

# SOFTWARE RELEASE NOTICE

1. SRN Number: PA-SRN- 281		
2. Project Title: TSPA & Technical Integration Code		Project No. 20-01402-762
3. SRN Title: TPA Version 5.0beta		
4. Originator/Requestor: Gordon Wittmeyer		Date: 09/27/02
5. Summary of Actions  <input type="checkbox"/> Release of new software  <input checked="" type="checkbox"/> Release of modified software: <input checked="" type="checkbox"/> Enhancements made <input checked="" type="checkbox"/> Corrections made  <input type="checkbox"/> Change of access software  <input type="checkbox"/> Software Retirement		
6. Persons Authorized Access		
Name	Read Only/Read-Write	Addition/Change/Delete
Sitakanta Mohanty	RW	
Ron Janetzke	RW	
David Esh (NRC)	RW	
Tim McCartin (NRC)	RW	
James Firth (NRC)	RW	
Others (NRC/CNWRA)	RO	
7. Element Manager Approval: <i>Gordon Wittmeyer</i>		Date: <i>9/27/2002</i>
8. Remarks: An 8mm tape containing FORTRAN source code for the TPA Version 5.0beta code, and 3 data CDs containing binary executable files and one CD containing source code for the PC/Windows NT platform were sent to NRC.		

# SOFTWARE SUMMARY FORM

01. Summary Date: 09/27/02	02. Summary prepared by (Name and phone): Ron Janetzke (210) 522-3318	03. Summary Action: Modified	
04. Software Date: 09/27/02	05. Short Title: TPA Version 5.0beta		
06. Software Title: TPA - System Performance Assessment Computer Code, Version 5.0beta		07. Internal Software ID: None	
08. Software Type:  <input type="checkbox"/> Automated Data System <input checked="" type="checkbox"/> Computer Program <input type="checkbox"/> Subroutine/Module	09. Processing Mode:  <input type="checkbox"/> Interactive <input checked="" type="checkbox"/> Batch <input type="checkbox"/> Combination	10. Application Area:  a. General: <input type="checkbox"/> Scientific/Engineering <input type="checkbox"/> Auxiliary Analyses <input checked="" type="checkbox"/> Total System PA <input type="checkbox"/> Subsystem PA <input type="checkbox"/> Other  b. Specific:	
11. Submitting Organization and Address:  CNWRA/SwRI 6220 Culebra Road San Antonio, TX 78228		12. Technical Contact(s) and Phone:  Sitakanta Mohanty (210) 522-5185	
13. Software Application: The TPA Code consists of the following modules: UZFLOW, NFENV, EBSREL, UZFT, SZFT, DCAGW, FAULTO, SEISMO, VOLCANO, ASHPLUMO, ASHRMVO, DCAGS, LHS, EXEC.			
14. Computer Platform: SUN Workstation PC	15. Computer Operating System: UNIX Windows NT	16. Programming Language(s): SUN FORTRAN 5.0 Lahey LF90 V4.5	17. Number of Source Program Statements: Approx. 54300 lines w/o stand alone codes
18. Computer Memory Requirements: 160 Mb	19. Tape Drives: None	20. Disk Units: N/A	21. Graphics: N/A
22. Other Operational Requirements:  Uses system environment variables: TPA_TEST and TPA_DATA.			
23. Software Availability: <input checked="" type="checkbox"/> Available <input type="checkbox"/> Limited <input type="checkbox"/> In-House ONLY		24. Documentation Availability: <input type="checkbox"/> Available <input type="checkbox"/> Preliminary <input checked="" type="checkbox"/> In-House ONLY	
25. Software Developer: <u>Ron Janetzke</u> Date: <u>9-27-02</u>			

## Bruce Mabrito

From: Randolph W. Folck [rfolck@satx.rr.com]  
Sent: Tuesday, September 24, 2002 5:18 PM  
To: Bruce Mabrito  
Cc: Ron Janetzke  
Subject: TPA Version 5.0 Beta Release

Hi Bruce:

Ron will be ready to release version 5.0 Beta on Friday. As we discussed, this being a Beta release, we would not expect a full QA Verification Report to be documented but, the SSF, SRN, and copy of the code should be placed in the QA file. TOP-018 really does not address Beta. Note that the SCRs will be completed except for completion of all testing. I verified implementation of SDP requirements and will reflect that in a surveillance report to be issued in October.

Sincerely,  
Randy Folck

-----  
Process Innovation, Inc.  
6434 Club Oaks  
San Antonio, Texas 78249  
210-558-4236  
<http://www.process-innovation.com/>

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*9/27/2002 - NOT all SCRs are complete as of this date. They will be complete by 2/1/2003. QA will expect all SCRs for TPA Version 5.0 to be completed by that date.*

*On 9/27/2002 B. Mabrito sat with R. Janetzke to review the "Very beta TPA Version 5.0" Scientific & Engineering software. The Software Summary Form and The Software Release Notice were reviewed and accepted from R. Janetzke. Print outs were requested and provided of TPA V 5.0 beta.*

*TPA Version 5.0 beta reviewed 9/27/2002 with B. Mabrito in bldg 189, Room A207. Bruce Mabrito  
An 8mm Tape of TPA Version 5.0 beta was obtained from R. Janetzke. 9/27/2002*

```

c Program Name:      TPA - Total-System Performance Assessment Code
c File Name:         %M%
c File Date:         %G%
c Release Version:   5.0beta
c
c Client Name:       USNRC
c                   U. S. Nuclear Regulatory Commission
c                   NRC Office of Nuclear Material Safety and Safeguards
c                   Division of Waste Management
c Contract Number:   NRC 02-97-009
c
c NRC Contact        Tim McCartin (301) 415-6681
c
c CNWRA Contact:     Sitakanta Mohanty (210) 522-5185
c                   Center for Nuclear Waste Regulatory Analyses
c                   San Antonio, Texas 78238-5166
c                   smohanty@swri.edu
c
c Revisions:
c
c       3.1.1      includes SPCRs 101 through 205
c       3.1.2      includes SPCRs 206 through 224
c       3.1.3      includes SPCRs 225 through 227
c       3.1.4      includes SPCRs 228 through 231
c       3.2        includes SPCRs 232 through 252
c       3.2.1      3.2PCbeta port of 3.2 to PC running NT4
c       3.2.2      3.2PVMbeta mod of 3.2.1 to enable PVM
c       3.2.3      includes SCRs 260 through 271
c       3.3        includes SCRs 272 through 278
c       and        includes SCRs 280 through 287
c       4.0        includes SCRs 288 through 313
c       4.1        includes SCR 321 through 326
c       4.1c       includes SCR 331 peak mean dose
c       4.1d       includes SCR 332 tpameans.out & tpa.inp
c       4.1e       changes to ChlorideMultFactor in tpa.inp only.
c       4.1f       includes SCR 334 EPA groundwater bug fix.
c       4.1g       includes SCR 336 Add MAI loss mode in uzflow.
c       4.1h       includes SCR 335 Add checkpoint/restart.
c       4.1i       includes SCR 337 Bug fix for icheckpointinp.
c       4.1j       includes SCR 338 Increase max correlated var.
c       4.1k       includes SCR 344-part A; Improve checkpoint p
performance.
c
c       4.2        includes SCR 344-part B; Add user option for
checkpoint.
c
c       4.2a       includes SCR 387 Add lhs user distributions.
c       4.2b       includes SCR 393 Remove last write of check.p
nt for good runs.
c
c       4.2c       includes SCR 376 Add streamtube width multipl
ier.
c
c       4.2d       includes SCR 348 Add DSFAIL standalone code.
c       4.2e       includes SCR 373 Sample CHnv thickness.
c       4.2f       includes SCR 382 New mass load & occupancy fa
ctors.
c
c       4.2g       includes SCR 365 Add weld corrosion to failt.
c       4.2h       includes SCR 395 Add drip shield data to appe
nd files.
c
c       4.2i       includes SCR 374 Split UZ flow into fracture
& matrix.
c
c       4.2j       includes SCR 327 Remove U and scaled values f
rom groundwater protection output files.
c
c       4.2k       includes SCR 397 Add checkpoint/restart logic
to DSFAIL.
c
c       4.2l       includes SCRs 367,369,370,&396 Glass,cladding,
anddiffusion in releaset.
c
c       4.2m       includes SCR 381 Use GENII to get DCFs for gr

```

Source Code  
Header info.

*[Signature]*  
9/27/2002



```
ound surface dose.
c          4.2n      includes SCR   389 Pathway specific dose output
c
c          4.2o      includes SCR   385 New seismo and mechfail modu
les.
c          4.2p      includes SCR   377 Add time dependent velocitie
s to szft.
c          4.2q      includes SCR   379 Use new plume capture model.
c          4.2r      includes SCR   385 Minor bug fix for PC.
c          4.2s      includes SCR   384 Add ash redistribution model
c
c          4.2t      includes SCR   375 Add variable dispersivity in
uzft.
c          4.2u      includes SCR   398 Add near field chemistry tem
perature epochs.
c          4.2v      includes SCR   386 Add one WP/temperature_cell
option.
c          4.2w      includes SCR 399&408 Time dependent dilution vo
lume and szft bug fix.
c          4.2x      includes SCR   371 Add Kd equations.
c          4.2y      includes SCR   385 Mechfail backfill & drift de
gradation.
c          4.2z      includes SCR   368 Add colloids.
c          4.3       continuation of SCR385, mechfail.f bug fix.
c          4.3a      continuation of SCR371 Add partial read of coef
kdeg.dat.
c          4.3b      includes SCR   390 New runoff data files.
c          4.3c      includes SCR   346 spatial variance for infiltr
ation.
c          5.0beta   includes SCR   409 Change EPA file column headi
ng.
c
c Documentation:      Predecisional "Total-System Performance Assessment
c                      (TPA) Version 4.0 Code: Module Description and
c                      User's Guide", Center for Nuclear Waste Regulatory
c                      Analyses
c NUREG-Series Designator: N/A
cccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccccc
c
c
c = = = = =
c
c                      D I S C L A I M E R
c
c = = = = =
c
c "This computer code/material was prepared as an account of work
c performed by the Center for Nuclear Waste Regulatory Analyses (CNWRA)
c for the Division of Waste Management of the Nuclear Regulatory
c Commission (NRC), an independent agency of the United States
c Government. Neither the developer(s) of the code nor any of their
c sponsors make any warranty, expressed or implied, or assume any legal
c liability or responsibility for the accuracy, completeness, or
c usefulness of any information, apparatus, product or process
c disclosed, or represent that its use would not infringe on privately-
c owned rights."
c
c "In no event unless required by applicable law will the sponsors
c or those who have written or modified this code, be liable for
c damages, including any lost profits, lost monies, or other special,
c incidental or consequential damages arising out of the use or
c inability to use the program (including but not limited to loss of
c data or data being rendered inaccurate or losses sustained by third
c parties or a failure of the program to operate with other programs),
c even if you have been advised of the possibility of such damages or
```

c for any claim by any other party."  
c

```
=====
exec: Welcome to TPA Version 5.0beta
Job started: Fri Sep 27 15:50:29 2002
=====
```

## REPOSITORY DESIGN INFORMATION

Subarea #	Area [m^2]	Waste [MTU]	Number of WP
1	723591.3	11479.9	1455
2	784763.0	12371.5	1568
3	390372.0	6114.8	775
4	207581.3	3361.1	426
5	378972.8	5996.4	760
6	424872.5	6714.4	851
7	163938.3	2548.5	323
8	393468.9	6674.9	846
9	660785.5	7708.5	977
10	589497.1	7069.4	896

```
Total Area [acre] = 1165.7629779961
Total Buried Waste [MTU] = 70039.530000000
Repository AML [MTU/acre] = 60.080420567478
```

## Specified Global Parameters:

```
Compliance Period = 10000.0 (yr)
Maximum Simulation Time = 10000.0 (yr)
Number Of Realizations = 1
Number Of Subareas = 10
Volcanism scenario = 0 (yes=1, no=0)
Faulting scenario = 0 (yes=1, no=0)
Mechanical failure scenarios:
    Seismicity = 1 (yes=1, no=0)
    Drift Degradation = 1 (yes=1, no=0)
Distance to Receptor Group = 18.0 (km)
```

```
**>>> CAUTION: CHECKING OF NUCLIDES AND CHAINS IS DISABLED <<<*>
**>>> You may not be using the standard chains specified <<<*>
**>>> in the invent module. <<<*>
**>>> (see "CheckNuclidesAndChains(yes=1,no=0)" in tpa.inp)<<<*>
```

```
The specified path for data = $TPA_DATA/
The specified path for codes = $TPA_TEST/
```

```
**To modify global parameters or the path, stop code execution using control-C*
```

```
-----
subarea 1 of 10 realization 1 of 1
-----
exec: calling uzflow
UZFLOW: Uncertainty parameter: 0.0000E+00
Mean Annual Infiltration at Start(AAI0): 1.2153E+01
exec: calling nfenv
exec: calling DSFAIL
exec: calling seismo
exec: calling ebsfail
ebsfail: No Weld Failure
*** No Corrosion WP Failure ***
exec: failed WPs from INITIAL event = 11 at time = 0.0 yr
*** failed WPs: 11 out of 1455 ***
exec: calling ebsrel
ebsrel: running spent fuel waste form
Highest release rates from Sub Area 1
Tc99 1.4240E-02 [Ci/yr/SA] at 8.691E+03 yr
Ni59 2.0002E-03 [Ci/yr/SA] at 9.107E+03 yr
C14 1.4154E-03 [Ci/yr/SA] at 8.113E+02 yr
```

TPA V5.0beta

Output file -  
Result of short  
run.

Dev  
9/27/2002

```

Cs135      8.9639E-04 [Ci/yr/SA] at 8.101E+03 yr
Np237      3.2405E-04 [Ci/yr/SA] at 1.000E+04 yr
Ja243      2.5734E-04 [Ci/yr/SA] at 1.000E+04 yr
Am243      2.5734E-04 [Ci/yr/SA] at 1.000E+04 yr
exec: calling uzft
          Highest release rates from UZ
Tc99      1.4240E-02 [Ci/yr/SA] at 8.691E+03 yr
Ni59      1.9978E-03 [Ci/yr/SA] at 9.107E+03 yr
Cs135      8.9521E-04 [Ci/yr/SA] at 8.101E+03 yr
Np237      3.2368E-04 [Ci/yr/SA] at 1.000E+04 yr
Ja243      2.5734E-04 [Ci/yr/SA] at 1.000E+04 yr
Am243      2.5705E-04 [Ci/yr/SA] at 1.000E+04 yr
exec: calling szft
          Highest release rates from SZ
Tc99      1.4003E-02 [Ci/yr/SA] at 9.769E+03 yr
Ra226      2.3592E-04 [Ci/yr/SA] at 1.000E+04 yr
Ni59      7.9615E-05 [Ci/yr/SA] at 9.543E+03 yr
Np237      7.3830E-05 [Ci/yr/SA] at 1.000E+04 yr
I129      5.7057E-05 [Ci/yr/SA] at 9.323E+03 yr
Se79      4.2856E-05 [Ci/yr/SA] at 1.000E+04 yr
exec: calling dcagw
          Highest annual dose GW pathway
Np237      2.9843E-02 [mrem/yr] at 1.000E+04 yr
Ra226      2.8041E-02 [mrem/yr] at 1.000E+04 yr
Pb210      1.0513E-02 [mrem/yr] at 1.000E+04 yr
Pu239      8.5668E-03 [mrem/yr] at 1.000E+04 yr
Tc99      2.1821E-03 [mrem/yr] at 9.769E+03 yr
I129      1.6399E-03 [mrem/yr] at 9.323E+03 yr
At end of TPI, annual dose GW pathway
Np237      2.9843E-02 [mrem/yr]
Ra226      2.8041E-02 [mrem/yr]
Pb210      1.0513E-02 [mrem/yr]
Pu239      8.5668E-03 [mrem/yr]
Tc99      2.1768E-03 [mrem/yr]
I129      1.6020E-03 [mrem/yr]
sum      8.0990E-02 [mrem/yr]
exec: end realizations

exec: Peak Mean Dose is 8.09900E-05 rem/yr at 10000.0 yr.

exec: Run Successfully Completed

```

```

drwxr-xr-x rjanetz/sunuser 0 2002-09-27 10:10:26 tpa50beta/
-rwxr-xr-x rjanetz/sunuser 2001 2002-09-18 16:52:07 tpa50beta/CLEANUP
-rw-r--r-- rjanetz/sunuser 29502 2002-02-15 10:18:36 tpa50beta/array.f
-rw-r--r-- rjanetz/sunuser 20601 2002-09-11 13:41:49 tpa50beta/ashplumo.f
-rw-r--r-- rjanetz/sunuser 37612 2002-09-13 12:12:10 tpa50beta/ashrmovo.f
-rw-r--r-- rjanetz/sunuser 10207 2002-02-15 10:18:39 tpa50beta/condxyzft.f
-rw-r--r-- rjanetz/sunuser 608 2002-09-20 20:44:36 tpa50beta/coefkdeg.i
-rw-r--r-- rjanetz/sunuser 115312 2002-09-13 10:23:57 tpa50beta/dcags.f
-rw-r--r-- rjanetz/sunuser 155845 2002-09-25 13:26:34 tpa50beta/dcagw.f
-rw-r--r-- rjanetz/sunuser 23141 2002-08-28 10:26:14 tpa50beta/dsfail.f
-rw-r--r-- rjanetz/sunuser 48674 2002-09-04 19:25:52 tpa50beta/ebsfail.f
-rw-r--r-- rjanetz/sunuser 77369 2002-09-25 15:06:38 tpa50beta/ebsrel.f
-rw-r--r-- rjanetz/sunuser 149 2002-09-25 12:15:49 tpa50beta/ebsrell.i
-rw-r--r-- rjanetz/sunuser 349783 2002-09-26 16:50:21 tpa50beta/exec.f
-rw-r--r-- rjanetz/sunuser 2385 2002-09-21 10:07:04 tpa50beta/execa.i
-rw-r--r-- rjanetz/sunuser 486 1997-09-03 17:54:54 tpa50beta/execb.i
-rw-r--r-- rjanetz/sunuser 269 2002-05-29 17:02:17 tpa50beta/execc.i
-rw-r--r-- rjanetz/sunuser 8503 2002-02-15 10:18:51 tpa50beta/faulto.f
-rw-r--r-- rjanetz/sunuser 6599 2002-05-29 17:03:27 tpa50beta/fileunit.f
-rw-r--r-- rjanetz/sunuser 5784 2002-02-15 10:18:53 tpa50beta/findelev.f
-rw-r--r-- rjanetz/sunuser 68121 2002-09-25 12:07:53 tpa50beta/invent.f
-rw-r--r-- rjanetz/sunuser 38724 2002-02-15 10:18:54 tpa50beta/iareader.f
-rw-r--r-- rjanetz/sunuser 1229 1999-07-22 09:07:03 tpa50beta/ia.i
-rw-r--r-- rjanetz/sunuser 956 2000-09-26 18:44:08 tpa50beta/ia1.i
-rw-r--r-- rjanetz/sunuser 869 2002-09-06 12:08:34 tpa50beta/Makefile
-rw-r--r-- rjanetz/sunuser 78 1997-08-16 13:32:33 tpa50beta/max500yr.i
-rw-r--r-- rjanetz/sunuser 99 2002-09-25 12:10:05 tpa50beta/maxchain.i
-rw-r--r-- rjanetz/sunuser 508 2002-09-25 12:11:30 tpa50beta/maxnnucl.i
-rw-r--r-- rjanetz/sunuser 149 2002-09-25 12:50:43 tpa50beta/maxclchn.i
-rw-r--r-- rjanetz/sunuser 144 2002-09-25 12:50:46 tpa50beta/maxclnuc.i
-rw-r--r-- rjanetz/sunuser 299 1998-07-10 15:15:51 tpa50beta/maxnsuba.i
-rw-r--r-- rjanetz/sunuser 206 1999-05-28 11:01:07 tpa50beta/maxntime.i
-rw-r--r-- rjanetz/sunuser 11850 2002-02-15 10:18:56 tpa50beta/mv.f
-rw-r--r-- rjanetz/sunuser 108095 2002-09-20 09:32:28 tpa50beta/nfenv.f
-rw-r--r-- rjanetz/sunuser 58 1997-08-16 13:32:42 tpa50beta/reflux2.i
-rw-r--r-- rjanetz/sunuser 94 1997-08-16 13:32:41 tpa50beta/nintv.i
-rw-r--r-- rjanetz/sunuser 1502 1997-06-11 16:21:39 tpa50beta/notice.i
-rw-r--r-- rjanetz/sunuser 6579 2002-02-15 10:18:59 tpa50beta/numrecip.f
-rw-r--r-- rjanetz/sunuser 259 1997-08-16 13:34:50 tpa50beta/path.i
-rw-r--r-- rjanetz/sunuser 6584 2002-02-15 10:19:00 tpa50beta/peakfind.f
-rw-r--r-- rjanetz/sunuser 46322 2002-02-15 10:19:01 tpa50beta/ran.f
-rw-r--r-- rjanetz/sunuser 148500 2002-09-25 12:25:37 tpa50beta/reader.f
-rw-r--r-- rjanetz/sunuser 185 1998-05-21 14:30:57 tpa50beta/reader.i
-rw-r--r-- rjanetz/sunuser 106 1999-08-27 15:20:53 tpa50beta/reader1.i
-rw-r--r-- rjanetz/sunuser 58 1999-08-27 15:20:52 tpa50beta/reader2.i
-rw-r--r-- rjanetz/sunuser 102 1999-08-27 15:20:53 tpa50beta/reader3.i
-rw-r--r-- rjanetz/sunuser 89 1999-08-27 15:20:54 tpa50beta/reader4.i
-rw-r--r-- rjanetz/sunuser 190 2002-09-20 09:32:11 tpa50beta/driftsa.i
-rw-r--r-- rjanetz/sunuser 95694 2002-05-29 17:03:43 tpa50beta/sampler.f
-rw-r--r-- rjanetz/sunuser 51131 2002-09-21 10:06:59 tpa50beta/seismo2.f
-rw-r--r-- rjanetz/sunuser 144 1997-09-03 11:09:30 tpa50beta/stop.i
-rw-r--r-- rjanetz/sunuser 38273 2002-09-03 10:13:43 tpa50beta/subarea.f
-rw-r--r-- rjanetz/sunuser 108014 2002-09-25 12:37:40 tpa50beta/szft.f
-rw-r--r-- rjanetz/sunuser 60 2000-02-07 15:53:49 tpa50beta/szft.i
-rw-r--r-- rjanetz/sunuser 83751 2002-09-26 16:50:12 tpa50beta/tpa.inp
-r--r--r-- rjanetz/sunuser 9325 2002-03-04 18:59:46 tpa50beta/tpa_.out
-rw-r--r-- rjanetz/sunuser 66563 2002-09-26 14:39:11 tpa50beta/uzflow.f
-rw-r--r-- rjanetz/sunuser 119021 2002-09-25 17:31:11 tpa50beta/uzft.f
-rw-r--r-- rjanetz/sunuser 542 2002-09-20 20:44:36 tpa50beta/uzszft.i
-rw-r--r-- rjanetz/sunuser 14215 2002-02-15 10:19:18 tpa50beta/volcano.f

```

-rw-r--r--	rjanetz/sunuser	60	1997-08-16	13:32:21	tpa50beta/ful.i
-rw-r--r--	rjanetz/sunuser	609	2002-09-04	19:29:21	tpa50beta/fu2.i
-rw-r--r--	rjanetz/sunuser	33	2002-09-25	12:15:57	tpa50beta/invent_.i
-rw-r--r--	rjanetz/sunuser	57	1997-08-16	13:32:23	tpa50beta/inventa.i
-rw-r--r--	rjanetz/sunuser	182	2002-09-25	12:14:29	tpa50beta/inventb.i
-rw-r--r--	rjanetz/sunuser	344	2002-09-25	12:14:33	tpa50beta/inventc.i
-rw-r--r--	rjanetz/sunuser	124	2002-09-25	12:14:36	tpa50beta/inventd.i
-rw-r--r--	rjanetz/sunuser	131	2002-09-25	12:14:38	tpa50beta/invente.i
-rw-r--r--	rjanetz/sunuser	130	2002-09-25	12:14:42	tpa50beta/inventf.i
-rw-r--r--	rjanetz/sunuser	128	2002-09-25	12:14:44	tpa50beta/inventg.i
-rw-r--r--	rjanetz/sunuser	127	2002-09-25	12:14:48	tpa50beta/inventh.i
-rw-r--r--	rjanetz/sunuser	75	1997-08-16	13:32:29	tpa50beta/inventi.i
-rw-r--r--	rjanetz/sunuser	288	2002-09-25	12:14:51	tpa50beta/inventj.i
-rw-r--r--	rjanetz/sunuser	332	2002-09-25	12:14:53	tpa50beta/inventk.i
-rw-r--r--	rjanetz/sunuser	150	2002-09-25	12:14:56	tpa50beta/inventl.i
-rw-r--r--	rjanetz/sunuser	315	2002-09-25	12:14:59	tpa50beta/inventm.i
-rw-r--r--	rjanetz/sunuser	175	2002-09-25	12:15:01	tpa50beta/inventn.i
-rw-r--r--	rjanetz/sunuser	249	2000-01-29	09:31:23	tpa50beta/invento.i
-rw-r--r--	rjanetz/sunuser	267	2002-09-25	12:15:04	tpa50beta/inventp.i
-rw-r--r--	rjanetz/sunuser	111	1997-09-04	14:39:30	tpa50beta/mva.i
-rw-r--r--	rjanetz/sunuser	56	1997-08-16	13:32:37	tpa50beta/mvb.i
-rw-r--r--	rjanetz/sunuser	57	1997-08-16	13:32:38	tpa50beta/mvc.i
-rw-r--r--	rjanetz/sunuser	101	1997-08-16	13:32:39	tpa50beta/mvd.i
-rw-r--r--	rjanetz/sunuser	72	1997-08-16	13:32:40	tpa50beta/mve.i
-rw-r--r--	rjanetz/sunuser	72	1997-08-16	13:32:40	tpa50beta/mvf.i
-rw-r--r--	rjanetz/sunuser	62	1997-08-16	13:32:43	tpa50beta/sampler0.i
-rw-r--r--	rjanetz/sunuser	79	1997-08-16	13:32:43	tpa50beta/sampler1.i
-rw-r--r--	rjanetz/sunuser	62	1997-08-16	13:32:44	tpa50beta/sampler2.i
-rw-r--r--	rjanetz/sunuser	178	1998-04-03	18:50:53	tpa50beta/sampler3.i
-rw-r--r--	rjanetz/sunuser	145	2000-09-19	17:56:41	tpa50beta/sampler4.i
-rw-r--r--	rjanetz/sunuser	62	1997-08-16	13:32:45	tpa50beta/sampler.a.i
-rw-r--r--	rjanetz/sunuser	62	1997-08-16	13:32:46	tpa50beta/samplerb.i
-rw-r--r--	rjanetz/sunuser	62	1997-08-16	13:32:46	tpa50beta/samplerc.i
-rw-r--r--	rjanetz/sunuser	68	1997-08-16	13:32:47	tpa50beta/samplerd.i
-rw-r--r--	rjanetz/sunuser	133	1997-08-16	13:32:48	tpa50beta/sampler.e.i
-rw-r--r--	rjanetz/sunuser	111	1997-08-16	13:32:48	tpa50beta/samplerf.i
-rw-r--r--	rjanetz/sunuser	84	1997-08-16	13:32:49	tpa50beta/samplerg.i
-rw-r--r--	rjanetz/sunuser	68	1997-08-16	13:32:50	tpa50beta/samplerh.i
-rw-r--r--	rjanetz/sunuser	83	1997-08-16	13:32:51	tpa50beta/sampleri.i
-rw-r--r--	rjanetz/sunuser	61	1997-08-16	13:32:51	tpa50beta/samplerj.i
-rw-r--r--	rjanetz/sunuser	208	1997-08-16	13:32:52	tpa50beta/samplerk.i
-rw-r--r--	rjanetz/sunuser	104	1997-08-16	13:32:53	tpa50beta/samplerl.i
-rw-r--r--	rjanetz/sunuser	63	1997-08-16	13:32:54	tpa50beta/samplerm.i
-rw-r--r--	rjanetz/sunuser	79	1997-08-16	13:32:54	tpa50beta/sampler.n.i
-rw-r--r--	rjanetz/sunuser	63	1997-08-16	13:32:55	tpa50beta/sampler.o.i
-rw-r--r--	rjanetz/sunuser	260	2002-03-14	15:15:42	tpa50beta/samplerp.i
-rw-r--r--	rjanetz/sunuser	103	1997-08-16	13:32:57	tpa50beta/samplerq.i
-rw-r--r--	rjanetz/sunuser	176	1997-08-16	13:32:57	tpa50beta/sampler.r.i
-rw-r--r--	rjanetz/sunuser	336	1998-04-03	19:02:35	tpa50beta/sampler.s.i
-rw-r--r--	rjanetz/sunuser	70	1997-08-16	13:32:59	tpa50beta/sampler.t.i
-rw-r--r--	rjanetz/sunuser	69	1997-08-16	13:33:00	tpa50beta/sampler.u.i
-rw-r--r--	rjanetz/sunuser	62	1997-08-16	13:33:01	tpa50beta/sampler.v.i
-rw-r--r--	rjanetz/sunuser	60	1997-08-16	13:33:01	tpa50beta/sampler.w.i
-rw-r--r--	rjanetz/sunuser	227	2002-03-14	15:15:46	tpa50beta/sampler.x.i
-rw-r--r--	rjanetz/sunuser	299	2001-04-30	15:29:47	tpa50beta/sampler.y.i
-rw-r--r--	rjanetz/sunuser	60	1997-08-16	13:33:04	tpa50beta/sampler.z.i
-rw-r--r--	rjanetz/sunuser	255	2000-02-04	10:45:20	tpa50beta/subareaa.i
-rw-r--r--	rjanetz/sunuser	79	1997-08-16	13:33:07	tpa50beta/subareab.i
-rw-r--r--	rjanetz/sunuser	82	1997-08-16	13:33:07	tpa50beta/subareac.i
-rw-r--r--	rjanetz/sunuser	81	1997-08-16	13:33:08	tpa50beta/subaread.i

-rw-r--r--	rjanetz/sunuser	77	1997-08-16	13:33:09	tpa50beta/subareae.i
-rw-r--r--	rjanetz/sunuser	60	2000-02-03	08:08:30	tpa50beta/subarea.f.i
-rw-r--r--	rjanetz/sunuser	64	2000-02-02	20:38:43	tpa50beta/subarea.g.i
-rw-r--r--	rjanetz/sunuser	314	1997-08-16	13:33:10	tpa50beta/uz_climi.i
-rw-r--r--	rjanetz/sunuser	1219	2002-09-06	20:05:50	tpa50beta/uz_climr.i
-rw-r--r--	rjanetz/sunuser	341	1997-08-16	13:33:12	tpa50beta/uz_climz.i
-rw-r--r--	rjanetz/sunuser	1323	2002-09-26	14:28:08	tpa50beta/uz_flowi.i
-rw-r--r--	rjanetz/sunuser	1170	2002-09-26	14:29:52	tpa50beta/uz_flowr.i
-rw-r--r--	rjanetz/sunuser	176	1997-08-16	13:33:14	tpa50beta/uz_flowz.i
-rw-r--r--	rjanetz/sunuser	3225	2002-09-26	14:30:57	tpa50beta/uz_parms.i
-rw-r--r--	rjanetz/sunuser	11721	2002-02-15	10:19:20	tpa50beta/zportunx.f
drwxr-xr-x	rjanetz/sunuser	0	2002-09-27	10:10:32	tpa50beta/codes/
-rw-r--r--	rjanetz/sunuser	1403	2002-09-06	13:40:32	tpa50beta/codes/Makefile
-rw-r--r--	rjanetz/sunuser	499	1997-06-02	14:25:35	tpa50beta/codes/README
-rw-r--r--	rjanetz/sunuser	2320	1998-05-28	16:26:08	tpa50beta/codes/SIZES.INC
-rw-r--r--	rjanetz/sunuser	164	1998-02-17	20:25:08	tpa50beta/codes/SIZES2.INC
-rw-r--r--	rjanetz/sunuser	95611	2000-09-26	19:33:32	tpa50beta/codes/ashplume.f
-rw-r--r--	rjanetz/sunuser	99585	2002-07-17	11:11:46	tpa50beta/codes/failt.f
-rw-r--r--	rjanetz/sunuser	20721	2002-07-23	15:47:00	tpa50beta/codes/dsfailt.f
-rw-r--r--	rjanetz/sunuser	308005	2000-09-26	19:28:12	tpa50beta/codes/nefmks.f
-rw-r--r--	rjanetz/sunuser	147326	2002-09-20	09:33:57	tpa50beta/codes/releaset.f
-rw-r--r--	rjanetz/sunuser	224558	2002-09-06	10:21:16	tpa50beta/codes/snllhs.f
-r--r--r--	rjanetz/sunuser	868	2002-03-14	15:14:50	tpa50beta/codes/lhs1.i
-r--r--r--	rjanetz/sunuser	1308	2002-03-14	15:14:51	tpa50beta/codes/lhs2.i
-r--r--r--	rjanetz/sunuser	438	2002-03-14	15:14:51	tpa50beta/codes/lhs3.i
-r--r--r--	rjanetz/sunuser	437	2002-03-14	15:14:52	tpa50beta/codes/lhs4.i
-r--r--r--	rjanetz/sunuser	374	2002-03-14	15:14:52	tpa50beta/codes/lhs5.i
-r--r--r--	rjanetz/sunuser	450	2002-03-14	15:14:53	tpa50beta/codes/lhs6.i
-r--r--r--	rjanetz/sunuser	464	2002-03-14	15:14:53	tpa50beta/codes/lhs7.i
-r--r--r--	rjanetz/sunuser	431	2002-03-14	15:14:54	tpa50beta/codes/lhs8.i
-rw-r--r--	rjanetz/sunuser	12568	2000-09-26	19:31:46	tpa50beta/codes/ebsfilt.f
-rwxr-xr-x	rjanetz/sunuser	4040	2002-05-29	17:14:34	tpa50beta/codes/integrt.f
-rwxr-xr-x	rjanetz/sunuser	5229	2002-05-29	17:14:50	tpa50beta/codes/linintrp.f
-rwxr-xr-x	rjanetz/sunuser	4303	2002-05-29	17:14:51	tpa50beta/codes/srchpos.f
-rwxr-xr-x	rjanetz/sunuser	18031	2002-07-17	14:40:28	tpa50beta/codes/weldfail.f
-rw-r--r--	rjanetz/sunuser	25361	2002-07-17	14:57:20	tpa50beta/codes/corrosn.f
-rw-r--r--	rjanetz/sunuser	82807	2002-09-25	15:02:42	tpa50beta/codes/mechfail.f
drwxr-xr-x	rjanetz/sunuser	0	2002-09-27	10:10:32	tpa50beta/codes/gentpa/
-rw-r--r--	rjanetz/sunuser	1746	2000-02-11	17:32:51	tpa50beta/codes/gentpa/Mke
-rw-r--r--	rjanetz/sunuser	1548	2000-02-11	17:32:52	tpa50beta/codes/gentpa/Mke
-rw-r--r--	rjanetz/sunuser	543	2000-02-11	07:57:56	tpa50beta/codes/gentpa/AFP
-rw-r--r--	rjanetz/sunuser	1044	2000-02-11	07:57:58	tpa50beta/codes/gentpa/AIR
-rw-r--r--	rjanetz/sunuser	872	2000-02-11	07:57:58	tpa50beta/codes/gentpa/ANM
-rw-r--r--	rjanetz/sunuser	615	2000-02-11	07:57:59	tpa50beta/codes/gentpa/AQU
-rw-r--r--	rjanetz/sunuser	1089	2000-02-11	07:58:00	tpa50beta/codes/gentpa/CON
-rw-r--r--	rjanetz/sunuser	461	2000-02-11	19:06:30	tpa50beta/codes/gentpa/DAY
-rw-r--r--	rjanetz/sunuser	400	2000-02-11	19:06:35	tpa50beta/codes/gentpa/DEC
-rw-r--r--	rjanetz/sunuser	571	2000-02-11	07:58:02	tpa50beta/codes/gentpa/DFP
-rw-r--r--	rjanetz/sunuser	1359	2000-02-11	07:57:56	tpa50beta/codes/gentpa/DOS
-rw-r--r--	rjanetz/sunuser	574	2000-02-11	07:58:24	tpa50beta/codes/gentpa/ENV
-rw-r--r--	rjanetz/sunuser	310	2000-02-11	19:06:39	tpa50beta/codes/gentpa/EXP
-rw-r--r--	rjanetz/sunuser	637	2000-02-11	07:58:25	tpa50beta/codes/gentpa/EXT
-rw-r--r--	rjanetz/sunuser	327	2000-02-11	19:06:42	tpa50beta/codes/gentpa/FIL
-rw-r--r--	rjanetz/sunuser	814	2000-02-11	07:58:27	tpa50beta/codes/gentpa/FOD
-rw-r--r--	rjanetz/sunuser	438	2000-02-11	19:06:45	tpa50beta/codes/gentpa/INV
-rw-r--r--	rjanetz/sunuser	569	2000-02-11	07:58:47	tpa50beta/codes/gentpa/LAB
-rw-r--r--	rjanetz/sunuser	1161	2000-02-11	07:58:48	tpa50beta/codes/gentpa/MTB
-rw-r--r--	rjanetz/sunuser	1688	2000-02-28	10:15:28	tpa50beta/codes/gentpa/Mak
-rw-r--r--	rjanetz/sunuser	2762	2000-02-11	07:58:50	tpa50beta/codes/gentpa/OPT
-rw-r--r--	rjanetz/sunuser	444	2000-02-11	19:06:49	tpa50beta/codes/gentpa/ORG

-rw-r--r--	rjanetz/sunuser	728	2000-02-11	07:58:52	tpa50beta/codes/gentpa/ORG
-rw-r--r--	rjanetz/sunuser	589	2000-02-11	07:59:14	tpa50beta/codes/gentpa/RAD
-rw-r--r--	rjanetz/sunuser	722	2000-02-11	07:59:16	tpa50beta/codes/gentpa/RMD
-rw-r--r--	rjanetz/sunuser	788	2000-02-11	07:59:15	tpa50beta/codes/gentpa/RAD
-rw-r--r--	rjanetz/sunuser	489	2000-02-11	19:06:52	tpa50beta/codes/gentpa/RMD
-rw-r--r--	rjanetz/sunuser	891	2000-02-11	07:59:18	tpa50beta/codes/gentpa/SOL
-rw-r--r--	rjanetz/sunuser	489	2000-02-11	19:06:55	tpa50beta/codes/gentpa/SWP
-rw-r--r--	rjanetz/sunuser	586	2000-02-11	07:59:38	tpa50beta/codes/gentpa/TIM
-rw-r--r--	rjanetz/sunuser	316	2000-02-11	19:06:58	tpa50beta/codes/gentpa/TIT
-rw-r--r--	rjanetz/sunuser	12777	2000-02-11	07:59:41	tpa50beta/codes/gentpa/acc
-rw-r--r--	rjanetz/sunuser	10094	2000-02-11	07:58:04	tpa50beta/codes/gentpa/acu
-rw-r--r--	rjanetz/sunuser	9579	2000-02-11	07:58:04	tpa50beta/codes/gentpa/acu
-rw-r--r--	rjanetz/sunuser	7118	2000-02-11	07:58:05	tpa50beta/codes/gentpa/acu
-rw-r--r--	rjanetz/sunuser	8669	2000-02-11	07:58:05	tpa50beta/codes/gentpa/air
-rw-r--r--	rjanetz/sunuser	8383	2000-02-11	07:58:07	tpa50beta/codes/gentpa/anm
-rw-r--r--	rjanetz/sunuser	2043	2000-02-11	07:58:08	tpa50beta/codes/gentpa/aqu
-rw-r--r--	rjanetz/sunuser	1217	2000-02-11	07:58:09	tpa50beta/codes/gentpa/bio
-rw-r--r--	rjanetz/sunuser	4174	2000-02-11	07:58:11	tpa50beta/codes/gentpa/blo
-rw-r--r--	rjanetz/sunuser	1405	2000-02-11	07:58:12	tpa50beta/codes/gentpa/bso
-rw-r--r--	rjanetz/sunuser	13008	2000-02-11	07:58:12	tpa50beta/codes/gentpa/can
-rw-r--r--	rjanetz/sunuser	6653	2000-02-11	07:58:31	tpa50beta/codes/gentpa/cha
-rw-r--r--	rjanetz/sunuser	23921	2000-02-11	07:58:31	tpa50beta/codes/gentpa/che
-rw-r--r--	rjanetz/sunuser	10189	2000-02-11	19:07:02	tpa50beta/codes/gentpa/cro
-rw-r--r--	rjanetz/sunuser	5153	2000-02-11	07:58:34	tpa50beta/codes/gentpa/crp
-rw-r--r--	rjanetz/sunuser	3842	2000-02-11	07:58:53	tpa50beta/codes/gentpa/dkh
-rw-r--r--	rjanetz/sunuser	5426	2000-02-11	07:58:56	tpa50beta/codes/gentpa/dos
-rw-r--r--	rjanetz/sunuser	2398	2000-02-11	07:58:57	tpa50beta/codes/gentpa/drif
-rw-r--r--	rjanetz/sunuser	6728	2000-02-11	07:58:57	tpa50beta/codes/gentpa/drif
-rw-r--r--	rjanetz/sunuser	1877	2000-02-11	07:58:58	tpa50beta/codes/gentpa/drk
-rw-r--r--	rjanetz/sunuser	1325	2000-02-11	07:58:58	tpa50beta/codes/gentpa/dum
-rw-r--r--	rjanetz/sunuser	3958	2000-02-11	07:58:59	tpa50beta/codes/gentpa/edr
-rw-r--r--	rjanetz/sunuser	3567	2000-02-11	07:59:00	tpa50beta/codes/gentpa/edr
-rw-r--r--	rjanetz/sunuser	2525	2000-02-11	07:59:00	tpa50beta/codes/gentpa/edr
-rw-r--r--	rjanetz/sunuser	2853	2000-02-11	07:59:01	tpa50beta/codes/gentpa/edr
-rw-r--r--	rjanetz/sunuser	10581	2000-02-11	07:59:01	tpa50beta/codes/gentpa/env
-rw-r--r--	rjanetz/sunuser	4885	2000-02-11	07:59:02	tpa50beta/codes/gentpa/env
-rw-r--r--	rjanetz/sunuser	4561	2000-02-11	19:07:06	tpa50beta/codes/gentpa/env
-rw-r--r--	rjanetz/sunuser	1912	2000-02-11	07:59:21	tpa50beta/codes/gentpa/exp
-rw-r--r--	rjanetz/sunuser	6774	2000-02-11	07:59:21	tpa50beta/codes/gentpa/ext
-rw-r--r--	rjanetz/sunuser	1489	2000-02-11	07:59:23	tpa50beta/codes/gentpa/fil
-rw-r--r--	rjanetz/sunuser	1986	2000-02-11	07:59:25	tpa50beta/codes/gentpa/fnt
-rw-r--r--	rjanetz/sunuser	3003	2000-02-11	19:07:14	tpa50beta/codes/gentpa/hea
-rw-r--r--	rjanetz/sunuser	2203	2000-02-11	07:59:43	tpa50beta/codes/gentpa/idn
-rw-r--r--	rjanetz/sunuser	2842	2000-02-11	07:59:43	tpa50beta/codes/gentpa/inh
-rw-r--r--	rjanetz/sunuser	2392	2000-02-11	07:59:44	tpa50beta/codes/gentpa/ini
-rw-r--r--	rjanetz/sunuser	1841	2000-02-11	07:59:45	tpa50beta/codes/gentpa/int
-rw-r--r--	rjanetz/sunuser	1348	2000-02-11	07:58:13	tpa50beta/codes/gentpa/inv
-rw-r--r--	rjanetz/sunuser	677	2000-02-11	07:58:16	tpa50beta/codes/gentpa/mak
-rw-r--r--	rjanetz/sunuser	1849	2000-02-24	17:30:11	tpa50beta/codes/gentpa/Mak
-rw-r--r--	rjanetz/sunuser	5870	2000-02-11	19:07:11	tpa50beta/codes/gentpa/opn
-rw-r--r--	rjanetz/sunuser	4217	2000-02-11	07:58:19	tpa50beta/codes/gentpa/ord
-rw-r--r--	rjanetz/sunuser	2325	2000-02-11	07:58:20	tpa50beta/codes/gentpa/pac
-rw-r--r--	rjanetz/sunuser	3366	2000-02-11	07:58:21	tpa50beta/codes/gentpa/plm
-rw-r--r--	rjanetz/sunuser	1861	2000-02-11	07:58:39	tpa50beta/codes/gentpa/pri
-rw-r--r--	rjanetz/sunuser	4080	2000-02-11	07:58:40	tpa50beta/codes/gentpa/pro
-rw-r--r--	rjanetz/sunuser	27222	2000-02-11	19:07:18	tpa50beta/codes/gentpa/rit
-rw-r--r--	rjanetz/sunuser	2079	2000-02-11	07:58:40	tpa50beta/codes/gentpa/pro
-rw-r--r--	rjanetz/sunuser	11351	2000-02-11	07:58:41	tpa50beta/codes/gentpa/rea
-rw-r--r--	rjanetz/sunuser	6174	2000-02-11	07:58:42	tpa50beta/codes/gentpa/red
-rw-r--r--	rjanetz/sunuser	3867	2000-02-11	07:58:42	tpa50beta/codes/gentpa/red



-rw-r--r--	rjanetz/sunuser	8483	2000-02-11	07:58:44	tpa50beta/codes/gentpa/red
-rw-r--r--	rjanetz/sunuser	1694	2000-02-11	07:58:44	tpa50beta/codes/gentpa/red
-rw-r--r--	rjanetz/sunuser	8548	2000-02-11	07:59:04	tpa50beta/codes/gentpa/rit
-rw-r--r--	rjanetz/sunuser	4371	2000-02-11	07:59:05	tpa50beta/codes/gentpa/rit
-rw-r--r--	rjanetz/sunuser	2584	2000-02-11	07:59:07	tpa50beta/codes/gentpa/rit
-rw-r--r--	rjanetz/sunuser	4346	2000-02-11	07:59:08	tpa50beta/codes/gentpa/rli
-rw-r--r--	rjanetz/sunuser	4399	2000-02-11	07:59:09	tpa50beta/codes/gentpa/rwa
-rw-r--r--	rjanetz/sunuser	2396	2000-02-11	07:59:30	tpa50beta/codes/gentpa/sig
-rw-r--r--	rjanetz/sunuser	8387	2000-02-11	07:59:32	tpa50beta/codes/gentpa/swc
-rw-r--r--	rjanetz/sunuser	1894	2000-02-11	07:59:33	tpa50beta/codes/gentpa/trn
-rw-r--r--	rjanetz/sunuser	1771	2000-02-11	07:59:35	tpa50beta/codes/gentpa/ust
-rw-r--r--	rjanetz/sunuser	9276	2000-02-11	07:59:46	tpa50beta/codes/gentpa/xqc
-rw-r--r--	rjanetz/sunuser	5277	2000-02-11	07:59:46	tpa50beta/codes/gentpa/xqi
drwxr-xr-x	rjanetz/sunuser	0	2002-09-27	10:10:32	tpa50beta/codes/itym/
-rw-r--r--	rjanetz/sunuser	598	2000-03-29	12:25:30	tpa50beta/codes/itym/makef
drwxr-xr-x	rjanetz/sunuser	0	2002-09-27	10:10:34	tpa50beta/codes/itym/src/
-rw-r--r--	rjanetz/sunuser	29776	2000-03-22	15:15:19	tpa50beta/codes/itym/src/a
-rw-r--r--	rjanetz/sunuser	15856	2000-03-22	15:15:19	tpa50beta/codes/itym/src/c
-rw-r--r--	rjanetz/sunuser	59186	2002-09-25	18:51:54	tpa50beta/codes/itym/src/e
-rw-r--r--	rjanetz/sunuser	4911	2002-09-25	18:53:49	tpa50beta/codes/itym/src/i
-rw-r--r--	rjanetz/sunuser	9420	2002-09-25	18:55:36	tpa50beta/codes/itym/src/i
-rw-r--r--	rjanetz/sunuser	10129	2002-09-25	18:57:25	tpa50beta/codes/itym/src/i
-rw-r--r--	rjanetz/sunuser	26752	2002-09-26	14:19:13	tpa50beta/codes/itym/src/i
-rw-r--r--	rjanetz/sunuser	261	2000-03-22	15:15:23	tpa50beta/codes/itym/src/p
-rw-r--r--	rjanetz/sunuser	55	2000-03-22	15:15:23	tpa50beta/codes/itym/src/p
-rw-r--r--	rjanetz/sunuser	42671	2000-03-22	15:15:24	tpa50beta/codes/itym/src/r
-rw-r--r--	rjanetz/sunuser	38406	2002-09-26	14:20:38	tpa50beta/codes/itym/src/s
-rw-r--r--	rjanetz/sunuser	60346	2002-09-26	14:22:27	tpa50beta/codes/itym/src/u
-rw-r--r--	rjanetz/sunuser	12265	2000-03-22	15:15:26	tpa50beta/codes/itym/src/u
-rw-r--r--	rjanetz/sunuser	55	2000-03-22	15:15:26	tpa50beta/codes/itym/src/u
-rw-r--r--	rjanetz/sunuser	10904	2000-03-22	15:15:28	tpa50beta/codes/itym/src/z
drwxr-xr-x	rjanetz/sunuser	0	2002-09-27	10:10:26	tpa50beta/data/
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-rw-r--r--	rjanetz/sunuser	2200	1999-02-01	17:48:41	tpa50beta/data/climato2.da
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-rw-r--r--	rjanetz/sunuser	6265	2002-07-17	09:54:32	tpa50beta/data/ebsfail.def
-rw-r--r--	rjanetz/sunuser	5553	2002-09-03	09:27:17	tpa50beta/data/ebsrel.def
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-rw-r--r--	rjanetz/sunuser	965	2000-02-11	18:48:43	tpa50beta/data/FILENAME.DA
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-rw-r--r--	rjanetz/sunuser	66	1997-08-01	14:32:11	tpa50beta/ccdf/tccdf.i
-rw-r--r--	rjanetz/sunuser	640	2001-01-29	14:46:52	tpa50beta/ccdf/tccdf.inp
-rw-r--r--	rjanetz/sunuser	267	2000-03-14	16:27:40	tpa50beta/ccdf/Makefile

**SOFTWARE DEVELOPMENT PLAN FOR  
THE TOTAL-SYSTEM PERFORMANCE  
ASSESSMENT VERSION 5.0 CODE**

*Prepared for*

**U.S. Nuclear Regulatory Commission  
Contract NRC-02-97-009**

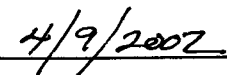
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This software development plan describes the approach to be followed in implementing the code modifications to be made to the Total-system Performance Assessment (TPA) Version 4.2 code, that are necessary to meet the design specifications for the TPA Version 5.0 code outlined in the Software Requirements Description for TPA Version 5.0.

## **1 SCOPE**

The scope of the software development effort is described in detail in the Software requirements description. The work will be performed on both the executive side of the code and the process model side. New waste form as well as a diffusive release model will be provided. Other new features and processes include weld corrosion, colloids, and drift collapse. All process models will be modified except the faulting model in the FAULTO module.

## **2 BASELINE ITEMS**

The products to be delivered from this software development project include: (i) a beta test version of the TPA Version 5.0 source code to be delivered to U.S. Nuclear Regulatory Commission (NRC) on September 17, 2002, (ii) a tested TPA Version 5.0 source code to be delivered to NRC on December 16, 2002, (iii) an updated version of the input file *tpa.inp*, (iv) *make* files that create the TPA and process model executable files, (v) auxiliary data files for the *data/* subdirectory, and (vi) source code for the process models in the *codes/* subdirectory.

## **3 PROJECT MANAGEMENT**

The software development tasks, schedules, staff and provisions for reducing associated risk are discussed in this section. The TPA Version 4.2 code will be used as the baseline code from which all modifications discussed in the software requirements description will proceed. Software Change Report numbers in the ranges 339, 344–349, and 365–400 have been reserved by the quality assurance staff for use in this effort.

### **3.1 Work Breakdown Structure**

The development tasks described in this section are identified by the alphanumeric identifier used in the software requirements description. See the Software requirements description for more details regarding the specific features address in each task. Key Center for Nuclear Waste Regulatory Analyses (CNWRA) and NRC technical staff members from appropriate key technical issues are identified in parentheses after each task identification.

#### **3.1.1 C1—Modify shallow infiltration to account for runoff (Fedors, 20 days)**

This task is limited to changes in the ITYM preprocessor. The changes require model modifications to include runoff and runoff considerations.

### **3.1.2 C2—Modify shallow infiltration estimates to account for vegetation (Stothoff, 25 days)**

This task is limited to changes in the ITYM preprocessor. The changes require modifications to equations used to estimate shallow infiltration so that new vegetation results from the BREATH code can be accommodated.

### **3.1.3 C3—Add shallow infiltration variance factor in UZFLOW (Janetzke, 11 Days)**

This task will create a new sampled parameter to determine the factor to be applied to the new ITYM shallow infiltration variance file. Modifications to the UZFLOW module will calculate the stochastic value of shallow infiltration for each pixel prior to aggregating the pixel values to subarea averages.

### **3.1.4 NF1—Update thermal model (Mohanty, 12 days)**

This task will modify NFENV to provide a new semianalytical thermal model for predicting repository temperature. Attempts to use temperature to determine multiple dissolution rates per subarea will be avoided.

### **3.1.5 DS1—Add drip shield failure model (Pensado, 15 days)**

This task will create a module for a new process model called DSFAIL. This model will include general corrosion and the effects of fluoride on the drip shield.

### **3.1.6 WP1—Add variable pH (Janetzke, 7 days)**

This task will modify the FAILT module to read an input file that contains time dependent value for pH.

### **3.1.7 WP2—Add weld corrosion (Pensado, 15 days)**

This task will modify the FAILT module to consider weld failures due to corrosion. New corrosion parameters will be required for the *tpa.inp* file.

### **3.1.8 WP3—Add microbial induced corrosion (Pensado, 10 days)**

This task will modify FAILT to apply a correction term to the critical potential for localized corrosion of Alloy 22. This correction term will be defined as a function of time in a look-up table.

### **3.1.9 SF1—Add glass source term (Codell, 15 days)**

This task will modify the EBSREL module to consider a glass source term for the release of radionuclides.

### **3.1.10 SF2—Add colloid source term (Pickett, 15 days)**

This task will provide a mechanism in the executive module to partition the radionuclide releases into two types, regular and colloidal. This should be performed in the executive module before the release values are sent to the EBSFILT module.

### **3.1.11 SF3—Add diffusive release (Codell, 15 days)**

This task will modify the EBSREL, RELEASET, and EBSFILT modules to include a diffusive release model for release from the waste form.

### **3.1.12 SF4—Add time dependent cladding failure (Codell, 15 days)**

This task will add a table look-up feature to the EBSREL and RELEASET modules for the cladding protection factor as a function of time.

### **3.1.13 FT1—Represent $K_d$ s and $R_s$ for unsaturated zone and saturated zone as a function of geochemistry (Janetzke, 14 days)**

This task will provide a new method for determining the  $K_d$ s for radionuclide transport in the UZFT and SZFT modules. This will include the addition of sampled parameters for the pH, the total carbon  $C_T$ , and the specific surface area  $A'$ .

### **3.1.14 FT2—Add colloid transport (Pickett, 14 days)**

This task will add new decay chains that include the irreversible attachment radionuclides that will undergo colloidal transport in the unsaturated zone and saturated zone. The READER, EXECUTIVE, UZFT, and SZFT modules will be modified for this task.

### **3.1.15 FT3—Reflect uncertainty in CHnv thickness (Janetzke, 7 days)**

This task will convert the CHnv layer thickness to a sampled parameter in a way that maintains the unsaturated zone total thickness as a fixed value for each subarea. These changes will be made in the UZFT module.

### **3.1.16 FT4—Add multiple fracture flow and matrix flow epochs (Janetzke, 7 days)**

This task will modify the UZFT module to permit the specification of two transport legs for one hydrostratigraphic unit in the NEFTRAN input data set. One will be used for fracture and one for matrix properties.

### **3.1.17 FT5—Add variable dispersivity for UZFT (Janetzke, 4 days)**

This task will modify the dispersivity limit in the UZFT module from 0.1 m to 0.01 m [0.33 ft to .033 ft] for layer thicknesses less than 40 m [131 ft].

**3.1.18                      FT6—Reflect uncertainty in streamtube dimensions (Winterle, 1 day)**

This task will add a new sampled parameter that will be used as a width multiplier for the streamtube widths read from the *strmtube.dat* file.

**3.1.19                      FT7—Update streamtube flux after climate change (Janetzke, 7 days)**

This task will create a velocity file for use with the SZFT module in conjunction with the NEFTRAN module. This file will contain the time dependent velocities in the saturated zone as influenced by climate change.

**3.1.20                      D1—Add plume capture model (LaPlante, 10 days)**

This task will add an option to the *tpa.inp* file to select a single algorithm in the DCAGW module to determine amount of plume captured while being consistent with the rule specification of a pumping rate of 3,000 acre-feet/year.

**3.1.21                      D2—Modify U.S. Environmental Protection Agency (EPA) groundwater protection output (LaPlante, 4 days)**

This task will reformat the EPA groundwater output files to add data in raw form or in physical units consistent with the standards.

**3.1.22                      D3—Use 18 km [11.2 mi] as receptor location(Janetzke, 7 days)**

This task will affect several modules in order to change the location of the maximally exposed individual to 18 km [11.2 mi] throughout the code. Most of the effort will be required to reconcile the various names used for this parameter.

**3.1.23                      D4—Use GENTPA for DCAGS dose conversion factors (Smith, 15 days)**

This task will introduce the DCAGW method of using the GENTPA code to determine the dose conversion factors to the DCAGS module.

**3.1.24                      IA1—Divide mass loading and occupancy factors into inside and outside components (Benke, 15 days)**

This task will add five new categories of disturbance parameter to the DCAGS module. Each category will have a mass load and an occupancy time.

**3.1.25                      IA2—Add alternative model for fuel incorporation into ash (Codell, 10 days)**

This task will add an alternative model of fuel incorporation into ash. This will require a new particle size distribution, a new uranium solubility in ash, and a new incorporation ratio in ASHPLUME.

**3.1.26                    IA3—Add ash redistribution model (Smith, 12 days)**

This task will modify DCAGS and ASHRMOVO to include several new parameters that will be used to implement the new ash redistribution model.

**3.1.27                    SA1—Add rockfall effects on the drip shield to SEISMO (Gute, 20 days)**

This task will perform a major rewrite of the SEISMO module to include the effects of rockfall on the drip shield.

**3.1.28                    EX1—Accommodate new thermal load strategies (Mohanty, 5 days)**

This task will modify the READER and the EXECUTIVE to accommodate variations to the DOE current thermal loading strategy.

**3.1.29                    EX2—Add new user distributions to SNLLHS (Pensado, 5 days)**

This task will modify the SNLLHS module to add several new user distributions.

**3.1.30                    EX3—Cull unused parameters from the SNLLHS input file (Rice, 15 days)**

This task will modify the READER and the EXECUTIVE to add a filter to the SNLLHS input data file to omit any sampled parameters that are not required for a particular run.

**3.1.31                    EX4—Add pathway specific dose output (Smith, 5 days)**

This task will create a new output file that contains the GENTPA pathway specific doses.

**3.1.32                    EX5—Miscellaneous items (Janetzke, 30 days)**

This task will perform miscellaneous code development and maintenance activities on an ongoing basis in support of effort described in all of the preceding tasks.

**3.1.33                    Delivery of TPA 5.0beta (Janetzke, 5 days)**

This task will perform quality assurance checks, configuration control, installation tests, documentation, and media preparation of the TPA 5.0beta code.

**3.2                    Schedules**



All coding modifications will be completed by August 1, 2002, in order to provide the necessary time for testing, quality assurance checks, and media preparation. The task assignments are presented on a Gantt chart in Appendix A. Delivery of the TPA 5.0beta will be on September 17, 2002, and delivery of TPA 5.0 will be on December 16, 2002.

### **3.3 Staffing**

In addition to performance assessment staff who have been involved in the development of the TPA Version 4.2 code, completion of this software development project will require the use of consultants and Southwest Research Institute personnel who are proficient in developing, implementing, and testing FORTRAN 77 code, specifically R. Rice, C. Scherer, M. Muller and J. Marty Menchaca. For most tasks, key CNWRA and NRC technical staff members from appropriate key technical issues will be required to produce the algorithms and data needed for modifications of the process models. These key technical issue staff members will also participate in the final code testing.

### **3.4 Risk Management**

The primary risk associated with this project is failure to meet the September 17, 2002, deliverable date for the delivery task described in section 3.1.32. This task is dependent on the completion of all of the other tasks except FT7, D4, and IA3. If the required tasks are not complete on July 31, 2002, then modifications not implemented will be deferred until a later version in order that the thorough testing for the delivery task may be completed on schedule. NRC will be informed at the time of delivery of Version 5.0beta that a certain feature was not implemented to ensure that a working code could be delivered on schedule. This risk is rated as medium.

Another risk is the interference that technical exchanges will cause for participating staff. The technical exchanges dates have not been determined yet, but will likely disturb the tightly choreographed time line shown in Appendix A by failure to meet the completion dates for various tasks. This risk is rated as high.

## **4 DEVELOPMENT PROCEDURES**

This section describes plans for developing the TPA Version 5.0 code

### **4.1 Hardware and Software resources**

All code development will be done on a Sun SPARC 20 workstation running SOLARIS 5.8, the Sun Ultra-4 server running SOLARIS 5.8, and a personal computer running Microsoft Windows NT. The Sun FORTRAN 77 Version 5.0 will be used on the UNIX platform and Lahey Fortran 90 (LF90) Version 4.5 will be used on the PC platform.

### **4.2 Software Development Life Cycle**

The project will consist of two phases. Phase 1 will be the development and delivery of TPA Version 5.0beta. Phase 2 will be the testing of the code prior to the delivery of TPA Version 5.0.

### **4.3 Coding**

All coding will be done in FORTRAN 77 with extensions to permit the use of long variable names. Coding style will be in accordance with that which has been historically used at the CNWRA and NRC for development of TPA codes.

### **4.4 Acceptance Testing and Analysis**

The results of any testing will be appropriately recorded in scientific notebooks or software change reports.

## **5 CONFIGURATION MANAGEMENT PLAN**

The official version of the working code will be placed under control of the Software Configuration Control System package available on the Sun workstation to ensure that coding conflicts do not arise during development. A copy of the final TPA Version 5.0 code will be provided to quality assurance for configuration control.

### **5.1 Tools**

In addition to the software configuration control system tool mentioned above, Unix utilities *diff*, *filemerge* and *make* will be used to perform the code manipulations required to maintain the official version of the working code on the SUN platform.

### **5.2 Configuration Identification**

The configuration identification will be assigned by the software custodian of the quality assurance staff.

### **5.3 Configuration Procedures**

All check-in or check-out activities on *scratchy1* will be performed by Ron Janetzke. The latest version of the files will be available in */export/home/janetzke/tpa/dev*. The standard software change report form will be used for all significant changes to the controlled source code.

## **6 REFERENCES**

None.

## **7 APPENDICES**

TPA 5.0beta Software Development Gantt Chart.



# **SOFTWARE REQUIREMENTS DESCRIPTION FOR THE TOTAL-SYSTEM PERFORMANCE ASSESSMENT VERSION 5.0 CODE—AMENDMENT 1**

*Prepared for*

**U.S. Nuclear Regulatory Commission  
Contract NRC-02-97-009**

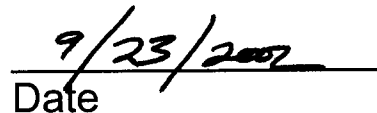
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## **PREFACE**

This document is the first amendment to the Software Requirements Description for the Total-system Performance Assessment Version 5.0 Code. It incorporates the guidance provided by the NRC via an e-mail that is included in Appendix C. The significant changes include the deletion of tasks C2 (Modify shallow infiltration estimates to account for vegetation), NF1 (Update the thermal model), and EX3 (Generate the SNLLHS input file such that only the input parameters that will be used during the run will be submitted to the SNLLHS code for sampling). It should be noted that the 4<sup>th</sup> item listed in the e-mail of Appendix C requires no addition to this Software Requirements Description.

## **ACKNOWLEDGMENTS**

The authors would like to thank the following for contributing significantly to the preparation of this software requirements description through personal communication, participation in meetings with the key technical issue leads, and e-mail messages: Paul Bertetti, Sean Brossia, Gustavo Cragolino, Darrell Dunn, Douglas Gute, Simon Hsiung, Patrick LaPlante, Sitakanta Mohanty, Goodluck Ofoegbu, Roberto Pabalan, David Pickett, Oleg Povetko, James Weldy, and James Winterle of the Center for Nuclear Waste Regulatory Analyses and David Esh and Timothy McCartin of the U.S. Nuclear Regulatory Commission.

Thanks are also expressed to Budhi Sagar for programmatic review, James Weldy for technical review, Barbara Long for editorial review, and Christina Weaver for secretarial support.

The data presented in Appendix A have been included in several reports and have been reviewed several times for those reports.

# 1 INTRODUCTION

This software requirements description documents the modifications to be made in updating the Total-system Performance Assessment (TPA) code to version 5.0. The modifications to the TPA code described in this software requirements description were identified using information in an external peer review (Weldy and Peckenpaugh, 2001), the Total System Performance Assessment for the Site Recommendation [Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O), 2000], Supplemental Science and Performance Analyses (CRWMS M&O, 2001), and discussions with key technical issue leads to enhance the capability of the TPA code as a review tool. In the period between the software requirements description for version 4.0 and this software requirements description for version 5.0, some minor modifications were made to the TPA code. These modifications were documented in a series of software change requests, which are maintained in the quality assurance folder at the Center for Nuclear Waste Regulatory Analyses (CNWRA).

Two general categories of modifications are outlined in Chapters 2 and 3 of this software requirements description for version 5.0 as proposed by the U.S. Nuclear Regulatory Commission (NRC) and CNWRA staffs. Chapter 2 includes modifications to the TPA code that are intended to reflect new data, increased knowledge of the repository system, and conceptual model improvements. Chapter 3 of the software requirements description outlines TPA code system-level enhancements. The specific changes in each chapter are identified with a software requirements identification. This identification is a software engineering tool that enables individual requirements to be tracked through the life cycle of the code to the point of delivery of the new version. Appendix B contains changes to the nominal case input file. Although the changes to the input file do not affect any of the modifications discussed in this software requirements description, they are included here as a documentation aid.

## 2 PROCESS-LEVEL MODIFICATIONS

Four new physical phenomena are to be implemented in the TPA Version 5.0 code.

- Glass waste form source term: this will be included in the release model in addition to the currently modeled spent nuclear fuel source term as part of the nominal scenario.
- Diffusive release of radionuclides from the waste package: this feature will consider diffusive release in the near field.
- Contaminant transport by colloids.
- Weld corrosion of the waste package: this will be considered as a waste package degradation process in addition to the localized and general corrosion processes already a part of the model. The following sections describe the introduction of these new processes as well as modifications to existing models.

### 2.1 Climate and Infiltration

Climate and infiltration data are provided to the UZFLOW module by the ITYM preprocessor in files prepared before the execution of the TPA code. Some of the changes listed here apply to



the ITYM preprocessor code. These changes will provide a more realistic representation of the shallow infiltration and associated uncertainty.

C1     Runoff effect on shallow infiltration

The UZFLOW module presently incorporates data from one-dimensional simulations. Runoff and runoff are not included in the one-dimensional model. Watershed simulations will provide abstractions to the ITYM code for the amounts and locations where additional water from runoff leads to increased shallow infiltration. These simulations will be implemented in the ITYM preprocessor as an adjustment of precipitation amount for pixels identified by an external file. The new external file will identify geomorphic categories of pixels. Equations will be included in the ITYM preprocessor that identify the amount of additional water available for each particular geomorphic category. The equations will be a function of upslope length and cumulative soil depths. This change does not affect the current format of the *maidtbl.dat* or the *climato2.dat* files.

C2     Modify shallow infiltration estimates to account for vegetation

This task is deleted.

C3     Add shallow infiltration variance factor in UZFLOW

Currently, mean values of shallow infiltration for each 30-m [98.4 ft] pixel are passed from the ITYM preprocessor to the UZFLOW module. The mean values reflect the Monte Carlo analysis performed in the ITYM preprocessor. It is desired to have all stochastic elements of the TPA code controlled by the LHS sampling module used by the executive module in preparing the internal sampled parameter database. This control permits the efficient correlation of all stochastic parameters in the TPA system.

To create a consistent sampling system throughout the TPA system, a new file containing the variance of each 30-m [98.4 ft] pixel will be passed to UZFLOW and a new sampled parameter will be created in the UZFLOW module with a range of -1.0 to 1.0 to determine the shallow infiltration estimate from a distribution defined by files containing the mean and variance. The sampled parameter will be applied consistently across the spatial domain for any particular realization, but will vary between realizations.

The UZFLOW module, besides needing a new sampled parameter, will need to be read in a new external file. Currently, it reads in multiple sets of mean shallow infiltration values contained in a single file covering the range of climatic conditions expected for the repository. A corresponding external file of variance will also need to be read by the UZFLOW module. An algorithm will be added to the UZFLOW module to calculate the stochastic value of shallow infiltration for each pixel prior to aggregating the pixel values to subarea averages.

## 2.2 Near-Field Environment

### NF1 Update Thermal Model

This task is deleted.

## 2.3 Drip Shield Lifetime

### DS1 Drip shield failure model

Currently, the drip shield model is limited to the specification of a single failure time. It is desired to have a parametric model that considers general corrosion rates and fluoride concentration and allows flexibility to consider mechanical failure modes (such as those due to rockfall). The new parametric model will be coded in a new TPA module called DSFAIL. It will interface with the TPA executive in a manner similar to the other modules; that is, DSFAIL will receive near-field chemistry information in a manner similar to the EBSFAIL module and return drip shield failure times to the executive. The drip shield failure times will affect water contacting the waste package and the near-field chloride concentration. The module will be designed so that mechanical failures of the drip shield and waste package are treated consistently.

## 2.4 Waste Package Lifetime

The following modifications to be made to the TPA code will affect the calculation of the waste package lifetime:

### WP1 Variable pH

The pH value is used to compute the corrosion potential of the waste package. The pH value is currently hard coded in the FAILT auxiliary code as a constant equal to 9. A time dependent value will be specified in an input data file. The equations for the computation of the corrosion potential will be modified to account for the variation of pH versus time.

### WP2 Weld corrosion

The extent of corrosion penetration of weld areas will be computed in the FAILT auxiliary code and used to calculate the waste package failure time. Corrosion parameters for the welds will be added to the *tpa.inp* input file. The corrosion of welds is not currently evaluated in the TPA code. The geometry of weld corrosion will determine the amount of water entering the waste package and available for radionuclide release, in case of weld failure. Geometry of the weld area will be used to modify water infiltration parameters.

### WP3 Microbial induced corrosion

Microbial induced corrosion is not currently considered in the TPA code. A correction term to the critical potential for localized corrosion of Alloy 22 will be added. This

correction term will be defined as a function of time in a look-up table. This correction is intended to allow the user to consider those aspects that could affect the critical potential for localized corrosion, with microbial induced corrosion among them. It must be noted that at present, there is no information to define this correction term. This change is only intended to allow flexibility in the analyses that can be performed with the TPA code.

## **2.5 Source Term**

The following modifications to be made to the TPA code will affect the calculation of the spent nuclear fuel and glass release:

### **SF1 Glass source term**

Currently, the TPA code does not include radionuclide source term from the glass waste form. There will be substantial waste packages containing vitrified glass waste forms. These waste forms will behave differently from spent uranium dioxide fuel, which makes up most of the inventory (in terms of radioactivity) of the repository. The glass waste form is different in several respects, including

- The waste form does not produce substantial heat, but can be heated by surrounding waste packages containing spent nuclear fuel.
- The glass waste form will have a different exposed surface area than an equivalent quantity of spent nuclear fuel.
- The glass waste form will contain a different mix of radionuclides than spent nuclear fuel.
- The glass waste form degrades at a different rate than spent nuclear fuel.

The TPA code will include a model that takes into account the differences in spent nuclear fuel by modifying the equations to simulate glass waste forms. This model will be included directly into the existing EBSREL module.

### **SF2 Colloid source term**

The release of radionuclides that become associated with colloids has not been considered in previous versions of the TPA code. Colloidal consideration can be separated into two parts, reversible and irreversible colloid attachment. The release model will be modified to account for irreversible colloid attachment of radionuclides released from the engineered barrier subsystem. Irreversible attachment can be simulated by specifying a fraction of the release for a particular radionuclide that will represent the colloidal release. This fraction will be assigned to a set of new (artificial) radionuclides that will possess transport properties appropriate for colloids. The elements considered for irreversible attachment are plutonium, americium, thorium, and curium. The new radionuclides will populate new decay chains that will be developed for

colloids to the point where an aqueous daughter product is generated. At that point, ingrowth to the aqueous phase daughter will be assumed.

### SF3 Diffusive Release

Currently there is no diffusive release model in the TPA code, although a previous version of TPA contained one. The U.S. Department of Energy (DOE) performance assessment models depend almost entirely on diffusion to release radionuclides from the waste form to the geosphere, whereas TPA relies on advective transport by water flowing through the waste packages. It is possible that advective transport will be small or nonexistent with the advent of the drip shield and corrosion resistant waste packages, so TPA will incorporate a diffusive model to simulate transport in the near field. The diffusive model in TPA will take into account diffusion within the waste package in thin water films on the waste form, support structure, and waste package walls; through cracks and openings in the waste package walls; and along the outside of the waste package. The model should also account for diffusion through the rock on the outside of the waste package, including the invert and any rock fall that comes into contact with the waste package. TPA currently has a model for advective and diffusive transport through the invert, but the assumptions will be reexamined to see if the invert model still applies or needs to be updated.

Most changes would be included in the EBSREL module and its associated code in the executive module. The model would probably use a finite difference approach, similar to past versions of TPA, which proved to be efficient and easily incorporated into the structure of the mixing cell module for the waste package concentration. The EBSFILT module for the invert will be modified as needed to make it consistent with the diffusive release model.

### SF4 Time dependent cladding failure

The *tpa.inp* file contains a cladding correction factor that is used in the determination of the wetted area of the spent nuclear fuel. This value is currently set to 1.0, thus indicating no reduction in the wetted area due to cladding. It is desired to accommodate a look-up table that includes a cladding protection factor as a function of time starting at repository closure. It must be noted that there is no information available to define precisely the cladding protection factor as a function of time. This change in the TPA code is proposed to allow flexibility in importance and sensitivity analyses and also to provide the TPA code with flexibility to review the total system performance assessment results by the DOE.

## 2.6 Unsaturated and Saturated Zones Flow and Transport

Modifications to the TPA code related to the unsaturated zone and saturated zone flow and transport involve the following:

- FT1 Represent  $K_D$ s and  $R_f$ s for unsaturated zone and saturated zone as a function of geochemistry

An improved method of determining and using  $K_d$ s and  $R_d$ s for the unsaturated zone and saturated zone is proposed by the staff associated with the Radionuclide Transport Key Technical Issue. See Appendix A for discussion of the theory. The implications of this method to the TPA code are the removal of many of the  $K_d$  or  $R_d$  specifications in the *tpa.inp* file and the addition of sampled correlated parameters for pH and  $PCO_2$ . Conversion of  $K_d$  to  $R_d$  for fractures will be performed in UZFT and SZFT as required by the NEFTRAN input file.

#### FT2 Colloid transport

This is a new feature of the TPA code that is closely associated with the colloid release considerations mentioned in the section on Source Term. The additional radionuclides will be accounted for with all the other radionuclides processed by the NEFTRAN module. This feature will necessitate the implementation of a second set of effective retardation factors for the irreversible attachment radionuclides whose release is coincident with the aqueous phase of the same species. This second set will be specified in the *tpa.inp* input file.

In addition, the transport properties of a subset of the aqueous radionuclides will be adjusted to reflect the reversible attachment of colloids. These new properties will be included in the nominal case data set.

An inventory of zero for the irreversible attachment colloid radionuclides may need to be maintained in the inventory database serving as a place holder for sections of the code that expect all chain members to be specified. The release in Ci/yr can be assigned to each when the release values are calculated for input to the invert module (EBSFILT). The colloid release values can be adjusted by using a user specified colloid fraction and applying it to the input file for EBSFILT. This will apportion the spent nuclear fuel release values between the aqueous radionuclides and the colloid radionuclides.

#### FT3 Reflect uncertainty in CHnv thickness

Currently, the thickness of the nonwelded vitric CHnv unsaturated zone layer below the repository is a fixed value specified in the *tpa.inp* file. The proposed change will make the CHnv thickness a sampled parameter that reflects the mineralogic and lithologic thickness uncertainty. With the addition of an overall unsaturated zone thickness parameter, the UZFT module will be modified to adjust the CHnz layer thickness to compensate for the variable CHnv thickness to maintain the desired overall unsaturated zone thickness for each subarea.

#### FT4 Multiple fracture flow and matrix flow epochs

The UZFT module currently restricts the flow media of a given layer to matrix or fracture for the entire simulation time. It is desired to allow the flow to share or switch media types one or more times during a simulation. This condition can be approximated by using two legs for one hydrostratigraphic unit in the NEFTRAN input data set. This feature will be added to the UZFT module to increase the flexibility of the code.

#### FT5 Variable dispersivity for UZFT

Currently, the dispersivity in the unsaturated zone is limited to a minimum of 0.1 m [0.33 ft] regardless of the layer thickness. To provide a more realistic parameter value for the unsaturated zone transport module this limit will be lowered to 0.01 m [0.33 ft] for layer thicknesses less than 40 m [131.2 ft].

#### FT6 Reflect uncertainty in streamtube dimensions

The streamtube dimensions of width and length are specified in the *strmtube.dat* file as a constant table used for all realizations. It is desired to reflect the uncertainty of these data by subjecting them to the influence of sampled parameters. This process will require the generation of a new sampled parameter representing a streamtube width multiplier. All routines that read the *strmtube.dat* file to obtain streamtube dimensions will be modified to include the use of the new parameters. This width multiplier will be applied to all streamtubes for their entire lengths. The range of this multiplier will be consistent with the data values in the *strmtube.dat* file so that the total streamtube width remains within realistic limits.

#### FT7 Update streamtube flux after climate change

Currently, the streamtube flux is implemented as a constant value read from the *strmtube.dat* file. The TPA code should permit the flux to change in response to climatic conditions. The change to climatic conditions relative to present day conditions is currently available in the UZFLOW file called *climato2.dat*. Normally, the saturated zone transport code considers a fixed porosity and fixed velocity for the transport legs. To consider time dependent flow, however, a velocity file will be generated to reflect the time dependent flux change at the assigned porosity. The degree of this effect will be controlled by an input factor which will control the scaling of the climatic deviations relative to present day conditions as applied to the flux rates. The present day flux rates will continue to be specified in the *strmtube.dat* file. This change will be made with time permitting.

## 2.7 Determination of Receptor Dose

#### D1 Add plume capture model

Currently, the DCAGW module handles the plume capture due to pumping at 10 km [6.2 mi] differently than at 20 km [12.4 mi]. An option will be provided in the *tpa.inp* file to select a single algorithm to be used for both locations consistent with the rule specification of a pumping rate of 3,000 acre-feet/year.

#### D2 U.S. Environmental Protection Agency (EPA) groundwater protection output

Currently, the EPA groundwater protection output in files *epapktim.out* and *epa\_avg.out* are produced by the DCAGW module. Most of the output is in the form of unitless ratios of dose to their EPA limits. The output files will be reformatted to add data in raw form or in physical units consistent with the standards (e.g., mrem and pCi/L). In addition,

uranium will not be included in the output, because it is not part of the standard, and the headings will be clarified to designate fraction of limit and radium where appropriate.

D3 Use 18 km [11.2 mi] as receptor location

The maximally exposed individual will be moved to 18 km [11.2 mi] from the previous value of 20 km [12.4 mi]. This value is contained in the *tpa.inp* file and would normally not be considered a code change. But since there exists some legacy code that contains confusing variable names for this value, clarifying the variable names is considered a code change. This change will affect several modules of the TPA code in both variable name nomenclature and internal documentation and comments. The data file *strmtube.dat* may also need to be modified to accommodate the change.

D4 Use GENTPA for DCAGS dose conversion factors

Currently, DCAGW uses GENTPA to generate the groundwater dose conversion factors for each realization, but DCAGS does not. It uses a fixed table look-up scheme instead. An identical dose conversion factor generation mechanism will be introduced using the GENTPA code for the DCAGW dose conversion factor values. This change will be made with time permitting.

## 2.8 Igneous Activity

IA1 Divide mass loading and occupancy factors into inside and outside components

Currently, only single values for the mass load and occupancy factor are used to determine the dose conversion factors for inhalation in the igneous case. To accommodate the new definition of the lifestyle for the reasonably maximally exposed individual, five categories of disturbance parameters will be used, including one category for offsite time. Each category will have a mass load and an occupancy time. The doses from these five categories for inhalation will be summed and used in the current dose conversion factor expressions. Even if the GENTPA code is used to generate the ground surface dose conversion factors for the other exposure pathways, the dose from the inhalation pathway will continue to be calculated by the TPA code and added to the results of the GENTPA code.

IA2 Modify Igneous Activity source term

The current igneous activity module assumes that spent nuclear fuel would be incorporated into the magma on the basis of an incorporation ratio that assumes that ash particles can incorporate spent nuclear fuel particles smaller than a certain ratio of diameters of the ash particle. There does not appear to be a justification for this choice of conceptual models. An alternative conceptual model of fuel incorporation into ash that takes into account the relative mass of spent nuclear fuel and ash in a range of particle size classes will be considered. The model will make minimum assumptions about the physics of incorporation because little is known about the phenomenon. Instead, the model will assume that the probability of the incorporation of spent nuclear fuel into ash depends only on the relative mass of fuel and ash in each particle size

class. This is called the parsimony model by R. Codell because it is the simplest set of assumptions about the physics of the situation and should stand until the time that there is better evidence about actual mechanisms. The intent of this change is to match the grain size with the ash size, and this matching will require a new particle size distribution, uranium solubility in ash, and incorporation ratio in ASHPLUME.

**IA3 Add ash redistribution model**

Currently, the TPA code considers only the long term ash removal process for tephra deposition directly at the reasonably maximally exposed individual location. A more realistic model will be added that includes a source term for the mobilization of ash that lands in the catchment basin north of Fortymile wash. Input parameters that will be used in support of the model include (i) fraction of redistributable ash that is mobilized each year, (ii) erosion rate of redistributable ash, (iii) density of redistributable ash, (iv) fraction of remobilized ash that stays in reasonably maximally exposed individual area, (v) concentration of spent nuclear fuel in the remobilized tephra, (vi) dilution factor during transport, and (vii) rate of deposition of windblown soil from noncontaminated sources. This change will be made with time permitting.

## **2.9 Seismic Activity**

**SA1 Add rockfall effects on drip shield to SEISMO**

Currently, the SEISMO module of the TPA code calculates rockfall effects on the waste package only. With the anticipated modification to include a model of the drip shield failure, the SEISMO module will need to be updated to include the effects of rockfall on the drip shield. The SEISMO module will provide the number of drip shield failures and waste package failures for each seismic event.

## **3 SYSTEM-LEVEL MODIFICATIONS**

This section describes the changes to the executive driver to accommodate added flexibility to several consequence modules and the changes to accommodate parameters representing new data that characterize the site. It is intended that all new modules and process implementations have a single point neutralization or removal mechanism available to the user that would permit the execution of the code as if the new feature had not been implemented. This mechanism will aid in testing the code as well as performing the importance analysis studies.

Changes to the nominal scenario data set are not usually considered part of the software development effort. However, because the TPA code has a large set of input parameters that may be adjusted in lieu of implementing certain code modifications, a list of proposed nominal case data changes are included in Appendix B.

### **3.1 Repository Design**

**EX1 Limited flexibility will be added to the executive to accommodate variations to the DOE current thermal loading strategy.**



### **3.2 Parameter Sampling**

EX2 Update the SNLLHS code with new user discrete distributions.

EX3 Generate the SNLLHS input file such that only the input parameters that will be used during the run will be submitted to the SNLLHS code for sampling.

This task is deleted.

### **3.3 Dose Output**

EX4 Create a new output file that contains the pathway specific doses.

### **3.4 Miscellaneous**

EX5 Miscellaneous readability, maintenance, and performance items will be addressed as encountered in development of the TPA Version 5.0 code.

## **4 TECHNICAL BASIS: PHYSICAL AND MATHEMATICAL MODEL**

Technical bases for the modifications proposed in this site requirements description are in the preceding sections and in Appendix A for changes related to the unsaturated zone transport. These changes have been discussed during several meetings with the key technical issue leads.

## **5 COMPUTATIONAL APPROACH**

Please refer to the discussion in the previous sections.

## **6 REFERENCES**

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## **APPENDIX A**

## DETAILS ON PROPOSED MODIFICATIONS TO RADIONUCLIDE TRANSPORT PARAMETERS FOR THE TPA VERSION 5.0 CODE

### INTRODUCTION

In the TPA Version 3.2 code, a  $K_D$  probability distribution function is assigned to each radionuclide for each hydrostratigraphic unit. For most of the radionuclides, the probability distribution functions are based on expert judgment supported by laboratory sorption data. Experimental data, however, show a link between the aqueous speciation of an actinide and its sorption behavior. Experimental and modeling results indicate that sorption behavior expressed as  $K_D$ , at least for actinides, is particularly influenced by physical and chemical parameters such as solution pH,  $PCO_2$ , and effective specific surface area  $A'$ . In the TPA Version 3.2 code, an effort was made to incorporate indirectly the effects of geochemistry by using site-specific hydrochemical data (Perfect, et al., 1995; Turner and Pabalan, 1999; Turner, et al., 1999) to calculate  $K_D$  values for a limited suite of actinides ( $Am^{3+}$ ,  $U^{6+}$ ,  $Np^{5+}$ ,  $Pu^{5+}$ , and  $Th^{4+}$ ). The results of these model calculations provided constraints on  $K_D$  probability distribution functions in the hydrologically saturated alluvium (hydrostratigraphic unit SAV). The correlation among the five different actinides is used to condition the Latin hypercube sampling of each probability distribution function and indirectly represents the geochemical link in sorption behavior.

### PROPOSED APPROACH FOR DETERMINING SORPTION PARAMETERS

Considering the potentially large number of sorption parameters necessary to represent 16 radionuclides, 9 hydrostratigraphic units, and 2 types (fracture and matrix) of transport, the use of correlation coefficients is a cumbersome means to address the effects of geochemistry. A more efficient means is proposed for implementation in the TPA Version 5.0 code.

The proposed method (Turner, et al., 1998) would involve development of a  $K^{A'}$  response surface to represent sorption as a function of critical parameters such as pH and  $PCO_2$ . During a given in the TPA Version 5.0 code realization, probability distribution functions for pH and  $C_T$  would be sampled and the values used to determine the appropriate value for  $K^{A'}$  from the response surface, either through a parametric representation of the surface or through interpolation of a look-up table. To determine the value for  $K_D$  used in the transport calculation, the sampled  $K^{A'}$  value would be normalized using the specific surface area and the relationship  $K_D = K^{A'} \times A'$ . The specific surface area  $A'$  can either be determined through sampling a probability distribution function or using empirical relationships between porosity/permeability and surface area.

### IMPLEMENTATION OF A $K_D$ RESPONSE SURFACE

Development and implementation of the  $K_D$  response surface would occur through several steps:

- Experimental data would be used to calibrate geochemical sorption models. Such calibration has already been performed to a limited extent for  $Am^{3+}$ ,  $U^{6+}$ ,  $Np^{5+}$ ,  $Pu^{5+}$ , and  $Th^{4+}$ . Additional radioelements (technetium, iodine, and selenium) have also been considered.

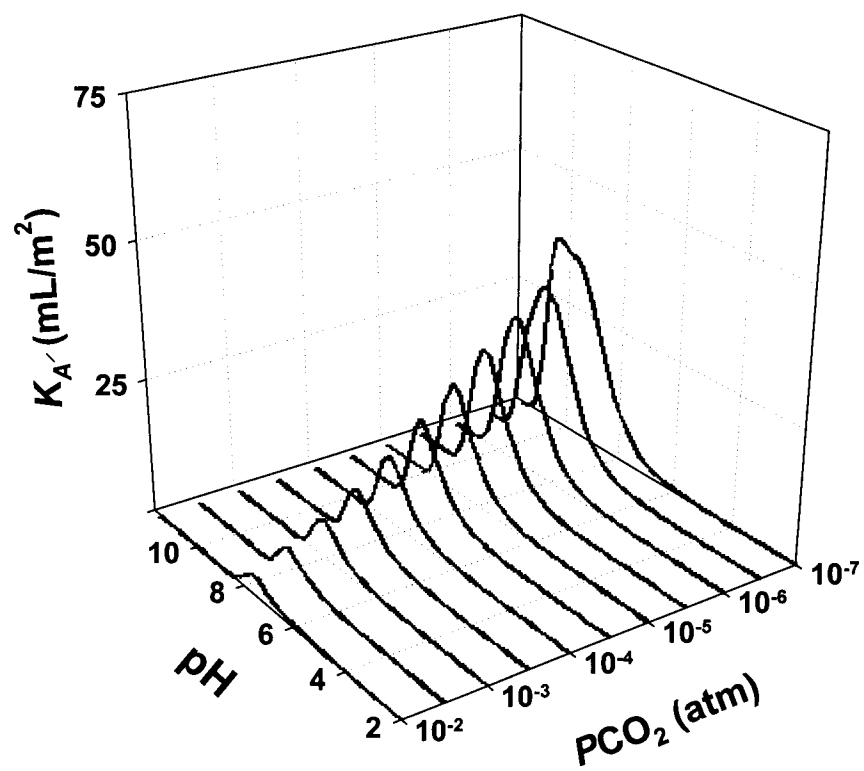
- The calibrated geochemical sorption models would be used to calculate radionuclide sorption expressed as  $KA'$  for a broad range in pH and  $C_T$ . The proposed approach has been demonstrated using a diffuse-layer surface complexation model to develop a response surface for Np(V) sorption as a function of pH and  $PCO_2$  (Figure A-1). Both a look-up table (Table A-1) and a series of parametric equations (Table A-2) have been used to define this surface.
- Site-specific geochemistry (Figures A-2 and A-3) can be used to constrain probability distribution functions (Table A-3) for sampling hydrochemical parameters such as pH and  $C_T$ . Because these parameters are linked through the aqueous carbonate chemistry, correlation will have to be developed for the latin hypercube sampling routine, either explicitly through mass action and mass balance or implicitly through a sample-by-sample comparison.

## CONCLUSION

Experimental sorption data for a wide range in chemical conditions is limited for various radionuclides of interest in the TPA Version 5.0 code. Identifying appropriate data sets, calibrating sorption models, applying these to a broad range in conditions to develop the response surfaces, and identifying probability distribution functions for the hydrochemical parameters is time consuming. It is reasonable that this approach could be implemented in the TPA Version 5.0 code as an option for a few select radionuclides. For example, a response surface has been developed for Np(V) sorption (Figure A-1). Testing would be used to ensure that the method is implemented correctly and produces consistent results. Refinement of the approach and extension of the method to other radionuclides would begin in later versions of the TPA code.

## REFERENCES

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**Figure A-1. Sorption Parameter Response Surface Calculated for Np(V)  
Using a Diffuse-Layer Surface Complexation Model**

**Table A-1. Sample Look-Up Table for Np(V) Sorption Response Surface (KA' in mL/m<sup>2</sup>);  
Np(V)total = 10<sup>-6</sup> molal, M/V = 4 G/L**

pH	Log PCO <sub>2</sub> (atm)											
	no CO <sub>2</sub>	-7.00	-6.50	-6.00	-5.50	-5.00	-4.50	-4.00	-3.50	-3.00	-2.50	-2.00
2.00	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407
2.25	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
2.50	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
2.75	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
3.00	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
3.25	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
3.50	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
3.75	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407
4.00	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407
4.25	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407
4.50	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034
4.75	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666
5.00	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303
5.25	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595
5.50	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572
5.75	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285
6.00	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799
6.25	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713
6.50	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.18621
6.75	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510
7.00	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.27163	2.27163	2.24115
7.25	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.21803	3.21803	3.21803	3.21803	3.15295	2.99153
7.50	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.54821	4.47703	4.23052	3.61471
7.75	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.44330	6.32294	6.00633	5.12992	3.44811
8.00	9.10258	9.10258	9.10258	9.10258	9.10258	9.05545	9.00844	8.86820	8.36349	7.18486	4.83630	2.21073
8.25	12.46597	12.46597	12.46597	12.46597	12.40932	12.35283	12.12856	11.47131	9.82514	6.68675	3.05588	0.79711
8.50	16.54732	16.54732	16.54732	16.54732	16.40879	16.13444	15.33238	13.15912	8.96157	4.16083	1.10188	0.10351
8.75	21.25818	21.25818	21.17252	21.08716	20.74882	19.68218	16.89766	11.57926	5.42922	1.50003	0.15557	0.00000
9.00	26.08434	25.98021	25.87650	25.46576	24.17486	20.83294	14.37197	6.80986	1.91015	0.20785	0.00000	0.00000
9.25	30.37756	30.13395	29.65303	28.25866	24.56508	17.18213	8.27330	2.36348	0.28666	0.00000	0.00000	0.00000
9.50	33.88698	33.06972	31.62813	27.80933	19.84308	9.77604	2.86369	0.33946	0.02580	0.00000	0.00000	0.00000
9.75	36.78310	34.58558	30.87119	22.67266	11.63347	3.48128	0.44572	0.02580	0.00000	0.00000	0.00000	0.00000
10.00	40.82421	35.30073	27.14918	14.75070	4.65561	0.60674	0.02580	0.00000	0.00000	0.00000	0.00000	0.00000

Table A-2. Equation Parameters and Summary of Fit Results for Model Curves at Discrete PCO <sub>2</sub> ; Np(V) <sub>total</sub> = 10 <sup>-6</sup> molal, M/V = 4 g/L								
PCO <sub>2</sub> (atm)	Coefficients [ln (KA', in mL/m <sup>2</sup> ) = a + bx + cx <sup>2</sup> + dx <sup>3</sup> + ex <sup>4</sup> + fx <sup>5</sup> ]							pH range used for fit
	a	b	c	d	e	f	r <sup>2</sup> value	
10-2.0	-323.7345029	151.4136753	-17.3990293	-1.7541185	0.4728224	-0.0247745	0.9999	6-9.25
10-2.5	-441.4872516	226.8171288	-37.7488848	1.2089255	0.2378357	-0.0167447	0.9999	6-9.25
10-3.0	148.2265595	-173.8278793	69.4791195	-12.8694017	1.1394455	-0.0390727	0.9999	6-9.50
10-3.5	604.4445148	-474.5177627	147.2075461	-22.6668262	1.7364614	-0.0529354	0.9999	6-9.50
10-4.0	847.1361569	-620.1544804	180.5362481	-26.2031203	1.8992944	-0.0549789	0.9999	6-10.00
10-4.5	925.7298724	-652.8079406	183.1897645	-25.6433576	1.7939710	-0.0501685	0.9999	6-10.25
10-5.0	923.2318767	-632.0905821	172.1420527	-23.3803904	1.5872876	-0.0430961	0.9999	6-10.50
10-5.5	672.7843206	-452.9837012	121.1472289	-16.1548188	1.0777544	-0.0287889	0.9999	6-11.00
10-6.0	393.8474607	-258.6708687	67.3400912	-8.7496479	0.5711094	-0.0149989	0.9999	6-11.25
10-6.5	722.6946490	-436.2310889	104.2139278	-12.3723844	0.7340464	-0.0174653	0.9978	6-11.50
10-7.0	2202.1902289	-1290.5774270	299.2738666	-34.3781522	1.9602212	-0.0444424	0.9816	6-11.75
no CO <sub>2</sub>	1211.3978170	-705.8275247	161.4080394	-18.1364167	1.0036927	-0.0219067	0.9996	6-11.75

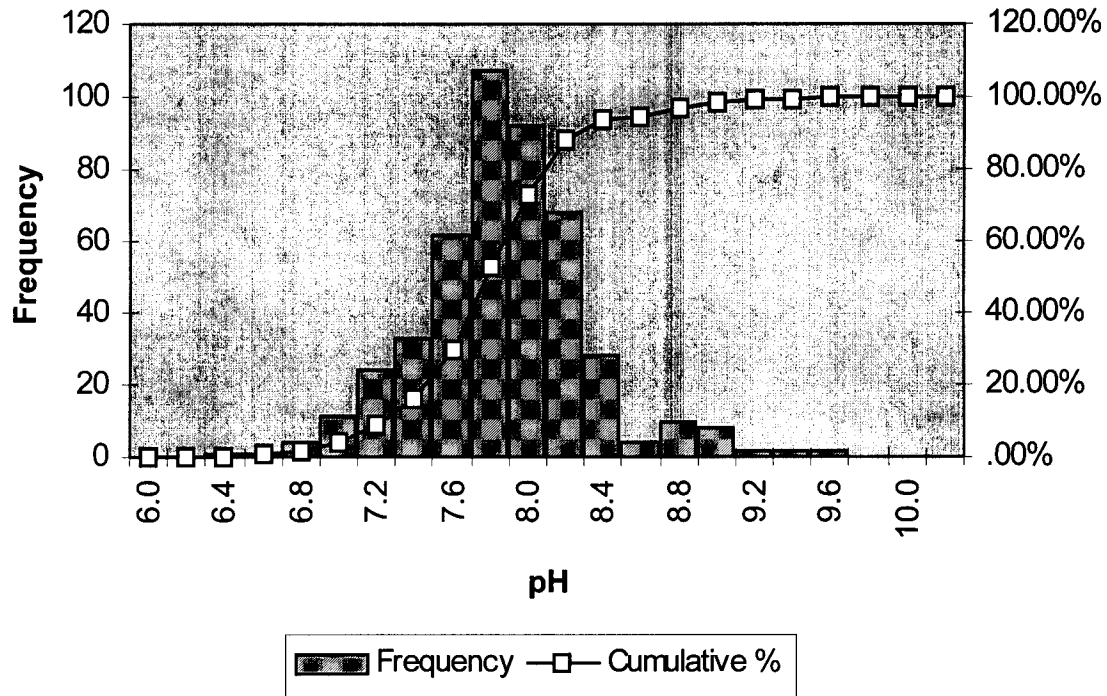


Figure A-2. Distribution of pH for Saturated Zone Regional Groundwaters

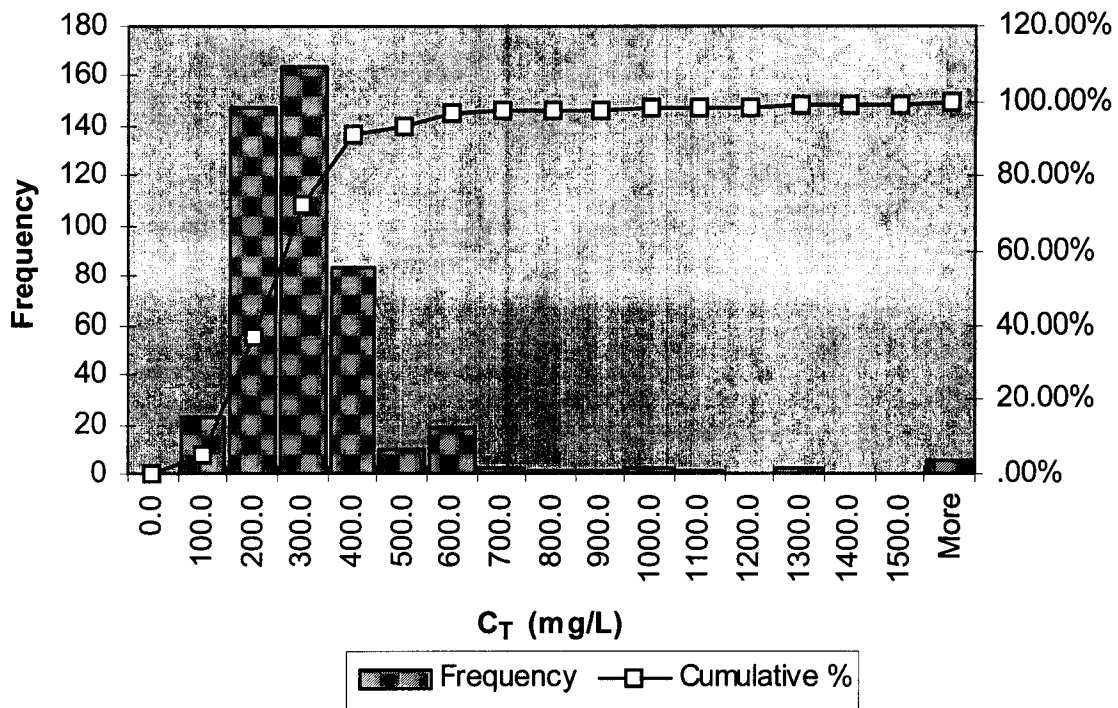


Figure A-3. Distribution of Total Inorganic Carbon ( $C_T$  in mg/L) for Saturated Zone Regional Groundwaters



<b>Table A-3. Descriptive Statistics of Saturated Zone Measured Groundwater Chemical Parameters (Perfect, et al., 1995)</b>			
	<b>pH (standard units)</b>	<b>C<sub>T</sub> (mg/L)</b>	<b>Log PCO<sub>2</sub> (atm)</b>
Mean	7.83	295.76	-2.50
Median	7.8	245.0	-2.45
Mode	7.8	300.0	-2.34
Standard Deviation	0.45	525.99	0.54
Kurtosis	1.75	270.67	3.73
Skewness	0.43	15.03	-1.30
Range	3.3	10133.20	4.311
Minimum	6.3	6.80	-5.08
Maximum	9.6	10140.00	-0.77
Count	460	460	460

## **APPENDIX B**

## SUMMARY OF PROPOSED DATA CHANGES FOR TPA VERSION 5.0 CODE

Table B-1. Data Changes		
Item #	Proposed Data Changes	Description
DC1	Adjust value of the fracture-to-matrix diffusion parameter, DiffusionRate_STFF, in SZFT section of <i>tpa.inp</i>	Impermeable fracture coatings may affect fracture-to-matrix diffusion and sorption. This change will account for the potential presence of impermeable fracture coatings limiting matrix diffusion in the tuff aquifer.
DC2	Adjust parameters in <i>wpflow.def</i> , which are used to derive $F_{ow}$ , to account for the thermal effects on fracture dilation	Fracture dilation may result from thermal-mechanical effect. Dilation may affect fracture flow and could divert flow from the pillar to the drift. Effects of fracture dilation will be accounted for through the $F_{ow}$ factor, which accounts for flow potentially reaching a wetted waste package.
DC3	Revise F-factors, which are used to derive $F_{mult}$ , to be more technically defensible	Need agreement among various technical staff as to the values assigned. $F_{mult}$ is accounted for in the TPA code through use of the WastePackageFlowMultiplicationFactor in the EBSREL section of <i>tpa.inp</i> .
DC4	Adjust transfer parameters in <i>gftrans.def</i> , which are used in GENTPA module, to address site-specific data as they become available from DOE	These are biosphere transfer coefficients for radionuclides between soil, crops, and animal products. Parameters can be changed to address site-specific data as they become available from DOE.
DC5	Make $K_D$ parameter sampling consistent for biosphere and ASHRMOVO	$K_D$ s, located in <i>tpa.inp</i> , are sampled parameters for biosphere but are constants for ASHRMOVO, thus, an inconsistency.
DC6	Revise/evaluate airborne mass loading factors in DCAGS section of <i>tpa.inp</i>	Airborne mass loading factors, AirborneMassLoadAboveFreshAshBlanket and AirborneMassLoadAboveSoil, account for mass of soil suspended in air above surface.

**Table B-1. Data Changes (continued)**

Item #	Proposed Data Changes	Description
DC7	Update and add new parameters to MULTIFLO data file	<p>Currently in the TPA code, information on chloride concentrations, temperature, and saturations as a function of time is accessed for waste package corrosion calculations via the look-up table <i>multiflo.dat</i>.</p> <p>For the TPA Version 5.0 code, a new conceptual model will be developed to describe chemical components important to both drip shield and waste package corrosion models. Values of <math>PO_2</math> and pH, as well as concentrations of total dissolved carbonate, chloride, nitrate, and fluoride will be provided in a new look-up table. In this new abstraction, the performance assessment period will be divided into a few discrete parcels of time characterized by constant chemical conditions in the look-up table. Temperature, saturation, and relative humidity, determined from off-line TPA and MULTIFLO runs, will be used to define time periods be represented in the TPA Version 5.0 code as having similar chemical conditions.</p>
DC8	Continuum approach for fractured tuff; once fracture flow starts, it should continue to layers below (unsaturated zone conceptual model)	The current NEFTRAN simulation of the unsaturated zone water flow assumes that fracture flow in the TSw unit is instantaneously received by the CHnv matrix flow. A more realistic model would have the TSw fracture flow feed the CHnv fracture flow. This approach can be approximated by adjusting the length of the CHnv unit and accomplished with a data change for the CHnv unit thickness in the <i>tpa.inp</i> file.
DC9	Correlate conduit diameter to power of the event	The conduit diameter range in previously reported data is seen by some to be too small to infer a correlation. This feature however, can be accommodated using the TPA parameter correlation feature. The parameter names also could be clarified to suggest reference to conduit instead of cone for the controlling parameter in the <i>tpa.inp</i> file.

Table B-1. Data Changes (continued)		
Item #	Proposed Data Changes	Description
DC10	Cool edges of repository	This capability requires another subarea dedicated to cooler temperatures. The subarea geometry can be modified to add a subarea on the edge of important subareas.

## **APPENDIX C**

Subject: Guidance on TPA 5.0 Development [Resend, correcting typographical error]  
Date: Mon, 19 Aug 2002 11:04:11 -0400  
From: James Firth <JRF2@nrc.gov>  
To: GWITT@cnwra.swri.edu  
CC: RJANETZKE@cnwra.swri.edu, CJG2@nrc.gov

The date for completing the validation testing plan, had a typographical error. The testing is to be completed by the end of May 2003 (i.e., after the TPA 5.0 code is delivered to NRC).

Gordon,

Based on our discussions on the TPA 5.0 code development, please note the following:

(1) The schedule for the development of TPA 5.0 now has the current dates, which were agreed upon. Delivery of TPA 5.0Beta to NRC (10.1.2002), Delivery of TPA 5.0 (2.1.2003), Completion of the Validation Testing (5.31.02). 5.31.03.

(2) It is recognized that TPA 5.0Beta may be a little rougher and it may still include more (and potentially larger) software bugs, owing to a reduced amount of testing. Additional testing, to make up for this deficit, will be performed on TPA 5.0Beta.

(3) During the initial planning for TPA 5.0, changes were identified as either optional or required. The SRD identified several of the optional changes as required changes. TPA 5.0Beta and TPA 5.0 will be found acceptable even if the following changes are not made; the SRD should be amended, as appropriate, to be consistent with the agreed upon approach.

(a) C2: modify shallow infiltration estimates to account for vegetation. This change is not required to be in TPA 5.0Beta and TPA 5.0. If it is not going to be included in TPA 5.0Beta and TPA 5.0, defer any steps to incorporate this into TPA (i.e., work billed to the TSPAI Element) until NRC approves it for inclusion in a later version of TPA.

(b) NF1: Update thermal model. This change is not required to be in TPA 5.0Beta and TPA 5.0. CNWRA should identify additional individuals who would be able to work on this issue and should continue development efforts, as resources permit. A later decision will be made regarding when it is appropriate to make the resulting changes in TPA.

(c) EX3: Cull unused parameters from the SNLLHS input file. This change is not required to be in TPA 5.0Beta and TPA 5.0. Development on this change should continue, as resources permit. It does not represent changes to the physics, so it may be added to the TPA code at a later date.

(4) SA1: Add rockfall effects on the drip shield to SEISMO. This change is to be included in TPA 5.0Beta and TPA 5.0.

Jim



# **SOFTWARE REQUIREMENTS DESCRIPTION FOR THE TOTAL-SYSTEM PERFORMANCE ASSESSMENT VERSION 5.0 CODE**

*Prepared for*

**U.S. Nuclear Regulatory Commission  
Contract NRC-02-97-009**

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12/7/2001  
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## **ACKNOWLEDGMENTS**

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Thanks are also expressed to Budhi Sagar for programmatic review, James Weldy for technical review, Barbara Long for editorial review, and Christina Weaver for secretarial support.

The data presented in Appendix A have been included in several reports and have been reviewed several times for those reports.

## **1 INTRODUCTION**

This software requirements description documents the modifications to be made in updating the Total-system Performance Assessment (TPA) code to version 5.0. The modifications to the TPA code described in this software requirements description were identified using information in an external peer review (Weldy and Peckenpaugh, 2001), the Total System Performance Assessment for the Site Recommendation [Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O), 2000], Supplemental Science and Performance Analyses (CRWMS M&O, 2001), and discussions with key technical issue leads to improve the capability of the TPA code as a review tool. In the period between the software requirements description for version 4.0 and this software requirements description for version 5.0, some minor modifications were made to the TPA code. These modifications were documented in a series of software change requests, which are maintained in the quality assurance folder at the Center for Nuclear Waste Regulatory Analyses (CNWRA).

Two general categories of modifications are outlined in Chapters 2 and 3 of this software requirements description for version 5.0 as proposed by the U.S. Nuclear Regulatory Commission (NRC) and CNWRA staffs. Chapter 2 includes modifications to the TPA code that are intended to reflect new data, increased knowledge of the repository system, and conceptual model improvements. Chapter 3 of the software requirements description outlines TPA code system-level enhancements. The specific changes in each chapter are identified with a software requirements identification. This identification is a software engineering tool that enables individual requirements to be tracked through the life cycle of the code to the point of delivery of the new version. Appendix B contains changes to the nominal case input file. Although the changes to the input file do not affect any of the modifications discussed in this software requirements description, they are included here as a documentation aid.

## **2 PROCESS-LEVEL MODIFICATIONS**

Four new physical phenomena are to be implemented in the TPA Version 5.0 code.

- Glass waste form source term: this will be included in the release model in addition to the currently modeled spent nuclear fuel source term as part of the nominal scenario.
- Diffusive release of radionuclides from the waste package: this feature will consider diffusive release in the near field.
- Contaminant transport by colloids.
- Weld corrosion of the waste package: this will be considered as a waste package degradation process in addition to the localized and general corrosion processes already a part of the model. The following sections describe the introduction of these new processes as well as modifications to existing models.

### **2.1 Climate and Infiltration**

Climate and infiltration data are provided to the UZFLOW module by the ITYM preprocessor in files prepared before the execution of the TPA code. Some of the changes listed here apply to

the ITYM preprocessor code. These changes will provide a more realistic representation of the shallow infiltration and associated uncertainty.

C1     Runoff effect on shallow infiltration

The UZFLOW module presently incorporates data from one-dimensional simulations. Runoff and runoff are not included in the one-dimensional model. Watershed simulations will provide abstractions to the ITYM code for the amounts and locations where additional water from runoff leads to increased shallow infiltration. These simulations will be implemented in the ITYM preprocessor as an adjustment of precipitation amount for pixels identified by an external file. The new external file will identify geomorphic categories of pixels. Equations will be included in the ITYM preprocessor that identify the amount of additional water available for each particular geomorphic category. The equations will be a function of upslope length and cumulative soil depths. This change does not affect the current format of the *maidtbl.dat* or the *climato2.dat* files.

C2     Modify shallow infiltration estimates to account for vegetation

Vegetation is heuristically included in the shallow infiltration estimates calculated in the ITYM preprocessor. The results of BREATH (Stothoff, 1995) simulations that include vegetation can be included in the ITYM preprocessor by modifying the equations coded into the ITYM preprocessor used to estimate shallow infiltration. This change does not affect the current format of the *maidtbl.dat* or the *climato2.dat* files.

C3     Add shallow infiltration variance factor in UZFLOW

Currently, mean values of shallow infiltration for each 30-m [98.4 ft] pixel are passed from the ITYM preprocessor to the UZFLOW module. The mean values reflect the Monte Carlo analysis performed in the ITYM preprocessor. It is desired to have all stochastic elements of the TPA code controlled by the LHS sampling module used by the executive module in preparing the internal sampled parameter database. This control permits the efficient correlation of all stochastic parameters in the TPA system.

To create a consistent sampling system throughout the TPA system, a new file containing the variance of each 30-m [98.4 ft] pixel will be passed to UZFLOW and a new sampled parameter will be created in the UZFLOW module with a range of -1.0 to 1.0 to determine the shallow infiltration estimate from a distribution defined by files containing the mean and variance. The sampled parameter will be applied consistently across the spatial domain for any particular realization, but will vary between realizations.

The UZFLOW module, besides needing a new sampled parameter, will need to be read in a new external file. Currently, it reads in multiple sets of mean shallow infiltration values contained in a single file covering the range of climatic conditions expected for the repository. A corresponding external file of variance will also need to be read by the UZFLOW module. An algorithm will be added to the UZFLOW module to calculate the stochastic value of shallow infiltration for each pixel prior to aggregating the pixel values to subarea averages.

## **2.2 Near-Field Environment**

### **NF1 Update Thermal Model**

A new semianalytical thermal model will be used for predicting repository temperature. The new model is expected to compute temperatures more accurately in the vicinity of the waste package. Two approaches will be investigated. The first approach will be an improvement to the existing semianalytical solution. It appears that the two-dimensional repository-layout assumption in the model is currently contributing to the loss of accuracy in the temperature prediction within the drift, especially in determining the impact of backfill on temperature, by not appropriately accounting for the drift geometry. The second approach is an ellipsoidal approximation of the waste package and the surrounding medium. The ellipsoidal model is expected to resolve the near-waste package descriptions more accurately than the first approach. However, the computational needs are not obvious. Therefore, one of these two models will be selected on the basis of accuracy of the results and computation time to replace the existing thermal model.

Attempts will be made to better capture temperature distribution within a subarea. Because in the nominal case TPA run, the temperature tends to have a dominant influence on the spent nuclear fuel dissolution rate, spatial dependency of temperature will be carried through the TPA code for computing the spent nuclear fuel dissolution rate. Temperatures will be calculated for either individual waste packages or for a group of waste packages. A source term will be calculated for each of these temperatures within a subarea. This approach will require changes to the current thermal model and the executive code.

## **2.3 Drip Shield Lifetime**

### **DS1 Drip shield failure model**

Currently, the drip shield model is limited to the specification of a single failure time. It is desired to have a parametric model that considers general corrosion rates and fluoride concentration and allows flexibility to consider mechanical failure modes (such as those due to rockfall). The new parametric model will be coded in a new TPA module called DSFAIL. It will interface to the TPA executive in a manner similar to the other modules; that is, DSFAIL will receive near-field chemistry information in a manner similar to the EBSFAIL module and return drip shield failure times to the executive. The drip shield failure times will affect water contacting the waste package and the near-field chloride concentration. The module will be designed so that mechanical failures of the drip shield and waste package are treated consistently.

## 2.4 Waste Package Lifetime

The following modifications to be made to the TPA code will affect the calculation of the waste package lifetime:

### WP1 Variable pH

The pH value is used to compute the corrosion potential of the waste package. The pH value is currently hard coded in the FAILT auxiliary code as a constant equal to 9. A time dependent value will be specified in an input data file. The equations for the computation of the corrosion potential will be modified to account for the variation of pH versus time.

### WP2 Weld corrosion

The extent of corrosion penetration of weld areas will be computed in the FAILT auxiliary code and used to calculate the waste package failure time. Corrosion parameters for the welds will be added to the *tpa.inp* input file. The corrosion of welds is not currently evaluated in the TPA code. The geometry of weld corrosion should limit the amount of water available for radionuclide release, in case of weld failure. Consideration of the geometry of the weld area will be accomplished to modify water infiltration parameters.

### WP3 Microbial induced corrosion

Microbial induced corrosion is not currently considered in the TPA code. A correction term to the critical potential for localized corrosion of Alloy 22 will be added. This correction term will be defined as a function of time in a look-up table. This correction is intended to allow the user to consider those aspects that could affect the critical potential for localized corrosion, with microbial induced corrosion among them. It must be noted that at present, there is no information to define this correction term. This change is only intended to allow flexibility in the analyses that can be performed with the TPA code.

## 2.5 Source Term

The following modifications to be made to the TPA code will affect the calculation of the spent nuclear fuel and glass release:

### SF1 Glass source term

Currently, the TPA code does not consider a glass source term for the release of radionuclides from the glass waste form. There will be substantial waste packages containing vitrified glass waste forms. These waste forms will behave differently from spent uranium dioxide fuel, which makes up most of the inventory of the repository. The glass waste form is different in several respects, including

- The waste form does not produce substantial heat, but can be heated by surrounding waste packages containing spent nuclear fuel.

- The glass waste form will have a different exposed surface area than an equivalent quantity of spent nuclear fuel.
- The glass waste form will contain a different mix of radionuclides than spent nuclear fuel.
- The glass waste form degrades at a different rate than spent nuclear fuel.

The TPA code will include a model that takes into account the differences in spent nuclear fuel by modifying the equations to simulate glass waste forms. This model will be included directly into the existing EBSREL module.

## SF2 Colloid source term

The release of radionuclides that become associated with colloids has not been considered in previous versions of the TPA code. Colloidal consideration can be separated into two parts, reversible and irreversible colloid attachment. The release model will be modified to account for irreversible colloid attachment of radionuclides released from the engineered barrier subsystem. Irreversible attachment can be simulated by specifying a fraction of the release for a particular radionuclide that will represent the colloidal release. This fraction will be assigned to a set of new (artificial) radionuclides that will possess transport properties appropriate for colloids. The elements considered for irreversible attachment are plutonium, americium, thorium, and curium. The new radionuclides will populate new decay chains that will be developed for colloids to the point where an aqueous daughter product is generated. At that point, ingrowth to the aqueous phase daughter is assumed.

## SF3 Diffusive Release

Currently there is no diffusive release model in the TPA code, although a previous version of TPA contained one. The U.S. Department of Energy (DOE) performance assessment models depend almost entirely on diffusion to release radionuclides from the waste form to the geosphere, whereas TPA relies on advective transport by water flowing through the waste packages. It is possible that advective transport will be small or nonexistent with the advent of the drip shield and corrosion resistant waste packages, so TPA will incorporate a diffusive model to simulate transport in the near field. The diffusive model in TPA will take into account diffusion within the waste package in thin water films on the waste form, support structure, and waste package walls; through cracks and openings in the waste package walls; and along the outside of the waste package. The model should also account for diffusion through the rock on the outside of the waste package, including the invert and any rock fall that comes into contact with the waste package. TPA currently has a model for advective and diffusive transport through the invert, but the assumptions will be reexamined to see if the invert model still applies or needs to be updated.

Most changes would be included in the EBSREL module and its associated code in the executive module. The model would probably use a finite difference approach, similar to past versions of TPA, which proved to be efficient and easily incorporated into the structure of the mixing cell module for the waste package concentration. The EBSFILT



module for the invert will be modified as needed to make it consistent with the diffusive release model.

**SF4 Time dependent cladding failure**

The *tpa.inp* file contains a cladding correction factor that is used in the determination of the wetted area of the spent nuclear fuel. This value is currently set to 1.0, thus indicating no reduction in the wetted area due to cladding. It is desired to accommodate a look-up table that includes a cladding protection factor as a function of time starting at repository closure. It must be noted that there is no information available to define precisely the cladding protection factor as a function of time. This change in the TPA code is proposed to allow flexibility in importance and sensitivity analyses and also to provide the TPA code with flexibility to review the total system performance assessment results by the DOE.

## **2.6 Unsaturated and Saturated Zones Flow and Transport**

Modifications to the TPA code related to the unsaturated zone and saturated zone flow and transport involve the following:

**FT1 Represent  $K_D$ s and  $R_d$ s for unsaturated zone and saturated zone as a function of geochemistry**

An improved method of determining and using  $K_D$ s and  $R_d$ s for the unsaturated zone and saturated zone is proposed by the staff associated with the Radionuclide Transport Key Technical Issue. See Appendix A for discussion of the theory. The implications of this method to the TPA code are the removal of many of the  $K_D$  or  $R_d$  specifications in the *tpa.inp* file and the addition of sampled correlated parameters for pH and  $PCO_2$ . Conversion of  $K_D$  to  $R_d$  for fractures will be performed in UZFT and SZFT as required by the NEFTRAN input file.

**FT2 Colloid transport**

This is a new feature of the TPA code that is closely associated with the colloid release considerations mentioned in the section on Source Term. The additional radionuclides will be accounted for with all the other radionuclides processed by the NEFTRAN module. This feature will necessitate the implementation of a second set of effective retardation factors for the irreversible attachment radionuclides whose release is coincident with the aqueous phase of the same species. This second set will be specified in the *tpa.inp* input file.

In addition, the transport properties of a subset of the aqueous radionuclides will be adjusted to reflect the reversible attachment of colloids. These new properties will be included in the nominal case data set.

An inventory of zero for the irreversible attachment colloid radionuclides may need to be maintained in the inventory database serving as a place holder for sections of the code that expect all chain members to be specified. The release in Ci/yr can be assigned to

each when the release values are calculated for input to the invert module (EBSFILT). The colloid release values can be adjusted by using a user specified colloid fraction and applying it to the input file for EBSFILT. This will apportion the spent nuclear fuel release values between the aqueous radionuclides and the colloid radionuclides.

**FT3 Reflect uncertainty in CHnv thickness**

Currently, the thickness of the nonwelded vitric CHnv unsaturated zone layer below the repository is a fixed value specified in the *tpa.inp* file. The proposed change will make the CHnv thickness a sampled parameter that reflects the mineralogic and lithologic thickness uncertainty. With the addition of an overall unsaturated zone thickness parameter, the UZFT module will be modified to adjust the CHnz layer thickness to compensate for the variable CHnv thickness to maintain the desired overall unsaturated zone thickness for each subarea.

**FT4 Multiple fracture flow and matrix flow epochs**

The UZFT module currently restricts the flow media of a given layer to matrix or fracture for the entire simulation time. It is desired to allow the flow to share or switch media types one or more times during a simulation. This condition can be approximated by using two legs for one hydrostratigraphic unit in the NEFTRAN input data set. This feature will be added to the UZFT module to increase the flexibility of the code.

**FT5 Variable dispersivity for UZFT**

Currently, the dispersivity in the unsaturated zone is limited to a minimum of 0.1 m [0.33 ft] regardless of the layer thickness. To provide a more realistic parameter value for the unsaturated zone transport module this limit will be lowered to 0.01 m [0.33 ft] for layer thicknesses less than 40 m [131.2 ft].

**FT6 Reflect uncertainty in streamtube dimensions**

The streamtube dimensions of width and length are specified in the *strmtube.dat* file as a constant table used for all realizations. It is desired to reflect the uncertainty of these data by subjecting them to the influence of sampled parameters. This process will require the generation of a new sampled parameter representing a streamtube width multiplier. All routines that read the *strmtube.dat* file to obtain streamtube dimensions will be modified to include the use of the new parameters. This width multiplier will be applied to all streamtubes for their entire lengths. The range of this multiplier will be consistent with the data values in the *strmtube.dat* file so that the total streamtube width remains within realistic limits.

**FT7 Update streamtube flux after climate change**

Currently, the streamtube flux is implemented as a constant value read from the *strmtube.dat* file. The TPA code should permit the flux to change in response to climatic conditions. The change to climatic conditions relative to present day conditions is currently available in the UZFLOWS file called *climato2.dat*. Normally, the saturated zone transport code considers a fixed porosity and fixed velocity for the transport legs. To

consider time dependent flow, however, a velocity file will be generated to reflect the time dependent flux change at the assigned porosity. The degree of this effect will be controlled by an input factor which will control the scaling of the climatic deviations relative to present day conditions as applied to the flux rates. The present day flux rates will continue to be specified in the *strmtube.dat* file. This change will be made with time permitting.

## **2.7 Determination of Receptor Dose**

### **D1 Add plume capture model**

Currently, the DCAGW module handles the plume capture due to pumping at 10 km [6.2 mi] differently than at 20 km [12.4 mi]. An option will be provided in the *tpa.inp* file to select a single algorithm to be used for both locations consistent with the rule specification of a pumping rate of 3,000 acre-feet/year.

### **D2 U.S. Environmental Protection Agency (EPA) groundwater protection output**

Currently, the EPA groundwater protection output in files *epapktim.out* and *epa\_avg.out* are produced by the DCAGW module. Most of the output is in the form of unitless ratios of dose to their EPA limits. The output files will be reformatted to add data in raw form or in physical units consistent with the standards (e.g., mrem and pCi/L). In addition, uranium will not be included in the output, because it is not part of the standard, and the headings will be clarified to designate fraction of limit and radium where appropriate.

### **D3 Use 18 km [11.2 mi] as receptor location**

The maximally exposed individual will be moved to 18 km [11.2 mi] from the previous value of 20 km [12.4 mi]. This value is contained in the *tpa.inp* file and would normally not be considered a code change. But since there exists some legacy code that contains confusing variable names for this value, clarifying the variable names is considered a code change. This change will affect several modules of the TPA code in both variable name nomenclature and internal documentation and comments. The data file *strmtube.dat* may also need to be modified to accommodate the change.

### **D4 Use GENTPA for DCAGS dose conversion factors**

Currently, DCAGW uses GENTPA to generate the groundwater dose conversion factors for each realization, but DCAGS does not. It uses a fixed table look-up scheme instead. An identical dose conversion factor generation mechanism will be introduced using the GENTPA code for the DCAGW dose conversion factor values. This change will be made with time permitting.

## **2.8 Igneous Activity**

### **IA1 Divide mass loading and occupancy factors into inside and outside components**

Currently, only single values for the mass load and occupancy factor are used to determine the dose conversion factors for inhalation in the igneous case. To accommodate the new definition of the lifestyle for the reasonably maximally exposed individual, five categories of disturbance parameters will be used, including one category for offsite time. Each category will have a mass load and an occupancy time. The doses from these five categories for inhalation will be summed and used in the current dose conversion factor expressions. Even if the GENTPA code is used to generate the ground surface dose conversion factors for the other exposure pathways, the dose from the inhalation pathway will continue to be calculated by the TPA code and added to the results of the GENTPA code.

### **IA2 Modify Igneous Activity source term**

The current igneous activity module assumes that spent nuclear fuel would be incorporated into the magma on the basis of an incorporation ratio that assumes that ash particles can incorporate spent nuclear fuel particles smaller than a certain ratio of diameters of the ash particle. There does not appear to be a justification for this choice of conceptual models. An alternative conceptual model of fuel incorporation into ash that takes into account the relative mass of spent nuclear fuel and ash in a range of particle size classes will be considered. The model will make minimum assumptions about the physics of incorporation because little is known about the phenomenon. Instead, the model will assume that the probability of the incorporation of spent nuclear fuel into ash depends only on the relative mass of fuel and ash in each particle size class. This is called the parsimony model by R. Codell because it is the simplest set of assumptions about the physics of the situation and should stand until the time that there is better evidence about actual mechanisms. The intent of this change is to match the grain size with the ash size, and this matching will require a new particle size distribution, uranium solubility in ash, and incorporation ratio in ASHPLUME.

### **IA3 Add ash redistribution model**

Currently, the TPA code considers only the long term ash removal process for tephra deposition directly at the reasonably maximally exposed individual location. A more realistic model will be added that includes a source term for the mobilization of ash that lands in the catchment basin north of Fortymile wash. Input parameters that will be used in support of the model include (i) fraction of redistributable ash that is mobilized each year, (ii) erosion rate of redistributable ash, (iii) density of redistributable ash, (iv) fraction of remobilized ash that stays in reasonably maximally exposed individual area, (v) concentration of spent nuclear fuel in the remobilized tephra, (vi) dilution factor during transport, and (vii) rate of deposition of windblown soil from noncontaminated sources. This change will be made with time permitting.

## **2.9 Seismic Activity**

### **SA1 Add rockfall effects on drip shield to SEISMO**

Currently, the SEISMO module of the TPA code calculates rockfall effects on the waste package only. With the anticipated modification to include a model of the drip shield failure, the SEISMO module will need to be updated to include the effects of rockfall on the drip shield. The SEISMO module will provide the number of drip shield failures and waste package failures for each seismic event.

## **3 SYSTEM-LEVEL MODIFICATIONS**

This section describes the changes to the executive driver to accommodate added flexibility to several consequence modules and the changes to accommodate parameters representing new data that characterize the site. It is intended that all new modules and process implementations have a single point neutralization or removal mechanism available to the user that would permit the execution of the code as if the new feature had not been implemented. This mechanism will aid in testing the code as well as performing the importance analysis studies.

Changes to the nominal scenario data set are not usually considered part of the software development effort. However, because the TPA code has a large set of input parameters that may be adjusted in lieu of implementing certain code modifications, a list of proposed nominal case data changes are included in Appendix B.

### **3.1 Repository Design**

EX1 Limited flexibility will be added to the executive to accommodate variations to the DOE current thermal loading strategy.

### **3.2 Parameter Sampling**

EX2 Update the SNLLHS code with new user discrete distributions.

EX3 Generate the SNLLHS input file such that only the input parameters that will be used during the run will be submitted to the SNLLHS code for sampling. This select submission will reduce the number of sampled parameters when not needed for a particular run.

### **3.3 Dose Output**

EX4 Create a new output file that contains the pathway specific doses.

### **3.4 Miscellaneous**

EX5 Miscellaneous readability, maintenance, and performance items will be addressed as encountered in development of the TPA Version 5.0 code.

## **4 TECHNICAL BASIS: PHYSICAL AND MATHEMATICAL MODEL**

Technical bases for the modifications proposed in this site requirements description are in the preceding sections and in Appendix A for changes related to the unsaturated zone transport. These changes have been discussed during several meetings with the key technical issue leads.

## **5 COMPUTATIONAL APPROACH**

Please refer to the discussion in the previous sections.

## **6 REFERENCES**

CRWMS M&O. "Total System Performance Assessment for the Site Recommendation." TDR-WIS-PA-000001. Revision 00 ICN 01. Las Vegas, Nevada: TRW Environmental Safety Systems, Inc. 2000.

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## **APPENDIX A**

## DETAILS ON PROPOSED MODIFICATIONS TO RADIONUCLIDE TRANSPORT PARAMETERS FOR THE TPA VERSION 5.0 CODE

### INTRODUCTION

In the TPA Version 3.2 code, a  $K_D$  probability distribution function is assigned to each radionuclide for each hydrostratigraphic unit. For most of the radionuclides, the probability distribution functions are based on expert judgment supported by laboratory sorption data. Experimental data, however, show a link between the aqueous speciation of an actinide and its sorption behavior. Experimental and modeling results indicate that sorption behavior expressed as  $K_D$ , at least for actinides, is particularly influenced by physical and chemical parameters such as solution pH,  $PCO_2$ , and effective specific surface area  $A'$ . In the TPA Version 3.2 code, an effort was made to incorporate indirectly the effects of geochemistry by using site-specific hydrochemical data (Perfect, et al., 1995; Turner and Pabalan, 1999; Turner, et al., 1999) to calculate  $K_D$  values for a limited suite of actinides ( $Am^{3+}$ ,  $U^{6+}$ ,  $Np^{5+}$ ,  $Pu^{5+}$ , and  $Th^{4+}$ ). The results of these model calculations provided constraints on  $K_D$  probability distribution functions in the hydrologically saturated alluvium (hydrostratigraphic unit SAV). The correlation among the five different actinides is used to condition the Latin hypercube sampling of each probability distribution function and indirectly represents the geochemical link in sorption behavior.

### PROPOSED APPROACH FOR DETERMINING SORPTION PARAMETERS

Considering the potentially large number of sorption parameters necessary to represent 16 radionuclides, 9 hydrostratigraphic units, and 2 types (fracture and matrix) of transport, the use of correlation coefficients is a cumbersome means to address the effects of geochemistry. A more efficient means is proposed for implementation in the TPA Version 5.0 code.

The proposed method (Turner, et al., 1998) would involve development of a  $K^A$  response surface to represent sorption as a function of critical parameters such as pH and  $PCO_2$ . During a given in the TPA Version 5.0 code realization, probability distribution functions for pH and  $C_T$  would be sampled and the values used to determine the appropriate value for  $K^A$  from the response surface, either through a parametric representation of the surface or through interpolation of a look-up table. To determine the value for  $K_D$  used in the transport calculation, the sampled  $K^A$  value would be normalized using the specific surface area and the relationship  $K_D = K^A \times A'$ . The specific surface area  $A'$  can either be determined through sampling a probability distribution function or using empirical relationships between porosity/permeability and surface area.

### IMPLEMENTATION OF A $K_D$ RESPONSE SURFACE

Development and implementation of the  $K_D$  response surface would occur through several steps:

- Experimental data would be used to calibrate geochemical sorption models. Such calibration has already been performed to a limited extent for  $Am^{3+}$ ,  $U^{6+}$ ,  $Np^{5+}$ ,  $Pu^{5+}$ , and  $Th^{4+}$ . Additional radioelements (technetium, iodine, and selenium) have also been considered.



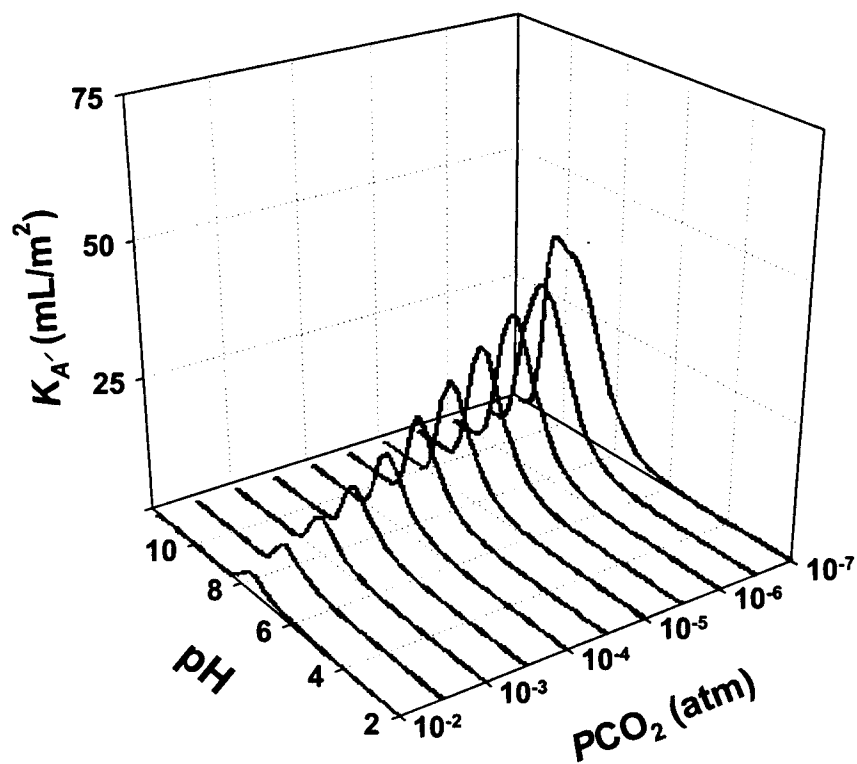
- The calibrated geochemical sorption models would be used to calculate radionuclide sorption expressed as  $KA'$  for a broad range in pH and  $C_T$ . The proposed approach has been demonstrated using a diffuse-layer surface complexation model to develop a response surface for Np(V) sorption as a function of pH and  $PCO_2$  (Figure A-1). Both a look-up table (Table A-1) and a series of parametric equations (Table A-2) have been used to define this surface.
- Site-specific geochemistry (Figures A-2 and A-3) can be used to constrain probability distribution functions (Table A-3) for sampling hydrochemical parameters such as pH and  $C_T$ . Because these parameters are linked through the aqueous carbonate chemistry, correlation will have to be developed for the latin hypercube sampling routine, either explicitly through mass action and mass balance or implicitly through a sample-by-sample comparison.

## CONCLUSION

Experimental sorption data for a wide range in chemical conditions is limited for various radionuclides of interest in the TPA Version 5.0 code. Identifying appropriate data sets, calibrating sorption models, applying these to a broad range in conditions to develop the response surfaces, and identifying probability distribution functions for the hydrochemical parameters is time consuming. It is reasonable that this approach could be implemented in the TPA Version 5.0 code as an option for a few select radionuclides. For example, a response surface has been developed for Np(V) sorption (Figure A-1). Testing would be used to ensure that the method is implemented correctly and produces consistent results. Refinement of the approach and extension of the method to other radionuclides would begin in later versions of the TPA code.

## REFERENCES

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**Figure A-1. Sorption Parameter Response Surface Calculated for Np(V) Using a Diffuse-Layer Surface Complexation Model**

**Table A-1. Sample Look-Up Table for Np(V) Sorption Response Surface (KA' in mL/m<sup>2</sup>);  
Np(V)<sub>total</sub> = 10-6 molal, M/V = 4 G/L**

pH	Log PCO <sub>2</sub> (atm)													
	no CO <sub>2</sub>	-7.00	-6.50	-6.00	-5.50	-5.00	-4.50	-4.00	-3.50	-3.00	-2.50	-2.00		
2.00	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407
2.25	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
2.50	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
2.75	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
3.00	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
3.25	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
3.50	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785	0.20785
3.75	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407
4.00	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407
4.25	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407	0.23407
4.50	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034	0.26034
4.75	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666	0.28666
5.00	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303	0.31303
5.25	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595	0.36595
5.50	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572	0.44572
5.75	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285	0.55285
6.00	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799	0.68799
6.25	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713	0.90713
6.50	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444	1.21444
6.75	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510	1.64510
7.00	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218	2.30218
7.25	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067	3.25067
7.50	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393	4.58393
7.75	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362	6.48362
8.00	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258	9.10258
8.25	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597	12.46597
8.50	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732	16.54732
8.75	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818	21.25818
9.00	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434	26.08434
9.25	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756	30.37756
9.50	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698	33.88698
9.75	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310	36.78310
10.00	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421	40.82421

Table A-2. Equation Parameters and Summary of Fit Results for Model Curves at Discrete PCO <sub>2</sub> ; Np(V)total = 10 <sup>-6</sup> molal, M/V = 4 g/L								
PCO <sub>2</sub> (atm)	Coefficients [ln (KA', in mL/m <sup>2</sup> ) = a + bx + cx <sup>2</sup> + dx <sup>3</sup> + ex <sup>4</sup> + fx <sup>5</sup> ]							pH range used for fit
	a	b	c	d	e	f	r <sup>2</sup> value	
10-2.0	-323.7345029	151.4136753	-17.3990293	-1.7541185	0.4728224	-0.0247745	0.9999	6-9.25
10-2.5	-441.4872516	226.8171288	-37.7488848	1.2089255	0.2378357	-0.0167447	0.9999	6-9.25
10-3.0	148.2265595	-173.8278793	69.4791195	-12.8694017	1.1394455	-0.0390727	0.9999	6-9.50
10-3.5	604.4445148	-474.5177627	147.2075461	-22.6668262	1.7364614	-0.0529354	0.9999	6-9.50
10-4.0	847.1361569	-620.1544804	180.5362481	-26.2031203	1.8992944	-0.0549789	0.9999	6-10.00
10-4.5	925.7298724	-652.8079406	183.1897645	-25.6433576	1.7939710	-0.0501685	0.9999	6-10.25
10-5.0	923.2318767	-632.0905821	172.1420527	-23.3803904	1.5872876	-0.0430961	0.9999	6-10.50
10-5.5	672.7843206	-452.9837012	121.1472289	-16.1548188	1.0777544	-0.0287889	0.9999	6-11.00
10-6.0	393.8474607	-258.6708687	67.3400912	-8.7496479	0.5711094	-0.0149989	0.9999	6-11.25
10-6.5	722.6946490	-436.2310889	104.2139278	-12.3723844	0.7340464	-0.0174653	0.9978	6-11.50
10-7.0	2202.1902289	-1290.5774270	299.2738666	-34.3781522	1.9602212	-0.0444424	0.9816	6-11.75
no CO <sub>2</sub>	1211.3978170	-705.8275247	161.4080394	-18.1364167	1.0036927	-0.0219067	0.9996	6-11.75

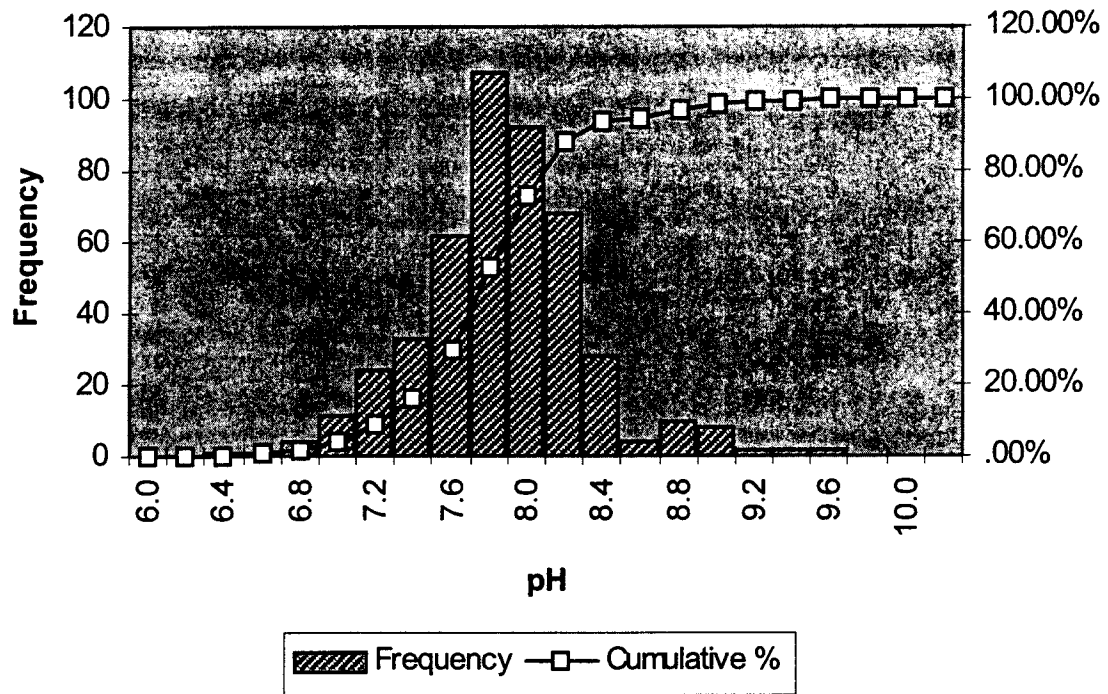


Figure A-2. Distribution of pH for Saturated Zone Regional Groundwaters

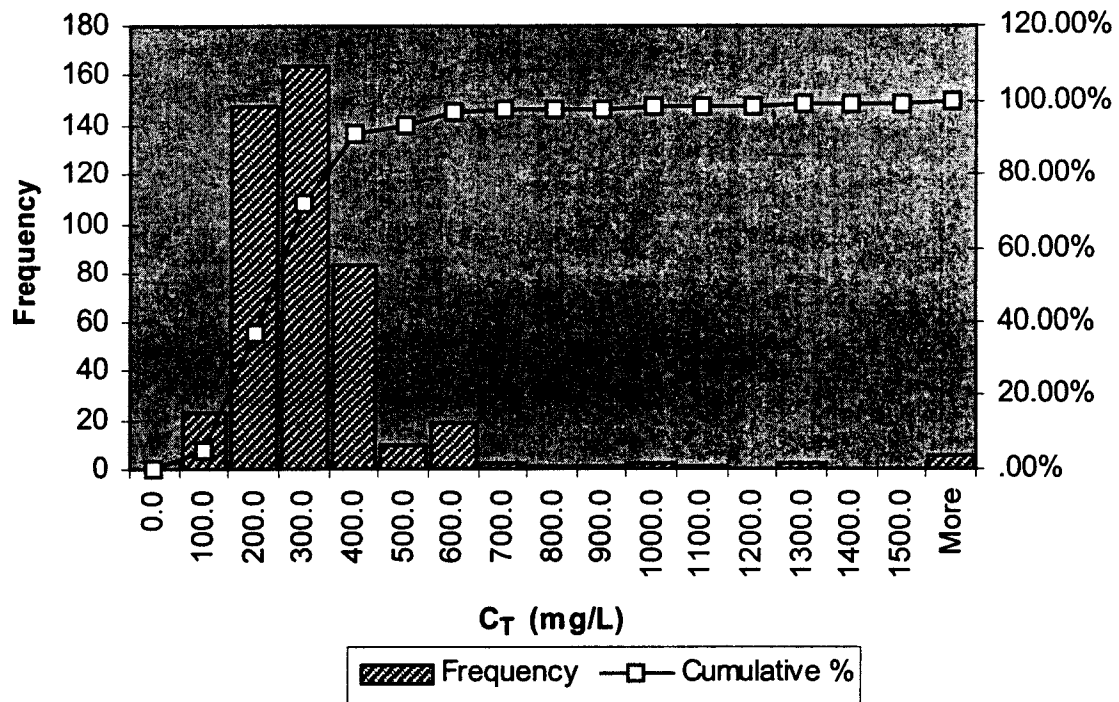


Figure A-3. Distribution of Total Inorganic Carbon ( $C_T$  in mg/L) for Saturated Zone Regional Groundwaters

<b>Table A-3. Descriptive Statistics of Saturated Zone Measured Groundwater Chemical Parameters (Perfect, et al., 1995)</b>			
	<b>pH (standard units)</b>	<b>C<sub>T</sub> (mg/L)</b>	<b>Log PCO<sub>2</sub> (atm)</b>
Mean	7.83	295.76	-2.50
Median	7.8	245.0	-2.45
Mode	7.8	300.0	-2.34
Standard Deviation	0.45	525.99	0.54
Kurtosis	1.75	270.67	3.73
Skewness	0.43	15.03	-1.30
Range	3.3	10133.20	4.311
Minimum	6.3	6.80	-5.08
Maximum	9.6	10140.00	-0.77
Count	460	460	460

## **APPENDIX B**

## SUMMARY OF PROPOSED DATA CHANGES FOR TPA VERSION 5.0 CODE

Table B-1. Data Changes		
Item #	Proposed Data Changes	Description
DC1	Adjust value of the fracture-to-matrix diffusion parameter, DiffusionRate_STFF, in SZFT section of <i>tpa.inp</i>	Impermeable fracture coatings may affect fracture-to-matrix diffusion and sorption. This change will account for the potential presence of impermeable fracture coatings limiting matrix diffusion in the tuff aquifer.
DC2	Adjust parameters in <i>wpflow.def</i> , which are used to derive $F_{ow}$ , to account for the thermal effects on fracture dilation	Fracture dilation may result from thermal-mechanical effect. Dilation may affect fracture flow and could divert flow from the pillar to the drift. Effects of fracture dilation will be accounted for through the $F_{ow}$ factor, which accounts for flow potentially reaching a wetted waste package.
DC3	Revise F-factors, which are used to derive $F_{mult}$ , to be more technically defensible	Need agreement among various technical staff as to the values assigned. $F_{mult}$ is accounted for in the TPA code through use of the WastePackageFlowMultiplicationFactor in the EBSREL section of <i>tpa.inp</i> .
DC4	Adjust transfer parameters in <i>gftrans.def</i> , which are used in GENTPA module, to address site-specific data as they become available from DOE	These are biosphere transfer coefficients for radionuclides between soil, crops, and animal products. Parameters can be changed to address site-specific data as they become available from DOE.
DC5	Make $K_D$ parameter sampling consistent for biosphere and ASHRMOVO	$K_D$ s, located in <i>tpa.inp</i> , are sampled parameters for biosphere but are constants for ASHRMOVO, thus, an inconsistency.
DC6	Revise/evaluate airborne mass loading factors in DCAGS section of <i>tpa.inp</i>	Airborne mass loading factors, AirborneMassLoadAboveFreshAshBlanket and AirborneMassLoadAboveSoil, account for mass of soil suspended in air above surface.




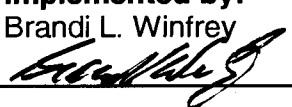
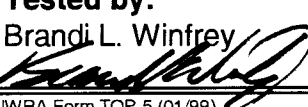
**Table B-1. Data Changes (continued)**

Item #	Proposed Data Changes	Description
DC7	Update and add new parameters to MULTIFLO data file	<p>Currently in the TPA code, information on chloride concentrations, temperature, and saturations as a function of time is accessed for waste package corrosion calculations via the look-up table <i>multiflo.dat</i>.</p> <p>For the TPA Version 5.0 code, a new conceptual model will be developed to describe chemical components important to both drip shield and waste package corrosion models. Values of PO<sub>2</sub> and pH, as well as concentrations of total dissolved carbonate, chloride, nitrate, and fluoride will be provided in a new look-up table. In this new abstraction, the performance assessment period will be divided into a few discrete parcels of time characterized by constant chemical conditions in the look-up table. Temperature, saturation, and relative humidity, determined from off-line TPA and MULTIFLO runs, will be used to define time periods be represented in the TPA Version 5.0 code as having similar chemical conditions.</p>
DC8	Continuum approach for fractured tuff; once fracture flow starts, it should continue to layers below (unsaturated zone conceptual model)	The current NEFTRAN simulation of the unsaturated zone water flow assumes that fracture flow in the TSw unit is instantaneously received by the CHnv matrix flow. A more realistic model would have the TSw fracture flow feed the CHnv fracture flow. This approach can be approximated by adjusting the length of the CHnv unit and accomplished with a data change for the CHnv unit thickness in the <i>tpa.inp</i> file.
DC9	Correlate conduit diameter to power of the event	The conduit diameter range in previously reported data is seen by some to be too small to infer a correlation. This feature however, can be accommodated using the TPA parameter correlation feature. The parameter names also could be clarified to suggest reference to conduit instead of cone for the controlling parameter in the <i>tpa.inp</i> file.

Table B-1. Data Changes (continued)		
Item #	Proposed Data Changes	Description
DC10	Cool edges of repository	This capability requires another subarea dedicated to cooler temperatures. The subarea geometry can be modified to add a subarea on the edge of important subareas.

## **Software Change Reports**

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-400	<b>Software Title and Version:</b> TPA 5.0betaC	<b>Project No:</b> 20-1402-762																								
<b>Affected Software Module(s), Description of Problem(s):</b> nfenv.f, tpa.inp, tpanames.dbs  The input parameter names used for in drift chemistry relative to SCR398 should be more descriptive.																										
<b>Change Requested by:</b> R. Janetzke Date: 09-18-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 09-18-02 																									
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  Changes made to parameter names in TPA.INP and NFENV.F:  <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; width: 40%;"><u>from:</u></th> <th style="text-align: left;"><u>to:</u></th> </tr> </thead> <tbody> <tr> <td>Cl_Epoch_1[mol/L]</td> <td>Indrift_Cl_PreTemperaturePeak[mol/L]</td> </tr> <tr> <td>Fl_Epoch_1[mol/L]</td> <td>Indrift_Fl_PreTemperaturePeak[mol/L]</td> </tr> <tr> <td>pH_Epoch_1[]</td> <td>Indrift_pH_PreTemperaturePeak[]</td> </tr> <tr> <td>CO3_Epoch_1[mol/L]</td> <td>Indrift_CO3_PreTemperaturePeak[mol/L]</td> </tr> <tr> <td>DeltaECrit_Epoch_1[VSHE]</td> <td>Wastepackage_DeltaECrit_PreTemperaturePeak[VSHE]</td> </tr> <tr> <td colspan="2"> </td> </tr> <tr> <td>Cl_Epoch_2[mol/L]</td> <td>Indrift_Cl_PostTemperaturePeak[mol/L]</td> </tr> <tr> <td>Fl_Epoch_2[mol/L]</td> <td>Indrift_Fl_PostTemperaturePeak[mol/L]</td> </tr> <tr> <td>pH_Epoch_2[]</td> <td>Indrift_pH_PostTemperaturePeak[]</td> </tr> <tr> <td>CO3_Epoch_2[mol/L]</td> <td>Indrift_CO3_PostTemperaturePeak[mol/L]</td> </tr> <tr> <td>DeltaECrit_Epoch_2[VSHE]</td> <td>Wastepackage_DeltaECrit_PostTemperaturePeak[VSHE]</td> </tr> </tbody> </table>			<u>from:</u>	<u>to:</u>	Cl_Epoch_1[mol/L]	Indrift_Cl_PreTemperaturePeak[mol/L]	Fl_Epoch_1[mol/L]	Indrift_Fl_PreTemperaturePeak[mol/L]	pH_Epoch_1[]	Indrift_pH_PreTemperaturePeak[]	CO3_Epoch_1[mol/L]	Indrift_CO3_PreTemperaturePeak[mol/L]	DeltaECrit_Epoch_1[VSHE]	Wastepackage_DeltaECrit_PreTemperaturePeak[VSHE]			Cl_Epoch_2[mol/L]	Indrift_Cl_PostTemperaturePeak[mol/L]	Fl_Epoch_2[mol/L]	Indrift_Fl_PostTemperaturePeak[mol/L]	pH_Epoch_2[]	Indrift_pH_PostTemperaturePeak[]	CO3_Epoch_2[mol/L]	Indrift_CO3_PostTemperaturePeak[mol/L]	DeltaECrit_Epoch_2[VSHE]	Wastepackage_DeltaECrit_PostTemperaturePeak[VSHE]
<u>from:</u>	<u>to:</u>																									
Cl_Epoch_1[mol/L]	Indrift_Cl_PreTemperaturePeak[mol/L]																									
Fl_Epoch_1[mol/L]	Indrift_Fl_PreTemperaturePeak[mol/L]																									
pH_Epoch_1[]	Indrift_pH_PreTemperaturePeak[]																									
CO3_Epoch_1[mol/L]	Indrift_CO3_PreTemperaturePeak[mol/L]																									
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Cl_Epoch_2[mol/L]	Indrift_Cl_PostTemperaturePeak[mol/L]																									
Fl_Epoch_2[mol/L]	Indrift_Fl_PostTemperaturePeak[mol/L]																									
pH_Epoch_2[]	Indrift_pH_PostTemperaturePeak[]																									
CO3_Epoch_2[mol/L]	Indrift_CO3_PostTemperaturePeak[mol/L]																									
DeltaECrit_Epoch_2[VSHE]	Wastepackage_DeltaECrit_PostTemperaturePeak[VSHE]																									
<b>Implemented by:</b> Brandi L. Winfrey 	<b>Date:</b> September 25, 2002																									
<b>Description of Acceptance Tests:</b> Compile the source code to incorporate the new parameter names into the executable. Run the executable and verify that the changes to the parameter names has not affected the output file <i>nfenv.rlt</i> (i.e., there should be no difference between the output file before and after the parameter names have been changed).																										
<b>Tested by:</b> Brandi L. Winfrey 	<b>Date:</b> January 20, 2003																									

# Test Plan for TPA SCR #400

**Test Plan Name:** Near-Field Environment

**Tested By:** Brandi L. Winfrey

**Date:** Jan 20, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0betaC

**Test Version:** 5.0betaD

## System Level Tests

The following modifications were made to the input parameter names used for in drift chemistry relative to SCR398. The purpose of these changes is to make the input parameter names more descriptive.

1. The modules *tpa.inp* and *nfenv.f* were modified as follows:

a. The following parameter names were changed:

<u>from:</u>	<u>to:</u>
Cl_Epoch_1[mol/L]	Indrift_Cl_PreTemperaturePeak[mol/L]
Fl_Epoch_1[mol/L]	Indrift_Fl_PreTemperaturePeak[mol/L]
pH_Epoch_1[]	Indrift_pH_PreTemperaturePeak[]
CO3_Epoch_1[mol/L]	Indrift_CO3_PreTemperaturePeak[mol/L]
DeltaECrit_Epoch_1[VSHE]	Wastepackage_DeltaECrit_PreTemperaturePeak[VSHE]
Cl_Epoch_2[mol/L]	Indrift_Cl_PostTemperaturePeak[mol/L]
Fl_Epoch_2[mol/L]	Indrift_Fl_PostTemperaturePeak[mol/L]
pH_Epoch_2[]	Indrift_pH_PostTemperaturePeak[]
CO3_Epoch_2[mol/L]	Indrift_CO3_PostTemperaturePeak[mol/L]
DeltaECrit_Epoch_2[VSHE]	Wastepackage_DeltaECrit_PostTemperaturePeak[VSHE]

## SL-1 Near-field Environment chemistry

### 1.0 Path for Run Directories

Test Case A

<<Run Directory 50betaC>> = \$HOME/SCR400/test/sltest/sl-1/50betaC

Test Case B

<<Run Directory 50betaD>> = \$HOME/SCR400/test/sltest/sl-1/50betaD

## 2.0 Path for Archived Results

\$HOME/SCR400/test/sltest/sl-1

## 3.0 Environment Variables

Test Case A:

TPA\_TEST = \$HOME/SCR400/50betaC

TPA\_DATA = \$HOME/SCR400/50betaC

Test Case B:

TPA\_TEST = \$HOME/SCR400/50betaD

TPA\_DATA = \$HOME/SCR400/50betaD

## 4.0 Special Input Files or Modifications to Input Files Required:

4.1 The following is a contents listing for source directories:

Directory	Contents
50betaC	tpa 5.0 betaC compiled with f77-4.2
50betaD	tpa 5.0 betaD compiled with f77-4.2

4.2 Modify *tpa.inp* parameters as follows:

OutputMode	1
SelectAppendFiles	2
StopAtSubarea	1

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used: None

7.0 Utility Scripts Needed to Perform the Test: None

## 8.0 Test Description

8.1 Objective: Ensure that changes to parameter names do not cause a change to the output.

8.2 Assumptions: None

8.3 Constraints: None.

8.4 Output File: *nfenv.ech*, *nfenv.rlt*

### 8.5 Procedure:

1. Copy the files *tpa.e* and *tpa.inp* from source directories specified in table of step 4.1 into the applicable run directories.
2. For Test Case A, at the command prompt from the <<Run Directory 50betaC>> directory, type the following: “tpa.e > PA-SCR-400\_SL1-A.out.” The screen output will be captured to file PA-SCR-400\_SL1-A.out.
3. Verify the code executes to completion without aborting and the files *nfenv.rlt* and *nfenv.ech* have been created.
4. For Test Case B, at the command prompt from the <<Run Directory 50betaD>> directory, type the following: “tpa.e > PA-SCR-400\_SL1-B.out.” The screen output will be captured to file PA-SCR-400\_SL1-B.out.
5. Verify the code executes to completion without aborting and the files *nfenv.rlt* and *nfenv.ech* have been created.
6. Using the script *compare\_nfenv* in the archive directory, compare the output files generated in test cases A and B using the command “./compare\_nfenv > nfenv.diff”.

Verify the only differences are the following:

- time and date stamps
- code versions

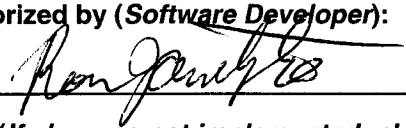
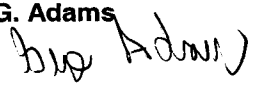

8.6 Pass/Fail Criteria: The code runs to completion and generates file output information corresponding to that expected from section 8.5.

1.9.0 Test Results All modified/new source code files, all executables used in the test, and all input/output files will be kept in the archive directory. The contents of the archive directory will be written out to a CD (attached).

### 9.1 Overall Test Status:

This test successfully **PASSED** the criterion above for system level test SL-1.

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-410	<b>Software Title and Version:</b> TPA 5.0beta	<b>/Project No:</b> 20-06002-01.113
<p><b>Affected Software Module(s), Description of Problem(s):</b> estimator.f, exec.f, reader.r</p> <p>Depending on the input to the ITYM preprocessor, the preprocessor would print ***'s to the screen for Esl instead of the correct value.</p> <p>The average infiltration values stored in infilper.res were the subarea averages and not the repository averages. The values stored in this file at time = 0 was different than the expected value for Mean Annual Infiltration At Start(AAI0) printed to the screen during TPA execution.</p> <p>A compiler warning occurred when compiling reader.f. The following warning message would be displayed: endofcolloidalnuclides is used but never set.</p>		
<b>Change Requested by:</b> R. Janetzke Date: 10-8-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 10-8-02 	
<p><b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b></p> <p>Module estimator.f was modified to print the values for Esl in double precision scientific notation.</p> <p>Module exec.f was modified to sum the values for percinfil(isa,jj,1) and divide by the repository area instead of summing a subarea averaged perfinfil(isa,jj,1) value and then dividing by the number of subareas.</p> <p>Module reader was modified to include endofcolloidalnuclides as part of an output string.</p>		
<b>Implemented by:</b> G. Adams 	<b>Date:</b> October 17, 2002	
<p><b>Description of Acceptance Tests:</b></p> <p>The Test Plan for TPA SCR #410 consists of one process level test to verify the ITYM preprocessor prints the Esl value to the screen correctly and one system level test to verify the Mean Annual Infiltration at Start (AAI0) values are correctly stored in infilper.res.</p>		
<b>Tested by:</b> R. Rogers 	<b>Date:</b> December 12, 2002	



test\_plan\_410.txt  
\*\*\* Test Plan for SCR-410 \*\*\*

\*Test Plan Name: SCR-410 Correct screen output for ITYM and place repository averages in infilper.res.

\*Tested by: Robert Rogers

\*Date: December 12, 2002

\*Host Machine: masaya.geophysics.swri.edu

\*Host OS: SuSE Linux

\*Baseline Version:  
5.0betaB

\*Test Version:  
5.0betaE

\*\* Process Level Tests \*\*

-----  
\*PL-1. Verification of Output Files

The format of a write statement had to be changed in estimator.f to correctly display (write to standard output) the values for EsI. This test verifies that the values are correctly output instead of \*\*\*'s. This code is part of the preprocessor itym.e.

\*Path for run directory:  
/home/brogers/tpa/tpa50betaE

\*Path for archive of results:  
/home/brogers/tpa/test/scr410\_test

\*Environment variables:  
TPA\_DATA=/home/brogers/tpa/tpa50betaE  
TPA\_TEST=/home/brogers/tpa/tpa50betaE

\*Special input files or modifications to input files required:  
The file itym.dat must be copied into the same directory as itym.e.  
In the file itym.dat:  
- set the parameter num\_MAP\_table to 3  
- set the parameter num\_MAT\_table to 3  
- set the parameter num\_realize\_per\_table to 2

\*Special diagnostic code modifications required:  
none

\*Program modes to be used (append flags, scenario/model switches, etc.):  
normal mode

\*Utility scripts needed to perform the test:  
none

\*Utility codes needed in the analysis of the test data:  
none

\*Test Description

Objective:

The test objective is to verify that the ITYM preprocessor produces the

test\_plan\_410.txt

correct data for variable EsI.

Assumptions:

none

Constraints:

none

Output files to compare or examine:

The data to be verified during this test is normally output to the screen.  
That data will be redirected to a file.

Step-by-step test procedure:

1. Run itym.e for tpa50betaE. Redirect the standard output using the following:

itym.e > itym\_test\_run.txt

2. The expected values for EsI are as follows:

for tbl( 1, 1) EsI = 2.369D+02  
for tbl( 2, 1) EsI = 9.638D+04  
for tbl( 3, 1) EsI = 4.664D+02  
for tbl( 1, 2) EsI = 3.660D+02  
for tbl( 2, 2) EsI = 1.574D+03  
for tbl( 3, 2) EsI = 8.472D+05  
for tbl( 1, 3) EsI = 3.679D+01  
for tbl( 2, 3) EsI = 7.420D+04  
for tbl( 3, 3) EsI = 2.679D+05

Pass/fail criteria:

Verify the results of step 1 match the expected results listed in step 2.

\*Test Results

See the file itym\_test\_run.txt in scr410\_test for results.

The values for EsI in the file itym\_test\_run.txt match the expected values in step 2 above.

Overall Test Status (PASS/FAIL): PASS

\*\* System Level Tests \*\*

-----  
\*SL-1. Verification of infiltration values

The computation of an infiltration value by exec.f was changed. The EXEC module now outputs to the file infilper.res the mean annual infiltration values averaged over the repository area instead of averaged over the subareas.

\*Path for run directory:

/home/brogers/tpa/tpa50betaE

\*Path for archive of results:

/home/brogers/tpa/test/scr410\_test

\*Environment variables:

TPA\_DATA=/home/brogers/tpa/tpa50betaE

TPA\_TEST=/home/brogers/tpa/tpa50betaE

\*Special input files or modifications to input files required:

See modifications to tpa.inp described below.

\*Special diagnostic code modifications required:

# test\_plan\_410.txt

none

\*Program modes to be used (append flags, scenario/model switches, etc.):

In tpa.inp, set the following:

'StartAtSubarea' to 1,  
'StopAtSubarea' to 10,  
'OutputMode(0=None,1=All,2=UserDefined)' to 2,  
'SelectAppendFiles' to 1 (for uzflow.ech and uzflow.rlt),  
'NumberOfRealizations' to 10,  
'MeanAnnualPrecipitationMultiplierAtGlacialMaximum' to constant and 1.0,  
'MeanAnnualTemperatureIncreaseAtGlacialMaximum[degC]' to constant and 0.0.

\*Utility scripts needed to perform the test:

none

\*Utility codes needed in the analysis of the test data:

none

\*Test description

Objective:

The test objective is to verify that the mean annual infiltration values in infilper.res are now averaged over the repository area instead of the subareas. The value in infilper.res are compared with the "Mean Annual Infiltration at Start(AAIO)" values that tpa.e normally outputs to the screen.

Assumptions:

none

Constraints:

none

Output files to compare or examine:

infilper.res

Some of the data to be verified during this test is normally output to the screen, but that data will be redirected to a file.

Step-by-step test procedure:

1. Run tpa.e for tpa50betaE. Redirect the screen output as follows:  
tpa.e > exec\_test\_run.txt
2. Verify that the values for "Mean Annual Infiltration at Start(AAIO)" in exec\_test\_run.txt are approximately equal to the corresponding values for avinfil in infilper.res. A difference of 1 percent is acceptable.

Pass/fail criteria:

Verify the results of step 2.

\*Test Results

See the files in scr410\_test for results. The values are summarized below:


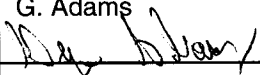
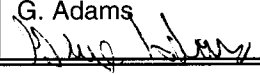
Realization	infilper.res	exec_test_run.txt
1	1.2517E+01	1.2601E+01
2	1.0495E+00	1.0566E+01
3	6.1669E+00	6.2085E+00
4	7.1442E+00	7.1924E+00
5	5.1419E+00	5.1766E+00
6	4.5011E+00	4.5315E+00
7	8.6984E+00	8.7571E+00
8	9.3812E+00	9.4445E+00
9	1.1159E+01	1.1234E+01

		test_plan_410.txt
10	7.6850E+00	7.7369E+00

The values for avinfil in the infilper.res are within 1 percent (0.67 percent) of the values in exec\_test\_run.txt.

Overall Test Status (PASS/FAIL): PASS

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-411	<b>Software Title and Version:</b> TPA 5.0beta	<b>/Project No:</b> 20-06002-01.113
<p><b>Affected Software Module(s), Description of Problem(s):</b> releaset.f, ebsrel.f, ebsrel.def,/ebsrel.inp, tpa.inp</p> <p>File ebsrel.inp contains a zero(0) drip shield failure time when it should contain the first time of drip shield failure contained in ebstrh.dat.</p> <p>In subroutine derivs of releaset.f, the variable amass0 is used instead of y(3). The coefficients for the ODE integration should be calculated using the input parameter y(3) instead of the initial parameter amass0.</p> <p>When tfirstflow is obtained from the information retrieved in ebsflo.dat, it is more precise than the TPA time step value retrieved from ebstrh.dat. For example, in one test case, the value 811.31698403 was retrieved from ebsflo.dat; whereas, 811.317 was retrieved from ebstrh.dat. This difference in precision will result in integration performed in liqrel to start one time step early.</p>		
<b>Change Requested by:</b> R. Janetzke Date: 10-8-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 10-8-02 	
<p><b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b></p> <p>Since the reference flowrate in ebsflo.dat will only be positive when the time is greater than or equal to the drip shield failure time, the retrieval of drip shield failure time from ebsrel.inp into dsfailtime is not necessary. Therefore, dsfailtime was eliminated from releaset.f and ebsrel.def/ebsrel.inp</p> <p>Replaced references to amass0 in subroutine derivs of releaset.f with y(3).</p> <p>Rounded variable tfirstflow (releaset.f) using the following statement:  <math display="block">\text{tfirstflow} = \text{DBLE}(\text{DNINT}(\text{tfirstflow} * 10000.0\text{D0})) / 10000.0\text{D0}</math> </p> <p>Modified LogOfGlassDissolutionConstantHighRange[] to 6.9 and GlassActivationEnergyHighRange[kj/mol-K] to 80.0 in TPA.INP per CRWMS M&amp;O. "Total System Performance Assessment (TSPA) Model for Site Recommendation." MDL-WIS-PA-000002. Rev. 00. Las Vegas, Nevada: CRWMS M&amp;O.2000TSPA-Model.</p>		
<b>Implemented by:</b> G. Adams 	<b>Date:</b> November 8, 2002	
<p><b>Description of Acceptance Tests:</b></p> <p>Please see attachment, "Description of Acceptance Tests."</p>		
<b>Tested by:</b> G. Adams 	<b>Date:</b> November 8, 2002	

### Description of Acceptance Tests

The Test Plan for TPA SCR #411 consists of four process level tests designed to verify the following:

- 1) Release rates are comparable to TPA version 4.1j release rates when diffusion is not included, no protection is provided by the cladding, and the glass source term model is not included.
- 2) Glass Model release rates are comparable to hand calculated release rates.
- 3) Diffusion release rates are comparable to hand calculated release rates.
- 4) Release rates with cladding protection are comparable to hand calculated release rates.

The Software successfully passed the process level tests in accordance with the Test Plan for TPA SCR #411. The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #411, Scientific Notebook 170-16E."

# Test Plan for TPA SCR# 411

**Test Plan Name:** SF1 Glass Source Term  
SF3 Diffusive Release  
SF4 Time Dependent Cladding Failure

**Tested By:** George Adams

**Date:** November 8, 2002

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0Beta

**Test Version:** 5.0Beta with  
Modifications to releaset.f ( referred to  
as code50beta1)

## Process Level Tests

The process level tests in this section are designed to verify the following:

1. Release rates are comparable to TPA version 4.1j release rates when diffusion is not included, no protection is provided by the cladding, and the glass source term model is not included.
2. Glass Model release rates are comparable to those calculated by hand.
3. Diffusion release rates are comparable to those calculated by hand.
4. Release rates with cladding protection factor varying with time are comparable to hand calculated rates.

## PL-1 Comparison to TPA Version 4.1j

### 1.0 Path for Run Directory

For Test Case A, <<Run Directory>> = \$HOME/PA-SCR-411/test/pltest/pl-1/TestA

For Test Case B, <<Run Directory>> = \$HOME/PA-SCR-411/test/pltest/pl-1/TestB

### 2.0 Path for Archived Results

<<Run Directory>>

### 3.0 Environment Variables

For Test Case A:

TPA\_TEST = \$HOME/PA-SCR-411/code50beta1

TPA\_DATA = \$HOME/PA-SCR-411/code50beta1

For Test Case B:

TPA\_TEST = \$HOME/PA-SCR-411/tpa41j

TPA\_DATA = \$HOME/PA-SCR-411/tpa41j

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, "tpa.inp" from the 5.0 beta distribution is required. Make the following changes to this file: (These settings eliminate diffusive flux and cladding protection.)

**Table 1. Test Case A TPA.INP Modifications**

Parameter	Value
OutputMode	1
StopAtSubarea	1
FuelRodHalfLength[m]	0.0
RationOfLastToFirstTimeStepInCompliancePeriod	1.0
LogOfGlassDissolutionConstantHighRange[]	6.9
GlassActivationEnergyHighRange[Kj/mol-K]	80.0
DiffusionCorrectionFactor_U[]	0.0
DiffusionCorrectionFactorAm[]	0.0
DiffusionCorrectionFactorNp[]	0.0
DiffusionCorrectionFactorPu[]	0.0
DiffusionCorrectionFactorTh[]	0.0
DiffusionCorrectionFactorRa[]	0.0
DiffusionCorrectionFactorPb[]	0.0
DiffusionCorrectionFactorCs[]	0.0
DiffusionCorrectionFactor_I[]	0.0
DiffusionCorrectionFactorTc[]	0.0
DiffusionCorrectionFactorNi[]	0.0
DiffusionCorrectionFactor_C[]	0.0
DiffusionCorrectionFactorSe[]	0.0
DiffusionCorrectionFactorNb[]	0.0
DiffusionCorrectionFactorCl[]	0.0

Note: FractionOfRepositoryWasteInGlassForm[] is already equal to 0.0; thereby, eliminating the glass model from consideration.



4.2 The file, "tpa.inp" from the 4.1j distribution is required. Make the following changes to this file:

**Table 2. Test Case B TPA.INP Modifications**

Parameter	Value
OutputMode	1
StopAtSubarea	1
MaximumTime[yr]	1.0e4

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

none

7.0 Utility Program Needed to Perform the Test

none

8.0 Test Description

8.1 Objective: This test verifies that the TPA5.0Beta releaset module will generate comparable release rates to that from TPA 4.1j when the code is executed without the diffusion model and no protection is provided by the cladding.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: ebsnef.dat, ebstrh.dat, ebsflo.dat, ebsrel.inp, ebspac.nuc

8.5 Procedure:

1. For Test Case A, from the <<Run Directory>> for Test Case A invoke the TPA code by typing the following: tpa.e > PA-SCR-411\_PL1-A.out &.
2. Verify the code runs to completion without aborting.
3. Copy the files identified in Section 8.4 to the following directory <<Run Directory>>/data-A.
4. For Test Case B, from the <<Run Directory>> for Test Case B invoke the TPA code by typing the following: tpa.e > PA-SCR-411\_PL1-B.out &.
5. Verify the code runs to completion without aborting.
6. Copy the files identified in Section 8.4 to the following directory <<Run Directory>>/data-B. Copy the releaset.e executable to this directory as well.
7. Replace file <<Run Directory>>/data-B/ebsflo.dat with <<Run Directory>>/data-A/ebsflo.dat
8. Make the following changes to file <<Run Directory>>/data-B/ebstrh.dat:
  - a. Copy the time step information for time steps 1 through 201 from <<Run Directory>>/data-A/ebstrh.dat
9. Make the following changes to file <<Run Directory>>/data-B/ebsrel.inp:

10. Invoke the releaset executable from <<Run Directory>>/data-B by typing releaset.e > PL1-B.out.

Parameter	Value
sawetfrac	8.81843E-01
defect	8.50000E+02
idefect	1.10000E+01
wetfrac(1)	8.08787E-01
preexpo	1.917E+05
r0z	1.92263E-03

11. Compare the release rates between Test Cases A and B in files <<Run Directory>>/data-A/ebsnef.dat and <<Run Directory>>/data-B/ebsnef.dat. Also compare the values in these files to hand calculated values for Tc99.

8.6 Pass/Fail Criteria: TPA code version 4.1j and TPA code version 5.0Beta1 generate similar release rates.

## 9.0 Test Results

9.1 Output and Supporting Files: Files and executables shall be archived on CD ROM.

9.2 Criterion 1: The current version of the code (5.0beta1) produces similar release rates per radionuclide as code version 4.1j.

9.3 Criterion 2: The release rates for both version 5.0beta1 and 4.1j compare to hand calculated values.

#### 9.4 Overall Test Status:

This test successfully **PASSED** the criterion above.

For hand calculations, formulas were taken from the TPA code and placed in an Excel spreadsheet. Then calculations over the 201 time steps were performed for Tc99 only. The hand calculated results are included in worksheet pl-1 of file pltest.xls.

Release Rates for Tc99					
Time	Hand Calculations	Code 5.0Beta (EBSNEF. DAT)	Percent Difference 5.0 Beta	Code4.1j (EBSNEF. DAT)	Percent Difference 4.1j
7800	0.00E+00	7.95E-03	-100.00%	0.00E+00	0.00%
7850	0.00E+00	1.48E-01	-100.00%	1.25E-01	-100.00%
7900	1.48E-01	1.47E-01	1.27%	1.47E-01	1.03%
7950	1.47E-01	1.45E-01	1.27%	1.46E-01	1.03%
8000	1.46E-01	1.50E-01	-2.33%	1.50E-01	-2.56%
8500	1.44E-01	1.48E-01	-2.36%	1.48E-01	-2.57%
9000	1.41E-01	1.44E-01	-2.28%	1.45E-01	-2.49%
9500	1.37E-01	1.40E-01	-2.10%	1.40E-01	-2.30%
10000	1.31E-01	1.30E-01	1.27%	1.30E-01	1.07%

The TPA Code 4.1j produces comparable release rates as shown in the table. However, in order to generate comparable values from 4.1j, the failure time had to be artificially set to the time for onset of flow. Otherwise, there is some difference between the 4.1j results and the 5.0 beta results, but the differences are small. Code 5.0 beta also differs in the way mass of fuel (amass0) is handled and this contributes to the difference in release rates between it and the 4.1j code version. Also, there is a large difference between hand calculations and code generated results at times 7800 and 7850. This difference is due to the way hand calculations are performed in the Excel Spreadsheet. Calculations within the spreadsheet do not take advantage of the ODE integration that the code is able to use. It is also important to note that code version 5.0 beta produces a release rate at time 7800; whereas code version 4.1j does not. This is because code version 5.0 beta changed the minimum volume of water in the waste package from 1E-6 to 1E-2 liters. The waste package fills sooner and the release begins earlier.

## **PL-2 Comparison of Glass Release Model to Hand Calculations**

### **1.0 Path for Run Directory**

<<Run Directory>> = \$HOME/PA-SCR-411/test/pltest/pl-2

### **2.0 Path for Archived Results**

<<Run Directory>>

### **3.0 Environment Variables**

TPA\_TEST = \$HOME/PA-SCR-411/code50beta1

TPA\_DATA = \$HOME/PA-SCR-411/code50beta1

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, "tpa.inp" from the 5.0 beta distribution is required. Make the following changes to this file:

**Table 5. TPA.INP Modifications**

Parameter	Value
OutputMode	1
SelectAppendFiles	7
StopAtSubarea	1
RationOfLastToFirstTimeStepInCompliancePeriod	1.0
LogOfGlassDissolutionConstantHighRange[]	6.9
GlassActivationEnergyHighRange[Kj/mol-K]	80.0
FractionOfRepositoryWasteInGlassForm[]	1.0
DiffusionCorrectionFactorCm[]	0.0
DiffusionCorrectionFactor_U[]	0.0
DiffusionCorrectionFactorAm[]	0.0
DiffusionCorrectionFactorNp[]	0.0
DiffusionCorrectionFactorPu[]	0.0
DiffusionCorrectionFactorTh[]	0.0
DiffusionCorrectionFactorRa[]	0.0
DiffusionCorrectionFactorPb[]	0.0
DiffusionCorrectionFactorCs[]	0.0
DiffusionCorrectionFactor_I[]	0.0
DiffusionCorrectionFactorTc[]	0.0
DiffusionCorrectionFactorNi[]	0.0
DiffusionCorrectionFactor_C[]	0.0
DiffusionCorrectionFactorSe[]	0.0
DiffusionCorrectionFactorNb[]	0.0
DiffusionCorrectionFactorCl[]	0.0

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

6.1 The tpa code is invoked for this process level test to allow the releaset module to run on one subarea. The output data for subarea 1 is compared to hand calculated values for glass release.

7.0 Utility Program Needed to Perform the Test

none

8.0 Test Description

8.1 Objective: This test verifies that the radionuclide release rates for glass release generated by releaset compare to hand calculated glass release rates.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: ebsrel.ech, ebsrel.rlt, and ebsrel.cum

8.5 Procedure:

1. From the <<Run Directory>> invoke the TPA code by typing the following: tpa.e > PA-SCR-411\_PL2.out &.
2. Verify the code runs to completion without aborting.
3. Hand calculate the glass release rates for Tc99 and compare the hand calculated results to those generated in ebsrel.rlt.

8.6 Pass/Fail Criteria: Hand calculated values for glass release compare to those generated by the TPA code.

9.0 Test Results

9.1 Output and Supporting Files: Files and executables shall be archived in directory <<Run Directory>>.

9.2 Criterion 1: Hand calculated values for glass release compare to those generated by the TPA code and displayed in file ebsrel.rlt.

### 9.3 Overall Test Status:

This test successfully **PASSED** the criterion above.

For hand calculations, formulas were taken from the TPA code and placed in an Excel spreadsheet. Then calculations over the 201 time steps were performed for Tc99 only. The hand calculated results are included in worksheet pl-2 of file pltest.xls

Release Rates for Tc99			
Time	Hand Calculations	Code 5.0Beta (EBSREL.RLT)	Percent Difference 5.0 Beta
7800	0.00E+00	1.00E-02	-100.00%
7850	0.00E+00	1.86E-01	-100.00%
7900	1.87E-01	1.84E-01	1.54%
7950	1.85E-01	1.82E-01	1.53%
8000	1.83E-01	1.87E-01	-2.08%
8500	1.76E-01	1.79E-01	-2.09%
9000	1.67E-01	1.71E-01	-2.01%
9500	1.57E-01	1.60E-01	-1.83%
10000	1.46E-01	1.44E-01	1.55%

The TPA Code 5.0Beta produces release rates that are comparable to hand calculated values as shown in the table. There is a large difference between hand calculations and code generated results at times 7800 and 7850. This difference is due to the way hand calculations are performed in the Excel Spreadsheet. Calculations within the spreadsheet do not take advantage of the ODE integration that the code is able to use.

## **PL-3 Comparison of Advective Flux with Diffusive and Advective Flux**

### **1.0 Path for Run Directory**

For Test Case A, <<Run Directory>> = \$HOME/PA-SCR-411/test/pltest/pl-3/TestA

For Test Case B, <<Run Directory>> = \$HOME/PA-SCR-411/test/pltest/pl-3/TestB

### **2.0 Path for Archived Results**

<<Run Directory>>

### **3.0 Environment Variables**

TPA\_TEST = \$HOME/PA-SCR-411/code50beta1

TPA\_DATA = \$HOME/PA-SCR-411/code50beta1



#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, "tpa.inp" from the 5.0 beta distribution is required. Make the following changes to this file for Test Case A: (These settings eliminate diffusive flux and cladding protection.)

**Table 7. TPA.INP Modifications Test Case A**

<b>Parameter</b>	<b>Value</b>
OutputMode	1
SelectAppendFiles	7
StopAtSubarea	1
RatioOfLastToFirstTimeStepInCompliancePeriod	1.0
LogOfGlassDissolutionConstantHighRange[]	6.9
GlassActivationEnergyHighRange[Kj/mol-K]	80.0
FractionOfRepositoryWasteInGlassForm[]	0.0
FuelRodHalfLength[m]	0.0
DiffusionCorrectionFactorCm[]	0.0
DiffusionCorrectionFactor_U[]	0.0
DiffusionCorrectionFactorAm[]	0.0
DiffusionCorrectionFactorNp[]	0.0
DiffusionCorrectionFactorPu[]	0.0
DiffusionCorrectionFactorTh[]	0.0
DiffusionCorrectionFactorRa[]	0.0
DiffusionCorrectionFactorPb[]	0.0
DiffusionCorrectionFactorCs[]	0.0
DiffusionCorrectionFactor_I[]	0.0
DiffusionCorrectionFactorTc[]	0.0
DiffusionCorrectionFactorNi[]	0.0
DiffusionCorrectionFactor_C[]	0.0
DiffusionCorrectionFactorSe[]	0.0
DiffusionCorrectionFactorNb[]	0.0
DiffusionCorrectionFactorCl[]	0.0

4.2 Make the following changes to “tpa.inp” for Test Case B:

**Table 8. TPA.INP Modifications Test Case B**

Parameter	Value
OutputMode	1
SelectAppendFiles	7
RatioOfLastToFirstTimeStepInCompliancePeriod	1.0
LogOfGlassDissolutionConstantHighRange[]	6.9
GlassActivationEnergyHighRange[Kj/mol-K]	80.0
StopAtSubarea	1
FractionOfRepositoryWasteInGlassForm[]	0.0
FuelRodHalfLength[m]	0.0

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

6.1 The tpa code is invoked for this process level test to allow the releaset module to run on one subarea. The output data for subarea 1 is compared to hand calculated releases for advective flux and advective combined with diffusive flux.

7.0 Utility Program Needed to Perform the Test

none

8.0 Test Description

8.1 Objective: This test verifies that the radionuclide release rates for the combined diffusive and advective flux generated by releaset compare to hand calculated release rates, and the addition of diffusive flux changes the release rates as expected.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: ebsrel.ech, ebsrel.rlt, and ebsrel.cum

8.5 Procedure:

1. For Test Case A, from the <<Run Directory>> invoke the TPA code by typing the following: tpa.e > PA-SCR-411\_PL3-A.out &.
2. Verify the code runs to completion without aborting.
3. Copy ebsrel.ech, ebsrel.rlt, and ebsrel.cum to ebsrel-A.ech, ebsrel-A.rlt, and ebsrel-A.cum, respectively.

4. Hand calculate the advective flux release rates for Tc99 and compare the hand calculated results to those generated in ebsrel.rlt.
  5. For Test Case B, from the <<Run Directory>> invoke the TPA code by typing the following: tpa.e > PA-SCR-367\_PL3-B.out &.
  6. Verify the code runs to completion without aborting.
  7. Copy ebsrel.ech, ebsrel.rlt, and ebsrel.cum to ebsrel-B.ech, ebsrel-B.rlt, and ebsrel-B.cum, respectively.
  8. Hand calculate the advective release rate and the combined advective and diffusive flux release rates for Tc99 and compare the hand calculated results to those generated in ebsrel.rlt.
- 8.6 Pass/Fail Criteria: Hand calculated release rates compare to those generated by the TPA code and diffusive flux changes the release rates as expected.

## 9.0 Test Results

- 9.1 Output and Supporting Files: Files and executables shall be archived in directory <<Run Directory>>.
- 9.2 Criterion 1: Hand calculated values for the advective flux release compare to those generated by the TPA code and displayed in file ebsrel.rlt.
- 9.3 Criterion 2: Hand calculated values for the combined advective and diffusive flux release compare to those generated by the TPA code and displayed in file ebsrel.rlt.
- 9.4 Criterion 3: The diffusive flux when combined with advective flux changes the release rate as expected.

## 9.5 Overall Test Status:

This test successfully **PASSED** the criterion above.

For hand calculations, formulas were taken from the TPA code and placed in an Excel spreadsheet. Then calculations over the 201 time steps were performed for Tc99 only. The hand calculated results are included in worksheet pl-3A for advective release alone and pl-3B for advective with diffusive release of file pltest.xls

The TPA Code 5.0Beta produces release rates that are comparable to hand calculated values as shown in the table. There is a large difference between hand calculations and code generated results at times 900, 1000, 7800 and 7850. This difference is due to the way hand calculations are performed in the Excel Spreadsheet. Calculations within the spreadsheet do not take advantage of the ODE integration that the code is able to use.

In addition, the comparison between advective release alone and advective with diffusive release shows the results expected. After 7800 years the release with advective flux alone should be slightly higher than the release with both advective and diffusive flux.

Release Rates for Tc99						
Time	Hand Calcs for Advective Flux	Code 5.0Beta (EBSREL .RLT)	Percent Diff 5.0 Beta	Hand Calcs for Advective and Diffusive Flux	Code 5.0 Beta (EBSREL .RLT) for Advective and Diffusive	Percent Diff
900	0.00E+00	0.00E+00	0.00%	0.00E+00	2.06E-03	-100.00%
1000	0.00E+00	0.00E+00	0.00%	2.04E-03	2.33E-03	-12.41%
1200	0.00E+00	0.00E+00	0.00%	2.11E-03	2.11E-03	-0.09%
1500	0.00E+00	0.00E+00	0.00%	1.82E-03	1.79E-03	1.91%
3000	0.00E+00	0.00E+00	0.00%	9.18E-04	9.03E-04	1.70%
7800	0.00E+00	7.95E-03	-100.00%	2.68E-04	7.54E-03	-96.45%
7850	0.00E+00	1.48E-01	-100.00%	2.65E-04	1.47E-01	-99.82%
7900	1.48E-01	1.47E-01	1.27%	1.47E-01	1.46E-01	1.28%
7950	1.47E-01	1.45E-01	1.27%	1.46E-01	1.44E-01	1.28%
8000	1.46E-01	1.50E-01	-2.33%	1.45E-01	1.49E-01	-2.32%
8500	1.44E-01	1.48E-01	-2.36%	1.43E-01	1.47E-01	-2.34%
9000	1.41E-01	1.44E-01	-2.28%	1.40E-01	1.43E-01	-2.27%
9500	1.37E-01	1.40E-01	-2.10%	1.36E-01	1.39E-01	-2.09%
10000	1.31E-01	1.30E-01	1.27%	1.30E-01	1.29E-01	1.27%

## **PL-4 Comparison of Cladding Failure to Hand Calculations**

### **1.0 Path for Run Directory**

<<Run Directory>> = \$HOME/PA-SCR-411/test/pltest/pl-4

### **2.0 Path for Archived Results**

<<Run Directory>>

### **3.0 Environment Variables**

TPA\_TEST = \$HOME/PA-SCR-411/code50beta1

TPA\_DATA = \$HOME/PA-SCR-411/code50beta1

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, "tpa.inp" from the 5.0 beta distribution is required. Make the following changes to this file: (These settings eliminate diffusive flux and the glass model but allow cladding protection.)

**Table 10. TPA.INP Modifications**

<b>Parameter</b>	<b>Value</b>
OutputMode	1
SelectAppendFiles	7
StopAtSubarea	1
RatioOfLastToFirstTimeStepInCompliancePeriod	1.0
LogOfGlassDissolutionConstantHighRange[]	6.9
GlassActivationEnergyHighRange[Kj/mol-K]	80.0
FractionOfRepositoryWasteInGlassForm[]	0.0
DiffusionCorrectionFactorCm[]	0.0
DiffusionCorrectionFactor_U[]	0.0
DiffusionCorrectionFactorAm[]	0.0
DiffusionCorrectionFactorNp[]	0.0
DiffusionCorrectionFactorPu[]	0.0
DiffusionCorrectionFactorTh[]	0.0
DiffusionCorrectionFactorRa[]	0.0
DiffusionCorrectionFactorPb[]	0.0
DiffusionCorrectionFactorCs[]	0.0
DiffusionCorrectionFactor_I[]	0.0
DiffusionCorrectionFactorTc[]	0.0
DiffusionCorrectionFactorNi[]	0.0
DiffusionCorrectionFactor_C[]	0.0
DiffusionCorrectionFactorSe[]	0.0
DiffusionCorrectionFactorNb[]	0.0
DiffusionCorrectionFactorCl[]	0.0

## 5.0 Special Diagnostic Code Modifications Required: None

## 6.0 Program Modes to be Used

6.1 The tpa code is invoked for this process level test to allow the releaset module to run on one subarea. The output data for subarea 1 is compared to hand calculated releases.

## 7.0 Utility Program Needed to Perform the Test

none

## 8.0 Test Description

8.1 Objective: This test verifies that the radionuclide release rates for advective flux under the cladding model compare to hand calculated release rates.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: ebsrel.ech, ebsrel.rlt, and ebsrel.cum

8.5 Procedure:

1. From the <<Run Directory>> invoke the TPA code by typing the following: tpa.e > PA-SCR-411\_PL4.out &.
2. Verify the code runs to completion without aborting.
3. Hand calculate the advective flux release rates under the cladding model for Tc99 and compare the hand calculated results to those generated in ebsrel.rlt.

8.6 Pass/Fail Criteria: Hand calculated release rates compare to those generated by the TPA code.

## 9.0 Test Results

9.1 Output and Supporting Files: Files and executables shall be archived in directory <<Run Directory>>.

9.2 Criterion 1: Hand calculated values for the advective flux release rates under the cladding model compare to those generated by the TPA code and displayed in file ebsrel.rlt.

9.3 Criterion 2: Release rates with cladding protection are lower than those without cladding protection..

## 9.4 Overall Test Status:

This test successfully **PASSED** the criterion above.

For hand calculations, formulas were taken from the TPA code and placed in an Excel spreadsheet. Then calculations over the 201 time steps were performed for Tc99 only. The hand calculated results are included in worksheet pl-4 of file pltest.xls

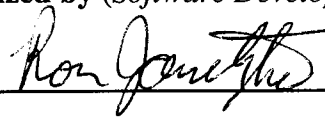


The TPA Code 5.0Beta produces release rates that are comparable to hand calculated values as shown in the table. There is a large difference between hand calculations and code generated results at times 7800 and 7850. This difference is due to the way hand calculations are performed in the Excel Spreadsheet. Calculations within the spreadsheet do not take advantage of the ODE integration that the code is able to use.

It is also important to note that the release rates under the cladding model shown in the table below are significantly lower than those generated in previous tests without the cladding model.

Release Rates for Tc99			
Time	Hand Calculations	Code 5.0Beta (EBSREL.RLT)	Percent Difference 5.0 Beta
7800	0.00E+00	7.12E-04	-100.00%
7850	0.00E+00	1.33E-02	-100.00%
7900	1.32E-02	1.32E-02	0.29%
7950	1.31E-02	1.31E-02	0.28%
8000	1.31E-02	1.35E-02	-3.28%
8500	1.32E-02	1.36E-02	-3.28%
9000	1.32E-02	1.36E-02	-3.18%
9500	1.31E-02	1.35E-02	-2.98%
10000	1.29E-02	1.29E-02	0.38%



## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-412	<b>Software Title and Version:</b> TPA 5.0 betaD	<b>/Project No:</b> 20-06002-113
<b>Affected Software Module(s), Description of Problem(s):</b> szft.f  <p>Values for the array pori (immobile porosity), the array rdi, and the variable pormix are not range checked. If the layer is 'SAV', pori and rdi are set to 0.0.</p> <p>If pormix is allowed to be zero, a divide by zero will occur. If pori or rdi is set to zero, NEFTRAN will abort.</p>		
<b>Change Requested by:</b> Carol Scherer Date: 10-30-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 10-30-02 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  <p>In szft.f: after ImmobilePorosity is read in, add code to verify that the value read is greater than 0.0 and less than 1.0. After pormix is read in, add code to verify that the value read is greater than 0.0. After Immobile RDs are read in, add code to verify that the value read is greater than 0.0. If the layer is 'SAV', set pori to 0.000001 and rdi to 1.0.</p> <p>See attachment for details.</p>		
<b>Implemented by:</b> Carol Scherer 	<b>Date:</b> 11-13-02	
<b>Description of Acceptance Tests:</b>  <p>The test plan (test_plan_412.txt) and test results are in the attached CD. The test plan contained one system level test with 25 subtests in which parameters in tpa.inp are set to values which had previously caused errors. The TPA program is verified to catch these values and produce appropriate error messages.</p>		
<b>Tested by:</b> Bob Rogers 	<b>Date:</b> 1-14-03	

## Description of Change(s) or Problem Resolution (continued):

Diff file modified code versus TPA 5.0beta code

SZFT:

```
945,948c945
< c css - 11/13/2002: SCR #412 - immobile rd cannot be 0.0
< cc          rdi(idelm(nelm),k) = 0.0d0
<          rdi(idelm(nelm),k) = 1.0d0
< c end test: SCR #412
---
>          rdi(idelm(nelm),k) = 0.0d0
957,969d953
< ccc
< c css - 11/13/2002: SCR #412
< c  add value range check for immobile rds rdi()
< c  a zero value for immobile rd will cause NEFTRAN to abort
<          if (rdi(idelm(nelm),k) .lt. 1.0) then
<              print *, ' ***>>> Error in szft:prenefmksa <<<*** '
<              print *, ' Immobile rd value out of range - must be',
<              &          ' greater than or equal to 1.0'
<              print *, ' ', spname, ' = ', rdi(idelm(nelm),k)
<              print *, ' '
<              STOP
<          endif
< ccc - SCR #412: end change
1015,1027d998
< ccc
< c css - 10/30/2002: SCR #412
< c  add value check for pormix
< c  a zero value could result in a divide by zero
<          if (pormix .le. 0.0) then
<              print *, ' ***>>> Error in szft:prenefmksa <<<*** '
<              print *, ' Pormix value out of range - must be',
<              &          ' greater than 0.0 '
<              print *, ' ', spname, ' = ', pormix
<              print *, ' '
<              STOP
<          endif
< ccc - SCR #412: end change
1059,1062c1030
< c css - 11/13/2002: SCR #412: porosity cannot be zero
< ccc          por(i) = 0.0d0
< c end change: SCR #412
<          por(i) = 0.000001d0
---
>          por(i) = 0.0d0
1070,1082d1037
< ccc
< c css - 10/30/2002: SCR #412
< c  add value range check for immobile porosity por(i)
< c  a zero value for immobile porosity will cause NEFTRAN to abort
<          if ((por(i) .le. 0.0) .or. (por(i) .ge. 1.0)) then
```

```
<          print *, ' ***>>> Error in szft:prenefmksa <<<*** '
<          print *, ' Porosity value out of range - must be',
<      &          ' greater than 0.0 and less than 1.0'
<          print *, ' ', spname, ' = ', por(i)
<          print *, ' '
<          STOP
<      endif
< ccc - SCR #412:  end change
```

test\_plan\_412.txt  
\*\*\* Test Plan for SCR-412 \*\*\*

\*Test Plan Name: SCR-412 Added range checking and fix for divide-by-zero errors in SZFT.

\*Tested by: Robert Rogers

\*Date: January 14, 2003

\*Host Machine: masaya.geophysics.swri.edu

\*Host OS: SuSE Linux

\*Baseline Version:  
5.0betaD

\*Test Version:  
5.0betaE

\*\* System Level Tests \*\*

-----  
\*SL-1. Verification of range checking for "ImmobileRD\_\*", "FracturePorosity\_", and "ImmobilePorosity\_\*" and fix of divide-by-zero errors in SZFT. The immobile RD and porosity values used in module szft were initially set to zero, which caused a divide-by-zero error in some cases. The fix under this SCR set the initial value to a very small number, to avoid this error. Also, range checking was added to validate an acceptable value for these parameters to avoid this error.

\*Path for run directory:  
/home/brogers/tpa/tpa50betaE

\*Path for archive of results:  
/home/brogers/tpa/test/scr412\_test

\*Environment variables:  
TPA\_DATA=/home/brogers/tpa/tpa50betaE  
TPA\_TEST=/home/brogers/tpa/tpa50betaE

\*Special input files or modifications to input files required:  
See modifications to tpa.inp described below.

\*Special diagnostic code modifications required:  
For test 25, after line 1054 of szft.f (listed below):  
pormix = valuesp(ispquery( spname ))  
add the following line  
pormix = 0.0

\*Program modes to be used (append flags, scenario/model switches, etc.):  
For each test run, set one of the following parameters in tpa.inp to the value specified to verify its range checking.

- (1) 'ImmobileRD\_STFF\_I' to 0.9
- (2) 'ImmobileRD\_STFF\_Tc' to 0.9
- (3) 'ImmobileRD\_STFF\_C1' to 0.9
- (4) 'ImmobileRD\_STFF\_Cm' to 0.9
- (5) 'ImmobileRD\_STFF\_Ra' to 0.9
- (6) 'ImmobileRD\_STFF\_Pb' to 0.9
- (7) 'ImmobileRD\_STFF-Cs' to 0.9
- (8) 'ImmobileRD\_STFF\_Ni' to 0.9

test\_plan\_412.txt

- (9) 'ImmobileRD\_STFF\_C' to 0.9
- (10) 'ImmobileRD\_STFF\_Se' to 0.9
- (11) 'ImmobileRD\_STFF\_Nb' to 0.9
- (12) 'ImmobileRD\_STFF\_Ja' to 0.9
- (13) 'ImmobileRD\_STFF\_Jc' to 0.9
- (14) 'ImmobileRD\_STFF\_Jp' to 0.9
- (15) 'ImmobileRD\_STFF\_Jt' to 0.9
  
- (16) 'FracturePorosity\_TSw\_' to constant, 0.0
- (17) 'FracturePorosity\_CHnv' to constant, 0.0
- (18) 'FracturePorosity\_CHnz' to constant, 0.0
- (19) 'FracturePorosity\_PPw\_' to constant, 0.0
- (20) 'FracturePorosity\_UCF\_' to constant, 0.0
- (21) 'FracturePorosity\_BFw\_' to constant, 0.0
- (22) 'FracturePorosity\_UFZ\_' to constant, 0.0
  
- (23) 'ImmobilePorosity\_STFF' to 0.0
- (24) 'ImmobilePorosity\_STFF' to 1.0

\*Utility scripts needed to perform the test:  
none

\*Utility codes needed in the analysis of the test data:  
none

\*Test description

Objective:

The test objective is to verify that SZFT does not crash due to divide-by-zero errors and that the range checking for the parameters "ImmobileRD\_\*", "FracturePorosity\_\*", and "ImmobilePorosity\_\*" listed above is working.

The range for "ImmobileRD\_\*" is greater than or equal to 1.0.

The range for "FracturePorosity\_\*" is greater than 0.0.

The range for "ImmobilePorosity\_\*" is greater than 0.0 and less than 1.0.

Assumptions:  
none

Constraints:  
none

Output files to compare or examine:

The data which is normally output to the screen during the execution of tpa.e will be redirected to a file.

Step-by-step test procedure:

1. Run tpa.e for tpa50betaE. Redirect the screen output as follows:  
tpa.e > szft\_test\_run#.txt  
where the "#" is replace with the test run number listed above.
2. Verify that SZFT did not fail due to a divide-by-zero error.
3. For each test run, verify that an error message (examples listed below) was produced and that the value of the parameter listed in the error message was as set above.

For "ImmobileRD\_\*" tests 1-15:

\*\*\*>>> Error in szft:prenefmksa <<<\*\*\*

Immobile rd value out of range - must be greater than or equal to 1.0

ImmobileRD\_STFF\_I = 0.9000000000000000E+00

```

                                test_plan_412.txt
For "FracturePorosity_" tests 16-22:
  ***>>> Error in uzft:prenefmks <<<***
  Porosity value out of range - must be greater than 0.0 and less than 1.0
  FracturePorosity_TSw_ = 0.000000000000000E+00

For "ImmobileRD_" tests 23-24:
  ***>>> Error in szft:prenefmksa <<<***
  Porosity value out of range - must be greater than 0.0 and less than 1.0
  ImmobilePorosity_STFF = 0.000000000000000E+00

For "FracturePorosity_" test 25:
  ***>>> Error in szft:prenefmksa <<<***
  Pormix value out of range - must be greater than 0.0
  FracturePorosity_BFw_ = 0.000000000000000E+00

```

Pass/fail criteria:

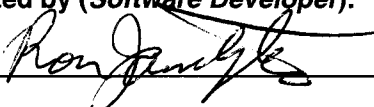
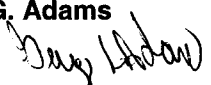

Verify the results of steps 2 and 3. Note that for tests 16-22 the error messages are actually produced by uzft. Since uzft caught the error-causing values for these parameters, szft.f was modified in test 25, as described in the section "Special diagnostic code modifications required".

\*Test Results

See the files in scr412\_test for results; the naming convention for the files follow that described in step 1 of the procedure. All error messages were produced, and no divide-by-zero errors occurred.

Overall Test Status (PASS/FAIL): PASS

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-413	<b>Software Title and Version:</b> TPA 5.0betaG	<b>/Project No:</b> 20-06002-01.113
<b>Affected Software Module(s), Description of Problem(s):</b> uzflow.f, tpa.inp, estimator.f, init_itym.f, itym.i, itym.dat, maydtbl.dat, smaydtbl.dat  This SCR addresses defects identified during the ITYM/UZFLOW Code Review conducted on 11-4-02. The areas this SCR will address are included on the attachment, "Description of Problems."		
<b>Change Requested by:</b> R. Janetzke Date: 11-11-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 11-11-02 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  The Description of Changes or Problem Resolutions are included on the attachment, "Description of Changes or Problem Resolution."		
<b>Implemented by:</b> G. Adams 	<b>Date:</b> November 25, 2002	
<b>Description of Acceptance Tests:</b>  The test plan for TPA SCR #413 consists of one process level test designed to verify that the ITYM Preprocessor output has changed as expected for a change in the current climate from 17.28 C to 17.38 C. In addition, the test plan contains one system level test designed to verify that the average infiltration can be constant and equal to the ArealAverageMeanAnnualInfiltrationAtStart[mm/yr].  The software successfully passed the process level test and system level test. The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #413."  <b>Addendum:</b> These tests were also run successfully under SuSE Linux, and the same results were achieved. The output files are located in the folder "scr413_test_linux".		
<b>Tested by:</b> G. Adams R. Rogers (Addendum) 	<b>Date:</b> December 20, 2002 January 9, 2003 (Addendum)	

## Description of Problems

### File UZFLOW.F

- 1) The previous `uzflow_init` subroutine was renamed `old_uzflow_init`. Instead of keeping the renamed subroutine in the code, rename it `uzflow_init` and comment it out. This alternative is preferable to leaving subroutines that are no longer being used.
- 2) Subroutine `calc_ainit` uses the number of pixels in a subarea and the repository to determine the fractional contribution of each subarea to infiltration. This causes the infiltration generated in file `infiltrer.res` to not correspond to the `ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]` since the rest of the TPA code calculates the area using a quadrilateral to determine the fractional contribution of each subarea.

### File ITYM.DAT

- 3) Create a base case `itym.dat` file. Include the default values for all options. Those options that are not needed for the base case will be commented out. This change was recommended because the ITYM code module will execute whether or not an option is present in the file. A user who is not familiar with the code would not know what options are available.

### File TPA.INP

- 4) It is difficult for a user unfamiliar with the UZFLOW code to understand the relationship between the following parameters: `UZFLOWSampleMode`, `UZFLOWHydraulicPropertyUncertaintyDeviation[N(0,1)]`, `ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]`, `MeanAnnualPrecipitationMultiplierAtGlacialMaximum`, and `MeanAnnualTemperatureIncreaseAtGlacialMaximum`. Therefore, the recommendation was to group all of these parameters and include specific instructions for their use as comments in `tpa.inp`.

- 5) In the section of the file marked, "Number and Location Of SubAreas[m] Based On EDA-II Design," the identifier for subarea 6 is `edaii 6-c` it should be `edaii 6-cw`. For subareas 9 and 10, the fifth coordinate should match the first coordinate to generate a closed polygon for the subarea.

### Test Plan for the UZFLOW/ITYM code

- 6) Add a system level test to the test plan that eliminates variation over time from the UZFLOW code. This test would include, for example, 1) Setting the `UZFLOWSampleMode` to 1 to eliminate the effects of standard deviation on mean annual infiltration. 2) Setting the `ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]` to a constant value, 3) Setting the `MeanAnnualPrecipitationMultiplierAtGlacialMaximum` to 1.0 to eliminate the variation in precipitation over time, and 4) Setting the `MeanAnnualTemperatureIncreaseAtGlacialMaximum` to 0.0 to eliminate the variation in infiltration over time.

### ITYM/UZFLOW

- 7) There is a minor difference between the temperature of the current climate used in the UZFLOW modules versus the temperature used in the ITYM preprocessor. The UZFLOW module uses a value of 17.38 degrees Celcius, the ITYM code uses the value 17.28 degrees Celcius. The code needs to be modified such that the temperature of the current climate corresponds between the UZFLOW code and the ITYM preprocessor.



## Description of Changes or Problem Resolution

### File UZFLOW.F

- 1) Renamed the previous uzflow\_init routine (old\_uzflow\_int) uzflow\_init and commented it out.
- 2) Modified subroutine calc\_ainit to use subarea areas instead of number of pixels to determine the fractional contribution by each subarea.

### File ITYM.DAT/INIT\_ITYM.F/ITYM.I

- 3) To include the default values for all options the following changes were made:

Added the following default options to itym.dat:

MergeDListNum	0
do_MAI_DTBL	0
do_MAY_DTBL	1
do_sMAY_DTBL	1
randomseed	5.05187067d8
MAP_scheme	Hevesi99
MAT_scheme	Stothoff96
MAV_scheme	Stothoff96

Removed the following lines from itym.dat:

#zDTBLout	maidtbi.dat
-----------	-------------

Modified files init\_itym.f and itym.i with the following:

Removed num\_calc\_refine/nCalcRefine. It was no longer being used.  
Removed scale\_thick/scale\_thick. It was no longer being used.  
Removed Sampling/zSampling. It was no longer being used.  
Removed zSkyFrac/zSkyFrac. It was no longer being used.

### File TPA.INP

- 4) Modified the tpa.inp file in accordance with the following:
  - a) Described how ArealAverageMeanAnnualInfiltrationAtStart changes for the different sample modes.
  - b) Described how UZFLOWHydraulicPropertyUncertaintyDeviation[N(0,1)] changes for the different sample modes.
  - c) Grouped the following parameters:
    - UZFLOWSampleMode
    - ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]
    - UZFLOWHydraulicPropertyUncertaintyDeviation[N(0,1)]
    - MeanAnnualPrecipitationMultiplierAtGlacialMaximum
    - MeanAnnualTemperatureIncreaseAtGlacialMaximum[degC]
- 5) Modified the tpa.inp file in accordance with the following:
  - a) Changed edali 6-c to edali 6-cw
  - b) Modified the fifth coordinate for subareas 9 and 10 to match the first coordinate. Therefore, the fifth coordinate for subarea 9 was changed from 547732.82,4081208.07 to 547732.82,4080960.00. And, the fifth coordinate for subarea 10 was changed from 548251.91,4081034.69 to 548251.91,4080817.50.

### Test Plan for TPA SCR#413

- 6) Generated a new system level test. This new system level test (SL-1) is designed to verify that the code can produce a constant mean annual infiltration for the repository over all time steps equal to the ArealAverageMeanAnnualInfiltrationAtStart[mm/yr].

### File ESTIMATOR.F

- 7) Changed references of 17.28 degrees Celcius to 17.38 degrees Celcius.

# Test Plan for TPA SCR# 413

**Test Plan Name:** Code Review Changes to ITYM/UZFLOW

**Tested By:** George Adams

**Date:** December 17-20, 2002

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0 BetaE

**Test Version:** 5.0 BetaEmod (with modifications to the 5.0 BetaE code and input files for this SCR)

## Process Level Tests

The process level tests identified in this section are designed to test the stand-alone module, "ITYM."

### PL-1 Verification with Previous Results

#### 1.0 Path for Run Directory

For version 5.0BetaEMod:

<<Run Directory>> = \$HOME/PA-SCR-413/test/pltest/pl-1/betaemod

For version 5.0BetaE:

<<RunDirectory>> = \$HOME/PA-SCR-413/test/pltest/pl-1/betae

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

For version 5.0BetaEMod:

TPA\_TEST = \$HOME/PA-SCR-413/code50betaemod

TPA\_DATA = \$HOME/PA-SCR-413/code50betaemod

For version 5.0BetaE:

TPA\_TEST = \$HOME/PA-SCR-413/code/code50betae

TPA\_DATA = \$HOME/PA-SCR-413/code/code50betae

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, "itym.dat," from the TPA Code 5.0BetaE distribution will be used. In addition, the updated itym.dat file from the modified software (Code 5.0BetaEmod) will be used. Ensure the following parameters are set in these files:

Parameter	Value
-----------	-------

num_pixel_merge	1
num_realize_per_table	500
do_MAI_DTBL	1

## 5.0 Special Diagnostic Code Modifications Required: None

## 6.0 Program Modes to be Used

6.1 The ITYM preprocessor is run using the itym.dat file with the parameters identified in Section 4.1.

## 7.0 Utility Scripts Needed to Perform the Test: None

## 8.0 Test Description

8.1 Objective: This test verifies that the modified TPA 5.0 BetaE version of the TPA code generates Mean Annual Infiltration values that are expected for the change in current climate from 17.28 C to 17.38 C.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: maidtbl.dat, maydtbl.dat, smaydtbl.dat

8.5 Procedure:

1. Modify the itym.dat file in accordance with Section 4.1, for version 5.0BetaEmod.
2. At the command prompt from the <<Run Directory>>, type the following, "itym.e > PA-SCR-413\_PL1-A.out &." The screen output is captured to a file labeled, "PA-SCR-413\_PL1-A.out."
3. Within this file, observe the following messages, "tbl( x, y): MAP = X.XXX MAT = X.XXX MAI = X.XXX s(MAI) = X.XXX MLI = X.XXX MSI = X.XXX EsI = X.XXX." The values, "x and y" will vary between 1 and 4." The values X.XXX are the output values for the associated parameters.
4. Modify the itym.dat file in accordance with Section 4.1, for version 5.0BetaE.
5. At the command prompt from the <<Run Directory>>, type the following, "itym.e > PA-SCR-413\_PL1-B.out &." The screen output is captured to a file labeled, "PA-SCR-413\_PL1-B.out."
6. Within this file, observe the following messages, "bl( x, y): MAP = X.XXX MAT = X.XXX MAI = X.XXX s(MAI) = X.XXX MLI = X.XXX MSI = X.XXX EsI = X.XXX." The values, "x and y" will vary between 1 and 4." The values X.XXX are the output values for the associated parameters.
7. Compare the screen output for steps 3 and 6. Verify the mean annual infiltration changes as expected for a change in the current climate from 17.28 C to 17.38 C.

8.6 Pass/Fail Criteria: The ITYM preprocessor generates the same output.

## 9.0 Test Results

9.1 Test and build files will be archived on a CD labeled, "Test Plan and Test Results for TPA SCR #413."

9.2 Criterion 1: Output is generated in accordance with Section 8.5, Steps 3, 6.

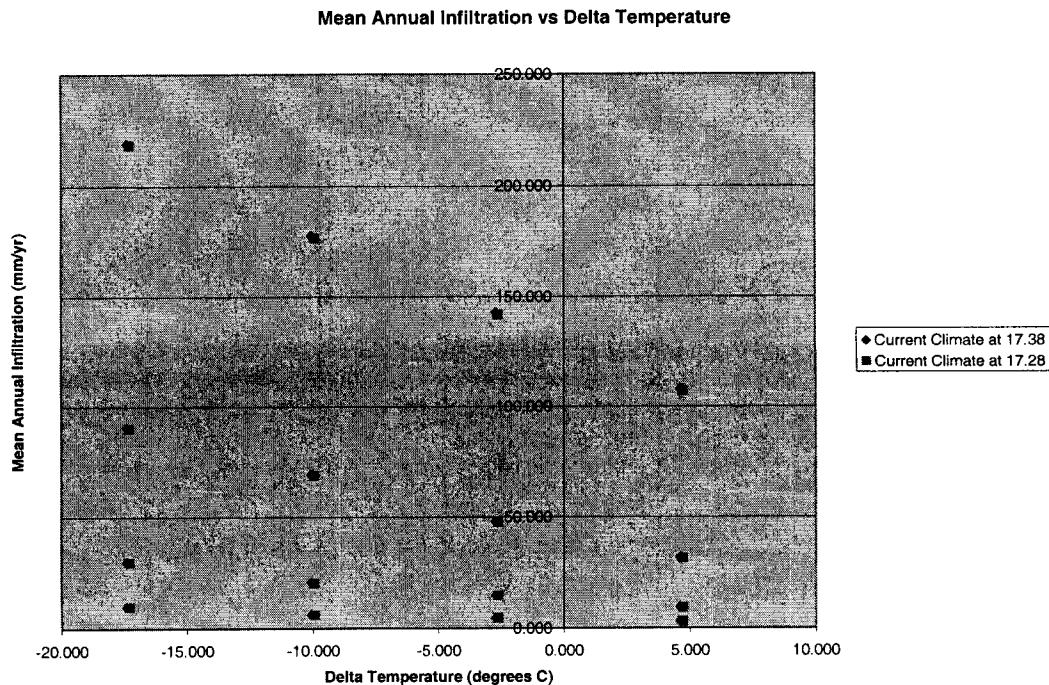
9.3 Criterion 2: Mean annual infiltration changes as expected for changes in the current climate.

#### 9.4 Overall Test Status:

This test successfully **PASSED** the criterion above.

The output files, PA-SCR-413\_PL1-A.out and PA-SCR-413\_PL1-B.out, are generated and contain information for the 16 tables as expected from Section 8.5, Steps 3 and 6.

With the current climate at 17.38 C instead of 17.28 C, the difference in temperature (delta T) at each climate is more negative. As shown in the plot below, at more negative delta T's, the Mean Annual Infiltration should be higher. Therefore, mean annual infiltration changes as expected for changes in the current climate.



Supporting data for the above plot is shown below:

Mean Annual Precip. (mm/yr)	Mean Annual Temp. (C)	Delta Temp. from Current Climate (17.38)	Mean Annual Infiltration (mm/yr) for Test A with ITYM Preprocessor set for the current climate at 17.38 C	Delta Temperature from Current Climate (17.28)	Mean Annual Infiltration (mm/yr) for Test B with the Original Code with ITYM Preprocessor set for the current climate at 17.28 C	Percentage Difference in Mean Annual Infiltration	Difference in Mean Annual Infiltration
100.000	0.000	-17.380	9.656	-17.280	9.561	0.99%	0.095
100.000	7.333	-10.047	6.219	-9.947	6.155	1.04%	0.064
100.000	14.667	-2.713	4.606	-2.613	4.554	1.14%	0.052
100.000	22.000	4.620	2.995	4.720	2.961	1.15%	0.034
200.000	0.000	-17.380	29.950	-17.280	29.703	0.83%	0.247
200.000	7.333	-10.047	20.599	-9.947	20.392	1.02%	0.207
200.000	14.667	-2.713	14.818	-2.613	14.662	1.06%	0.156
200.000	22.000	4.620	9.248	4.720	9.143	1.15%	0.105
400.000	0.000	-17.380	90.328	-17.280	89.836	0.55%	0.492
400.000	7.333	-10.047	69.134	-9.947	68.616	0.75%	0.518
400.000	14.667	-2.713	47.988	-2.613	47.540	0.94%	0.448
400.000	22.000	4.620	31.780	4.720	31.441	1.08%	0.339
800.000	0.000	-17.380	218.985	-17.280	218.257	0.33%	0.728
800.000	7.333	-10.047	177.492	-9.947	176.439	0.60%	1.053
800.000	14.667	-2.713	143.048	-2.613	141.940	0.78%	1.108
800.000	22.000	4.620	107.506	4.720	106.529	0.92%	0.977

## System Level Tests

The system level test in this section is designed to test the “UZFLOW” module and verify that it can generate a constant mean annual infiltration over all time steps and realizations.

### SL-1 Verification of Constant Mean Annual Infiltration

#### 1.0 Path for Run Directory

<<Run Directory>> = \$HOME/PA-SCR-413/test/sltest/sl-1

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-413/code50betaemod

TPA\_DATA = \$HOME/PA-SCR-413/code50betaemod

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, “tpa.inp” updated for the Version 5.0BetaE modifications is required. The following changes are required in this file:

Parameter	Value
Set the tpa.inp parameters as follows:	
UZFLOWSampleMode	1
ArealAverageMeanAnnualInfiltrationAtStart[mm/yr]	8.5 {constant}
MeanAnnualPrecipitationMultiplierAtGlacialMaximum	1.0 {constant}
MeanAnnualTemperatureIncreaseAtGlacialMaximum[degC]	0.0 {constant}
NumberOfRealizations	10
OutputMode	1
SelectAppendFiles	0

#### 5.0 Special Diagnostic Code Modifications Required: None

#### 6.0 Program Modes to be Used

6.1 As specified in Section 4.1, all output files are generated for all realizations.

## 7.0 Utility Program Needed to Perform the Test

none

## 8.0 Test Description

8.1 Objective: This test verifies that the UZFLOW module will generate a constant mean annual infiltration over all time steps and realizations that is equal to the ArealAverageMeanAnnualInfiltrationAtStart[mm/yr].

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: infilper.res, uzflow.rlt

8.5 Procedure:

1. At the command prompt from the <<Run Directory>>, type the following:, "tpa.e > PA-SCR-413\_SL1.out." Screen output will be captured to PA-SCR-413\_SL1.out.
2. Within this file, observe the following message for each subarea calculation, "exec: calling uzflow." Verify that the TPA code executes to completion without aborting.
3. Upon completion, open the result file, "infilper.res." Verify the average infiltration (avinfil) equals 8.5 for all time steps and realizations.

8.6 Pass/Fail Criteria: The TPA code executes without aborting, and the average infiltration equals the ArealAverageMeanAnnualInfiltrationAtStart[mm/yr].

## 9.0 Test Results

9.1 Output and Supporting Files: Build and test files will be archived on a CD labeled, "Test Plan and Test Results for TPA SCR #413."

9.2 Criterion 1: The TPA code executes without aborting.

9.3 Criterion 2: The average infiltration equals 8.5 over all time steps and realizations.

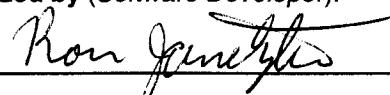
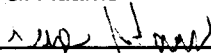
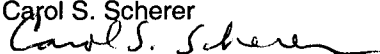
### 9.4 Overall Test Status:

The code executed without aborting. For each subarea calculation, the screen output in file PA-SCR-413\_SL1.out displayed, "exec: calling uzflow."

The value for average infiltration (avinfil) in file infilper.res equals 8.5 over all time steps and realizations. This value also matches the Mean Annual Infiltration at Start (AAI0) displayed on the screen output in file PA-SCR-413\_SL1.out.

This test successfully **PASSED** the criterion above.

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-414	<b>Software Title and Version:</b> TPA 5.0BetaE	<b>/Project No:</b> 20-06002-01.113
<p><b>Affected Software Module(s), Description of Problem(s):</b> dsfail.f, dsfailt.f, seismo2.f, exec.f, mechfail.f, seisbs1.dis, seisbs2.dis, mechfail.def, multifaf.dat, multifbe.dat, tpa.inp, ia.dat, tpanames.dbs.</p> <p>This SCR addresses Major and Minor defects identified during the DSFAIL (DS1) Code Review conducted on 11-11-02 and the SEISMO (SA1) Code Review conducted on 11-18-02. In addition, this SCR addresses changes to the SEISMO2 module following its initial implementation. The areas this SCR will address are included on the attachment, "Description of Problems/Changes."</p>		
<b>Change Requested by:</b> R. Janetzke Date: 11-11-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 11-11-02 	
<p><b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b></p> <p>The Description of Changes or Problem Resolutions are included on the attachment, "Description of Changes or Problem Resolution."</p>		
<b>Implemented by:</b> G. Adams 	<b>Date:</b> 12-11-02	
<p><b>Description of Acceptance Tests:</b></p> <p>The software was tested in accordance with the Test Plan for TPA SCR #414. This test plan consisted of one process level test designed to compare the MECHFAIL standalone code module results to hand calculated (Excel Spreadsheet) values. The test plan also contained three system level tests designed to verify the integration of the SEISMO2/DSFAIL/MECHFAIL code into the current TPA code.</p> <p>The software successfully passed the process level test and all system level tests. The software, build directories, and test results are contained on a CD labeled, " TPA SCR #414."</p>		
<b>Tested by:</b> Carol S. Scherer 	<b>Date:</b> 1-10-03	



## Description of Problems/Changes

=====DSFAIL=====

### File DSFAIL.F

- 1) The header needs to indicate that this module was implemented for Version 5.0 of the TPA code.
- 2) There was one misspelling. The name Pensado was misspelled Pendado.
- 3) Change NRC contact to Chris Grossman.

### File EXEC.F

- 4) Add the drip shield failure time to DSFAIL.RLT and DSFAIL.RES.
- 5) Create a new file called dsfail.res. Place the fraction of drip shields failed versus time in this new file.
- 6) Enhance the header text in file seismo.rlt. Make the column headers more understandable.

### File DSFAIL.F/EXEC.f/EBSREL.F/EBSFAIL.F/EBSTRH.DAT

- 7) Instead of using the first TPA time step after drip shield failure to identify the time of drip shield failure, use the interpolated corrosion failure time from DSFAIL. This time is more precise than the next higher TPA time step. This change will affect the data file EBSTRH.DAT used as an input to RELEASET.

### File EXEC.F/EBSREL.F/RELEASET.F

- 8) Look for consistency between the Waste Package Failure at the top and the Waste Package Failure at the bottom from the seismic analysis. If a waste package failure occurs at the bottom, then the flow-through model should be used in the analysis. However, the code is not currently setup to switch between flow-through and bathtub models. There are two options to consider: Option 1 is to switch the releaset code to flow-through analysis for bottom waste package failures. Option 2 is to print a warning to the screen if the bathtub model is being used but the failure mechanism is generating bottom failures.

### File DSFAILT.F

- 9) An error message is not correct. It currently displays, "Error: minimum fluoride must be greater than maximum fluoride." The message should display, "Error: maximum fluoride must be greater than minimum fluoride."

### File DSFAIL.F/SEISMO2.F/EXEC.F

- 10) Invoke the DSFAIL code on a subarea basis. This will also require making the SEISMO code run on a subarea basis.

### File DSFAIL.RES

- 11) Create a result file for drip shield failure that is similar to the WPSFAIL.RES file.
- 12) Accumulate drip shield failures similar to the way CUMFAIL is invoked for waste package failures. One note is that there are no initial failures for the drip shield; whereas, there may be initial failures for the waste package.

### Files MULTIFAF.DAT/MULTIFBE.DAT

- 13) These files for the code50beta release contain the data that was used for testing the software rather than the actual required values. Therefore, these files need to be modified to contain the correct data.

=====SEISMO2/MECHFAIL=====

### File SEISMO2.F/MECHFAIL.F

- 1) Impact Mitigation Height corresponds to a one-half meter thickness of rockfall rubble above the drip shield crown. Make the one-half meter input to Impact Mitigation Height a parameter in TPA.INP.
- 2) Modify the SEISMO module to account for direct rock impacts on the waste package. Currently the code only accounts for rock impacts on the drip shield. The drip shield may then be forced into the waste package.

3) Calculate the static rockfall load (tonnes/m) needed to initiate creep in the drip shield plate using the following equation:

$$L_{plate} = [4.903 \times 10^0] + [5.120 \times 10^{-1}]L_{buckling} - [1.130 \times 10^{-3}]L_{buckling}^2$$

where  $L_{plate}$  is the static rockfall load (tonnes/m) needed to initiate creep in the drip shield plate and  $L_{buckling}$  is the drip shield buckling load (tonnes/m).

4) Convert the static load acting on the drip shield ( $F_s$ ) in kg/m to tonnes/m by dividing by 1000 kg/tonne.

5) Compare the static load acting on the drip shield ( $F_s$ ) to  $L_{plate}$ . If  $F_s \geq L_{plate}$ , then initiate creep in the drip shield plate.

6) Calculate the static rockfall load (tonnes/m) needed to initiate creep in the drip shield bulkhead using the following equation:

$$L_{bulkhead} = [1.277 \times 10^1] + [3.572 \times 10^{-1}]L_{buckling} + [2.703 \times 10^{-4}]L_{buckling}^2$$

where  $L_{bulkhead}$  is the static rockfall load (tonnes/m) needed to initiate creep in the drip shield bulkhead, and  $L_{buckling}$  is the drip shield buckling load (tonnes/m).

7) Compare the static load acting on the drip shield ( $F_s$ ) to  $L_{bulkhead}$ . If  $F_s \geq L_{bulkhead}$ , then initiate creep in the drip shield bulkhead.

8) After drip shield buckling load (kg/m) is sampled, divide the sampled value by 1000 kg/tonne to convert the sampled value to tonnes/m.

9) Replace references to threshold height in the code by impact mitigation height.

10) As part of seismic analysis, discrete rock blocks have an effect when the drift degradation zone failure height is less than or equal to the impact mitigation height. However, as part of discrete rock block impact analysis, the drift degradation zone failure height may become greater than the impact mitigation height. If this is the case, then discrete rock block impacts can only be analyzed up to the impact mitigation height. Above the impact mitigation height, the damage caused by the static rockfall load would have to be analyzed.

11) The calculation of additional drift degradation zone failure height will be moved to after the check for engineered backfill in place. This occurs during the seismic analysis when the drift degradation zone failure height is at or below the impact mitigation height.

12) The abstraction for drip shield dynamic plate plastic strain and drip shield dynamic bulkhead plastic strain could generate negative plastic strains for low kinetic energy impacts. Therefore, if the plastic strain is less than zero (0), it will be set to zero (0).

13) Convert the rock block mass from kg to tonnes by dividing by 1000 kg/tonne.

14) Update the drip shield dynamic displacement using the following:

$$ds\_dyn\_displacement = [7.720 \times 10^{-3}]M + [3.402 \times 10^{-3}]M^2 - [3.544 \times 10^{-4}]M^3 + [1.041 \times 10^{-4}]MV_{rock} + [1.443 \times 10^{-3}]MV_{rock}^2$$

where  $M$  is the rock block mass in tonnes/m and  $V_{rock}$  is the rock block impact velocity in m/s

15) Update the drip shield dynamic plate plastic strain using the following:

$$ds\_dyn\_plate\_plastic\_strain = -[5.229 \times 10^{-2}] - [8.765 \times 10^{-3}]M + [1.338 \times 10^{-2}]MV_{rock} + [1.156 \times 10^{-4}]MV_{rock}^2$$

where  $M$  is the rock block mass in tonnes/m and  $V_{rock}$  is the rock block impact velocity in m/s

16) Update the drip shield dynamic bulkhead plastic strain using the following:

$$ds\_dyn\_bulk\_head\_plastic\_strain = -[7.877 \times 10^{-3}] + [1.195 \times 10^{-3}]M + [2.447 \times 10^{-3}]MV_{rock} + [2.766 \times 10^{-4}]MV_{rock}^2$$

17) The drift degradation rate is defined as the maximum drift failure height ( $H_{max}$ ) divided by the drift degradation time from the sampled distribution. However, the initial drift failure height is initially set to the drift radius. Therefore, to account for the initial drift failure height, the equation is modified as follows:  
drift degradation rate = ( $H_{max}$  - drift radius) / drift degradation time

18) There is the possibility that the corrosion failure of the drip shield will precede failures due to

mechanical failure. If corrosion failure occurs and there are still drip shields that have not failed, then print a warning message that corrosion failure occurred prior to failure from mechanical means. The reason this is important, is that mechanical failure does not account for the drop in thickness of the drip shield until the drip shield has completely failed.

File SEISBS1.DIS/SEISBS2.DIS

19) Add descriptive header text to the seisbs1.dis and seisbs2.dis files. The file should have descriptive text similar to what is shown in Appendix B of the User's Guide.

File MECHFAIL.DEF

20) This file should be created from a tpa run, and it should contain a set of values for the mean data case.

21) Variable naming was not provided to the starting block pointer; whereas, other parameters had associated variable names. Modify the MECHFAIL.DEF file to contain associated variable names for all parameters.

22) Establish a connection between the parameter in the def file and its associated parameter name in tpa.inp.

Test Plan and Test Results for TPA SCR #414

23) Create a test case for the SEISMO module for which a study over 10,000 years will produce the same or similar results to a study performed over 100,000 years.

File TPA.INP

24) Modify the seismic hazard curve as follows:

SeismicHazardCurveforSEISMO

10

0.050	142.0
0.100	409.0
0.169	1000.0
0.350	3968.0
0.534	10000.0
0.750	22340.0
1.305	100000.0
2.000	336261.0
3.000	1158062.0
6.000	100000000.0

25) Update the rock type percentages for each subarea this includes the following:

The value was

constant

FractionRockTypeOneInSubarea\_1{2..10}[]

0.7

The new value is

constant

FractionRockTypeOneInSubarea\_1{2..10}[]

0.75

26) Modify the distributions for drift degradation time to set the lower bound to 250 years. The new distribution is as follows:

beta

DegradationTimeRockTypeOne{Two}GridElement\_1{2..10}[yr]

250.0 1000.0 3.25842 1.82124

27) Modify the bulking factor for rock types one and two.

The old values are:

uniform

BulkingFactorRockTypeOneGridElement\_{1..10}

1.15 1.35

uniform

BulkingFactorRockTypeTwoGridElement\_{1..10}

1.15 1.35

The new values are:

uniform

BulkingFactorRockTypeOneGridElement\_{1..10}

1.15 1.50

uniform

BulkingFactorRockTypeTwoGridElement\_{1..10}

1.35 1.50

28) Drip shield buckling load (kg/m) is a beta distribution. Its parameters will be changed to the following:

A=25000, B=150000, p=2.08134, q=8.92986

## Description of Changes or Problem Resolution

### =====DSFAIL=====

#### File DSFAIL

- 1) The header was updated to indicate that this module was implemented for version 5.0 of the TPA code.
- 2) Corrected the spelling for Pensado.
- 3) The NRC contact was changed to Chris Grossman.

#### File EXEC.F

- 4) The executive receives the drip shield failure time and a flag indicating whether or not drip shield failure occurred. The drip shield failure time is placed in dsfail.rlt or a message indicating that no failure of the drip shield occurred is placed in the file. Also, file dsfail.res contains summary information for drip shield failure.
- 5) A new file, dsfail.res, was created to receive the number of drip shields that fail versus time from both mechanical failure and corrosive failure.
- 6) The column headers were expanded in file, seismo.rlt to make the contents under each column more understandable.

#### File DSFAIL.F/EXEC.F/EBSREL.F/EBSFAIL.F/EBSTRH.DAT

- 7) The value that is currently used for the drip shield failure time is the first TPA time step for which the drip shield thickness goes to zero when the DSFAIL module is run without mechanical failure and the TPA time step for which the drip shield failure fraction goes positive when mechanical failure is invoked. The drip shield failure time due to corrosion is returned to the EXEC for display in the result files. However, using the previous TPA time step when mechanical failure is invoked or the exact time generated from corrosive failure when no mechanical failure is invoked would cause the drip shield failure times to be determined differently for simulations with or without mechanical failure. This is because mechanical failure returns information based on tpa time steps, not interpolated time information. Therefore, the change to use a previous time step or an exact corrosion failure time was not performed in the code.

#### File EXEC.F/EBSREL.F/RELEASESET.F

- 8) This change to the code has not been implemented. Currently, waste package failures from mechanical means are not determined. Therefore, there would be no way to test the change.

#### File DSFAILT.F

- 9) Corrected the error message to read, "Error: maximum fluoride must be greater than minimum fluoride."

#### File DSFAIL/SEISMO2.F/MECHFAIL.F/EXEC.F

- 10) Both the DSFAIL and SEISMO/MECHFAIL code has been modified to be invoked on a subarea basis instead of a repository basis.

#### File DSFAIL.RES

- 11) Created a result (DSFAIL.RES) file for drip shield failures.
- 12) DSFAIL.RES contains repository summarized information for drip shield failure from corrosion and mechanical means.
- 13) Files multifaf.dat and multifbe.dat contained information that was used for testing and not the correct values. The values in these files were corrected.

### =====SEISMO2/MECHFAIL=====

- 1) Changed the variable names for threshold height to impact mitigation height. Also, added parameter, ThicknessRockfallRubbleAboveDripShieldCrown[m] as a constant 0.5 m input parameter in tpa.inp. This

new parameter is used to calculate the impact mitigation height.

2) Have not implemented modifications to the SEISMO/MECHFALL modules to account for direct rock impacts on the waste package. This analysis has not been performed.

3) Modified the equation used to calculate the static rockfall load required to initiate creep in the drip shield plate.

4) Converted the static load acting on the drip shield from kg/m to tonnes/m.

5) Modified the comparison test for initiation of creep in the plate. The new code compares the static load acting on the drip shield to the load required to initiate creep. If the static load is greater than or equal to the load required, then creep is initiated.

6) Modified the equation used to calculate the static rockfall load required to initiate creep in the drip shield bulkhead.

7) Modified the comparison test for initiation of creep in the bulkhead. The new code compares the static load acting on the drip shield to the load required to initiate creep. If the static load is greater than or equal to the load required, then creep is initiated.

8) The SEISMO (SEISMO2.F) module converts the drip shield buckling load from kg/m to tonnes/m and sends this converted value to the MECHFALL module.

9) References to threshold height have been replaced by references to impact mitigation height.

10) Modified the MECHFALL code module to detect a transition during seismic activity during which a rock impact will cause the static load to exceed the impact mitigation height.

11) The calculation of additional drift degradation zone failure height was moved to after the check for engineered backfill in place. This involved the seismic analysis section of the code in which the drift degradation zone failure height is at or below the impact mitigation height.

12) Modified the code to check for negative drip shield plate and bulkhead plastic strains from the abstractions. If the abstractions generate negative strains, then these negative strains are not added into the accumulated strains.

13) Rock block mass was converted from kg to tonnes. Rock block mass is an input to the abstractions used to calculate dynamic plate and bulkhead plastic strains and dynamic displacement of the drip shield.

14) The equation used to calculate the drip shield dynamic displacement was updated.

15) The equation used to calculate the drip shield dynamic plate plastic strain was updated.

16) The equation used to calculate the drip shield dynamic bulkhead plastic strain was updated.

17) The calculation for the drift degradation rate was modified to account for the initial drift radius.

18) During TPA execution, a message will print to the screen just after the message, "exec: calling seismo." This message follows: <<WARNING>> CORROSIVE FAILURE: xxxx [yr] (OCCURRED PRIOR TO MECHANICAL FAILURE)

File SEISBS1.DIS/SEISBS2.DIS

19) Descriptive text was added to the sesibs1.dis and seisbs2.dis files. These files were generated separately. The input parameters used to generate these files was added to their text header.

File MECHFAIL.DEF

20) This file was created from a tpa run and it contains the mean data set.

21) Added descriptive header information for starting blocks 1 and 2.

22) The descriptive headers were modified to link to the corresponding parameter names in tpa.inp.

Test Plan

23) Added test case SL3 to verify the results over 10,000 years are the same or similar whether the simulation is run over 10,000 years or 100,000 years.

File TPA.INP

24) Parameters for the seismic hazard curve were updated.

25) Rock type percentages were updated for all subareas.

26) Modified the distribution for drift degradation time to set the lower bound to 250 years.

27) The bulking factors were modified for rock types 1 and 2.

28) Modified the lower bound on the drip shield buckling load. Formerly, the lower bound was at 15,000 kg/m. The updated distribution sets this value to 25,000 kg/m.

scr414:

total 20173

drwxr-xr-x	10	cscherer	sunuser	8192	Jan	9	16:09	.
drwxr-xr-x	34	cscherer	sunuser	6144	Jan	10	11:48	..
-rwxr-xr-x	1	cscherer	sunuser	2001	Sep	18	16:52	CLEANUP
-rw-r--r--	1	cscherer	sunuser	965	Jan	9	16:09	FILENAME.DAT
-rw-rw-rw-	1	cscherer	sunuser	961	Nov	27	14:24	Makefile
-rw-rw-rw-	1	cscherer	sunuser	961	Nov	27	14:24	Makefile4.2
-rw-r--r--	1	cscherer	sunuser	869	Nov	27	14:22	Makefile_default
-rw-r--r--	1	cscherer	sunuser	171	Jan	9	16:09	NEFII.VEL
-rw-r--r--	1	cscherer	sunuser	2746	Jan	9	16:09	airpkdos.res
-rw-r--r--	1	cscherer	sunuser	2746	Jan	9	16:09	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	29502	Nov	15	17:28	array.f
-rw-r--r--	1	cscherer	sunuser	51364	Jan	9	09:33	array.o
-rw-r--r--	1	cscherer	sunuser	914	Jan	9	16:09	ashout.res
-rw-r--r--	1	cscherer	sunuser	20601	Sep	11	13:41	ashplumo.f
-rw-r--r--	1	cscherer	sunuser	45552	Jan	9	09:33	ashplumo.o
-rw-r--r--	1	cscherer	sunuser	37630	Nov	27	13:27	ashrmovo.f
-rw-r--r--	1	cscherer	sunuser	46800	Jan	9	09:33	ashrmovo.o
-rw-r--r--	1	cscherer	sunuser	1025	Jan	9	16:06	burnup.dat
drwxr-xr-x	2	cscherer	sunuser	512	Dec	31	09:53	ccdf
-rwxrwxrwx	1	cscherer	sunuser	142	Dec	31	13:27	ch_env
-rw-r--r--	1	cscherer	sunuser	5047	Jan	9	16:09	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Jan	9	16:06	climato1.dat
-rw-r--r--	1	cscherer	sunuser	2200	Jan	9	16:06	climato2.dat
drwxr-xr-x	5	cscherer	sunuser	1536	Jan	9	14:39	codes
-rw-r--r--	1	cscherer	sunuser	4791	Jan	9	16:06	coefkdeg.dat
-rw-r--r--	1	cscherer	sunuser	608	Sep	20	20:44	coefkdeg.i
-rw-r--r--	1	cscherer	sunuser	10207	Feb	15	2002	condxyzt.f
-rw-r--r--	1	cscherer	sunuser	3408	Jan	9	09:37	condxyzt.o
-rw-r--r--	1	cscherer	sunuser	14506	Jan	9	16:09	corrode.out
-rw-r--r--	1	cscherer	sunuser	78625	Jan	9	16:09	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2252	Jan	9	16:09	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2252	Jan	9	16:09	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Jan	9	16:09	cumrelse.out
drwxr-xr-x	2	cscherer	sunuser	1536	Dec	31	09:53	data
-rw-r--r--	1	cscherer	sunuser	120159	Dec	19	14:34	dcags.f
-rw-r--r--	1	cscherer	sunuser	255936	Jan	9	09:34	dcags.o
-rw-r--r--	1	cscherer	sunuser	157577	Dec	19	14:34	dcagw.f
-rw-r--r--	1	cscherer	sunuser	335488	Jan	9	09:34	dcagw.o
-rw-r--r--	1	cscherer	sunuser	6693	Jan	9	16:09	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Jan	9	16:09	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2200	Jan	9	16:09	dilution.dat
drwxr-xr-x	3	cscherer	sunuser	512	Jan	10	11:38	docs
-rw-r--r--	1	cscherer	sunuser	3870	Jan	9	16:06	drifts.dat
-rw-r--r--	1	cscherer	sunuser	190	Sep	20	09:32	driftsa.i
-rw-r--r--	1	cscherer	sunuser	519	Jan	9	16:06	drythick.dat
-rw-r--r--	1	cscherer	sunuser	25470	Dec	17	17:53	dsfail.f
-rw-r--r--	1	cscherer	sunuser	28504	Jan	9	09:34	dsfail.o
-rw-r--r--	1	cscherer	sunuser	2401	Jan	9	16:09	dsfail.res
-rw-r--r--	1	cscherer	sunuser	2869	Jan	9	16:09	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Jan	9	16:06	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	43144	Jan	9	16:06	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Jan	9	16:09	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Jan	9	16:06	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	37960	Jan	9	16:09	ebscld.out
-rw-r--r--	1	cscherer	sunuser	6265	Jan	9	16:06	ebsfail.def



-rw-r--r--	1	cscherer	sunuser	48674	Sep	4	19:25	ebsfail.f
-rw-r--r--	1	cscherer	sunuser	6222	Jan	9	16:09	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	117596	Jan	9	09:34	ebsfail.o
-rw-r--r--	1	cscherer	sunuser	790	Jan	9	16:06	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	41960	Jan	9	16:06	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	3030	Jan	9	16:09	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	551	Jan	9	16:09	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Jan	9	16:09	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	146101	Jan	9	16:09	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	108252	Jan	9	16:09	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	140681	Jan	9	16:09	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Jan	9	16:09	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5486	Jan	9	16:06	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	77642	Dec	30	16:53	ebsrel.f
-rw-r--r--	1	cscherer	sunuser	11110	Jan	9	16:09	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	209300	Jan	9	09:35	ebsrel.o
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:15	ebsrel1.i
-rw-r--r--	1	cscherer	sunuser	108203	Jan	9	16:09	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Jan	9	16:09	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Jan	9	16:09	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2711	Jan	9	16:09	echofail.dat
-rw-r--r--	1	cscherer	sunuser	276871	Jan	9	16:09	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	191076	Jan	9	16:09	env.e
-rwxr-xr-x	1	cscherer	sunuser	282692	Jan	9	16:09	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Jan	9	16:09	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1707	Jan	9	16:09	epapktim.out
-rw-r--r--	1	cscherer	sunuser	369978	Dec	30	19:07	exec.f
-rw-r--r--	1	cscherer	sunuser	1085896	Jan	9	09:37	exec.o
-rw-r--r--	1	cscherer	sunuser	2385	Sep	21	10:07	execa.i
-rw-r--r--	1	cscherer	sunuser	486	Sep	3	1997	execb.i
-rw-r--r--	1	cscherer	sunuser	269	May	29	2002	execc.i
-rwxr-xr-x	1	cscherer	sunuser	143508	Jan	9	16:06	failt.e
-rw-r--r--	1	cscherer	sunuser	17398	Jan	9	16:09	failt.out
-rw-r--r--	1	cscherer	sunuser	8503	Feb	15	2002	faulto.f
-rw-r--r--	1	cscherer	sunuser	10828	Jan	9	09:35	faulto.o
-rw-r--r--	1	cscherer	sunuser	6599	May	29	2002	fileunit.f
-rw-r--r--	1	cscherer	sunuser	8588	Jan	9	09:37	fileunit.o
-rw-r--r--	1	cscherer	sunuser	5784	Feb	15	2002	findelev.f
-rw-r--r--	1	cscherer	sunuser	9708	Jan	9	09:37	findelev.o
-rw-r--r--	1	cscherer	sunuser	6281	Jan	9	16:09	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Jan	9	16:09	frac_rel.out
drwxr-xr-x	4	cscherer	sunuser	512	Dec	31	16:35	fromgeorge_test
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	ful.i
-rw-r--r--	1	cscherer	sunuser	609	Sep	4	19:29	fu2.i
-rw-r--r--	1	cscherer	sunuser	6513	Jan	9	16:09	gbioacl.dat
-rw-r--r--	1	cscherer	sunuser	3383	Jan	9	16:09	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Jan	9	16:09	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Jan	9	16:09	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Jan	9	16:09	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Jan	9	16:09	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Jan	9	16:09	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Jan	9	16:09	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Jan	9	16:09	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Jan	9	16:09	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	13855	Jan	9	16:09	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Jan	9	16:09	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Jan	9	16:09	ggenii.out

-rw-r--r--	1	cscherer	sunuser	5351	Jan	9	16:09	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Jan	9	16:09	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Jan	9	16:09	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Jan	9	16:09	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Jan	9	16:09	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Jan	9	16:09	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Jan	9	16:09	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Jan	9	16:09	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Jan	9	16:09	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Jan	9	16:09	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	572	Jan	9	16:09	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Jan	9	16:09	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Jan	9	16:09	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1738	Jan	9	16:09	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1738	Jan	9	16:09	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2170	Jan	9	16:09	gwttuzsz.res
-rw-r--r--	1	cscherer	sunuser	1229	Jul	22	1999	ia.i
-rw-r--r--	1	cscherer	sunuser	956	Sep	26	2000	ial.i
-rw-r--r--	1	cscherer	sunuser	21238	Dec	19	14:34	iareader.f
-rw-r--r--	1	cscherer	sunuser	37264	Jan	9	09:35	iareader.o
-rw-r--r--	1	cscherer	sunuser	2330	Jan	9	16:09	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Jan	9	16:09	invl000.out
-rw-r--r--	1	cscherer	sunuser	68121	Sep	25	12:07	invent.f
-rw-r--r--	1	cscherer	sunuser	86480	Jan	9	09:35	invent.o
-rw-r--r--	1	cscherer	sunuser	33	Sep	25	12:15	invent_.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	inventa.i
-rw-r--r--	1	cscherer	sunuser	182	Sep	25	12:14	inventb.i
-rw-r--r--	1	cscherer	sunuser	344	Sep	25	12:14	inventc.i
-rw-r--r--	1	cscherer	sunuser	124	Sep	25	12:14	inventd.i
-rw-r--r--	1	cscherer	sunuser	131	Sep	25	12:14	invente.i
-rw-r--r--	1	cscherer	sunuser	130	Sep	25	12:14	inventf.i
-rw-r--r--	1	cscherer	sunuser	128	Sep	25	12:14	inventg.i
-rw-r--r--	1	cscherer	sunuser	127	Sep	25	12:14	inventh.i
-rw-r--r--	1	cscherer	sunuser	75	Aug	16	1997	inventi.i
-rw-r--r--	1	cscherer	sunuser	288	Sep	25	12:14	inventj.i
-rw-r--r--	1	cscherer	sunuser	332	Sep	25	12:14	inventk.i
-rw-r--r--	1	cscherer	sunuser	150	Dec	6	14:29	inventl.i
-rw-r--r--	1	cscherer	sunuser	315	Dec	11	09:33	inventm.i
-rw-r--r--	1	cscherer	sunuser	175	Sep	25	12:15	inventn.i
-rw-r--r--	1	cscherer	sunuser	249	Jan	29	2000	invento.i
-rw-r--r--	1	cscherer	sunuser	267	Sep	25	12:15	inventp.i
-rw-r--r--	1	cscherer	sunuser	0	Dec	31	16:19	lhs.csv
-rw-r--r--	1	cscherer	sunuser	41968	Jan	9	16:06	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5546	Jan	9	16:06	lhs.out
-rw-r--r--	1	cscherer	sunuser	72030	Jan	9	16:06	lhse.out
-rw-r--r--	1	cscherer	sunuser	5348	Jan	9	09:37	linintrp.o
-rw-r--r--	1	cscherer	sunuser	78	Aug	16	1997	max500yr.i
-rw-r--r--	1	cscherer	sunuser	99	Sep	25	12:10	maxchain.i
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:50	maxclchn.i
-rw-r--r--	1	cscherer	sunuser	144	Sep	25	12:50	maxclnuc.i
-rw-r--r--	1	cscherer	sunuser	508	Sep	25	12:11	maxnnucl.i
-rw-r--r--	1	cscherer	sunuser	299	Jul	10	1998	maxnsuba.i
-rw-r--r--	1	cscherer	sunuser	206	May	28	1999	maxntime.i
-rw-r--r--	1	cscherer	sunuser	1095	Jan	9	16:09	maxrel.dat
-rwxr-xr-x	1	cscherer	sunuser	943775	Jan	9	16:06	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31768	Jan	9	16:09	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Jan	9	16:06	mechfail.def

-rwxr-xr-x	1	cscherer	sunuser	109064	Jan	9	16:06	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9575	Jan	9	16:09	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Jan	9	16:09	mechfail.out
-rw-r--r--	1	cscherer	sunuser	92057	Jan	8	15:36	mechfail2.out
-rw-r--r--	1	cscherer	sunuser	92057	Jan	8	15:52	mechfail3.out
-rw-r--r--	1	cscherer	sunuser	92059	Jan	8	17:15	mechfail4.out
-rwxr-xr-x	1	cscherer	sunuser	105956	Jan	8	09:36	mechfail_0108_sol42.e
-rw-r--r--	1	cscherer	sunuser	31756	Dec	31	16:23	mechfail_1strun.dat
-rw-r--r--	1	cscherer	sunuser	9767	Dec	31	16:20	mechfail_baserun.inp
-rw-r--r--	1	cscherer	sunuser	31768	Jan	8	14:27	mechfail_def.dat
-rwxr-xr-x	1	cscherer	sunuser	109064	Jan	7	11:15	mechfail_defaultcomp.e
-rwxr-xr-x	1	cscherer	sunuser	102492	Jan	8	14:04	mechfail_georgeI.e
-rwxr-xr-x	1	cscherer	sunuser	105956	Jan	8	15:17	mechfail_makeall.e
-rw-r--r--	1	cscherer	sunuser	9767	Dec	31	16:23	mechfail_pl1.inp
-rwxr-xr-x	1	cscherer	sunuser	105956	Jan	7	11:18	mechfail_sol42.e
-rwxr-xr-x	1	cscherer	sunuser	107232	Jan	8	17:38	mechfail_test.e
-rw-r--r--	1	cscherer	sunuser	31768	Jan	8	14:21	mechfail_v42.dat
-rw-r--r--	1	cscherer	sunuser	31768	Jan	9	14:43	mechfail_xtypemap.dat
-rw-r--r--	1	cscherer	sunuser	1320	Jan	9	16:06	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1321	Jan	9	16:06	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	11850	Feb	15	2002	mv.f
-rw-r--r--	1	cscherer	sunuser	19424	Jan	9	09:35	mv.o
-rw-r--r--	1	cscherer	sunuser	61241	Jan	9	16:09	mv.tpa
-rw-r--r--	1	cscherer	sunuser	111	Sep	4	1997	mva.i
-rw-r--r--	1	cscherer	sunuser	56	Aug	16	1997	mvb.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	mvc.i
-rw-r--r--	1	cscherer	sunuser	101	Aug	16	1997	mvd.i
-rw-r--r--	1	cscherer	sunuser	72	Aug	16	1997	mve.i
-rw-r--r--	1	cscherer	sunuser	72	Aug	16	1997	mvf.i
-rw-r--r--	1	cscherer	sunuser	2330	Jan	9	16:09	nearfld.res
-rw-r--r--	1	cscherer	sunuser	76131	Jan	9	16:09	nefi.i.dis
-rw-r--r--	1	cscherer	sunuser	10104	Jan	9	16:09	nefi.i.inp
-rw-r--r--	1	cscherer	sunuser	119457	Jan	9	16:09	nefi.i.out
-rw-r--r--	1	cscherer	sunuser	603	Jan	9	16:09	nefi.i.rel
-rw-r--r--	1	cscherer	sunuser	76131	Jan	9	16:09	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Jan	9	16:09	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	119457	Jan	9	16:09	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	139568	Jan	9	16:09	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	171	Jan	9	16:09	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	815414	Jan	9	16:09	nefiuuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Jan	9	16:09	nefiuuz.inp
-rw-r--r--	1	cscherer	sunuser	858614	Jan	9	16:09	nefiuuz.out
-rw-r--r--	1	cscherer	sunuser	140005	Jan	9	16:09	nefiuuz.src
-rw-r--r--	1	cscherer	sunuser	171	Jan	9	16:09	nefiuuz.vel
-rwxr-xr-x	1	cscherer	sunuser	408036	Jan	9	16:06	nefmks.e
-rw-r--r--	1	cscherer	sunuser	405	Jan	9	16:09	nefmks.log
-rw-r--r--	1	cscherer	sunuser	110451	Dec	20	09:07	nfenv.f
-rw-r--r--	1	cscherer	sunuser	98496	Jan	9	09:35	nfenv.o
-rw-r--r--	1	cscherer	sunuser	326	Nov	17	18:24	nfenvadj.i
-rw-r--r--	1	cscherer	sunuser	94	Aug	16	1997	nintv.i
-rw-r--r--	1	cscherer	sunuser	1502	Jun	11	1997	notice.i
-rw-r--r--	1	cscherer	sunuser	2506	Jan	9	16:09	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2506	Jan	9	16:09	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Jan	9	16:06	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	6579	Feb	15	2002	numrecip.f
-rw-r--r--	1	cscherer	sunuser	4748	Jan	9	09:37	numrecip.o
-rw-r--r--	1	cscherer	sunuser	7111	Jan	9	16:09	organdf.dat

-rw-r--r--	1	cscherer	sunuser	259	Aug	16	1997	path.i
-rw-r--r--	1	cscherer	sunuser	6584	Feb	15	2002	peakfind.f
-rw-r--r--	1	cscherer	sunuser	6336	Jan	9	09:37	peakfind.o
-rw-r--r--	1	cscherer	sunuser	698	Jan	9	16:09	pkmndose.out
-rw-r--r--	1	cscherer	sunuser	8244	Jan	9	16:09	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8244	Jan	9	16:09	pkrltm_c.res
drwxr-xr-x	3	cscherer	sunuser	512	Dec	31	16:05	pltest
-rw-r--r--	1	cscherer	sunuser	46322	Feb	15	2002	ran.f
-rw-r--r--	1	cscherer	sunuser	87592	Jan	9	09:37	ran.o
-rw-r--r--	1	cscherer	sunuser	148482	Dec	19	14:32	reader.f
-rw-r--r--	1	cscherer	sunuser	185	May	21	1998	reader.i
-rw-r--r--	1	cscherer	sunuser	432384	Jan	9	09:36	reader.o
-rw-r--r--	1	cscherer	sunuser	106	Aug	27	1999	reader1.i
-rw-r--r--	1	cscherer	sunuser	58	Aug	27	1999	reader2.i
-rw-r--r--	1	cscherer	sunuser	102	Aug	27	1999	reader3.i
-rw-r--r--	1	cscherer	sunuser	89	Aug	27	1999	reader4.i
-rw-r--r--	1	cscherer	sunuser	58	Aug	16	1997	reflux2.i
-rw-r--r--	1	cscherer	sunuser	899	Jan	9	16:09	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	572	Jan	9	16:09	relccdf.res
-rw-r--r--	1	cscherer	sunuser	721	Jan	9	16:09	relcum.out
-rwxr-xr-x	1	cscherer	sunuser	115588	Jan	9	16:06	releaset.e
-rw-r--r--	1	cscherer	sunuser	411	Jan	9	16:09	releaset.out
-rw-r--r--	1	cscherer	sunuser	620	Jan	9	16:09	relfrac.out
-rw-r--r--	1	cscherer	sunuser	722	Jan	9	16:09	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Jan	9	16:06	repdes.dat
-rw-r--r--	1	cscherer	sunuser	47561	Jan	9	16:09	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	9	16:09	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	9	16:09	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	9	16:09	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	9	16:09	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	9	16:09	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	9	16:09	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	9	16:09	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5137	Jan	9	16:09	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16137	Jan	9	16:09	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5183	Jan	9	16:09	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	572	Jan	9	16:09	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	722	Jan	9	16:09	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	95694	May	29	2002	sampler.f
-rw-r--r--	1	cscherer	sunuser	165652	Jan	9	09:36	sampler.o
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler0.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	sampler1.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler2.i
-rw-r--r--	1	cscherer	sunuser	178	Apr	3	1998	sampler3.i
-rw-r--r--	1	cscherer	sunuser	145	Sep	19	2000	sampler4.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.a.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.b.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.c.i
-rw-r--r--	1	cscherer	sunuser	68	Aug	16	1997	sampler.d.i
-rw-r--r--	1	cscherer	sunuser	133	Aug	16	1997	sampler.e.i
-rw-r--r--	1	cscherer	sunuser	111	Aug	16	1997	sampler.f.i
-rw-r--r--	1	cscherer	sunuser	84	Aug	16	1997	sampler.g.i
-rw-r--r--	1	cscherer	sunuser	68	Aug	16	1997	sampler.h.i
-rw-r--r--	1	cscherer	sunuser	83	Aug	16	1997	sampler.i.i
-rw-r--r--	1	cscherer	sunuser	61	Aug	16	1997	sampler.j.i
-rw-r--r--	1	cscherer	sunuser	208	Aug	16	1997	sampler.k.i
-rw-r--r--	1	cscherer	sunuser	104	Aug	16	1997	sampler.l.i

-rw-r--r--	1	cscherer	sunuser	63	Aug	16	1997	samplerm.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	samplern.i
-rw-r--r--	1	cscherer	sunuser	63	Aug	16	1997	sampler.o.i
-rw-r--r--	1	cscherer	sunuser	260	Mar	14	2002	samplerp.i
-rw-r--r--	1	cscherer	sunuser	103	Aug	16	1997	samplerq.i
-rw-r--r--	1	cscherer	sunuser	176	Aug	16	1997	samlerr.i
-rw-r--r--	1	cscherer	sunuser	336	Apr	3	1998	samplers.i
-rw-r--r--	1	cscherer	sunuser	70	Aug	16	1997	samlert.i
-rw-r--r--	1	cscherer	sunuser	69	Aug	16	1997	sampleru.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	samlerv.i
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	samplerw.i
-rw-r--r--	1	cscherer	sunuser	227	Mar	14	2002	samplerx.i
-rw-r--r--	1	cscherer	sunuser	299	Apr	30	2001	samlery.i
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	samplerz.i
-rw-r--r--	1	cscherer	sunuser	3759	Jan	9	16:06	samlpar.abb
-rw-r--r--	1	cscherer	sunuser	28819	Jan	9	16:06	samlpar.hdr
-rw-r--r--	1	cscherer	sunuser	6192	Jan	9	16:09	samlpar.res
-rw-r--r--	1	cscherer	sunuser	322	Nov	17	18:24	seisadj.i
-rwxr-xr-x	1	cscherer	sunuser	130758	Jan	9	16:06	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Jan	9	16:06	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	74226	Dec	17	17:52	seismo2.f
-rw-r--r--	1	cscherer	sunuser	73900	Jan	9	09:36	seismo2.o
-rwxrwxrwx	1	cscherer	sunuser	30	Sep	12	16:53	show_env
drwxr-xr-x	5	cscherer	sunuser	512	Jan	7	11:16	sltest
-rwxr-xr-x	1	cscherer	sunuser	943788	Jan	9	16:06	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	243532	Jan	9	16:06	snllhs.e
-rw-r--r--	1	cscherer	sunuser	139568	Jan	9	16:09	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	29935	Jan	9	16:09	sp.tpa
-rw-r--r--	1	cscherer	sunuser	1948	Jan	9	09:37	srchpos.o
-rw-r--r--	1	cscherer	sunuser	144	Sep	3	1997	stop.i
-rw-r--r--	1	cscherer	sunuser	4506	Jan	9	16:06	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	38273	Sep	3	10:13	subarea.f
-rw-r--r--	1	cscherer	sunuser	59656	Jan	9	09:36	subarea.o
-rw-r--r--	1	cscherer	sunuser	255	Feb	4	2000	subareaa.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	subareab.i
-rw-r--r--	1	cscherer	sunuser	82	Aug	16	1997	subareac.i
-rw-r--r--	1	cscherer	sunuser	81	Aug	16	1997	subaread.i
-rw-r--r--	1	cscherer	sunuser	77	Aug	16	1997	subareae.i
-rw-r--r--	1	cscherer	sunuser	60	Feb	3	2000	subareaf.i
-rw-r--r--	1	cscherer	sunuser	64	Feb	2	2000	subareag.i
-rw-r--r--	1	cscherer	sunuser	112874	Dec	11	10:54	szft.f
-rw-r--r--	1	cscherer	sunuser	264	Nov	17	18:23	szft.i
-rw-r--r--	1	cscherer	sunuser	186356	Jan	9	09:35	szft.o
drwxr-xr-x	2	cscherer	sunuser	1024	Jan	9	09:16	test
-rw-r--r--	1	cscherer	sunuser	13122	Jan	9	16:09	totdos_c.res
-rw-r--r--	1	cscherer	sunuser	13122	Jan	9	16:09	totdose.res
-rwxr-xr-x	1	cscherer	sunuser	2505700	Jan	9	09:37	tpa.e
-rw-r--r--	1	cscherer	sunuser	87741	Dec	30	19:35	tpa.inp
-r--r--r--	1	cscherer	sunuser	9325	Mar	4	2002	tpa_.out
-rw-r--r--	1	cscherer	sunuser	87741	Dec	30	19:35	tpa_basecase.inp
-rw-r--r--	1	cscherer	sunuser	24356	Jan	9	16:09	tpa_def_mech.out
-rw-r--r--	1	cscherer	sunuser	386	Jan	7	10:39	tpa_inp.diff
-rw-r--r--	1	cscherer	sunuser	87741	Dec	30	19:35	tpa_orig.inp
-rw-r--r--	1	cscherer	sunuser	90216	Dec	31	16:19	tpa_pl1.inp
-rw-r--r--	1	cscherer	sunuser	87793	Jan	7	10:50	tpa_sl1.inp
-rw-r--r--	1	cscherer	sunuser	87796	Jan	7	12:30	tpa_sl2.inp
-rw-r--r--	1	cscherer	sunuser	87795	Jan	8	08:53	tpa_sl3a.inp

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-rw-r--r-- 1 cscherer sunuser 87795 Jan 8 08:53 tpa_sl3b.inp
-rw-r--r-- 1 cscherer sunuser 87817 Dec 31 16:17 tpa_test.inp
-rw-r--r-- 1 cscherer sunuser 24356 Jan 7 12:10 tpa_testdefault_base.out
-rw-r--r-- 1 cscherer sunuser 2482 Jan 7 12:05 tpa_testsol42_base.out
-rw-r--r-- 1 cscherer sunuser 24356 Jan 9 14:43 tpa_usextypemap.out
-rw-r--r-- 1 cscherer sunuser 90152 Jan 9 16:06 tpameans.out
-rw-r--r-- 1 cscherer sunuser 90216 Dec 31 16:19 tpameans_pl1.out
-rw-r--r-- 1 cscherer sunuser 99636 Jan 9 16:06 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser 117139 Jan 9 16:09 trelease.out
-rw-r--r-- 1 cscherer sunuser 314 Aug 16 1997 uz_climi.i
-rw-r--r-- 1 cscherer sunuser 1219 Sep 6 20:05 uz_climr.i
-rw-r--r-- 1 cscherer sunuser 341 Aug 16 1997 uz_climz.i
-rw-r--r-- 1 cscherer sunuser 1323 Sep 26 14:28 uz_flowi.i
-rw-r--r-- 1 cscherer sunuser 1170 Sep 26 14:29 uz_flowr.i
-rw-r--r-- 1 cscherer sunuser 176 Aug 16 1997 uz_flowz.i
-rw-r--r-- 1 cscherer sunuser 3225 Sep 26 14:30 uz_parms.i
-rw-r--r-- 1 cscherer sunuser 68541 Dec 30 19:33 uzflow.f
-rw-r--r-- 1 cscherer sunuser 61864 Jan 9 09:36 uzflow.o
-rw-r--r-- 1 cscherer sunuser 124085 Nov 27 13:28 uzft.f
-rw-r--r-- 1 cscherer sunuser 200392 Jan 9 09:37 uzft.o
-rw-r--r-- 1 cscherer sunuser 755 Nov 17 18:23 uzszft.i
-rw-r--r-- 1 cscherer sunuser 14215 Feb 15 2002 volcano.f
-rw-r--r-- 1 cscherer sunuser 17468 Jan 9 09:37 volcano.o
-rw-r--r-- 1 cscherer sunuser 14132 Jan 9 16:09 weldfail.out
-rw-r--r-- 1 cscherer sunuser 8805 Jan 9 16:06 wpflow.dat
-rw-r--r-- 1 cscherer sunuser 17410 Jan 9 16:06 wpflow.def
-rw-r--r-- 1 cscherer sunuser 818 Jan 9 16:09 wpsfail.res
-rw-r--r-- 1 cscherer sunuser 11721 Feb 15 2002 zportunx.f
-rw-r--r-- 1 cscherer sunuser 1936 Jan 9 09:37 zportunx.o

```

## scr414/ccdf:

total 35

```

drwxr-xr-x 2 cscherer sunuser 512 Dec 31 09:53 .
drwxr-xr-x 10 cscherer sunuser 8192 Jan 9 16:09 ..
-rw-r--r-- 1 cscherer sunuser 267 Mar 14 2000 Makefile
-rw-r--r-- 1 cscherer sunuser 23390 Jul 22 1999 tccdf.f
-rw-r--r-- 1 cscherer sunuser 66 Aug 1 1997 tccdf.i
-rw-r--r-- 1 cscherer sunuser 640 Jan 29 2001 tccdf.inp

```

## scr414/codes:

total 4260

```

drwxr-xr-x 5 cscherer sunuser 1536 Jan 9 14:39 .
drwxr-xr-x 10 cscherer sunuser 8192 Jan 9 16:09 ..
-rw-r--r-- 1 cscherer sunuser 1403 Nov 27 14:19 Makefile
-rw-rw-rw- 1 cscherer sunuser 1812 Jan 9 14:32 Makefile4.2
-rw-rw-rw- 1 cscherer sunuser 1698 Nov 27 16:22 Makefile_orig4.2
-rw-rw-rw- 1 cscherer sunuser 1812 Jan 9 14:32 Makefile_test4.2
-rw-r--r-- 1 cscherer sunuser 499 Jun 2 1997 README
-rw-r--r-- 1 cscherer sunuser 2320 May 28 1998 SIZES.INC
-rw-r--r-- 1 cscherer sunuser 164 Feb 17 1998 SIZES2.INC
-rwxr-xr-x 1 cscherer sunuser 165120 Jan 9 09:39 ashplume.e
-rw-r--r-- 1 cscherer sunuser 95611 Sep 26 2000 ashplume.f
-rw-r--r-- 1 cscherer sunuser 25361 Jul 17 14:57 corrosn.f
-rw-r--r-- 1 cscherer sunuser 22384 Jan 9 09:38 corrosn.o
-rwxr-xr-x 1 cscherer sunuser 43144 Jan 9 09:39 dsfailt.e
-rw-r--r-- 1 cscherer sunuser 23303 Dec 17 17:21 dsfailt.f
-rwxr-xr-x 1 cscherer sunuser 41960 Jan 9 09:39 ebsfilt.e

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-rw-r--r--	1	cscherer	sunuser	12568	Dec	30	17:05	ebsfilt.f
-rwxr-xr-x	1	cscherer	sunuser	191076	Jan	9	09:39	env.e
-rwxr-xr-x	1	cscherer	sunuser	282692	Jan	9	09:39	envin.e
-rwxr-xr-x	1	cscherer	sunuser	143508	Jan	9	09:38	failt.e
-rw-r--r--	1	cscherer	sunuser	103340	Nov	17	18:01	failt.f
-r--r--r--	1	cscherer	sunuser	450	Nov	17	18:03	failtadj.i
drwxr-xr-x	2	cscherer	sunuser	3584	Jan	9	09:39	gentpa
-rwxr-xr-x	1	cscherer	sunuser	4633	Nov	17	18:01	integr.t.f
-rw-r--r--	1	cscherer	sunuser	2076	Jan	9	09:38	integr.t.o
drwxr-xr-x	3	cscherer	sunuser	512	Dec	31	09:54	itym
-r--r--r--	1	cscherer	sunuser	868	Dec	17	16:59	lhs1.i
-r--r--r--	1	cscherer	sunuser	1308	Mar	14	2002	lhs2.i
-r--r--r--	1	cscherer	sunuser	438	Mar	14	2002	lhs3.i
-r--r--r--	1	cscherer	sunuser	437	Mar	14	2002	lhs4.i
-r--r--r--	1	cscherer	sunuser	374	Mar	14	2002	lhs5.i
-r--r--r--	1	cscherer	sunuser	450	Mar	14	2002	lhs6.i
-r--r--r--	1	cscherer	sunuser	464	Mar	14	2002	lhs7.i
-r--r--r--	1	cscherer	sunuser	431	Mar	14	2002	lhs8.i
-rwxr-xr-x	1	cscherer	sunuser	5229	May	29	2002	linintrp.f
-rw-r--r--	1	cscherer	sunuser	3272	Jan	9	09:38	linintrp.o
-r--r--r--	1	cscherer	sunuser	331	Nov	17	18:03	mechadj.i
-rwxr-xr-x	1	cscherer	sunuser	109064	Jan	7	11:15	mechfail.e
-rw-r--r--	1	cscherer	sunuser	126625	Dec	17	17:57	mechfail.f
-rwxr-xr-x	1	cscherer	sunuser	105956	Jan	8	09:36	mechfail_0108_sol42.e
-rw-r--r--	1	cscherer	sunuser	126625	Dec	17	17:57	mechfail_betaH.f
-rw-r--r--	1	cscherer	sunuser	126727	Jan	6	09:25	mechfail_debug.f
-rwxr-xr-x	1	cscherer	sunuser	109064	Jan	7	11:15	mechfail_defaultcomp.e
-rwxr-xr-x	1	cscherer	sunuser	102492	Jan	8	14:04	mechfail_georgeI.e
-rwxr-xr-x	1	cscherer	sunuser	105956	Jan	8	15:17	mechfail_makeall.e
-rw-r--r--	1	cscherer	sunuser	126625	Dec	17	17:57	mechfail_orig.f
-rwxr-xr-x	1	cscherer	sunuser	105956	Jan	7	11:18	mechfail_sol42.e
-rwxr-xr-x	1	cscherer	sunuser	107232	Jan	9	09:37	mechfail_test.e
-rw-r--r--	1	cscherer	sunuser	128045	Jan	8	17:37	mechfail_test.f
-rwxr-xr-x	1	cscherer	sunuser	408036	Jan	9	09:38	nefmks.e
-rw-r--r--	1	cscherer	sunuser	308005	Sep	26	2000	nefmks.f
drwxr-xr-x	2	cscherer	sunuser	512	Jan	9	09:30	prev_exes
-rwxr-xr-x	1	cscherer	sunuser	115588	Jan	9	09:38	releaset.e
-rw-r--r--	1	cscherer	sunuser	153674	Dec	30	17:05	releaset.f
-rwxr-xr-x	1	cscherer	sunuser	243532	Jan	9	09:39	snllhs.e
-rw-r--r--	1	cscherer	sunuser	224558	Sep	6	10:21	snllhs.f
-rwxr-xr-x	1	cscherer	sunuser	4303	May	29	2002	srchpos.f
-rw-r--r--	1	cscherer	sunuser	1300	Jan	9	09:38	srchpos.o
-rwxr-xr-x	1	cscherer	sunuser	19890	Nov	17	18:01	weldfail.f
-rw-r--r--	1	cscherer	sunuser	9348	Jan	9	09:38	weldfail.o

## scr414/codes/gentpa:

total 1067

drwxr-xr-x	2	cscherer	sunuser	3584	Jan	9	09:39	.
drwxr-xr-x	5	cscherer	sunuser	1536	Jan	9	14:39	..
-rw-r--r--	1	cscherer	sunuser	543	Feb	11	2000	AFPPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1044	Feb	11	2000	AIRPAR.CMN
-rw-r--r--	1	cscherer	sunuser	872	Feb	11	2000	ANMPAR.CMN
-rw-r--r--	1	cscherer	sunuser	615	Feb	11	2000	AQUPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1089	Feb	11	2000	CONC.CMN
-rw-r--r--	1	cscherer	sunuser	461	Feb	11	2000	DAYPC.CMN
-rw-r--r--	1	cscherer	sunuser	400	Feb	11	2000	DECAY.CMN
-rw-r--r--	1	cscherer	sunuser	571	Feb	11	2000	DFPAR.CMN

-rw-r--r--	1	cscherer	sunuser	1359	Feb 11	2000	DOSALL.CMN
-rw-r--r--	1	cscherer	sunuser	574	Feb 11	2000	ENVPAR.CMN
-rw-r--r--	1	cscherer	sunuser	310	Feb 11	2000	EXPALL.CMN
-rw-r--r--	1	cscherer	sunuser	637	Feb 11	2000	EXTPAR.CMN
-rw-r--r--	1	cscherer	sunuser	327	Feb 11	2000	FILES.CMN
-rw-r--r--	1	cscherer	sunuser	814	Feb 11	2000	FODPAR.CMN
-rw-r--r--	1	cscherer	sunuser	438	Feb 11	2000	INVIN.CMN
-rw-r--r--	1	cscherer	sunuser	569	Feb 11	2000	LABELS.CMN
-rw-r--r--	1	cscherer	sunuser	1161	Feb 11	2000	MTBPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1688	Feb 28	2000	Make.bat
-rw-rw-rw-	1	cscherer	sunuser	1938	Nov 27	14:12	Makefile
-rw-rw-rw-	1	cscherer	sunuser	1938	Nov 27	14:12	Makefile4.2
-rw-r--r--	1	cscherer	sunuser	1849	Feb 24	2000	Makefile_default
-rw-r--r--	1	cscherer	sunuser	1746	Feb 11	2000	Mkenv.fig
-rw-r--r--	1	cscherer	sunuser	1548	Feb 11	2000	Mkenvin.fig
-rw-r--r--	1	cscherer	sunuser	2762	Feb 11	2000	OPT.CMN
-rw-r--r--	1	cscherer	sunuser	444	Feb 11	2000	ORGMAS.CMN
-rw-r--r--	1	cscherer	sunuser	728	Feb 11	2000	ORGPARG.CMN
-rw-r--r--	1	cscherer	sunuser	589	Feb 11	2000	RAD.CMN
-rw-r--r--	1	cscherer	sunuser	788	Feb 11	2000	RADIN.CMN
-rw-r--r--	1	cscherer	sunuser	722	Feb 11	2000	RMD.CMN
-rw-r--r--	1	cscherer	sunuser	489	Feb 11	2000	RMD2.CMN
-rw-r--r--	1	cscherer	sunuser	891	Feb 11	2000	SOLPAR.CMN
-rw-r--r--	1	cscherer	sunuser	489	Feb 11	2000	SWPAR.CMN
-rw-r--r--	1	cscherer	sunuser	586	Feb 11	2000	TIMES.CMN
-rw-r--r--	1	cscherer	sunuser	316	Feb 11	2000	TITL.CMN
-rw-r--r--	1	cscherer	sunuser	12777	Feb 11	2000	accmod.f
-rw-r--r--	1	cscherer	sunuser	24096	Dec 31	15:45	accmod.o
-rw-r--r--	1	cscherer	sunuser	10094	Feb 11	2000	acutel.f
-rw-r--r--	1	cscherer	sunuser	16196	Dec 31	15:46	acutel.o
-rw-r--r--	1	cscherer	sunuser	9579	Feb 11	2000	acutea.f
-rw-r--r--	1	cscherer	sunuser	11188	Dec 31	15:46	acutea.o
-rw-r--r--	1	cscherer	sunuser	7118	Feb 11	2000	acutec.f
-rw-r--r--	1	cscherer	sunuser	8488	Dec 31	15:46	acutec.o
-rw-r--r--	1	cscherer	sunuser	8669	Feb 11	2000	aircal.f
-rw-r--r--	1	cscherer	sunuser	11232	Dec 31	15:46	aircal.o
-rw-r--r--	1	cscherer	sunuser	8383	Feb 11	2000	anmcal.f
-rw-r--r--	1	cscherer	sunuser	12716	Dec 31	15:46	anmcal.o
-rw-r--r--	1	cscherer	sunuser	2043	Feb 11	2000	aqucal.f
-rw-r--r--	1	cscherer	sunuser	3984	Dec 31	15:46	aqucal.o
-rw-r--r--	1	cscherer	sunuser	1217	Feb 11	2000	biocal.f
-rw-r--r--	1	cscherer	sunuser	1944	Dec 31	15:46	biocal.o
-rw-r--r--	1	cscherer	sunuser	4174	Feb 11	2000	blockd.f
-rw-r--r--	1	cscherer	sunuser	6664	Dec 31	15:45	blockd.o
-rw-r--r--	1	cscherer	sunuser	1405	Feb 11	2000	bsort.f
-rw-r--r--	1	cscherer	sunuser	1200	Dec 31	15:45	bsort.o
-rw-r--r--	1	cscherer	sunuser	13008	Feb 11	2000	candh.f
-rw-r--r--	1	cscherer	sunuser	10420	Dec 31	15:46	candh.o
-rw-r--r--	1	cscherer	sunuser	6653	Feb 11	2000	chain.f
-rw-r--r--	1	cscherer	sunuser	5368	Dec 31	15:46	chain.o
-rw-r--r--	1	cscherer	sunuser	23921	Feb 11	2000	check.f
-rw-r--r--	1	cscherer	sunuser	48600	Dec 31	15:46	check.o
-rw-r--r--	1	cscherer	sunuser	10189	Feb 11	2000	cronmod.f
-rw-r--r--	1	cscherer	sunuser	22452	Dec 31	15:45	cronmod.o
-rw-r--r--	1	cscherer	sunuser	5153	Feb 11	2000	crpcal.f
-rw-r--r--	1	cscherer	sunuser	8556	Dec 31	15:46	crpcal.o
-rw-r--r--	1	cscherer	sunuser	3842	Feb 11	2000	dkharv.f



-rw-r--r--	1	cscherer	sunuser	6120	Dec 31	15:46	dkharv.o
-rw-r--r--	1	cscherer	sunuser	5426	Feb 11	2000	dose.f
-rw-r--r--	1	cscherer	sunuser	2398	Feb 11	2000	drfbiv.f
-rw-r--r--	1	cscherer	sunuser	2628	Dec 31	15:45	drfbiv.o
-rw-r--r--	1	cscherer	sunuser	6728	Feb 11	2000	drfsec.f
-rw-r--r--	1	cscherer	sunuser	5248	Dec 31	15:45	drfsec.o
-rw-r--r--	1	cscherer	sunuser	1877	Feb 11	2000	drkcal.f
-rw-r--r--	1	cscherer	sunuser	2276	Dec 31	15:46	drkcal.o
-rw-r--r--	1	cscherer	sunuser	1325	Feb 11	2000	dumred.f
-rw-r--r--	1	cscherer	sunuser	3600	Dec 31	15:45	dumred.o
-rw-r--r--	1	cscherer	sunuser	3958	Feb 11	2000	edranm.f
-rw-r--r--	1	cscherer	sunuser	7244	Dec 31	15:46	edranm.o
-rw-r--r--	1	cscherer	sunuser	3567	Feb 11	2000	edrcrp.f
-rw-r--r--	1	cscherer	sunuser	7652	Dec 31	15:46	edrcrp.o
-rw-r--r--	1	cscherer	sunuser	2525	Feb 11	2000	edrnnon.f
-rw-r--r--	1	cscherer	sunuser	4696	Dec 31	15:46	edrnnon.o
-rw-r--r--	1	cscherer	sunuser	2853	Feb 11	2000	edrres.f
-rw-r--r--	1	cscherer	sunuser	4136	Dec 31	15:46	edrres.o
-rw-r--r--	1	cscherer	sunuser	10581	Feb 11	2000	env.f
-rw-r--r--	1	cscherer	sunuser	4885	Feb 11	2000	envin.f
-rw-r--r--	1	cscherer	sunuser	4561	Feb 11	2000	envlib.f
-rw-r--r--	1	cscherer	sunuser	8708	Dec 31	15:45	envlib.o
-rw-r--r--	1	cscherer	sunuser	1912	Feb 11	2000	exposr.f
-rw-r--r--	1	cscherer	sunuser	2236	Dec 31	15:46	exposr.o
-rw-r--r--	1	cscherer	sunuser	6774	Feb 11	2000	extcal.f
-rw-r--r--	1	cscherer	sunuser	7572	Dec 31	15:46	extcal.o
-rw-r--r--	1	cscherer	sunuser	1489	Feb 11	2000	filerr.f
-rw-r--r--	1	cscherer	sunuser	3860	Dec 31	15:45	filerr.o
-rw-r--r--	1	cscherer	sunuser	1986	Feb 11	2000	fntdrf.f
-rw-r--r--	1	cscherer	sunuser	2000	Dec 31	15:45	fntdrf.o
-rw-r--r--	1	cscherer	sunuser	3003	Feb 11	2000	headng.f
-rw-r--r--	1	cscherer	sunuser	5740	Dec 31	15:45	headng.o
-rw-r--r--	1	cscherer	sunuser	2203	Feb 11	2000	idnuc.f
-rw-r--r--	1	cscherer	sunuser	3000	Dec 31	15:45	idnuc.o
-rw-r--r--	1	cscherer	sunuser	2842	Feb 11	2000	inhcal.f
-rw-r--r--	1	cscherer	sunuser	5704	Dec 31	15:46	inhcal.o
-rw-r--r--	1	cscherer	sunuser	2392	Feb 11	2000	initnv.f
-rw-r--r--	1	cscherer	sunuser	2756	Dec 31	15:46	initnv.o
-rw-r--r--	1	cscherer	sunuser	1841	Feb 11	2000	intpol.f
-rw-r--r--	1	cscherer	sunuser	3724	Dec 31	15:46	intpol.o
-rw-r--r--	1	cscherer	sunuser	1348	Feb 11	2000	invmol.f
-rw-r--r--	1	cscherer	sunuser	1160	Dec 31	15:45	invmol.o
-rw-r--r--	1	cscherer	sunuser	677	Feb 11	2000	makda2.f
-rw-r--r--	1	cscherer	sunuser	1048	Dec 31	15:45	makda2.o
-rw-r--r--	1	cscherer	sunuser	5870	Feb 11	2000	opnfil.f
-rw-r--r--	1	cscherer	sunuser	11748	Dec 31	15:45	opnfil.o
-rw-r--r--	1	cscherer	sunuser	4217	Feb 11	2000	order.f
-rw-r--r--	1	cscherer	sunuser	5732	Dec 31	15:45	order.o
-rw-r--r--	1	cscherer	sunuser	2325	Feb 11	2000	packag.f
-rw-r--r--	1	cscherer	sunuser	3480	Dec 31	15:46	packag.o
-rw-r--r--	1	cscherer	sunuser	3366	Feb 11	2000	plmriz.f
-rw-r--r--	1	cscherer	sunuser	2184	Dec 31	15:45	plmriz.o
-rw-r--r--	1	cscherer	sunuser	1861	Feb 11	2000	prior.f
-rw-r--r--	1	cscherer	sunuser	2236	Dec 31	15:46	prior.o
-rw-r--r--	1	cscherer	sunuser	4080	Feb 11	2000	prob.f
-rw-r--r--	1	cscherer	sunuser	2108	Dec 31	15:45	prob.o
-rw-r--r--	1	cscherer	sunuser	2079	Feb 11	2000	profile.f

```

-rw-r--r-- 1 cscherer sunuser 1612 Dec 31 15:45 profile.o
-rw-r--r-- 1 cscherer sunuser 11351 Feb 11 2000 readin.f
-rw-r--r-- 1 cscherer sunuser 47520 Dec 31 15:45 readin.o
-rw-r--r-- 1 cscherer sunuser 6174 Feb 11 2000 redcas.f
-rw-r--r-- 1 cscherer sunuser 24420 Dec 31 15:46 redcas.o
-rw-r--r-- 1 cscherer sunuser 3867 Feb 11 2000 redcha.f
-rw-r--r-- 1 cscherer sunuser 9248 Dec 31 15:46 redcha.o
-rw-r--r-- 1 cscherer sunuser 8483 Feb 11 2000 redflt.f
-rw-r--r-- 1 cscherer sunuser 35388 Dec 31 15:45 redflt.o
-rw-r--r-- 1 cscherer sunuser 1694 Feb 11 2000 redist.f
-rw-r--r-- 1 cscherer sunuser 1792 Dec 31 15:46 redist.o
-rw-r--r-- 1 cscherer sunuser 8548 Feb 11 2000 ritenv.f
-rw-r--r-- 1 cscherer sunuser 37152 Dec 31 15:45 ritenv.o
-rw-r--r-- 1 cscherer sunuser 4371 Feb 11 2000 ritexp.f
-rw-r--r-- 1 cscherer sunuser 10940 Dec 31 15:46 ritexp.o
-rw-r--r-- 1 cscherer sunuser 2584 Feb 11 2000 ritmed.f
-rw-r--r-- 1 cscherer sunuser 7300 Dec 31 15:46 ritmed.o
-rw-r--r-- 1 cscherer sunuser 27222 Feb 11 2000 ritqa.f
-rw-r--r-- 1 cscherer sunuser 93708 Dec 31 15:45 ritqa.o
-rw-r--r-- 1 cscherer sunuser 4346 Feb 11 2000 rlibin.f
-rw-r--r-- 1 cscherer sunuser 10192 Dec 31 15:45 rlibin.o
-rw-r--r-- 1 cscherer sunuser 4399 Feb 11 2000 rwake.f
-rw-r--r-- 1 cscherer sunuser 3392 Dec 31 15:45 rwake.o
-rw-r--r-- 1 cscherer sunuser 2396 Feb 11 2000 sigma.f
-rw-r--r-- 1 cscherer sunuser 1832 Dec 31 15:45 sigma.o
-rw-r--r-- 1 cscherer sunuser 8387 Feb 11 2000 swcal.f
-rw-r--r-- 1 cscherer sunuser 5868 Dec 31 15:46 swcal.o
-rw-r--r-- 1 cscherer sunuser 1894 Feb 11 2000 trnspt.f
-rw-r--r-- 1 cscherer sunuser 2048 Dec 31 15:46 trnspt.o
-rw-r--r-- 1 cscherer sunuser 1771 Feb 11 2000 ustar.f
-rw-r--r-- 1 cscherer sunuser 1500 Dec 31 15:45 ustar.o
-rw-r--r-- 1 cscherer sunuser 9276 Feb 11 2000 xqcal.f
-rw-r--r-- 1 cscherer sunuser 17128 Dec 31 15:46 xqcal.o
-rw-r--r-- 1 cscherer sunuser 5277 Feb 11 2000 xqin.f
-rw-r--r-- 1 cscherer sunuser 12472 Dec 31 15:45 xqin.o

```

## scr414/codes/itym:

total 5

```

drwxr-xr-x 3 cscherer sunuser 512 Dec 31 09:54 .
drwxr-xr-x 5 cscherer sunuser 1536 Jan 9 14:39 ..
-rw-r--r-- 1 cscherer sunuser 596 Oct 1 10:06 makefile
drwxr-xr-x 2 cscherer sunuser 512 Dec 31 09:54 src

```

## scr414/codes/itym/src:

total 328

```

drwxr-xr-x 2 cscherer sunuser 512 Dec 31 09:54 .
drwxr-xr-x 3 cscherer sunuser 512 Dec 31 09:54 ..
-rw-r--r-- 1 cscherer sunuser 29776 Mar 22 2000 array.f
-rw-r--r-- 1 cscherer sunuser 15856 Mar 22 2000 check_valid.f
-rw-r--r-- 1 cscherer sunuser 60931 Dec 30 19:29 estimator.f
-rw-r--r-- 1 cscherer sunuser 5384 Dec 30 19:31 init_itym.f
-rw-r--r-- 1 cscherer sunuser 9420 Sep 25 18:55 itym.f
-rw-r--r-- 1 cscherer sunuser 11640 Dec 30 19:31 itym.i
-rw-r--r-- 1 cscherer sunuser 26752 Sep 26 14:19 itymutils.f
-rw-r--r-- 1 cscherer sunuser 261 Mar 22 2000 path.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 preuzf.i
-rw-r--r-- 1 cscherer sunuser 42671 Mar 22 2000 ran.f

```

```

-rw-r--r-- 1 cscherer sunuser 38406 Sep 26 14:20 strtokfunc.f
-rw-r--r-- 1 cscherer sunuser 60346 Sep 26 14:22 uncertain.f
-rw-r--r-- 1 cscherer sunuser 12265 Mar 22 2000 uncertain.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 unctab.i
-rw-r--r-- 1 cscherer sunuser 10904 Mar 22 2000 zportunx.f

```

## scr414/codes/prev\_exes:

total 2495

```

drwxr-xr-x 2 cscherer sunuser 512 Jan 9 09:30 .
drwxr-xr-x 5 cscherer sunuser 1536 Jan 9 14:39 ..
-rwxr-xr-x 1 cscherer sunuser 165120 Jan 8 15:15 ashplume.e
-rwxr-xr-x 1 cscherer sunuser 43144 Jan 8 15:15 dsfailt.e
-rwxr-xr-x 1 cscherer sunuser 41960 Jan 8 15:15 ebsfilt.e
-rwxr-xr-x 1 cscherer sunuser 191076 Jan 7 10:23 env.e
-rwxr-xr-x 1 cscherer sunuser 282692 Jan 7 10:23 envin.e
-rwxr-xr-x 1 cscherer sunuser 143508 Jan 8 15:14 failt.e
-rwxr-xr-x 1 cscherer sunuser 107232 Jan 8 17:38 mechfail.e
-rwxr-xr-x 1 cscherer sunuser 105956 Jan 8 09:36 mechfail_0108_sol42.e
-rwxr-xr-x 1 cscherer sunuser 109064 Jan 7 11:15 mechfail_defaultcomp.e
-rwxr-xr-x 1 cscherer sunuser 102492 Jan 8 14:04 mechfail_georgeI.e
-rwxr-xr-x 1 cscherer sunuser 105956 Jan 8 15:17 mechfail_makeall.e
-rwxr-xr-x 1 cscherer sunuser 105956 Jan 7 11:18 mechfail_sol42.e
-rwxr-xr-x 1 cscherer sunuser 107232 Jan 8 17:38 mechfail_test.e
-rwxr-xr-x 1 cscherer sunuser 408036 Jan 8 15:14 nefmks.e
-rwxr-xr-x 1 cscherer sunuser 115588 Jan 8 15:15 releaset.e
-rwxr-xr-x 1 cscherer sunuser 243532 Jan 8 15:15 snllhs.e

```

## scr414/data:

total 7087

```

drwxr-xr-x 2 cscherer sunuser 1536 Dec 31 09:53 .
drwxr-xr-x 10 cscherer sunuser 8192 Jan 9 16:09 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 11 2000 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 121789 Mar 22 2000 bunitdem.dat
-rw-r--r-- 1 cscherer sunuser 1025 Mar 29 2000 burnup.dat
-rwxr-xr-x 1 cscherer sunuser 468925 Sep 25 19:00 careadem.dat
-rwxr-xr-x 1 cscherer sunuser 515693 Sep 25 19:01 cdepdem.dat
-rw-r--r-- 1 cscherer sunuser 850000 Aug 15 1997 climato1.dat
-rw-r--r-- 1 cscherer sunuser 2200 Feb 1 1999 climato2.dat
-rw-r--r-- 1 cscherer sunuser 4791 Sep 25 17:29 coefkdeq.dat
-rw-r--r-- 1 cscherer sunuser 2200 Dec 19 13:50 dilution.dat
-rw-r--r-- 1 cscherer sunuser 519 Oct 19 2000 drythick.dat
-rw-r--r-- 1 cscherer sunuser 791 Jul 23 15:39 dsfailt.def
-rw-r--r-- 1 cscherer sunuser 6265 Jul 17 09:54 ebsfail.def
-rw-r--r-- 1 cscherer sunuser 790 May 28 1998 ebsfilt.def
-rw-r--r-- 1 cscherer sunuser 5486 Dec 30 17:05 ebsrel.def
-rw-r--r-- 1 cscherer sunuser 298679 Mar 22 2000 elevdem.dat
-rw-r--r-- 1 cscherer sunuser 9381 May 29 2002 fluoride.dat
-rw-r--r-- 1 cscherer sunuser 6513 Feb 11 2000 gbioac1.dat
-rw-r--r-- 1 cscherer sunuser 3383 Sep 4 19:18 gdefaults.def
-rw-r--r-- 1 cscherer sunuser 3383 Feb 11 2000 gdefault.def
-rw-r--r-- 1 cscherer sunuser 64 Feb 11 2000 gdosinc2.dat
-rw-r--r-- 1 cscherer sunuser 7011 Feb 11 2000 gftrans.def
-rw-r--r-- 1 cscherer sunuser 7011 Sep 4 19:18 gftranss.def
-rw-r--r-- 1 cscherer sunuser 15214 Feb 11 2000 ggamen.dat
-rw-r--r-- 1 cscherer sunuser 13855 Feb 11 2000 ggenii.def
-rw-r--r-- 1 cscherer sunuser 13173 Sep 4 19:18 ggeniis.def
-rw-r--r-- 1 cscherer sunuser 5351 Feb 11 2000 ggrdf.dat

```

```

-rw-r--r-- 1 cscherer sunuser 9897 Mar 29 2000 gnewdf.dat
-rw-r--r-- 1 cscherer sunuser 13200 Mar 20 2000 grmdlib.dat
-rw-r--r-- 1 cscherer sunuser 3048 Sep 15 2000 gs_cb_ad.dat
-rw-r--r-- 1 cscherer sunuser 2487 Jun 4 1998 gs_cb_ci.dat
-rw-r--r-- 1 cscherer sunuser 3045 Sep 15 2000 gs_pb_ad.dat
-rw-r--r-- 1 cscherer sunuser 2487 Jun 4 1998 gs_pb_ci.dat
-rw-r--r-- 1 cscherer sunuser 8153 Dec 20 09:54 ia.dat
-rw-r--r-- 1 cscherer sunuser 20698 Dec 30 19:26 itym.dat
-rw-r--r-- 1 cscherer sunuser 943774 Mar 29 2000 maidtbl.dat
-rw-r--r-- 1 cscherer sunuser 10978 Mar 22 2000 maswtbl.dat
-rwxr-xr-x 1 cscherer sunuser 943775 Dec 30 19:18 maydtbl.dat
-rw-r--r-- 1 cscherer sunuser 9729 Dec 17 17:31 mechfail.def
-rw-r--r-- 1 cscherer sunuser 1320 Dec 17 17:31 multifaf.dat
-rw-r--r-- 1 cscherer sunuser 1321 Dec 17 17:31 multifbe.dat
-rw-r--r-- 1 cscherer sunuser 116965 Jul 17 09:56 multiflo.dat
-rw-r--r-- 1 cscherer sunuser 6890 Sep 25 11:51 nuclides.dat
-rw-r--r-- 1 cscherer sunuser 7111 Sep 24 2000 organdf.dat
-rw-r--r-- 1 cscherer sunuser 548 Sep 21 2000 repdes.dat
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs2.dis
-rwxr-xr-x 1 cscherer sunuser 943788 Dec 30 19:18 smaydtbl.dat
-rw-r--r-- 1 cscherer sunuser 489858 Mar 22 2000 soildem.dat
-rw-r--r-- 1 cscherer sunuser 4506 Feb 7 2000 strmtube.dat
-rw-r--r-- 1 cscherer sunuser 119673 Mar 22 2000 sunitdem.dat
-rw-r--r-- 1 cscherer sunuser 162404 May 8 2000 tefkti.inp
-rw-r--r-- 1 cscherer sunuser 99692 Dec 17 17:31 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser 471041 Mar 22 2000 winddem.dat
-rw-r--r-- 1 cscherer sunuser 17410 Feb 2 2000 wpflow.def

```

## scr414/docs:

total 265

```

drwxr-xr-x 3 cscherer sunuser 512 Jan 10 11:38 .
drwxr-xr-x 10 cscherer sunuser 8192 Jan 9 16:09 ..
drwxr-xr-x 2 cscherer sunuser 512 Dec 31 13:13 fromgeorge
-rwxr--r-- 1 cscherer sunuser 39659 Jan 10 11:40 scr_414.wpd
-rwxr--r-- 1 cscherer sunuser 205496 Jan 10 09:39 tp_scr_414.wpd

```

## scr414/docs/fromgeorge:

total 266

```

drwxr-xr-x 2 cscherer sunuser 512 Dec 31 13:13 .
drwxr-xr-x 3 cscherer sunuser 512 Jan 10 11:38 ..
-rw-r--r-- 1 cscherer sunuser 218108 Dec 11 17:55 Test Plan PA-SCR-414.wpd
-rwxr--r-- 1 cscherer sunuser 39954 Dec 30 14:28 scr_414.wpd

```

## scr414/fromgeorge\_test:

total 11

```

drwxr-xr-x 4 cscherer sunuser 512 Dec 31 16:35 .
drwxr-xr-x 10 cscherer sunuser 8192 Jan 9 16:09 ..
drwxr-xr-x 3 cscherer sunuser 512 Dec 11 14:21 pltest
drwxr-xr-x 5 cscherer sunuser 512 Dec 11 14:21 sltest

```

## scr414/fromgeorge\_test/pltest:

total 6

```

drwxr-xr-x 3 cscherer sunuser 512 Dec 11 14:21 .
drwxr-xr-x 4 cscherer sunuser 512 Dec 31 16:35 ..
drwxr-xr-x 3 cscherer sunuser 4096 Dec 11 14:55 pl-1

```

scr414/fromgeorge\_test/pltest/pl-1:

total 11567

drwxr-xr-x	3	cscherer	sunuser	4096	Dec 11 14:55	.
drwxr-xr-x	3	cscherer	sunuser	512	Dec 11 14:21	..
-rw-r--r--	1	cscherer	sunuser	965	Dec 11 14:41	FILENAME.DAT
-rw-r--r--	1	cscherer	sunuser	381	Dec 11 14:41	NEFII.VEL
-rw-r--r--	1	cscherer	sunuser	152064	Dec 11 14:55	PA-SCR-414_PL1.xls
-rw-r--r--	1	cscherer	sunuser	2746	Dec 11 14:41	airpkdos.res
-rw-r--r--	1	cscherer	sunuser	2746	Dec 11 14:41	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	914	Dec 11 14:41	ashout.res
-rw-r--r--	1	cscherer	sunuser	1025	Dec 11 14:40	burnup.dat
-rw-r--r--	1	cscherer	sunuser	5047	Dec 11 14:41	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Dec 11 14:40	climato1.dat
-rw-r--r--	1	cscherer	sunuser	2200	Dec 11 14:40	climato2.dat
-rw-r--r--	1	cscherer	sunuser	4791	Dec 11 14:41	coefkdeq.dat
-rw-r--r--	1	cscherer	sunuser	14506	Dec 11 14:41	corrode.out
-rw-r--r--	1	cscherer	sunuser	109413	Dec 11 14:41	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2252	Dec 11 14:41	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2252	Dec 11 14:41	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Dec 11 14:41	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	6693	Dec 11 14:41	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Dec 11 14:41	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2033	Dec 11 14:41	dilution.dat
-rw-r--r--	1	cscherer	sunuser	3870	Dec 11 14:40	drifts.dat
-rw-r--r--	1	cscherer	sunuser	519	Dec 11 14:40	drythick.dat
-rw-r--r--	1	cscherer	sunuser	1024	Dec 11 14:41	dsfail.res
-rw-r--r--	1	cscherer	sunuser	5674	Dec 11 14:40	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Dec 11 14:40	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	27532	Dec 11 14:40	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Dec 11 14:40	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 14:40	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	37960	Dec 11 14:41	ebscld.out
-rw-r--r--	1	cscherer	sunuser	6265	Dec 11 14:41	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	6222	Dec 11 14:41	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	790	Dec 11 14:41	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	26320	Dec 11 14:41	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	3030	Dec 11 14:41	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	239	Dec 11 14:41	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Dec 11 14:41	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	146101	Dec 11 14:41	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	108252	Dec 11 14:41	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	439749	Dec 11 14:41	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Dec 11 14:41	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5553	Dec 11 14:41	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	11211	Dec 11 14:41	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	108203	Dec 11 14:41	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Dec 11 14:41	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Dec 11 14:41	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2711	Dec 11 14:41	echofail.dat
-rw-r--r--	1	cscherer	sunuser	445601	Dec 11 14:41	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	180804	Dec 11 14:41	env.e
-rwxr-xr-x	1	cscherer	sunuser	268736	Dec 11 14:41	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Dec 11 14:41	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1707	Dec 11 14:41	epapktim.out
-rwxr-xr-x	1	cscherer	sunuser	128128	Dec 11 14:41	failt.e
-rw-r--r--	1	cscherer	sunuser	17398	Dec 11 14:41	failt.out
-rw-r--r--	1	cscherer	sunuser	6281	Dec 11 14:40	fluoride.dat

-rw-r--r--	1	cscherer	sunuser	46580	Dec 11 14:41	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	6513	Dec 11 14:41	gbioac1.dat
-rw-r--r--	1	cscherer	sunuser	3383	Dec 11 14:41	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Dec 11 14:41	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Dec 11 14:41	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 14:41	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Dec 11 14:41	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Dec 11 14:41	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Dec 11 14:41	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Dec 11 14:41	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Dec 11 14:41	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	13855	Dec 11 14:41	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Dec 11 14:41	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Dec 11 14:41	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Dec 11 14:41	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Dec 11 14:41	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Dec 11 14:41	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Dec 11 14:41	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 14:41	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 14:41	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Dec 11 14:41	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Dec 11 14:41	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Dec 11 14:41	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Dec 11 14:41	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 14:41	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 14:41	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Dec 11 14:41	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1738	Dec 11 14:41	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1738	Dec 11 14:41	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2170	Dec 11 14:41	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2330	Dec 11 14:41	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Dec 11 14:41	invl000.out
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 14:35	lhs.csv
-rw-r--r--	1	cscherer	sunuser	96	Dec 11 14:40	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5531	Dec 11 14:35	lhs.out
-rw-r--r--	1	cscherer	sunuser	71879	Dec 11 14:35	lhse.out
-rw-r--r--	1	cscherer	sunuser	1095	Dec 11 14:41	maxrel.dat
-rw-r--r--	1	cscherer	sunuser	943775	Dec 11 14:40	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31756	Dec 11 14:41	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9767	Dec 11 14:40	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	102908	Dec 11 14:40	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9767	Dec 11 14:40	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	91945	Dec 11 14:41	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1320	Dec 11 14:40	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1321	Dec 11 14:40	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	61241	Dec 11 14:41	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2330	Dec 11 14:41	nearfld.res
-rw-r--r--	1	cscherer	sunuser	53905	Dec 11 14:41	nefii.dis
-rw-r--r--	1	cscherer	sunuser	11320	Dec 11 14:41	nefii.inp
-rw-r--r--	1	cscherer	sunuser	144983	Dec 11 14:41	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Dec 11 14:41	nefii.rel
-rw-r--r--	1	cscherer	sunuser	53905	Dec 11 14:41	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	11320	Dec 11 14:41	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	144983	Dec 11 14:41	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	187942	Dec 11 14:41	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	381	Dec 11 14:41	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	34718	Dec 11 14:41	nefiuiz.dis

-rw-r--r--	1	cscherer	sunuser	10100	Dec 11 14:41	nefiuz.inp
-rw-r--r--	1	cscherer	sunuser	109234	Dec 11 14:41	nefiuz.out
-rw-r--r--	1	cscherer	sunuser	175858	Dec 11 14:41	nefiuz.src
-rw-r--r--	1	cscherer	sunuser	264	Dec 11 14:41	nefiuz.vel
-rwxr-xr-x	1	cscherer	sunuser	392988	Dec 11 14:41	nefmks.e
-rw-r--r--	1	cscherer	sunuser	20	Dec 11 14:41	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2506	Dec 11 14:41	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2506	Dec 11 14:41	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Dec 11 14:40	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Dec 11 14:41	organdf.dat
-rw-r--r--	1	cscherer	sunuser	698	Dec 11 14:41	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8244	Dec 11 14:41	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8244	Dec 11 14:41	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	899	Dec 11 14:41	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 14:41	relccdf.res
-rw-r--r--	1	cscherer	sunuser	721	Dec 11 14:41	relcum.out
-rwxr-xr-x	1	cscherer	sunuser	100372	Dec 11 14:41	reaset.e
-rw-r--r--	1	cscherer	sunuser	412	Dec 11 14:41	reaset.out
-rw-r--r--	1	cscherer	sunuser	620	Dec 11 14:41	relfrac.out
-rw-r--r--	1	cscherer	sunuser	722	Dec 11 14:41	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Dec 11 14:40	repdes.dat
-rw-r--r--	1	cscherer	sunuser	47561	Dec 11 14:41	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Dec 11 14:41	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Dec 11 14:41	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Dec 11 14:41	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Dec 11 14:41	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Dec 11 14:41	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Dec 11 14:41	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Dec 11 14:41	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5137	Dec 11 14:41	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16137	Dec 11 14:41	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5183	Dec 11 14:41	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 14:41	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	722	Dec 11 14:41	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	537	Dec 11 14:40	samplpar.abb
-rw-r--r--	1	cscherer	sunuser	537	Dec 11 14:40	samplpar.hdr
-rw-r--r--	1	cscherer	sunuser	679	Dec 11 14:41	samplpar.res
-rw-r--r--	1	cscherer	sunuser	130758	Dec 11 14:40	seisbs1.dis
-rw-r--r--	1	cscherer	sunuser	130758	Dec 11 14:40	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	943788	Dec 11 14:40	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	228036	Dec 11 14:35	snllhs.e
-rw-r--r--	1	cscherer	sunuser	187942	Dec 11 14:41	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	579	Dec 11 14:41	sp.tpa
drwxr-xr-x	2	cscherer	sunuser	512	Dec 11 14:37	standalone
-rw-r--r--	1	cscherer	sunuser	4506	Dec 11 14:41	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	13122	Dec 11 14:41	totdos_c.res
-rw-r--r--	1	cscherer	sunuser	13122	Dec 11 14:41	totdose.res
-rwxr--r--	1	cscherer	sunuser	2503704	Dec 11 14:19	tpa.e
-rw-r--r--	1	cscherer	sunuser	89088	Dec 11 14:40	tpa.inp
-rw-r--r--	1	cscherer	sunuser	86685	Dec 11 14:40	tpa_original.inp
-rw-r--r--	1	cscherer	sunuser	89088	Dec 11 14:40	tpameans_original.out
-rw-r--r--	1	cscherer	sunuser	99636	Dec 11 14:40	tpanames.dbs
-rw-r--r--	1	cscherer	sunuser	138891	Dec 11 14:41	trelease.out
-rw-r--r--	1	cscherer	sunuser	14132	Dec 11 14:41	weldfail.out
-rw-r--r--	1	cscherer	sunuser	8805	Dec 11 14:41	wpflow.dat
-rw-r--r--	1	cscherer	sunuser	17410	Dec 11 14:41	wpflow.def
-rw-r--r--	1	cscherer	sunuser	818	Dec 11 14:41	wpsfail.res

scr414/fromgeorge\_test/pltest/pl-1/standalone:

total 521

drwxr-xr-x	2	cscherer	sunuser	512	Dec 11 14:37	.
drwxr-xr-x	3	cscherer	sunuser	4096	Dec 11 14:55	..
-rw-r--r--	1	cscherer	sunuser	91945	Dec 11 14:43	PA-SCR-414_PL1.out
-rw-r--r--	1	cscherer	sunuser	31756	Dec 11 14:43	mechfail.dat
-rwxr--r--	1	cscherer	sunuser	102908	Dec 11 14:19	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9767	Dec 11 14:40	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	130758	Dec 11 13:47	seisbs1.dis
-rw-r--r--	1	cscherer	sunuser	130758	Dec 11 13:47	seisbs2.dis

scr414/fromgeorge\_test/sltest:

total 15

drwxr-xr-x	5	cscherer	sunuser	512	Dec 11 14:21	.
drwxr-xr-x	4	cscherer	sunuser	512	Dec 31 16:35	..
drwxr-xr-x	2	cscherer	sunuser	4096	Dec 11 15:08	sl-1
drwxr-xr-x	2	cscherer	sunuser	3584	Dec 11 17:52	sl-2
drwxr-xr-x	3	cscherer	sunuser	4608	Dec 11 17:41	sl-3

scr414/fromgeorge\_test/sltest/sl-1:

total 28358

drwxr-xr-x	2	cscherer	sunuser	4096	Dec 11 15:08	.
drwxr-xr-x	5	cscherer	sunuser	512	Dec 11 14:21	..
-rw-r--r--	1	cscherer	sunuser	965	Dec 11 15:04	FILENAME.DAT
-rw-r--r--	1	cscherer	sunuser	450	Dec 11 15:08	NEFII.VEL
-rw-r--r--	1	cscherer	sunuser	70776	Dec 11 15:08	PA-SCR-414_SL1.out
-rw-r--r--	1	cscherer	sunuser	3480	Dec 11 15:08	airpkdos.res
-rw-r--r--	1	cscherer	sunuser	3480	Dec 11 15:08	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	1040	Dec 11 15:08	ashout.res
-rw-r--r--	1	cscherer	sunuser	1025	Dec 11 15:01	burnup.dat
-rw-r--r--	1	cscherer	sunuser	5047	Dec 11 15:07	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Dec 11 15:01	climato1.dat
-rw-r--r--	1	cscherer	sunuser	2200	Dec 11 15:01	climato2.dat
-rw-r--r--	1	cscherer	sunuser	4791	Dec 11 15:01	coefkdeq.dat
-rw-r--r--	1	cscherer	sunuser	14506	Dec 11 15:07	corrode.out
-rw-r--r--	1	cscherer	sunuser	78711	Dec 11 15:08	cp.tpa
-rw-r--r--	1	cscherer	sunuser	3812	Dec 11 15:08	cumrel.res
-rw-r--r--	1	cscherer	sunuser	3812	Dec 11 15:08	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Dec 11 15:07	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	142319	Dec 11 15:08	dcagw.ech
-rw-r--r--	1	cscherer	sunuser	125333	Dec 11 15:08	dcagw.rlt
-rw-r--r--	1	cscherer	sunuser	14392	Dec 11 15:08	dcfgw.cum
-rw-r--r--	1	cscherer	sunuser	6693	Dec 11 15:07	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Dec 11 15:07	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2033	Dec 11 15:04	dilution.dat
-rw-r--r--	1	cscherer	sunuser	3870	Dec 11 15:01	drifts.dat
-rw-r--r--	1	cscherer	sunuser	519	Dec 11 15:01	drythick.dat
-rw-r--r--	1	cscherer	sunuser	118172	Dec 11 15:08	dsfail.ech
-rw-r--r--	1	cscherer	sunuser	3535	Dec 11 15:08	dsfail.res
-rw-r--r--	1	cscherer	sunuser	221915	Dec 11 15:08	dsfail.rlt
-rw-r--r--	1	cscherer	sunuser	274	Dec 11 15:07	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Dec 11 15:01	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	27532	Dec 11 15:01	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Dec 11 15:07	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 15:01	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	37960	Dec 11 15:07	ebscld.out



-rw-r--r--	1	cscherer	sunuser	6265	Dec 11 15:01	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	546410	Dec 11 15:08	ebsfail.ech
-rw-r--r--	1	cscherer	sunuser	6222	Dec 11 15:07	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	119655	Dec 11 15:08	ebsfail.rlt
-rw-r--r--	1	cscherer	sunuser	790	Dec 11 15:01	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	26320	Dec 11 15:01	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	3030	Dec 11 15:07	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	551	Dec 11 15:07	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Dec 11 15:07	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	146101	Dec 11 15:07	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	108252	Dec 11 15:07	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	140681	Dec 11 15:07	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Dec 11 15:07	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	17051	Dec 11 15:07	ebsrel.cum
-rw-r--r--	1	cscherer	sunuser	5553	Dec 11 15:01	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	573248	Dec 11 15:08	ebsrel.ech
-rw-r--r--	1	cscherer	sunuser	11211	Dec 11 15:07	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	1723775	Dec 11 15:08	ebsrel.rlt
-rw-r--r--	1	cscherer	sunuser	108203	Dec 11 15:07	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Dec 11 15:07	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Dec 11 15:07	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2696	Dec 11 15:07	echofail.dat
-rw-r--r--	1	cscherer	sunuser	352270	Dec 11 15:07	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	180804	Dec 11 15:04	env.e
-rwxr-xr-x	1	cscherer	sunuser	268736	Dec 11 15:04	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Dec 11 15:08	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	2073	Dec 11 15:08	epapktim.out
-rw-r--r--	1	cscherer	sunuser	347960	Dec 11 15:07	failt.cum
-rwxr-xr-x	1	cscherer	sunuser	128128	Dec 11 15:01	failt.e
-rw-r--r--	1	cscherer	sunuser	17398	Dec 11 15:07	failt.out
-rw-r--r--	1	cscherer	sunuser	6281	Dec 11 15:07	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Dec 11 15:07	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	6513	Dec 11 15:04	gbioacl.dat
-rw-r--r--	1	cscherer	sunuser	3383	Dec 11 15:04	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Dec 11 15:08	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Dec 11 15:04	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 15:08	gentoo.out
-rw-r--r--	1	cscherer	sunuser	73728	Dec 11 15:08	genv.cum
-rw-r--r--	1	cscherer	sunuser	35173	Dec 11 15:08	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Dec 11 15:08	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Dec 11 15:04	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Dec 11 15:08	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Dec 11 15:04	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	40452	Dec 11 15:08	ggenii.cum
-rw-r--r--	1	cscherer	sunuser	13855	Dec 11 15:04	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Dec 11 15:08	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Dec 11 15:08	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Dec 11 15:04	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Dec 11 15:08	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Dec 11 15:04	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Dec 11 15:04	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 15:08	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 15:08	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Dec 11 15:08	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Dec 11 15:08	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Dec 11 15:08	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Dec 11 15:08	gw_pb_ci.dat

-rw-r--r--	1	cscherer	sunuser	607	Dec 11 15:08	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	607	Dec 11 15:08	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Dec 11 15:08	gwork.buf
-rw-r--r--	1	cscherer	sunuser	2136	Dec 11 15:08	gwpkds.res
-rw-r--r--	1	cscherer	sunuser	2136	Dec 11 15:08	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2712	Dec 11 15:08	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	3968	Dec 11 15:08	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Dec 11 15:07	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 15:01	lhs.csv
-rw-r--r--	1	cscherer	sunuser	41860	Dec 11 15:01	lhs.inp
-rw-r--r--	1	cscherer	sunuser	11062	Dec 11 15:01	lhs.out
-rw-r--r--	1	cscherer	sunuser	71879	Dec 11 15:01	lhse.out
-rw-r--r--	1	cscherer	sunuser	1095	Dec 11 15:07	maxrel.dat
-rw-r--r--	1	cscherer	sunuser	943775	Dec 11 15:01	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31768	Dec 11 15:07	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9767	Dec 11 15:01	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	102908	Dec 11 15:01	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9911	Dec 11 15:07	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	93932	Dec 11 15:07	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1320	Dec 11 15:01	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1321	Dec 11 15:01	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	78958	Dec 11 15:08	mv.tpa
-rw-r--r--	1	cscherer	sunuser	3968	Dec 11 15:08	nearfld.res
-rw-r--r--	1	cscherer	sunuser	47495	Dec 11 15:08	nefi.dis
-rw-r--r--	1	cscherer	sunuser	10104	Dec 11 15:08	nefi.inp
-rw-r--r--	1	cscherer	sunuser	183390	Dec 11 15:08	nefi.out
-rw-r--r--	1	cscherer	sunuser	603	Dec 11 15:08	nefi.rel
-rw-r--r--	1	cscherer	sunuser	47495	Dec 11 15:08	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Dec 11 15:08	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	183390	Dec 11 15:08	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	151697	Dec 11 15:08	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Dec 11 15:08	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	3634352	Dec 11 15:08	nefiuz.cum
-rw-r--r--	1	cscherer	sunuser	522726	Dec 11 15:08	nefiuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Dec 11 15:08	nefiuz.inp
-rw-r--r--	1	cscherer	sunuser	565934	Dec 11 15:08	nefiuz.out
-rw-r--r--	1	cscherer	sunuser	153286	Dec 11 15:08	nefiuz.src
-rw-r--r--	1	cscherer	sunuser	171	Dec 11 15:08	nefiuz.vel
-rwxr-xr-x	1	cscherer	sunuser	392988	Dec 11 15:01	nefmks.e
-rw-r--r--	1	cscherer	sunuser	180	Dec 11 15:08	nefmks.log
-rw-r--r--	1	cscherer	sunuser	118169	Dec 11 15:08	nfenv.ech
-rw-r--r--	1	cscherer	sunuser	639215	Dec 11 15:08	nfenv.rlt
-rw-r--r--	1	cscherer	sunuser	3160	Dec 11 15:08	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	3160	Dec 11 15:08	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Dec 11 15:01	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Dec 11 15:04	organdf.dat
-rw-r--r--	1	cscherer	sunuser	744	Dec 11 15:08	pkmndose.out
-rw-r--r--	1	cscherer	sunuser	15244	Dec 11 15:08	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	15244	Dec 11 15:08	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	809	Dec 11 15:07	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	607	Dec 11 15:08	relccdf.res
-rw-r--r--	1	cscherer	sunuser	721	Dec 11 15:07	relcum.out
-rw-r--r--	1	cscherer	sunuser	8240	Dec 11 15:07	reaset.cum
-rwxr-xr-x	1	cscherer	sunuser	100372	Dec 11 15:01	reaset.e
-rw-r--r--	1	cscherer	sunuser	412	Dec 11 15:07	reaset.out
-rw-r--r--	1	cscherer	sunuser	620	Dec 11 15:07	relfrac.out
-rw-r--r--	1	cscherer	sunuser	784	Dec 11 15:08	relgwgs.res

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-rw-r--r-- 1 cscherer sunuser      548 Dec 11 15:01 repdes.dat
-rw-r--r-- 1 cscherer sunuser    47561 Dec 11 15:08 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Dec 11 15:08 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Dec 11 15:08 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Dec 11 15:08 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Dec 11 15:08 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Dec 11 15:08 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Dec 11 15:08 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser    94425 Dec 11 15:08 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser     5137 Dec 11 15:08 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser    16137 Dec 11 15:08 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser     9829 Dec 11 15:08 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser      607 Dec 11 15:08 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser      784 Dec 11 15:08 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser     3750 Dec 11 15:01 samplpar.abb
-rw-r--r-- 1 cscherer sunuser    28740 Dec 11 15:01 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser    11708 Dec 11 15:08 samplpar.res
-rw-r--r-- 1 cscherer sunuser   130758 Dec 11 15:01 seisbs1.dis
-rw-r--r-- 1 cscherer sunuser   130758 Dec 11 15:01 seisbs2.dis
-rw-r--r-- 1 cscherer sunuser   233963 Dec 11 15:08 seismo.ech
-rw-r--r-- 1 cscherer sunuser   697897 Dec 11 15:08 seismo.rlt
-rw-r--r-- 1 cscherer sunuser   943788 Dec 11 15:01 smaydtbl.dat
-rwxr-xr-x 1 cscherer sunuser   228036 Dec 11 15:01 snllhs.e
-rw-r--r-- 1 cscherer sunuser   151697 Dec 11 15:08 sotnef.dat
-rw-r--r-- 1 cscherer sunuser    37371 Dec 11 15:08 sp.tpa
-rw-r--r-- 1 cscherer sunuser   167719 Dec 11 15:08 spquery.tpa
-rw-r--r-- 1 cscherer sunuser      4506 Dec 11 15:01 strmtube.dat
-rw-r--r-- 1 cscherer sunuser  1724631 Dec 11 15:08 szft.ech
-rw-r--r-- 1 cscherer sunuser  1247155 Dec 11 15:08 szft.rlt
-rw-r--r-- 1 cscherer sunuser    25584 Dec 11 15:08 totdos_c.res
-rw-r--r-- 1 cscherer sunuser    25584 Dec 11 15:08 totdose.res
-rwxr--r-- 1 cscherer sunuser  2503704 Dec 11 14:19 tpa.e
-rw-r--r-- 1 cscherer sunuser    86691 Dec 11 15:00 tpa.inp
-rw-r--r-- 1 cscherer sunuser    89094 Dec 11 15:01 tpameans.out
-rw-r--r-- 1 cscherer sunuser    99636 Dec 11 15:01 tpanames.db
-rw-r--r-- 1 cscherer sunuser   169967 Dec 11 15:07 trelease.out
-rw-r--r-- 1 cscherer sunuser     4435 Dec 11 15:08 uzflow.ech
-rw-r--r-- 1 cscherer sunuser   118035 Dec 11 15:08 uzflow.rlt
-rw-r--r-- 1 cscherer sunuser  1841659 Dec 11 15:08 uzft.ech
-rw-r--r-- 1 cscherer sunuser  1841095 Dec 11 15:08 uzft.rlt
-rw-r--r-- 1 cscherer sunuser    14132 Dec 11 15:07 weldfail.out
-rw-r--r-- 1 cscherer sunuser     8805 Dec 11 15:01 wpflow.dat
-rw-r--r-- 1 cscherer sunuser    17410 Dec 11 15:01 wpflow.def
-rw-r--r-- 1 cscherer sunuser      912 Dec 11 15:08 wpsfail.res

```

scr414/fromgeorge\_test/sltest/sl-2:

total 12138

```

drwxr-xr-x 2 cscherer sunuser    3584 Dec 11 17:52 .
drwxr-xr-x 5 cscherer sunuser     512 Dec 11 14:21 ..
-rw-r--r-- 1 cscherer sunuser     965 Dec 11 15:21 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser     645 Dec 11 15:41 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser  208339 Dec 11 15:41 PA-SCR-414_SL2.out
-rw-r--r-- 1 cscherer sunuser   36352 Dec 11 16:58 PA-SCR-414_SL2.xls
-rw-r--r-- 1 cscherer sunuser    9352 Dec 11 15:41 airpkdos.res
-rw-r--r-- 1 cscherer sunuser    9352 Dec 11 15:41 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser    2048 Dec 11 15:41 ashout.res
-rw-r--r-- 1 cscherer sunuser    1025 Dec 11 15:19 burnup.dat

```

-rw-r--r--	1	cscherer	sunuser	5047	Dec 11 15:41	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Dec 11 15:19	climato1.dat
-rw-r--r--	1	cscherer	sunuser	2200	Dec 11 15:19	climato2.dat
-rw-r--r--	1	cscherer	sunuser	4791	Dec 11 15:19	coefkdeg.dat
-rw-r--r--	1	cscherer	sunuser	14506	Dec 11 15:41	corrode.out
-rw-r--r--	1	cscherer	sunuser	78711	Dec 11 15:41	cp.tpa
-rw-r--r--	1	cscherer	sunuser	16292	Dec 11 15:41	cumrel.res
-rw-r--r--	1	cscherer	sunuser	16292	Dec 11 15:41	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Dec 11 15:41	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	6693	Dec 11 15:41	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Dec 11 15:41	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2033	Dec 11 15:21	dilution.dat
-rw-r--r--	1	cscherer	sunuser	3870	Dec 11 15:19	drifts.dat
-rw-r--r--	1	cscherer	sunuser	519	Dec 11 15:19	drythick.dat
-rw-r--r--	1	cscherer	sunuser	19978	Dec 11 15:41	dsfail.res
-rw-r--r--	1	cscherer	sunuser	5674	Dec 11 15:41	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Dec 11 15:19	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	27532	Dec 11 15:19	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Dec 11 15:41	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 15:19	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	37960	Dec 11 15:41	ebscld.out
-rw-r--r--	1	cscherer	sunuser	6265	Dec 11 15:19	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	6222	Dec 11 15:41	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	790	Dec 11 15:19	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	26320	Dec 11 15:19	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	3030	Dec 11 15:41	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	551	Dec 11 15:41	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Dec 11 15:41	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	146101	Dec 11 15:41	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	108252	Dec 11 15:41	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	140681	Dec 11 15:41	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Dec 11 15:41	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5553	Dec 11 15:19	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	11211	Dec 11 15:41	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	108203	Dec 11 15:41	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Dec 11 15:41	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Dec 11 15:41	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2711	Dec 11 15:41	echofail.dat
-rw-r--r--	1	cscherer	sunuser	253786	Dec 11 15:41	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	180804	Dec 11 15:21	env.e
-rwxr-xr-x	1	cscherer	sunuser	268736	Dec 11 15:21	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Dec 11 15:41	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	5001	Dec 11 15:41	epapktim.out
-rwxr-xr-x	1	cscherer	sunuser	128128	Dec 11 15:19	failt.e
-rw-r--r--	1	cscherer	sunuser	17398	Dec 11 15:41	failt.out
-rw-r--r--	1	cscherer	sunuser	6281	Dec 11 15:41	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Dec 11 15:41	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	6513	Dec 11 15:21	gbioac1.dat
-rw-r--r--	1	cscherer	sunuser	3383	Dec 11 15:21	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Dec 11 15:41	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Dec 11 15:21	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 15:41	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Dec 11 15:41	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Dec 11 15:41	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Dec 11 15:21	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Dec 11 15:41	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Dec 11 15:21	ggamen.dat

-rw-r--r--	1	cscherer	sunuser	13855	Dec 11 15:21	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Dec 11 15:41	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Dec 11 15:41	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Dec 11 15:21	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Dec 11 15:41	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Dec 11 15:21	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Dec 11 15:21	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 15:41	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 15:41	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Dec 11 15:41	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Dec 11 15:41	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Dec 11 15:41	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Dec 11 15:41	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	887	Dec 11 15:41	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	887	Dec 11 15:41	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Dec 11 15:41	gwork.buf
-rw-r--r--	1	cscherer	sunuser	5320	Dec 11 15:41	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	5320	Dec 11 15:41	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	7048	Dec 11 15:41	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	17072	Dec 11 15:41	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Dec 11 15:41	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 15:19	lhs.csv
-rw-r--r--	1	cscherer	sunuser	41860	Dec 11 15:19	lhs.inp
-rw-r--r--	1	cscherer	sunuser	55310	Dec 11 15:19	lhs.out
-rw-r--r--	1	cscherer	sunuser	71879	Dec 11 15:19	lhse.out
-rw-r--r--	1	cscherer	sunuser	415	Dec 11 15:41	maxrel.dat
-rw-r--r--	1	cscherer	sunuser	943775	Dec 11 15:19	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31756	Dec 11 15:41	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9767	Dec 11 15:19	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	102908	Dec 11 15:19	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9719	Dec 11 15:41	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	91284	Dec 11 15:41	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1320	Dec 11 15:19	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1321	Dec 11 15:19	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	220694	Dec 11 15:41	mv.tpa
-rw-r--r--	1	cscherer	sunuser	17072	Dec 11 15:41	nearfld.res
-rw-r--r--	1	cscherer	sunuser	56653	Dec 11 15:41	nefii.dis
-rw-r--r--	1	cscherer	sunuser	11320	Dec 11 15:41	nefii.inp
-rw-r--r--	1	cscherer	sunuser	56653	Dec 11 15:41	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	11320	Dec 11 15:41	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	225631	Dec 11 15:41	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	145230	Dec 11 15:41	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	645	Dec 11 15:41	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	13361	Dec 11 15:40	nefiuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Dec 11 15:40	nefiuz.inp
-rw-r--r--	1	cscherer	sunuser	57032	Dec 11 15:40	nefiuz.out
-rw-r--r--	1	cscherer	sunuser	148365	Dec 11 15:40	nefiuz.src
-rw-r--r--	1	cscherer	sunuser	175	Dec 11 15:40	nefiuz.vel
-rwxr-xr-x	1	cscherer	sunuser	392988	Dec 11 15:19	nefmks.e
-rw-r--r--	1	cscherer	sunuser	600	Dec 11 15:41	nefmks.log
-rw-r--r--	1	cscherer	sunuser	8392	Dec 11 15:41	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	8392	Dec 11 15:41	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Dec 11 15:19	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Dec 11 15:21	organdf.dat
-rw-r--r--	1	cscherer	sunuser	1112	Dec 11 15:41	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	71244	Dec 11 15:41	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	71244	Dec 11 15:41	pkrltm_c.res

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-rw-r--r-- 1 cscherer sunuser      899 Dec 11 15:41 rel_flow.out
-rw-r--r-- 1 cscherer sunuser      887 Dec 11 15:41 relccdf.res
-rw-r--r-- 1 cscherer sunuser      721 Dec 11 15:41 relcum.out
-rwxr-xr-x 1 cscherer sunuser 100372 Dec 11 15:19 releaset.e
-rw-r--r-- 1 cscherer sunuser      409 Dec 11 15:41 releaset.out
-rw-r--r-- 1 cscherer sunuser      620 Dec 11 15:41 relfrac.out
-rw-r--r-- 1 cscherer sunuser     1280 Dec 11 15:41 relgwgs.res
-rw-r--r-- 1 cscherer sunuser      548 Dec 11 15:19 repdes.dat
-rw-r--r-- 1 cscherer sunuser     47561 Dec 11 15:41 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser     47561 Dec 11 15:41 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser     47561 Dec 11 15:41 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser     47561 Dec 11 15:41 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser     47561 Dec 11 15:41 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser     47561 Dec 11 15:41 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser     47561 Dec 11 15:41 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 469337 Dec 11 15:41 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser     5137 Dec 11 15:41 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser    16137 Dec 11 15:41 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser    46997 Dec 11 15:41 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser      887 Dec 11 15:41 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser     1280 Dec 11 15:41 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser     3750 Dec 11 15:19 samplpar.abb
-rw-r--r-- 1 cscherer sunuser    28740 Dec 11 15:19 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser    55956 Dec 11 15:41 samplpar.res
-rw-r--r-- 1 cscherer sunuser   130758 Dec 11 15:19 seisbs1.dis
-rw-r--r-- 1 cscherer sunuser   130758 Dec 11 15:19 seisbs2.dis
-rw-r--r-- 1 cscherer sunuser    943788 Dec 11 15:19 smaydtbl.dat
-rwxr-xr-x 1 cscherer sunuser   228036 Dec 11 15:19 snllhs.e
-rw-r--r-- 1 cscherer sunuser   135578 Dec 11 15:41 sotnef.dat
-rw-r--r-- 1 cscherer sunuser    97515 Dec 11 15:41 sp.tpa
-rw-r--r-- 1 cscherer sunuser     4506 Dec 11 15:19 strmtube.dat
-rw-r--r-- 1 cscherer sunuser   125280 Dec 11 15:41 totdos_c.res
-rw-r--r-- 1 cscherer sunuser   125280 Dec 11 15:41 totdose.res
-rwxr--r-- 1 cscherer sunuser 2503704 Dec 11 14:19 tpa.e
-rw-r--r-- 1 cscherer sunuser    86686 Dec 11 15:18 tpa.inp
-rw-r--r-- 1 cscherer sunuser    89089 Dec 11 15:19 tpameans.out
-rw-r--r-- 1 cscherer sunuser    99636 Dec 11 15:19 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser   100191 Dec 11 15:41 trelease.out
-rw-r--r-- 1 cscherer sunuser    14132 Dec 11 15:41 weldfail.out
-rw-r--r-- 1 cscherer sunuser     8805 Dec 11 15:19 wpflow.dat
-rw-r--r-- 1 cscherer sunuser    17410 Dec 11 15:19 wpflow.def
-rw-r--r-- 1 cscherer sunuser     1664 Dec 11 15:41 wpsfail.res

```

scr414/fromgeorge\_test/sltest/sl-3:

total 75926

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drwxr-xr-x 3 cscherer sunuser      4608 Dec 11 17:41 .
drwxr-xr-x 5 cscherer sunuser      512 Dec 11 14:21 ..
-rw-r--r-- 1 cscherer sunuser      965 Dec 11 17:31 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser    1845 Dec 11 17:37 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser   68575 Dec 11 17:18 PA-SCR-414_SL3-A.out
-rw-r--r-- 1 cscherer sunuser   70339 Dec 11 17:38 PA-SCR-414_SL3-B.out
-rw-r--r-- 1 cscherer sunuser    3480 Dec 11 17:38 airpkdos.res
-rw-r--r-- 1 cscherer sunuser    3480 Dec 11 17:38 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser    1040 Dec 11 17:38 ashout.res
-rw-r--r-- 1 cscherer sunuser    1025 Dec 11 17:24 burnup.dat
-rw-r--r-- 1 cscherer sunuser    7547 Dec 11 17:36 chlrdmf.dat
-rw-r--r-- 1 cscherer sunuser 850000 Dec 11 17:25 climato1.dat

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-rw-r--r--	1	cscherer	sunuser	2200	Dec 11 17:25	climato2.dat
-rw-r--r--	1	cscherer	sunuser	4791	Dec 11 17:25	coefkdeq.dat
drwxr-xr-x	2	cscherer	sunuser	512	Dec 11 17:42	compare
-rw-r--r--	1	cscherer	sunuser	21606	Dec 11 17:36	corrode.out
-rw-r--r--	1	cscherer	sunuser	78711	Dec 11 17:38	cp.tpa
-rw-r--r--	1	cscherer	sunuser	3812	Dec 11 17:38	cumrel.res
-rw-r--r--	1	cscherer	sunuser	3812	Dec 11 17:38	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	69680	Dec 11 17:36	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	212119	Dec 11 17:38	dcagw.ech
-rw-r--r--	1	cscherer	sunuser	186933	Dec 11 17:38	dcagw.rlt
-rw-r--r--	1	cscherer	sunuser	28784	Dec 11 17:38	dcfgw.cum
-rw-r--r--	1	cscherer	sunuser	9993	Dec 11 17:36	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	14700	Dec 11 17:36	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2033	Dec 11 17:31	dilution.dat
-rw-r--r--	1	cscherer	sunuser	3870	Dec 11 17:24	drifts.dat
-rw-r--r--	1	cscherer	sunuser	519	Dec 11 17:25	drythick.dat
-rw-r--r--	1	cscherer	sunuser	4993	Dec 11 17:24	dsfail-A.res
-rw-r--r--	1	cscherer	sunuser	5074	Dec 11 17:41	dsfail-B.res
-rw-r--r--	1	cscherer	sunuser	176172	Dec 11 17:38	dsfail.ech
-rw-r--r--	1	cscherer	sunuser	5074	Dec 11 17:38	dsfail.res
-rw-r--r--	1	cscherer	sunuser	330195	Dec 11 17:38	dsfail.rlt
-rw-r--r--	1	cscherer	sunuser	8375	Dec 11 17:36	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Dec 11 17:25	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	27532	Dec 11 17:25	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Dec 11 17:36	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 17:25	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	56860	Dec 11 17:36	ebscld.out
-rw-r--r--	1	cscherer	sunuser	6265	Dec 11 17:25	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	816410	Dec 11 17:38	ebsfail.ech
-rw-r--r--	1	cscherer	sunuser	6222	Dec 11 17:36	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	177655	Dec 11 17:38	ebsfail.rlt
-rw-r--r--	1	cscherer	sunuser	790	Dec 11 17:25	ebsfild.def
-rwxr-xr-x	1	cscherer	sunuser	26320	Dec 11 17:25	ebsfild.e
-rw-r--r--	1	cscherer	sunuser	3030	Dec 11 17:36	ebsfild.inp
-rw-r--r--	1	cscherer	sunuser	239	Dec 11 17:36	ebsfild.out
-rw-r--r--	1	cscherer	sunuser	20929	Dec 11 17:36	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	219001	Dec 11 17:36	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	162252	Dec 11 17:36	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	658449	Dec 11 17:36	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Dec 11 17:36	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	18941	Dec 11 17:36	ebsrel.cum
-rw-r--r--	1	cscherer	sunuser	5553	Dec 11 17:25	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	851248	Dec 11 17:38	ebsrel.ech
-rw-r--r--	1	cscherer	sunuser	11211	Dec 11 17:36	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	2575775	Dec 11 17:38	ebsrel.rlt
-rw-r--r--	1	cscherer	sunuser	162203	Dec 11 17:36	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	25515	Dec 11 17:36	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	18435	Dec 11 17:36	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2711	Dec 11 17:36	echofail.dat
-rw-r--r--	1	cscherer	sunuser	667001	Dec 11 17:36	echofild.dat
-rwxr-xr-x	1	cscherer	sunuser	180804	Dec 11 17:31	env.e
-rwxr-xr-x	1	cscherer	sunuser	268736	Dec 11 17:31	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Dec 11 17:38	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	2073	Dec 11 17:38	epapktim.out
-rw-r--r--	1	cscherer	sunuser	474048	Dec 11 17:36	failt.cum
-rwxr-xr-x	1	cscherer	sunuser	128128	Dec 11 17:25	failt.e
-rw-r--r--	1	cscherer	sunuser	25398	Dec 11 17:36	failt.out

-rw-r--r--	1	cscherer	sunuser	9381	Dec 11 17:36	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	69680	Dec 11 17:36	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	6513	Dec 11 17:31	gbioacl.dat
-rw-r--r--	1	cscherer	sunuser	3383	Dec 11 17:31	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Dec 11 17:38	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Dec 11 17:31	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 17:38	gentoo.out
-rw-r--r--	1	cscherer	sunuser	73728	Dec 11 17:38	genv.cum
-rw-r--r--	1	cscherer	sunuser	35173	Dec 11 17:38	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Dec 11 17:38	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Dec 11 17:31	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Dec 11 17:38	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Dec 11 17:31	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	40452	Dec 11 17:38	ggenii.cum
-rw-r--r--	1	cscherer	sunuser	13855	Dec 11 17:31	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Dec 11 17:38	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Dec 11 17:38	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Dec 11 17:31	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Dec 11 17:38	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Dec 11 17:31	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Dec 11 17:31	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 17:38	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Dec 11 17:38	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Dec 11 17:38	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Dec 11 17:38	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Dec 11 17:38	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Dec 11 17:38	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	607	Dec 11 17:38	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	607	Dec 11 17:38	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Dec 11 17:38	gwork.buf
-rw-r--r--	1	cscherer	sunuser	2136	Dec 11 17:38	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	2136	Dec 11 17:38	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2712	Dec 11 17:38	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	5528	Dec 11 17:38	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Dec 11 17:36	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Dec 11 17:13	lhs.csv
-rw-r--r--	1	cscherer	sunuser	41860	Dec 11 17:25	lhs.inp
-rw-r--r--	1	cscherer	sunuser	11062	Dec 11 17:25	lhs.out
-rw-r--r--	1	cscherer	sunuser	71879	Dec 11 17:25	lhse.out
-rw-r--r--	1	cscherer	sunuser	1095	Dec 11 17:36	maxrel.dat
-rw-r--r--	1	cscherer	sunuser	943775	Dec 11 17:25	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	47356	Dec 11 17:36	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9767	Dec 11 17:25	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	102908	Dec 11 17:25	mechfail.e
-rw-r--r--	1	cscherer	sunuser	27383	Dec 11 17:36	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	334901	Dec 11 17:36	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1320	Dec 11 17:25	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1321	Dec 11 17:25	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	78958	Dec 11 17:38	mv.tpa
-rw-r--r--	1	cscherer	sunuser	5528	Dec 11 17:38	nearfld.res
-rw-r--r--	1	cscherer	sunuser	648833	Dec 11 17:38	nefi.dis
-rw-r--r--	1	cscherer	sunuser	10104	Dec 11 17:37	nefi.inp
-rw-r--r--	1	cscherer	sunuser	1247175	Dec 11 17:38	nefi.out
-rw-r--r--	1	cscherer	sunuser	603	Dec 11 17:33	nefi.rel
-rw-r--r--	1	cscherer	sunuser	648833	Dec 11 17:33	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Dec 11 17:33	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	1247175	Dec 11 17:33	nefiisz.out



-rw-r--r--	1	cscherer	sunuser	307806	Dec 11 17:33	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	1845	Dec 11 17:33	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	22685258	Dec 11 17:37	nefiuuz.cum
-rw-r--r--	1	cscherer	sunuser	8308145	Dec 11 17:37	nefiuuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Dec 11 17:37	nefiuuz.inp
-rw-r--r--	1	cscherer	sunuser	8504334	Dec 11 17:37	nefiuuz.out
-rw-r--r--	1	cscherer	sunuser	283638	Dec 11 17:37	nefiuuz.src
-rw-r--r--	1	cscherer	sunuser	636	Dec 11 17:37	nefiuuz.vel
-rwxr-xr-x	1	cscherer	sunuser	392988	Dec 11 17:25	nefmks.e
-rw-r--r--	1	cscherer	sunuser	350	Dec 11 17:37	nefmks.log
-rw-r--r--	1	cscherer	sunuser	176169	Dec 11 17:33	nfenv.ech
-rw-r--r--	1	cscherer	sunuser	955215	Dec 11 17:33	nfenv.rlt
-rw-r--r--	1	cscherer	sunuser	3160	Dec 11 17:33	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	3160	Dec 11 17:33	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Dec 11 17:24	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Dec 11 17:31	organdf.dat
-rw-r--r--	1	cscherer	sunuser	744	Dec 11 17:33	pkmndose.out
-rw-r--r--	1	cscherer	sunuser	15244	Dec 11 17:33	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	15244	Dec 11 17:33	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	899	Dec 11 17:35	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	607	Dec 11 17:33	relccdf.res
-rw-r--r--	1	cscherer	sunuser	721	Dec 11 17:35	relcum.out
-rw-r--r--	1	cscherer	sunuser	8252	Dec 11 17:35	reaset.cum
-rwxr-xr-x	1	cscherer	sunuser	100372	Dec 11 17:25	reaset.e
-rw-r--r--	1	cscherer	sunuser	412	Dec 11 17:35	reaset.out
-rw-r--r--	1	cscherer	sunuser	620	Dec 11 17:35	relfrac.out
-rw-r--r--	1	cscherer	sunuser	784	Dec 11 17:33	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Dec 11 17:24	repdes.dat
-rw-r--r--	1	cscherer	sunuser	70761	Dec 11 17:33	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Dec 11 17:33	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Dec 11 17:33	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Dec 11 17:33	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Dec 11 17:33	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Dec 11 17:33	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Dec 11 17:33	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	140825	Dec 11 17:33	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	7437	Dec 11 17:33	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	23937	Dec 11 17:33	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	14429	Dec 11 17:33	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	607	Dec 11 17:33	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	784	Dec 11 17:33	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	3750	Dec 11 17:24	samplpar.abb
-rw-r--r--	1	cscherer	sunuser	28740	Dec 11 17:24	samplpar.hdr
-rw-r--r--	1	cscherer	sunuser	11708	Dec 11 17:33	samplpar.res
-rw-r--r--	1	cscherer	sunuser	130758	Dec 11 17:25	seisbs1.dis
-rw-r--r--	1	cscherer	sunuser	130758	Dec 11 17:25	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	695757	Dec 11 17:24	seismo-A.rlt
-rw-r--r--	1	cscherer	sunuser	1036757	Dec 11 17:41	seismo-B.rlt
-rw-r--r--	1	cscherer	sunuser	838805	Dec 11 17:33	seismo.ech
-rw-r--r--	1	cscherer	sunuser	1036757	Dec 11 17:33	seismo.rlt
-rw-r--r--	1	cscherer	sunuser	943788	Dec 11 17:25	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	228036	Dec 11 17:25	snllhs.e
-rw-r--r--	1	cscherer	sunuser	307806	Dec 11 17:37	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	37371	Dec 11 17:33	sp.tpa
-rw-r--r--	1	cscherer	sunuser	167719	Dec 11 17:33	spquery.tpa
-rw-r--r--	1	cscherer	sunuser	4506	Dec 11 17:25	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	2576631	Dec 11 17:33	szft.ech

```

-rw-r--r-- 1 cscherer sunuser 1863155 Dec 11 17:33 szft.rlt
-rw-r--r-- 1 cscherer sunuser 25584 Dec 11 17:33 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 37984 Dec 11 17:33 totdose.res
-rwxr--r-- 1 cscherer sunuser 2503704 Dec 11 14:19 tpa.e
-rw-r--r-- 1 cscherer sunuser 86685 Dec 11 17:24 tpa.inp
-rw-r--r-- 1 cscherer sunuser 89088 Dec 11 17:24 tpameans.out
-rw-r--r-- 1 cscherer sunuser 99636 Dec 11 17:24 tpanames.db
-rw-r--r-- 1 cscherer sunuser 222235 Dec 11 17:35 trelease.out
-rw-r--r-- 1 cscherer sunuser 6135 Dec 11 17:33 uzflow.ech
-rw-r--r-- 1 cscherer sunuser 176035 Dec 11 17:33 uzflow.rlt
-rw-r--r-- 1 cscherer sunuser 2751659 Dec 11 17:33 uzft.ech
-rw-r--r-- 1 cscherer sunuser 2751095 Dec 11 17:33 uzft.rlt
-rw-r--r-- 1 cscherer sunuser 21032 Dec 11 17:35 weldfail.out
-rw-r--r-- 1 cscherer sunuser 13105 Dec 11 17:25 wpflow.dat
-rw-r--r-- 1 cscherer sunuser 17410 Dec 11 17:25 wpflow.def
-rw-r--r-- 1 cscherer sunuser 1006 Dec 11 17:33 wpsfail.res

```

scr414/fromgeorge\_test/sltest/sl-3/compare:

total 2081

```

drwxr-xr-x 2 cscherer sunuser 512 Dec 11 17:42 .
drwxr-xr-x 3 cscherer sunuser 4608 Dec 11 17:41 ..
-rw-r--r-- 1 cscherer sunuser 4993 Dec 11 17:41 dsfail-A.res
-rw-r--r-- 1 cscherer sunuser 5074 Dec 11 17:42 dsfail-B.res
-rw-r--r-- 1 cscherer sunuser 207 Dec 11 17:42 dsfail.dif
-rw-r--r-- 1 cscherer sunuser 695757 Dec 11 17:41 seismo-A.rlt
-rw-r--r-- 1 cscherer sunuser 1036757 Dec 11 17:41 seismo-B.rlt
-rw-r--r-- 1 cscherer sunuser 345838 Dec 11 17:42 seismo.dif

```

scr414/pltest:

total 10

```

drwxr-xr-x 3 cscherer sunuser 512 Dec 31 16:05 .
drwxr-xr-x 10 cscherer sunuser 8192 Jan 9 16:09 ..
drwxr-xr-x 2 cscherer sunuser 512 Jan 9 12:55 pl-1

```

scr414/pltest/pl-1:

total 1142

```

drwxr-xr-x 2 cscherer sunuser 512 Jan 9 12:55 .
drwxr-xr-x 3 cscherer sunuser 512 Dec 31 16:05 ..
-rw-r--r-- 1 cscherer sunuser 152064 Dec 11 14:55 PA-SCR-414_PL1.xls
-rw-r--r-- 1 cscherer sunuser 31756 Jan 8 14:13 mechfail.dat
-rwxr-xr-x 1 cscherer sunuser 105940 Jan 6 09:25 mechfail.e
-rw-r--r-- 1 cscherer sunuser 9767 Dec 31 16:23 mechfail.inp
-rwxr-xr-x 1 cscherer sunuser 105940 Jan 6 09:25 mechfail_debug.e
-rwxr-xr-x 1 cscherer sunuser 105956 Dec 31 15:43 mechfail_orig.e
-rwxr--r-- 1 cscherer sunuser 236032 Jan 9 12:55 pl1.xls
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs2.dis
-rw-r--r-- 1 cscherer sunuser 91945 Jan 6 09:35 tpa_pl1.out

```

scr414/sltest:

total 689

```

drwxr-xr-x 5 cscherer sunuser 512 Jan 7 11:15 .
drwxr-xr-x 10 cscherer sunuser 8192 Jan 9 16:09 ..
-rw-r--r-- 1 cscherer sunuser 31756 Jan 7 11:15 mechfail.dat
-rwxr-xr-x 1 cscherer sunuser 109064 Jan 7 11:15 mechfail.e
-rw-r--r-- 1 cscherer sunuser 9767 Dec 31 16:23 mechfail.inp
-rwxr-xr-x 1 cscherer sunuser 109064 Jan 7 11:15 mechfail_defaultcomp.e

```

```

-rwxr-xr-x 1 cscherer sunuser 105956 Jan 7 11:13 mechfail_sol4.2.e
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs2.dis
drwxr-xr-x 2 cscherer sunuser 4608 Jan 7 11:30 sl-1
drwxr-xr-x 2 cscherer sunuser 4096 Jan 8 12:25 sl-2
drwxr-xr-x 3 cscherer sunuser 4608 Jan 8 09:23 sl-3

```

scr414/sltest/sl-1:

total 28332

```

drwxr-xr-x 2 cscherer sunuser 4608 Jan 7 11:30 .
drwxr-xr-x 5 cscherer sunuser 512 Jan 7 11:15 ..
-rw-r--r-- 1 cscherer sunuser 965 Jan 7 11:25 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Jan 7 11:30 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 3480 Jan 7 11:30 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 3480 Jan 7 11:30 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 1040 Jan 7 11:30 ashout.res
-rw-r--r-- 1 cscherer sunuser 1025 Jan 7 11:22 burnup.dat
-rw-r--r-- 1 cscherer sunuser 5047 Jan 7 11:30 chlrdmf.dat
-rw-r--r-- 1 cscherer sunuser 850000 Jan 7 11:22 climato1.dat
-rw-r--r-- 1 cscherer sunuser 2200 Jan 7 11:22 climato2.dat
-rw-r--r-- 1 cscherer sunuser 4791 Jan 7 11:23 coefkdeg.dat
-rw-r--r-- 1 cscherer sunuser 14506 Jan 7 11:30 corrode.out
-rw-r--r-- 1 cscherer sunuser 78711 Jan 7 11:30 cp.tpa
-rw-r--r-- 1 cscherer sunuser 3812 Jan 7 11:30 cumrel.res
-rw-r--r-- 1 cscherer sunuser 3812 Jan 7 11:30 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Jan 7 11:30 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 142319 Jan 7 11:30 dcagw.ech
-rw-r--r-- 1 cscherer sunuser 125333 Jan 7 11:30 dcagw.rlt
-rw-r--r-- 1 cscherer sunuser 14392 Jan 7 11:30 dcfgw.cum
-rw-r--r-- 1 cscherer sunuser 6693 Jan 7 11:30 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Jan 7 11:30 diagnose.out
-rw-r--r-- 1 cscherer sunuser 2200 Jan 7 11:25 dilution.dat
-rw-r--r-- 1 cscherer sunuser 3870 Jan 7 11:22 drifts.dat
-rw-r--r-- 1 cscherer sunuser 519 Jan 7 11:22 drythick.dat
-rw-r--r-- 1 cscherer sunuser 118172 Jan 7 11:30 dsfail.ech
-rw-r--r-- 1 cscherer sunuser 3535 Jan 7 11:30 dsfail.res
-rw-r--r-- 1 cscherer sunuser 221915 Jan 7 11:30 dsfail.rlt
-rw-r--r-- 1 cscherer sunuser 274 Jan 7 11:30 dsfailt.dat
-rw-r--r-- 1 cscherer sunuser 791 Jan 7 11:22 dsfailt.def
-rwxr-xr-x 1 cscherer sunuser 43144 Jan 7 11:22 dsfailt.e
-rw-r--r-- 1 cscherer sunuser 610 Jan 7 11:30 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Jan 7 11:22 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 37960 Jan 7 11:30 ebscld.out
-rw-r--r-- 1 cscherer sunuser 6265 Jan 7 11:23 ebsfail.def
-rw-r--r-- 1 cscherer sunuser 546410 Jan 7 11:30 ebsfail.ech
-rw-r--r-- 1 cscherer sunuser 6222 Jan 7 11:30 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 119655 Jan 7 11:30 ebsfail.rlt
-rw-r--r-- 1 cscherer sunuser 790 Jan 7 11:23 ebsfilt.def
-rwxr-xr-x 1 cscherer sunuser 41960 Jan 7 11:23 ebsfilt.e
-rw-r--r-- 1 cscherer sunuser 3030 Jan 7 11:30 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 551 Jan 7 11:30 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 14029 Jan 7 11:30 ebsflo.dat
-rw-r--r-- 1 cscherer sunuser 146101 Jan 7 11:30 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 108252 Jan 7 11:30 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 140681 Jan 7 11:30 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Jan 7 11:30 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 17051 Jan 7 11:30 ebsrel.cum

```

-rw-r--r--	1	cscherer	sunuser	5486	Jan	7 11:23	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	573248	Jan	7 11:30	ebsrel.ech
-rw-r--r--	1	cscherer	sunuser	11110	Jan	7 11:30	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	1723775	Jan	7 11:30	ebsrel.rlt
-rw-r--r--	1	cscherer	sunuser	108203	Jan	7 11:30	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Jan	7 11:30	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Jan	7 11:30	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2696	Jan	7 11:30	echofail.dat
-rw-r--r--	1	cscherer	sunuser	352242	Jan	7 11:30	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	191076	Jan	7 11:25	env.e
-rwxr-xr-x	1	cscherer	sunuser	282692	Jan	7 11:25	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Jan	7 11:30	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	2073	Jan	7 11:30	epapktim.out
-rw-r--r--	1	cscherer	sunuser	347960	Jan	7 11:30	failt.cum
-rwxr-xr-x	1	cscherer	sunuser	143508	Jan	7 11:23	failt.e
-rw-r--r--	1	cscherer	sunuser	17398	Jan	7 11:30	failt.out
-rw-r--r--	1	cscherer	sunuser	6281	Jan	7 11:30	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Jan	7 11:30	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	6513	Jan	7 11:25	gbioacl.dat
-rw-r--r--	1	cscherer	sunuser	3383	Jan	7 11:25	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Jan	7 11:30	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Jan	7 11:25	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Jan	7 11:30	gentoo.out
-rw-r--r--	1	cscherer	sunuser	73728	Jan	7 11:30	genv.cum
-rw-r--r--	1	cscherer	sunuser	35173	Jan	7 11:30	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Jan	7 11:30	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Jan	7 11:25	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Jan	7 11:30	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Jan	7 11:25	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	40452	Jan	7 11:30	ggenii.cum
-rw-r--r--	1	cscherer	sunuser	13855	Jan	7 11:25	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Jan	7 11:30	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Jan	7 11:30	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Jan	7 11:25	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Jan	7 11:30	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Jan	7 11:25	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Jan	7 11:25	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Jan	7 11:30	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Jan	7 11:30	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Jan	7 11:30	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Jan	7 11:30	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Jan	7 11:30	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Jan	7 11:30	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	607	Jan	7 11:30	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	607	Jan	7 11:30	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Jan	7 11:30	gwork.buf
-rw-r--r--	1	cscherer	sunuser	2136	Jan	7 11:30	gwpkds.res
-rw-r--r--	1	cscherer	sunuser	2136	Jan	7 11:30	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2712	Jan	7 11:30	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	3968	Jan	7 11:30	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Jan	7 11:30	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Jan	7 08:55	lhs.csv
-rw-r--r--	1	cscherer	sunuser	41860	Jan	7 11:22	lhs.inp
-rw-r--r--	1	cscherer	sunuser	11062	Jan	7 11:22	lhs.out
-rw-r--r--	1	cscherer	sunuser	71879	Jan	7 11:22	lhse.out
-rw-r--r--	1	cscherer	sunuser	1095	Jan	7 11:30	maxrel.dat
-rwxr-xr-x	1	cscherer	sunuser	943775	Jan	7 11:22	maydtbl.dat

-rw-r--r--	1	cscherer	sunuser	31768	Jan	7	11:30	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Jan	7	11:22	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	109064	Jan	7	11:22	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9911	Jan	7	11:30	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Jan	7	11:30	mechfail.out
-rw-r--r--	1	cscherer	sunuser	31768	Dec	11	15:07	mechfail_fromgeorge.dat
-rw-r--r--	1	cscherer	sunuser	1320	Jan	7	11:22	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1321	Jan	7	11:22	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	78958	Jan	7	11:30	mv.tpa
-rw-r--r--	1	cscherer	sunuser	3968	Jan	7	11:30	nearfld.res
-rw-r--r--	1	cscherer	sunuser	47495	Jan	7	11:30	nefi.dis
-rw-r--r--	1	cscherer	sunuser	10104	Jan	7	11:30	nefi.inp
-rw-r--r--	1	cscherer	sunuser	183390	Jan	7	11:30	nefi.out
-rw-r--r--	1	cscherer	sunuser	603	Jan	7	11:30	nefi.rel
-rw-r--r--	1	cscherer	sunuser	47495	Jan	7	11:30	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Jan	7	11:30	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	183390	Jan	7	11:30	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	151996	Jan	7	11:30	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Jan	7	11:30	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	3018666	Jan	7	11:30	nefiuiz.cum
-rw-r--r--	1	cscherer	sunuser	663126	Jan	7	11:30	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Jan	7	11:30	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	706334	Jan	7	11:30	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	153704	Jan	7	11:30	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	171	Jan	7	11:30	nefiuiz.vel
-rwxr-xr-x	1	cscherer	sunuser	408036	Jan	7	11:23	nefmks.e
-rw-r--r--	1	cscherer	sunuser	195	Jan	7	11:30	nefmks.log
-rw-r--r--	1	cscherer	sunuser	118169	Jan	7	11:30	nfenv.ech
-rw-r--r--	1	cscherer	sunuser	639215	Jan	7	11:30	nfenv.rlt
-rw-r--r--	1	cscherer	sunuser	3160	Jan	7	11:30	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	3160	Jan	7	11:30	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Jan	7	11:22	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Jan	7	11:26	organdf.dat
-rw-r--r--	1	cscherer	sunuser	744	Jan	7	11:30	pkmddose.out
-rw-r--r--	1	cscherer	sunuser	15244	Jan	7	11:30	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	15244	Jan	7	11:30	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	809	Jan	7	11:30	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	607	Jan	7	11:30	relccdf.res
-rw-r--r--	1	cscherer	sunuser	721	Jan	7	11:30	relcum.out
-rw-r--r--	1	cscherer	sunuser	8240	Jan	7	11:30	reaset.cum
-rwxr-xr-x	1	cscherer	sunuser	115588	Jan	7	11:23	reaset.e
-rw-r--r--	1	cscherer	sunuser	412	Jan	7	11:30	reaset.out
-rw-r--r--	1	cscherer	sunuser	620	Jan	7	11:30	relfrac.out
-rw-r--r--	1	cscherer	sunuser	784	Jan	7	11:30	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Jan	7	11:22	repdes.dat
-rw-r--r--	1	cscherer	sunuser	47561	Jan	7	11:30	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	7	11:30	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	7	11:30	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	7	11:30	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	7	11:30	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	7	11:30	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Jan	7	11:30	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	94425	Jan	7	11:30	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5137	Jan	7	11:30	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16137	Jan	7	11:30	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	9829	Jan	7	11:30	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	607	Jan	7	11:30	rlccdf_c.res

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-rw-r--r-- 1 cscherer sunuser      784 Jan  7 11:30 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser     3750 Jan  7 11:22 samplpar.abb
-rw-r--r-- 1 cscherer sunuser    28740 Jan  7 11:22 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser    11708 Jan  7 11:30 samplpar.res
-rwxr-xr-x 1 cscherer sunuser   130758 Jan  7 11:22 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser   130758 Jan  7 11:22 seisbs2.dis
-rw-r--r-- 1 cscherer sunuser   233963 Jan  7 11:30 seismo.ech
-rw-r--r-- 1 cscherer sunuser   697897 Jan  7 11:30 seismo.rlt
-rwxr-xr-x 1 cscherer sunuser   943788 Jan  7 11:22 smaydtbl.dat
-rwxr-xr-x 1 cscherer sunuser   243532 Jan  7 11:22 snllhs.e
-rw-r--r-- 1 cscherer sunuser   151996 Jan  7 11:30 sotnef.dat
-rw-r--r-- 1 cscherer sunuser    37371 Jan  7 11:30 sp.tpa
-rw-r--r-- 1 cscherer sunuser   167719 Jan  7 11:30 spquery.tpa
-rw-r--r-- 1 cscherer sunuser     4506 Jan  7 11:23 strmtube.dat
-rw-r--r-- 1 cscherer sunuser   1724631 Jan  7 11:30 szft.ech
-rw-r--r-- 1 cscherer sunuser   1247155 Jan  7 11:30 szft.rlt
-rw-r--r-- 1 cscherer sunuser    25584 Jan  7 11:30 totdos_c.res
-rw-r--r-- 1 cscherer sunuser    25584 Jan  7 11:30 totdose.res
-rwxr-xr-x 1 cscherer sunuser  2505700 Jan  7 10:21 tpa.e
-rw-r--r-- 1 cscherer sunuser    87793 Jan  7 10:50 tpa.inp
-rw-r--r-- 1 cscherer sunuser     2805 Jan  7 08:55 tpa_abort1.out
-rw-r--r-- 1 cscherer sunuser    86691 Dec 11 15:00 tpa_fromgeorge.inp
-rw-r--r-- 1 cscherer sunuser    87793 Jan  7 10:50 tpa_sl1.inp
-rw-r--r-- 1 cscherer sunuser    49491 Jan  7 11:30 tpa_sl1.out
-rw-r--r-- 1 cscherer sunuser    87813 Jan  7 08:51 tpa_sl1_error.inp
-rw-r--r-- 1 cscherer sunuser    90192 Jan  7 11:22 tpameans.out
-rw-r--r-- 1 cscherer sunuser    99636 Jan  7 11:22 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser   169407 Jan  7 11:30 trelease.out
-rw-r--r-- 1 cscherer sunuser     4435 Jan  7 11:30 uzflow.ech
-rw-r--r-- 1 cscherer sunuser   118035 Jan  7 11:30 uzflow.rlt
-rw-r--r-- 1 cscherer sunuser   1841659 Jan  7 11:30 uzft.ech
-rw-r--r-- 1 cscherer sunuser   1841095 Jan  7 11:30 uzft.rlt
-rw-r--r-- 1 cscherer sunuser    14132 Jan  7 11:30 weldfail.out
-rw-r--r-- 1 cscherer sunuser     8805 Jan  7 11:23 wpflow.dat
-rw-r--r-- 1 cscherer sunuser    17410 Jan  7 11:23 wpflow.def
-rw-r--r-- 1 cscherer sunuser     912 Jan  7 11:30 wpsfail.res

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scr414/sltest/sl-2:

total 12634

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drwxr-xr-x 2 cscherer sunuser    4096 Jan  8 12:25 .
drwxr-xr-x 5 cscherer sunuser     512 Jan  7 11:15 ..
-rw-r--r-- 1 cscherer sunuser     965 Jan  7 12:37 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser     645 Jan  7 13:02 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser    9352 Jan  7 13:02 airpkdos.res
-rw-r--r-- 1 cscherer sunuser    9352 Jan  7 13:02 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser    2048 Jan  7 13:02 ashout.res
-rw-r--r-- 1 cscherer sunuser    1025 Jan  7 12:34 burnup.dat
-rw-r--r-- 1 cscherer sunuser    5047 Jan  7 13:01 chlrdmf.dat
-rw-r--r-- 1 cscherer sunuser  850000 Jan  7 12:34 climato1.dat
-rw-r--r-- 1 cscherer sunuser    2200 Jan  7 12:34 climato2.dat
-rw-r--r-- 1 cscherer sunuser    4791 Jan  7 12:34 coefkdeg.dat
-rw-r--r-- 1 cscherer sunuser   14506 Jan  7 13:01 corrode.out
-rw-r--r-- 1 cscherer sunuser   78711 Jan  7 13:02 cp.tpa
-rw-r--r-- 1 cscherer sunuser   16292 Jan  7 13:02 cumrel.res
-rw-r--r-- 1 cscherer sunuser   16292 Jan  7 13:02 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser   46580 Jan  7 13:01 cumrelse.out
-rw-r--r-- 1 cscherer sunuser    6693 Jan  7 13:01 deltaec.inp

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-rw-r--r--	1	cscherer	sunuser	9800	Jan	7	13:01	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2200	Jan	7	12:37	dilution.dat
-rw-r--r--	1	cscherer	sunuser	3870	Jan	7	12:34	drifts.dat
-rw-r--r--	1	cscherer	sunuser	519	Jan	7	12:34	drythick.dat
-rw-r--r--	1	cscherer	sunuser	19978	Jan	7	13:02	dsfail.res
-rw-r--r--	1	cscherer	sunuser	5674	Jan	7	13:01	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Jan	7	12:34	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	43144	Jan	7	12:34	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Jan	7	13:01	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Jan	7	12:34	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	37960	Jan	7	13:02	ebscld.out
-rw-r--r--	1	cscherer	sunuser	6265	Jan	7	12:34	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	6222	Jan	7	13:01	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	790	Jan	7	12:34	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	41960	Jan	7	12:34	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	3030	Jan	7	13:01	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	551	Jan	7	13:02	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Jan	7	13:01	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	146101	Jan	7	13:02	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	108252	Jan	7	13:02	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	140681	Jan	7	13:02	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Jan	7	13:01	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5486	Jan	7	12:34	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	11110	Jan	7	13:01	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	108203	Jan	7	13:02	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Jan	7	13:01	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Jan	7	13:01	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2711	Jan	7	13:01	echofail.dat
-rw-r--r--	1	cscherer	sunuser	308677	Jan	7	13:02	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	191076	Jan	7	12:37	env.e
-rwxr-xr-x	1	cscherer	sunuser	282692	Jan	7	12:37	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Jan	7	13:02	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	5001	Jan	7	13:02	epapktim.out
-rwxr-xr-x	1	cscherer	sunuser	143508	Jan	7	12:34	failt.e
-rw-r--r--	1	cscherer	sunuser	17398	Jan	7	13:01	failt.out
-rw-r--r--	1	cscherer	sunuser	6281	Jan	7	13:01	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Jan	7	13:01	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	6513	Jan	7	12:37	gbioacl.dat
-rw-r--r--	1	cscherer	sunuser	3383	Jan	7	12:37	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Jan	7	13:02	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Jan	7	12:37	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Jan	7	13:02	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Jan	7	13:02	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Jan	7	13:02	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Jan	7	12:37	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Jan	7	13:02	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Jan	7	12:37	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	13855	Jan	7	12:37	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Jan	7	13:02	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Jan	7	13:02	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Jan	7	12:37	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Jan	7	13:02	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Jan	7	12:37	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Jan	7	12:37	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Jan	7	13:02	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Jan	7	13:02	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Jan	7	13:02	gw_cb_ad.dat

-rw-r--r--	1	cscherer	sunuser	1264	Jan	7	13:02	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Jan	7	13:02	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Jan	7	13:02	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	887	Jan	7	13:02	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	887	Jan	7	13:02	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Jan	7	13:02	gwork.buf
-rw-r--r--	1	cscherer	sunuser	5320	Jan	7	13:02	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	5320	Jan	7	13:02	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	7048	Jan	7	13:02	gwttuusz.res
-rw-r--r--	1	cscherer	sunuser	17072	Jan	7	13:02	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Jan	7	13:01	invl000.out
-rw-r--r--	1	cscherer	sunuser	0	Jan	7	12:34	lhs.csv
-rw-r--r--	1	cscherer	sunuser	41860	Jan	7	12:34	lhs.inp
-rw-r--r--	1	cscherer	sunuser	55310	Jan	7	12:34	lhs.out
-rw-r--r--	1	cscherer	sunuser	71879	Jan	7	12:34	lhse.out
-rw-r--r--	1	cscherer	sunuser	1095	Jan	7	13:01	maxrel.dat
-rwxr-xr-x	1	cscherer	sunuser	943775	Jan	7	12:34	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31756	Jan	7	13:01	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Jan	7	12:34	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	109064	Jan	7	12:34	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9719	Jan	7	13:01	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Jan	7	13:01	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1320	Jan	7	12:34	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1321	Jan	7	12:34	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	220694	Jan	7	13:02	mv.tpa
-rw-r--r--	1	cscherer	sunuser	17072	Jan	7	13:02	nearfld.res
-rw-r--r--	1	cscherer	sunuser	64217	Jan	7	13:02	nefii.dis
-rw-r--r--	1	cscherer	sunuser	11320	Jan	7	13:02	nefii.inp
-rw-r--r--	1	cscherer	sunuser	233339	Jan	7	13:02	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Jan	7	13:02	nefii.rel
-rw-r--r--	1	cscherer	sunuser	64217	Jan	7	13:02	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	11320	Jan	7	13:02	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	233339	Jan	7	13:02	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	145610	Jan	7	13:02	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	645	Jan	7	13:02	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	6749	Jan	7	13:01	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Jan	7	13:01	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	50420	Jan	7	13:01	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	145971	Jan	7	13:01	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	179	Jan	7	13:01	nefiuiz.vel
-rwxr-xr-x	1	cscherer	sunuser	408036	Jan	7	12:34	nefmks.e
-rw-r--r--	1	cscherer	sunuser	685	Jan	7	13:02	nefmks.log
-rw-r--r--	1	cscherer	sunuser	8392	Jan	7	13:02	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	8392	Jan	7	13:02	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Jan	7	12:34	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Jan	7	12:37	organdf.dat
-rw-r--r--	1	cscherer	sunuser	1112	Jan	7	13:02	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	71244	Jan	7	13:02	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	71244	Jan	7	13:02	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	899	Jan	7	13:01	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	887	Jan	7	13:02	relccdf.res
-rw-r--r--	1	cscherer	sunuser	721	Jan	7	13:01	relcum.out
-rwxr-xr-x	1	cscherer	sunuser	115588	Jan	7	12:34	releaset.e
-rw-r--r--	1	cscherer	sunuser	412	Jan	7	13:02	releaset.out
-rw-r--r--	1	cscherer	sunuser	620	Jan	7	13:01	relfrac.out
-rw-r--r--	1	cscherer	sunuser	1280	Jan	7	13:02	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Jan	7	12:34	repdes.dat



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-rw-r--r-- 1 cscherer sunuser 47561 Jan 7 13:02 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Jan 7 13:02 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Jan 7 13:02 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Jan 7 13:02 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Jan 7 13:02 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Jan 7 13:02 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Jan 7 13:02 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 469337 Jan 7 13:02 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5137 Jan 7 13:02 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16137 Jan 7 13:02 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 46997 Jan 7 13:02 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 887 Jan 7 13:02 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 1280 Jan 7 13:02 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3750 Jan 7 12:34 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 28740 Jan 7 12:34 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 55956 Jan 7 13:02 samplpar.res
-rw-r--r-- 1 cscherer sunuser 36352 Dec 11 16:53 scr414_george.xls
-rwxr-xr-x 1 cscherer sunuser 130758 Jan 7 12:34 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Jan 7 12:34 seisbs2.dis
-rwxr--r-- 1 cscherer sunuser 39936 Jan 8 12:25 sl2.xls
-rwxr-xr-x 1 cscherer sunuser 943788 Jan 7 12:34 smaydtbl.dat
-rwxr-xr-x 1 cscherer sunuser 243532 Jan 7 12:34 snllhs.e
-rw-r--r-- 1 cscherer sunuser 145610 Jan 7 13:02 sotnef.dat
-rw-r--r-- 1 cscherer sunuser 97515 Jan 7 13:02 sp.tpa
-rw-r--r-- 1 cscherer sunuser 4506 Jan 7 12:34 strmtube.dat
-rw-r--r-- 1 cscherer sunuser 125280 Jan 7 13:02 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 125280 Jan 7 13:02 totdose.res
-rwxr-xr-x 1 cscherer sunuser 2505700 Jan 7 10:21 tpa.e
-rw-r--r-- 1 cscherer sunuser 87796 Jan 7 12:30 tpa.inp
-rw-r--r-- 1 cscherer sunuser 87796 Jan 7 12:30 tpa_sl2.inp
-rw-r--r-- 1 cscherer sunuser 196342 Jan 7 13:02 tpa_sl2.out
-rw-r--r-- 1 cscherer sunuser 90195 Jan 7 12:34 tpameans.out
-rw-r--r-- 1 cscherer sunuser 99636 Jan 7 12:34 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser 140851 Jan 7 13:01 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Jan 7 13:01 weldfail.out
-rw-r--r-- 1 cscherer sunuser 8805 Jan 7 12:34 wpflow.dat
-rw-r--r-- 1 cscherer sunuser 17410 Jan 7 12:34 wpflow.def
-rw-r--r-- 1 cscherer sunuser 1664 Jan 7 13:02 wpsfail.res

```

scr414/sltest/sl-3:

total 51861

```

drwxr-xr-x 3 cscherer sunuser 4608 Jan 8 09:23 .
drwxr-xr-x 5 cscherer sunuser 512 Jan 7 11:15 ..
-rw-r--r-- 1 cscherer sunuser 965 Jan 8 09:15 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 1845 Jan 8 09:21 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 3480 Jan 8 09:21 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 3480 Jan 8 09:21 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 1040 Jan 8 09:21 ashout.res
-rw-r--r-- 1 cscherer sunuser 1025 Jan 8 09:11 burnup.dat
-rw-r--r-- 1 cscherer sunuser 7547 Jan 8 09:21 chlrdmf.dat
-rw-r--r-- 1 cscherer sunuser 850000 Jan 8 09:11 climato1.dat
-rw-r--r-- 1 cscherer sunuser 2200 Jan 8 09:11 climato2.dat
-rw-r--r-- 1 cscherer sunuser 4791 Jan 8 09:12 coefkdeq.dat
drwxr-xr-x 2 cscherer sunuser 512 Jan 8 09:23 compare
-rw-r--r-- 1 cscherer sunuser 21606 Jan 8 09:21 corrode.out
-rw-r--r-- 1 cscherer sunuser 78711 Jan 8 09:21 cp.tpa
-rw-r--r-- 1 cscherer sunuser 3812 Jan 8 09:21 cumrel.res

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-rw-r--r--	1	cscherer	sunuser	3812	Jan	8	09:21	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	69680	Jan	8	09:21	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	212119	Jan	8	09:21	dcagw.ech
-rw-r--r--	1	cscherer	sunuser	186933	Jan	8	09:21	dcagw.rlt
-rw-r--r--	1	cscherer	sunuser	28784	Jan	8	09:21	dcfgw.cum
-rw-r--r--	1	cscherer	sunuser	9993	Jan	8	09:21	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	14700	Jan	8	09:21	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2200	Jan	8	09:15	dilution.dat
-rw-r--r--	1	cscherer	sunuser	3870	Jan	8	09:11	drifts.dat
-rw-r--r--	1	cscherer	sunuser	519	Jan	8	09:11	drythick.dat
-rw-r--r--	1	cscherer	sunuser	176172	Jan	8	09:21	dsfail.ech
-rw-r--r--	1	cscherer	sunuser	330195	Jan	8	09:21	dsfail.rlt
-rw-r--r--	1	cscherer	sunuser	4993	Jan	8	09:03	dsfaila.res
-rw-r--r--	1	cscherer	sunuser	5074	Jan	8	09:21	dsfailb.res
-rw-r--r--	1	cscherer	sunuser	8375	Jan	8	09:21	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Jan	8	09:11	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	43144	Jan	8	09:11	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Jan	8	09:21	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Jan	8	09:11	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	56860	Jan	8	09:21	ebscld.out
-rw-r--r--	1	cscherer	sunuser	6265	Jan	8	09:11	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	816410	Jan	8	09:21	ebsfail.ech
-rw-r--r--	1	cscherer	sunuser	6222	Jan	8	09:21	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	177655	Jan	8	09:21	ebsfail.rlt
-rw-r--r--	1	cscherer	sunuser	790	Jan	8	09:11	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	41960	Jan	8	09:11	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	3030	Jan	8	09:21	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	239	Jan	8	09:21	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	20929	Jan	8	09:21	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	219001	Jan	8	09:21	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	162252	Jan	8	09:21	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	658449	Jan	8	09:21	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Jan	8	09:21	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	18941	Jan	8	09:21	ebsrel.cum
-rw-r--r--	1	cscherer	sunuser	5486	Jan	8	09:11	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	851248	Jan	8	09:21	ebsrel.ech
-rw-r--r--	1	cscherer	sunuser	11110	Jan	8	09:21	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	2575775	Jan	8	09:21	ebsrel.rlt
-rw-r--r--	1	cscherer	sunuser	162203	Jan	8	09:21	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	25515	Jan	8	09:21	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	18435	Jan	8	09:21	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2711	Jan	8	09:21	echofail.dat
-rw-r--r--	1	cscherer	sunuser	667001	Jan	8	09:21	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	191076	Jan	8	09:15	env.e
-rwxr-xr-x	1	cscherer	sunuser	282692	Jan	8	09:15	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Jan	8	09:21	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	2073	Jan	8	09:21	epapktim.out
-rw-r--r--	1	cscherer	sunuser	474048	Jan	8	09:21	failt.cum
-rwxr-xr-x	1	cscherer	sunuser	143508	Jan	8	09:11	failt.e
-rw-r--r--	1	cscherer	sunuser	25398	Jan	8	09:21	failt.out
-rw-r--r--	1	cscherer	sunuser	9381	Jan	8	09:21	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	69680	Jan	8	09:21	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	6513	Jan	8	09:15	gbioac1.dat
-rw-r--r--	1	cscherer	sunuser	3383	Jan	8	09:15	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Jan	8	09:21	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Jan	8	09:15	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Jan	8	09:21	gentoo.out

-rw-r--r--	1	cscherer	sunuser	73728	Jan	8	09:21	genv.cum
-rw-r--r--	1	cscherer	sunuser	35173	Jan	8	09:21	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Jan	8	09:21	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Jan	8	09:15	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Jan	8	09:21	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Jan	8	09:15	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	40452	Jan	8	09:21	ggenii.cum
-rw-r--r--	1	cscherer	sunuser	13855	Jan	8	09:15	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Jan	8	09:21	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Jan	8	09:21	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Jan	8	09:15	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Jan	8	09:21	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Jan	8	09:15	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Jan	8	09:15	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Jan	8	09:21	gscddf.res
-rw-r--r--	1	cscherer	sunuser	572	Jan	8	09:21	gscddf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Jan	8	09:21	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Jan	8	09:21	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Jan	8	09:21	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Jan	8	09:21	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	607	Jan	8	09:21	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	607	Jan	8	09:21	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Jan	8	09:21	gwork.buf
-rw-r--r--	1	cscherer	sunuser	2136	Jan	8	09:21	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	2136	Jan	8	09:21	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2712	Jan	8	09:21	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	5528	Jan	8	09:21	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Jan	8	09:21	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Jan	8	09:03	lhs.csv
-rw-r--r--	1	cscherer	sunuser	41860	Jan	8	09:11	lhs.inp
-rw-r--r--	1	cscherer	sunuser	11062	Jan	8	09:11	lhs.out
-rw-r--r--	1	cscherer	sunuser	71879	Jan	8	09:11	lhse.out
-rw-r--r--	1	cscherer	sunuser	1095	Jan	8	09:21	maxrel.dat
-rw-r--r--	1	cscherer	sunuser	943775	Jan	8	09:11	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	47356	Jan	8	09:21	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Jan	8	09:11	mechfail.def
-rw-r--r--	1	cscherer	sunuser	109064	Jan	8	09:11	mechfail.e
-rw-r--r--	1	cscherer	sunuser	27383	Jan	8	09:21	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Jan	8	09:21	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1320	Jan	8	09:11	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1321	Jan	8	09:11	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	78958	Jan	8	09:21	mv.tpa
-rw-r--r--	1	cscherer	sunuser	5528	Jan	8	09:21	nearfld.res
-rw-r--r--	1	cscherer	sunuser	648833	Jan	8	09:21	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Jan	8	09:21	nefii.inp
-rw-r--r--	1	cscherer	sunuser	1247175	Jan	8	09:21	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Jan	8	09:21	nefii.rel
-rw-r--r--	1	cscherer	sunuser	648833	Jan	8	09:21	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Jan	8	09:21	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	1247175	Jan	8	09:21	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	309288	Jan	8	09:21	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	1845	Jan	8	09:21	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	15584932	Jan	8	09:20	nefiuuz.cum
-rw-r--r--	1	cscherer	sunuser	90624	Jan	8	09:20	nefiuuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Jan	8	09:20	nefiuuz.inp
-rw-r--r--	1	cscherer	sunuser	351454	Jan	8	09:20	nefiuuz.out
-rw-r--r--	1	cscherer	sunuser	282878	Jan	8	09:20	nefiuuz.src

-rw-r--r--	1	cscherer	sunuser	834	Jan	8	09:20	nefiuz.vel
-rwxr-xr-x	1	cscherer	sunuser	408036	Jan	8	09:12	nefmks.e
-rw-r--r--	1	cscherer	sunuser	340	Jan	8	09:21	nefmks.log
-rw-r--r--	1	cscherer	sunuser	176169	Jan	8	09:21	nfenv.ech
-rw-r--r--	1	cscherer	sunuser	955215	Jan	8	09:21	nfenv.rlt
-rw-r--r--	1	cscherer	sunuser	3160	Jan	8	09:21	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	3160	Jan	8	09:21	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Jan	8	09:11	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Jan	8	09:15	organdf.dat
-rw-r--r--	1	cscherer	sunuser	744	Jan	8	09:21	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	15244	Jan	8	09:21	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	15244	Jan	8	09:21	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	899	Jan	8	09:21	rel_flow.res
-rw-r--r--	1	cscherer	sunuser	607	Jan	8	09:21	relccdf.res
-rw-r--r--	1	cscherer	sunuser	721	Jan	8	09:21	relcum.out
-rw-r--r--	1	cscherer	sunuser	8252	Jan	8	09:21	releaset.cum
-rwxr-xr-x	1	cscherer	sunuser	115588	Jan	8	09:11	releaset.e
-rw-r--r--	1	cscherer	sunuser	412	Jan	8	09:21	releaset.out
-rw-r--r--	1	cscherer	sunuser	620	Jan	8	09:21	relfrac.out
-rw-r--r--	1	cscherer	sunuser	784	Jan	8	09:21	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Jan	8	09:11	repdes.dat
-rw-r--r--	1	cscherer	sunuser	70761	Jan	8	09:21	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Jan	8	09:21	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Jan	8	09:21	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Jan	8	09:21	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Jan	8	09:21	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Jan	8	09:21	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	70761	Jan	8	09:21	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	140825	Jan	8	09:21	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	7437	Jan	8	09:21	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	23937	Jan	8	09:21	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	14429	Jan	8	09:21	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	607	Jan	8	09:21	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	784	Jan	8	09:21	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	3750	Jan	8	09:11	samplpar.abb
-rw-r--r--	1	cscherer	sunuser	28740	Jan	8	09:11	samplpar.hdr
-rw-r--r--	1	cscherer	sunuser	11708	Jan	8	09:21	samplpar.res
-rwxr-xr-x	1	cscherer	sunuser	130758	Jan	8	09:11	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Jan	8	09:11	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	838805	Jan	8	09:21	seismo.ech
-rw-r--r--	1	cscherer	sunuser	695757	Jan	8	09:08	seismoa.rlt
-rw-r--r--	1	cscherer	sunuser	1036757	Jan	8	09:21	seismob.rlt
-rwxr-xr-x	1	cscherer	sunuser	943788	Jan	8	09:11	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	243532	Jan	8	09:11	snllhs.e
-rw-r--r--	1	cscherer	sunuser	309288	Jan	8	09:21	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	37371	Jan	8	09:21	sp.tpa
-rw-r--r--	1	cscherer	sunuser	167719	Jan	8	09:21	spquery.tpa
-rw-r--r--	1	cscherer	sunuser	4506	Jan	8	09:12	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	2576631	Jan	8	09:21	szft.ech
-rw-r--r--	1	cscherer	sunuser	1863155	Jan	8	09:21	szft.rlt
-rw-r--r--	1	cscherer	sunuser	25584	Jan	8	09:21	totdos_c.res
-rw-r--r--	1	cscherer	sunuser	37984	Jan	8	09:21	totdose.res
-rwxr-xr-x	1	cscherer	sunuser	2505700	Jan	7	10:21	tpa.e
-rw-r--r--	1	cscherer	sunuser	87795	Jan	8	09:01	tpa.inp
-rw-r--r--	1	cscherer	sunuser	87795	Jan	8	08:53	tpa_sl3a.inp
-rw-r--r--	1	cscherer	sunuser	45759	Jan	8	09:08	tpa_sl3a.out
-rw-r--r--	1	cscherer	sunuser	87795	Jan	8	09:01	tpa_sl3b.inp

```

-rw-r--r-- 1 cscherer sunuser 47389 Jan 8 09:21 tpa_sl3b.out
-rw-r--r-- 1 cscherer sunuser 90194 Jan 8 09:11 tpameans.out
-rw-r--r-- 1 cscherer sunuser 99636 Jan 8 09:11 tpanames.db
-rw-r--r-- 1 cscherer sunuser 222375 Jan 8 09:21 trelease.out
-rw-r--r-- 1 cscherer sunuser 6135 Jan 8 09:21 uzflow.ech
-rw-r--r-- 1 cscherer sunuser 176035 Jan 8 09:21 uzflow.rlt
-rw-r--r-- 1 cscherer sunuser 2751659 Jan 8 09:21 uzft.ech
-rw-r--r-- 1 cscherer sunuser 2751095 Jan 8 09:21 uzft.rlt
-rw-r--r-- 1 cscherer sunuser 21032 Jan 8 09:21 weldfail.out
-rw-r--r-- 1 cscherer sunuser 13105 Jan 8 09:11 wpflow.dat
-rw-r--r-- 1 cscherer sunuser 17410 Jan 8 09:11 wpflow.def
-rw-r--r-- 1 cscherer sunuser 1006 Jan 8 09:21 wpsfail.res

```

scr414/sltest/sl-3/compare:

total 2081

```

drwxr-xr-x 2 cscherer sunuser 512 Jan 8 09:23 .
drwxr-xr-x 3 cscherer sunuser 4608 Jan 8 09:23 ..
-rw-r--r-- 1 cscherer sunuser 207 Jan 8 09:23 dsfail.dif
-rw-r--r-- 1 cscherer sunuser 4993 Jan 8 09:03 dsfaila.res
-rw-r--r-- 1 cscherer sunuser 5074 Jan 8 09:21 dsfailb.res
-rw-r--r-- 1 cscherer sunuser 345838 Jan 8 09:23 seismo.dif
-rw-r--r-- 1 cscherer sunuser 695757 Jan 8 09:03 seismoa.rlt
-rw-r--r-- 1 cscherer sunuser 1036757 Jan 8 09:21 seismob.rlt

```

scr414/test:

total 5341

```

drwxr-xr-x 2 cscherer sunuser 1024 Jan 9 09:15 .
drwxr-xr-x 10 cscherer sunuser 8192 Jan 9 16:09 ..
-rwxr-xr-x 1 cscherer sunuser 43144 Jan 8 14:15 dsfailt.e
-rwxr-xr-x 1 cscherer sunuser 41960 Jan 7 12:05 ebsfilt.e
-rwxr-xr-x 1 cscherer sunuser 191076 Jan 7 12:10 env.e
-rwxr-xr-x 1 cscherer sunuser 282692 Jan 7 12:10 envin.e
-rwxr-xr-x 1 cscherer sunuser 143508 Jan 7 12:05 failt.e
-rw-r--r-- 1 cscherer sunuser 31788 Jan 9 09:45 mechfail.dat
-rwxr-xr-x 1 cscherer sunuser 107232 Jan 9 09:37 mechfail.e
-rw-r--r-- 1 cscherer sunuser 9767 Jan 8 14:15 mechfail.inp
-rwxr-xr-x 1 cscherer sunuser 105956 Jan 8 09:35 mechfail_0108_sol42.e
-rw-r--r-- 1 cscherer sunuser 31756 Dec 31 16:23 mechfail_1strun.dat
-rw-r--r-- 1 cscherer sunuser 31788 Jan 8 17:33 mechfail_bignumber.dat
-rw-r--r-- 1 cscherer sunuser 31768 Jan 8 14:27 mechfail_def.dat
-rwxr-xr-x 1 cscherer sunuser 109064 Jan 7 11:15 mechfail_defaultcomp.e
-rw-r--r-- 1 cscherer sunuser 31768 Jan 9 08:53 mechfail_georgeI.dat
-rwxr-xr-x 1 cscherer sunuser 102492 Jan 8 14:04 mechfail_georgeI.e
-rwxr-xr-x 1 cscherer sunuser 105956 Jan 8 15:17 mechfail_makeall.e
-rwxr-xr-x 1 cscherer sunuser 105956 Jan 7 11:13 mechfail_sol42.e
-rwxr-xr-x 1 cscherer sunuser 107232 Jan 8 17:33 mechfail_test.e
-rw-r--r-- 1 cscherer sunuser 31768 Jan 8 14:21 mechfail_v42.dat
-rwxr-xr-x 1 cscherer sunuser 408036 Jan 7 12:05 nefmks.e
-rwxr-xr-x 1 cscherer sunuser 115588 Jan 7 12:05 releaset.e
-rwxr-xr-x 1 cscherer sunuser 130758 Jan 8 14:15 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Jan 8 14:15 seisbs2.dis
-rwxr-xr-x 1 cscherer sunuser 243532 Jan 8 14:13 snllhs.e
-rwxr-xr-x 1 cscherer sunuser 2505700 Jan 7 10:21 tpa.e
-rw-r--r-- 1 cscherer sunuser 87741 Dec 30 19:35 tpa.inp

```

# Test Plan for TPA SCR # 414

Rf 2-28-03

Test Plan Name: SEISMO~~MECH~~FAIL

Tested By: Carol Scherer

Date: January 10, 2003

Host Machine: SUN Ultra-4 Server: spock

Host OS: Solaris 5.8

Baseline Version: 5.0BetaE

Test Version: 5.0BetaH

For all test cases, the following settings are required to the tpa.inp file:

Parameter	Value
SeismicHazardCurveforSEISMO	10 0.050 142.0 0.100 409.0 0.169 1000.0 0.350 3968.0 0.534 10000.0 0.750 22340.0 1.305 100000.0 2.000 336261.0 3.000 1158062.0 6.000 100000000.0
ThicknessRockfallRubbleAboveDripShieldCrown[m]	constant: 0.5 (added under SEISMO section)
StartingBlockPointerOne_{1..10}[]	uniform: 1, 10000 (replaces StartingBlockPointerOne[])
StartingBlockPointerTwo_{1..10}[]	uniform: 1, 10000 (replaces StartingBlockPointerTwo[])
FractionRockTypeOneInSubarea_{1..10}[]	constant: 0.75 (modified the parameter from 0.70 to 0.75)

(TPA.INP modifications, continued:)

Parameter	Value
BulkingFactorRockTypeOneGridElement_{1..10}[]	uniform: 1.15, 1.50 (modified from uniform: 1.15, 1.35)
BulkingFactorRockTypeTwoGridElement_{1..10}[]	uniform: 1.35, 1.50 (modified from uniform: 1.15, 1.35)
DegradationTimeRockTypeOneGridElement_{1..10}[yr]	beta: 250.0, 1000.0, 3.25842, 1.82124 (modified from: beta: 0.0, 1000.0, 5.85392, 2.21348)
DegradationTimeRockTypeTwoGridElement_{1..10}[yr]	beta: 250.0, 1000.0, 3.25842, 1.82124 (modified from: beta: 0.0, 1000.0, 5.85392, 2.21348)
DripShieldBucklingLoadGridElement_{1..10}[kg/m]	beta: 25000, 150000, 2.08134, 8.92986 (modified from: beta: 15000, 150000, 2.89721, 9.34772)

## Process Level Tests

The process level test is designed to verify the standalone MECHFAIL module generates expected results.

### PL-1 Verification of Mechanical Failure with Hand Calculations

#### 1.0 Path for Run Directory

\$HOME = /net/spock/home/cscherer

<<Run Directory>> = \$HOME/tpatest/scr414/pltest/pl-1

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/tpatest/scr414

TPA\_DATA = \$HOME/tpatest/scr414

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, mechfail.inp is required from a mean case run (use tpameans.out from a base case run of tpa.e) with the following modifications to tpa.inp:

Parameter	Value
Indrift_FI_PreTemperaturePeak[mol/L]	1.0E-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0E-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0E-10}
StopAtSubarea	1

4.2 Copy the seisbs1.dis and seisbs2.dis files from the data directory to the <<Run Directory>>. Copy mechfail.e from the codes directory to the <<Run Directory>>.

#### 5.0 Special Diagnostic Code Modifications Required:

5.1 Set DEBUG\_FLAG to .TRUE. in mechfail.f.

#### 6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Section 4.0.

#### 7.0 Utility Scripts Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify the results of the MECHFAL standalone module with hand calculated values..

8.2 Assumptions: none

8.3 Constraints: none



#### 8.4 Output Files: mechfail.dat

#### 8.5 Procedure:

1. At the command prompt from the <<Run Directory>>, type the following: “mechfail.e > tpa\_pl1.out.” The screen output (print statements controlled by the DEBUG\_FLAG) will be captured to file tpa\_pl1.out.
2. Using hand calculations (Excel spreadsheet), determine the times for drift failure and drip shield failure for one grid element and compare to the failure information generated in mechfail.dat. (See spreadsheet file pl1.xls.)

8.6 Pass/Fail Criteria: The code runs to completion and generates output information corresponding to that expected in section 8.5.

#### 9.0 Test Results

9.1 All files will be archived on a CD labeled, “TPA SCR #414 - Test Directories.”

9.2 Criterion 1: Verify the MECHFALL module produces output failure information that compares to hand calculations.

#### 9.3 Overall Test Status:

The test results are included in an Excel Spreadsheet file titled, “pl.xls.” This file shows that the drift failure fraction and drip shield failure fraction correspond to those values obtained in mechfail.dat for grid element 1 of subarea 1.

In mechfail.dat 100% of the drifts fail at 750.28 years.

In pl1.xls, the drift fails for grid element 1 of subarea 1 at 750.28 years. This is the point where the drift failure height exceeds the maximum drift height.

In mechfail.dat, 75% of the drip shields fail due to buckling at 770.16 years. Since the value is 75%, this would be grid element 1. The calculations in pl1.xls show that at 761.84 years, the drip shield buckles and fails. This time corresponds to the seismic event at that time, and therefore, the next tpa time step in mechfail.dat (770.16 years) shows the drip shield in grid element one having failed.

The hand calculated results in pl1.xls compare to those in mechfail.dat.

This test successfully **PASSED** the criterion above for test PL-1.

## System Level Tests

The system level tests are designed to verify the integration of the MECHFAIL module within the TPA code. The TPA code is responsible for generating the input file for stand-alone module MECHFAIL.

The major modification to the code involves calling DSFAIL and SEISMO for every subarea instead of every realization. As part of these changes to the SEISMO/MECHFAIL/DSFAIL modules, the tpa.inp file was changed.

### SL-1 Zero Drip Shield Thickness

#### 1.0 Path for Run Directory

\$HOME = /net/spock/home/cscherer

<<Run Directory>> = \$HOME/tpatest/scr414/sltest/sl-1

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/tpatest/scr414

TPA\_DATA = \$HOME/tpatest/scr414

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 Set the values in TPA.INP in accordance with the following table:

Parameter	Value
DripShieldThickness[m]	0.0
OutputMode	1
SelectAppendFiles	0
NumberOfRealizations	2
Indrift_FI_PreTemperaturePeak[mol/L]	1.0E-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0E-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0E-10}

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Section 4.0.

7.0 Utility Scripts Needed to Perform the Test

None

8.0 Test Description

8.1 Objective: This test is designed to verify that the MECHFAIL module will return all drip shields failed over all time steps when the drip shield thickness is zero.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: TPA.INP is modified to generate all output files

8.5 Procedure:

1. At the command prompt from the <<Run Directory>>, type the following: "tpa.e > tpa\_sl1.out." The screen output will be captured to file tpa\_sl1.out.

2. Verify that for each subarea, the messages, "exec: calling dsfail" and "exec: calling seismo" appear.

3. Open file seismo.rlt. Verify that for all time steps, the Drip Shield, Drip Shield Buckling, Drip Shield Plate, and Drip Shield Bulkhead fractions are equal to 1.0.

8.6 Pass/Fail Criteria: The code runs to completion and generates screen output and file output information corresponding to that expected in section 8.5.

9.0 Test Results

9.1 Output and Supporting Files: All files are archived to a CD labeled, "TPA SCR #414 - Test Directories."

9.2 Criterion 1: Verify the output screen values are displayed in accordance with Section 8.5, Step 2.

9.3 Criterion 2: Verify the output file contains the correct failure information in accordance with Section 8.5, Step 3.

#### **9.4 Overall Test Status:**

For each subarea, the messages, “exec: calling dsfail” and “exec: calling seismo” appear.

Within file seismo.rlt, the Drip Shield, Drip Shield Buckling, Drip Shield Plate, and Drip Shield Bulkhead fractions are equal to 1.0 for all time steps and realizations.

This test successfully **PASSED** the criterion above for test SL-1.

## SL-2 Expected Results for Drift Failure

### 1.0 Path for Run Directory

\$HOME = /net/spock/home/cscherer

<<Run Directory>> = \$HOME/tpatest/scr414/sltest/sl-2

### 2.0 Path for Archived Results

<<Run Directory>>

### 3.0 Environment Variables

TPA\_TEST = \$HOME/tpatest/scr414

TPA\_DATA = \$HOME/tpatest/scr414

### 4.0 Special Input Files or Modifications to Input Files Required

4.1 Set the values in TPA.INP in accordance with the following table:

Parameter	Value
OutputMode	0
SelectAppendFiles	0
NumberOfRealizations	10
Indrift_FI_PreTemperaturePeak[mol/L]	1.0E-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0E-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0E-10}

### 5.0 Special Diagnostic Code Modifications Required: None

### 6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Sections 4.0.

### 7.0 Utility Scripts Needed to Perform the Test

None

## 8.0 Test Description

8.1 Objective: This test is designed to verify that the drift failure fractions generated by MECHFAIL, retrieved by module SEISMO and returned to the executive (EXEC) are reasonable.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: dsfail.res

### 8.5 Procedure:

1. At the command prompt from the <<Run Directory>>, type the following: "tpa.e > tpa\_sl2.out." The screen output will be captured to file tpa\_sl2.out.
2. Verify that for each subarea of each realization, the messages, "exec: calling dsfail" and "exec: calling seismo" appear.
3. Using Excel, plot the Cumulative Distribution Function (CDF) for the Beta Distribution defined for drift degradation in tpa.inp. The input parameters are: alpha = 3.25842, beta = 1.82124, min = 250, max = 1000. Results are stored in sl2.xls.
4. Using dsfail.res, plot the drift fraction as a cumulative distribution function and compare the plotted values to the curve calculated directly in step 3.
5. From dsfail.res, verify that 100% of the drifts fail by 1000 years.

8.6 Pass/Fail Criteria: The code runs to completion and generates screen output and file output information corresponding to that expected in section 8.5.

## 9.0 Test Results

9.1 All files will be archived on a CD labeled, "TPA SCR #414 - Test Directories."

9.2 Criterion 1: Verify the output screen values are displayed in accordance with Section 8.5, Step 2.

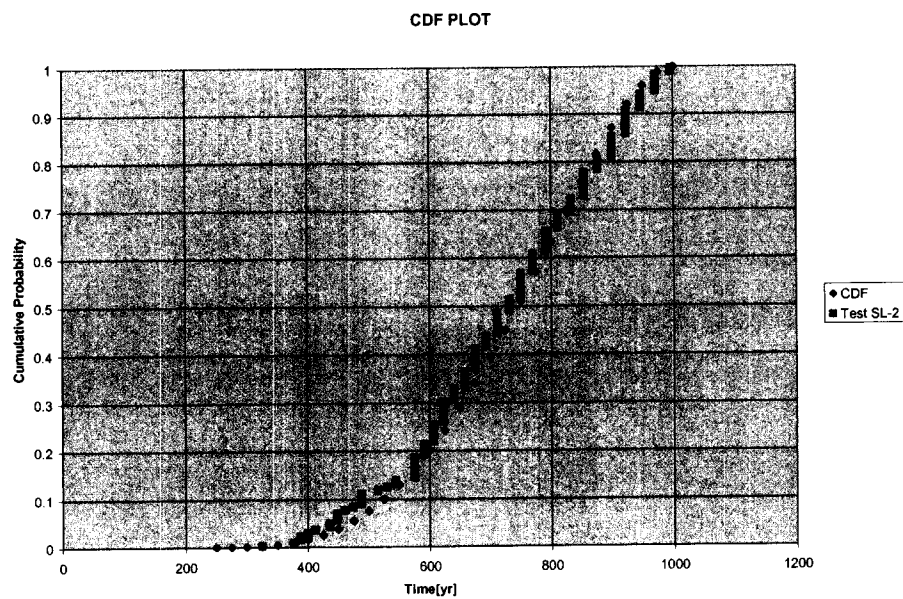
9.3 Criterion 2: Verify that the drift failure fraction cumulative distribution approximates the drift degradation beta distribution in tpa.inp.

9.4 Criterion 3: Verify that 100% of the drifts fail by 1000 years.

### 9.5 Overall Test Status:

For each subarea, the messages, “exec: calling dsfail” and “exec: calling seismo” appear.

Results from file dsfail.res were plotted against a CDF. The values from dsfail.res approximate the drift degradation beta distribution in tpa.inp.



The results in dsfail.res show that 100% of the drifts fail by 1000 years.

This test successfully **PASSED** the criterion above for test SL-2.



**SL-3 Verify the first 10,000 years generates the same results for End of Simulation at 10,000 years or 100,000 years**

**1.0 Path for Run Directory**

\$HOME = /net/spock/home/cscherer

<<Run Directory>> = \$HOME/tpatest/scr414/sltest/sl-3

**2.0 Path for Archived Results**

<<Run Directory>>

**3.0 Environment Variables**

TPA\_TEST = \$HOME/tpatest/scr414

TPA\_DATA = \$HOME/tpatest/scr414

**4.0 Special Input Files or Modifications to Input Files Required**

4.1 Set the values in TPA.INP in accordance with the following table:

**Test Case A**

Parameter	Value
OutputMode	1
SelectAppendFiles	0
NumberOfRealizations	2
MaximumTime[yr]	1.0e4
Indrift_FI_PreTemperaturePeak[mol/L]	1.0e-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0e-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0e-10}

## Test Case B

Parameter	Value
OutputMode	1
SelectAppendFiles	0
NumberOfRealizations	2
MaximumTime[yr]	1.0e5
Indrift_FI_PreTemperaturePeak[mol/L]	1.0e-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0e-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0e-10}

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Sections 4.0.

7.0 Utility Scripts Needed to Perform the Test

None

8.0 Test Description

8.1 Objective: This test is designed to verify that mechanical failure will produce the same test results for the first 10,000 years whether the end of simulation time is 10,000 years or 100,000 years.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: seismo.rlt, dsfail.res

8.5 Procedure:

1. For Test Case A, at the command prompt from the <<Run Directory>>, type the following: "tpa.e > tpa\_sl3a.out." The screen output will be captured to file tpa\_sl3a.out. Save seismo.rlt as seismoa.rlt and dsfail.res as dsfaila.res.

2. For Test Case B, at the command prompt from the <<Run Directory>>, type the following: "tpa.e > tpa\_sl3b.out." The screen output will be captured to file tpa\_sl3b.out. Save seismo.rlt as seismob.rlt and dsfail.res as dsfailb.res.

3. Compare the differences in files seismo.rlt and dsfail.res for Test Cases A and B. Verify that the same information is generated at or before 10,000 years regardless of the end of simulation time.

8.6 Pass/Fail Criteria: The code runs to completion and generates screen output and file output information corresponding to that expected in section 8.5.

## 9.0 Test Results

9.1 All files will be archived on a CD labeled, "TPA SCR #414 - Test Directories."

9.2 Criterion 1: Verify that the mechanical failure code generates the same output information regardless of end of simulation time.

### 9.3 Overall Test Status:

For test case A, the seismo.rlt and dsfail.res files were copied to a "compare" subdirectory as seismoa.rlt and dsfaila.res, respectively. For test case B, the seismo.rlt and dsfail.res files were copied to the "compare" subdirectory as seismob.rlt and dsfailb.res, respectively. The difference between the dsfail.res files was generated and stored in file dsfail.dif and the difference between the seismo.rlt files was generated and stored in file seismo.dif. The two difference files (dsfail.dif and seismo.dif) show that there is no difference in the output information at time steps at or below 10,000 years.

This test successfully **PASSED** the criterion above for test SL-3.

**NOTE:** The code tested was compiled using the solapps, version 4.2 FORTRAN compiler. Initially, the runs aborted in mechfail trying to read the file mechfail.dat. A change to the TPA 5.0betaH makefile (Makefile4.2) using "-xtypemap=real:64,double:64, integer:64" instead of "-r8" corrected the problem.

# Test Plan for TPA SCR # 414

Test Plan Name: SEISMO/MECHFAL

Tested By: George Adams

Date: December 11, 2002

Host Machine: SUN Ultra-4 Server: spock

Host OS: Solaris 5.8

Baseline Version: 5.0BetaD

Test Version: 5.0BetaD(modified)

For all test cases, the following modifications are required to the tpa.inp file:

Parameter	Value
SeismicHazardCurveforSEISMO	10 0.050 142.0 0.100 409.0 0.169 1000.0 0.350 3968.0 0.534 10000.0 0.750 22340.0 1.305 100000.0 2.000 336261.0 3.000 1158062.0 6.000 100000000.0
ThicknessRockfallRubbleAboveDripShieldCrown[m]	constant: 0.5 (added under SEISMO section)
StartingBlockPointerOne_{1..10}[]	uniform: 1, 10000 (replaces StartingBlockPointerOne[])
StartingBlockPointerTwo_{1..10}[]	uniform: 1, 10000 (replaces StartingBlockPointerTwo[])
FractionRockTypeOneInSubarea_{1..10}[]	constant: 0.75 (modified the parameter from 0.70 to 0.75)
BulkingFactorRockTypeOneGridElement_{1..10}[]	uniform: 1.15, 1.50 (modified from uniform: 1.15, 1.35)
BulkingFactorRockTypeTwoGridElement_{1..10}[]	uniform: 1.35, 1.50 (modified from uniform: 1.15, 1.35)
DegradationTimeRockTypeOneGridElement_{1..10}[yr]	beta: 250.0, 1000.0, 3.25842, 1.82124 (modified lower bound from 0.0 to 250.0)
DegradationTimeRockTypeTwoGridElement_{1..10}[yr]	beta: 250.0, 1000.0, 3.25842, 1.82124 (modified lower bound from 0.0 to 250.0)
DripShieldBucklingLoadGridElement_{1..10}[kg/m]	beta: 25000, 150000, 2.08134, 8.92986 (modified from: beta: 15000, 150000, 2.89721, 9.34772)

## Process Level Tests

The process level test is designed to verify the standalone MECHFAIL module generates expected results.

### PL-1 Verification of Mechanical Failure with Hand Calculations

#### 1.0 Path for Run Directory

<<Run Directory>> = \$HOME/PA-SCR-414/test/pltest/pl-1

<<Run Directory Standalone>> = \$HOME/PA-SCR-414/test/pltest/pl-1/standalone

#### 2.0 Path for Archived Results

<<Run Directory>>, <<Run Directory Standalone>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-414/code50betadmod

TPA\_DATA = \$HOME/PA-SCR-414/code50betadmod

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, mechfail.inp is required from a mean case run with the following modifications to tpa.inp:

Parameter	Value
Indrift_FI_PreTemperaturePeak[mol/L]	1.0E-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0E-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0E-10}
StopAtSubarea	1

4.2 Copy the seisbs1.dis and seisbs2.dis files from the data directory to the <<Run Directory>>.

#### 5.0 Special Diagnostic Code Modifications Required: None

#### 6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Sections 4.0.

#### 7.0 Utility Scripts Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify the results of the MECHFAIL standalone module with hand calculated values..

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: mechfail.dat

8.5 Procedure:

1. At the command prompt from the <<Run Directory Standalone>>, type the following: "mechfail.e > PA-SCR-414\_PL1.out." The screen output will be captured to file PA-SCR-414\_PL1.out.
2. Using hand calculations, determine the times for drift failure and drip shield failure for one grid element and compare to the failure information generated in mechfail.dat.

8.6 Pass/Fail Criteria: The code runs to completion and generates output information corresponding to that expected in section 8.5.

#### 9.0 Test Results

9.1 All files will be archived on a CD labeled, "Test Plan and Test Results for TPA SCR #414."

9.2 Criterion 1: Verify the MECHFAIL module produces output failure information that compares to hand calculations.

### 9.3 Overall Test Status:

The test results are included in an Excel Spreadsheet file titled, "PA-SCR-414\_PL1.xls." This file shows that the drift failure fraction and drip shield failure fraction correspond to those values obtained in mechfail.dat for grid element 1 of subarea 1.

In mechfail.dat 100% of the drifts fail at 750.28 years.

In PA-SCR-414\_PL1.xls, the drift fails for grid element 1 of subarea 1 at 750.28 years. This is the point where the drift failure height exceeds the maximum drift height.

In mechfail.dat 75% of the drip shields fail due to buckling at 770.16 years. Since the value is 75%, this would be grid element 1. The calculations in PA-SCR-414\_PL1.xls show that at 761.84 years, the drip shield buckles and fails. This time corresponds to the seismic event at that time, and therefore, the next tpa time step in mechfail.dat(770.16 years) shows the drip shield in grid element one having failed.

The hand calculated results in PA-SCR-414\_PL1.xls compare to those in mechfail.dat.

This test successfully **PASSED** the criterion above for test PL-1.

## System Level Tests

The system level tests are designed to verify the integration of the MECHFAIL module within the TPA code. The TPA code is responsible for generating the input file for stand-alone module MECHFAIL.

The major modification to the code involves calling DSFAIL and SEISMO for every subarea instead of every realization. As part of these changes to the SEISMO/MECHFAIL/DSFAIL modules, the tpa.inp file was changed.

### SL-1 Zero Drip Shield Thickness

#### 1.0 Path for Run Directory

<<Run Directory>> = \$HOME/PA-SCR-414/test/sltest/sl-1

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-414/code50betadmod

TPA\_DATA = \$HOME/PA-SCR-414/code50betadmod

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 Set the values in TPA.INP in accordance with the following table:

Parameter	Value
DripShieldThickness[m]	0.0
OutputMode	1
SelectAppendFiles	0
NumberOfRealizations	2
Indrift_FI_PreTemperaturePeak[mol/L]	1.0E-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0E-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0E-10}

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Section 4.0.

7.0 Utility Scripts Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify that the MECHFAIL module will return all drip shields failed over all time steps when the drip shield thickness is zero.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: TPA.INP is modified to generate all output files

8.5 Procedure:

1. At the command prompt from the <<Run Directory>>, type the following:, "tpa.e > PA-SCR-414\_SL1.out." The screen output will be captured to file PA-SCR-414\_SL1.out.
2. Verify that for each subarea, the messages, "exec: calling dsfail" and "exec: calling seismo" appear.
3. Open file seismo.rlt. Verify that for all time steps, the Drip Shield, Drip Shield Buckling, Drip Shield Plate, and Drip Shield Bulkhead fractions are equal to 1.0.

8.6 Pass/Fail Criteria: The code runs to completion and generates screen output and file output information corresponding to that expected in section 8.5.

#### 9.0 Test Results

9.1 Output and Supporting Files: All files are archived to a CD labeled, "Test Plan and Test Results for TPA SCR #414."

9.2 Criterion 1: Verify the output screen values are displayed in accordance with Section 8.5, Step 2.

9.3 Criterion 2: Verify the output file contains the correct failure information in accordance with Section 8.5, Step 3.

#### 9.4 Overall Test Status:

For each subarea, the messages, "exec: calling dsfail" and "exec: calling seismo" appear.

Within file seismo.rlt, the Drip Shield, Drip Shield Buckling, Drip Shield Plate, and Drip Shield Bulkhead fractions are equal to 1.0 for all time steps and realizations.

This test successfully **PASSED** the criterion above for test SL-1.



## SL-2 Expected Results for Drift Failure

### 1.0 Path for Run Directory

<<Run Directory>> = \$HOME/PA-SCR-414/test/sltest/sl-2

### 2.0 Path for Archived Results

<<Run Directory>>

### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-414/code50betadmod

TPA\_DATA = \$HOME/PA-SCR-414/code50betadmod

### 4.0 Special Input Files or Modifications to Input Files Required

4.1 Set the values in TPA.INP in accordance with the following table:

Parameter	Value
OutputMode	0
SelectAppendFiles	0
NumberOfRealizations	10
Indrift_FI_PreTemperaturePeak[mol/L]	1.0E-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0E-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0E-10}

5.0

Special Diagnostic Code Modifications Required: None

### 6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Sections 4.0.

### 7.0 Utility Scripts Needed to Perform the Test

None

### 8.0 Test Description

8.1 Objective: This test is designed to verify that the drift failure fractions generated by MECHFAIL, retrieved by module SEISMO and returned to the executive (EXEC) are reasonable.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: dsfail.res

8.5 Procedure:

1. At the command prompt from the <<Run Directory>>, type the following: "tpa.e > PA-SCR-414\_SL2.out." The screen output will be captured to file PA-SCR-414\_SL2.out.
2. Verify that for each subarea of each realization, the messages, "exec: calling dsfail" and "exec: calling seismo" appear.
3. Plot the Cumulative Distribution Function (CDF) for the Beta Distribution defined for drift degradation in tpa.inp. The input parameters are: alpha = 3.25842, beta = 1.82124, min = 250, max = 1000.
4. Using dsfail.res, plot the drift fraction as a cumulative distribution function and compare the plotted values to the curve calculated directly in step 3.
5. From dsfail.res, verify that 100% of the drifts fail by 1000 years.

8.6 Pass/Fail Criteria: The code runs to completion and generates screen output and file output information corresponding to that expected in section 8.5.

#### 9.0 Test Results

9.1 All files will be archived on a CD labeled, "Test Plan and Test Results for TPA SCR #414."

9.2 Criterion 1: Verify the output screen values are displayed in accordance with Section 8.5, Step 2.

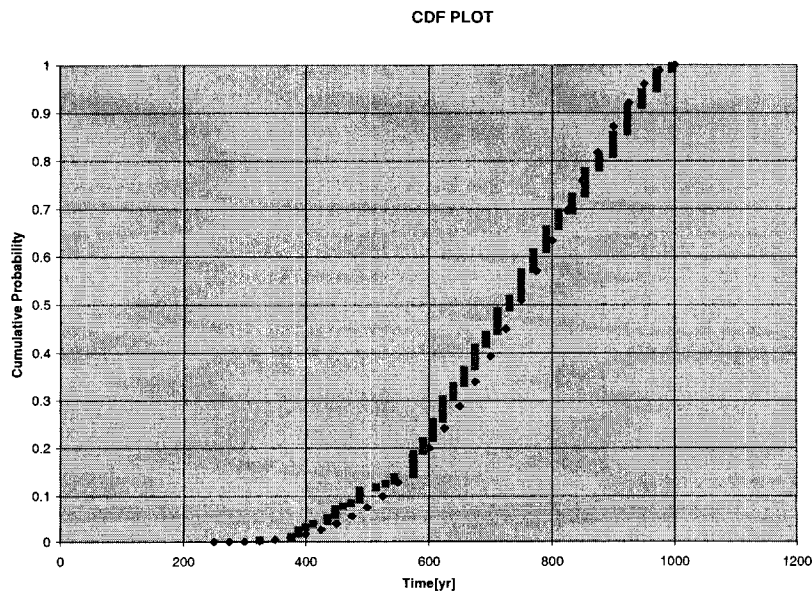
9.3 Criterion 2: Verify that the drift failure fraction cumulative distribution approximates the drift degradation beta distribution in tpa.inp.

9.4 Criterion 3: Verify that 100% of the drifts fail by 1000 years.

#### 9.5 Overall Test Status:

For each subarea, the messages, "exec: calling dsfail" and "exec: calling seismo" appear.

Results from file dsfail.res were plotted against a CDF. The values from dsfail.res approximate the drift degradation beta distribution in tpa.inp.



The results in dsfail.res show that 100% of the drifts fail by 1000 years.

This test successfully **PASSED** the criterion above for test SL-2.

### SL-3 Verify the first 10,000 years generates the same results for End of Simulation at 10,000 years or 100,000 years

#### 1.0 Path for Run Directory

<<Run Directory>> = \$HOME/PA-SCR-414/test/sltest/sl-3

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-414/code50betadmod

TPA\_DATA = \$HOME/PA-SCR-414/code50betadmod

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 Set the values in TPA.INP in accordance with the following table:

**Test Case A**

Parameter	Value
OutputMode	1
SelectAppendFiles	0
NumberOfRealizations	2
MaximumTime[yr]	1.0e4
Indrift_FI_PreTemperaturePeak[mol/L]	1.0e-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0e-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0e-10}

**Test Case B**

Parameter	Value
OutputMode	1
SelectAppendFiles	0
NumberOfRealizations	2
MaximumTime[yr]	1.0e5
Indrift_FI_PreTemperaturePeak[mol/L]	1.0e-5
Indrift_FI_PostTemperaturePeak[mol/L]	1.0e-5
DripShieldCorrosionRate[m/yr]	{constant, 1.0e-10}

#### 5.0 Special Diagnostic Code Modifications Required: None

#### 6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Sections 4.0.

## 7.0 Utility Scripts Needed to Perform the Test

None

## 8.0 Test Description

8.1 Objective: This test is designed to verify that mechanical failure will produce the same test results for the first 10,000 years whether the end of simulation time is 10,000 years or 100,000 years.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: seismo.rlt, dsfail.res

8.5 Procedure:

1. For Test Case A, at the command prompt from the <<Run Directory>>, type the following:  
"tpa.e > PA-SCR-414\_SL3-A.out." The screen output will be captured to file PA-SCR-414\_SL3-A.out.
2. For Test Case B, at the command prompt from the <<Run Directory>>, type the following:  
"tpa.e > PA-SCR-414\_SL3-B.out." The screen output will be captured to file PA-SCR-414\_SL3-B.out.
3. Compare the differences in files seismo.rlt and dsfail.res for Test Cases A and B. Verify that the same information is generated at or before 10,000 years regardless of the end of simulation time.

8.6 Pass/Fail Criteria: The code runs to completion and generates screen output and file output information corresponding to that expected in section 8.5.

## 9.0 Test Results

9.1 All files will be archived on a CD labeled, "Test Plan and Test Results for TPA SCR #414."

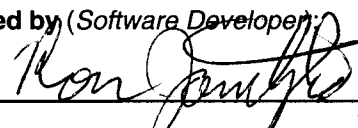
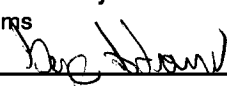
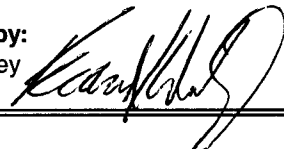
9.2 Criterion 1: Verify that the mechanical failure code generates the same output information regardless of end of simulation time.

### 9.3 Overall Test Status:

For test case A, the seismo.rlt and dsfail.res files were copied to a "compare" subdirectory as seismo-A.rlt and dsfail-A.res, respectively. For test case B, the seismo.rlt and dsfail.res files were copied to a "compare" subdirectory as seismo-B.rlt and dsfail-B.res, respectively. The difference between the dsfail.res files was generated and stored in file dsfail.dif and the difference between the seismo.rlt files was generated and stored in file seismo.dif. The two difference files (dsfail.dif and seismo.dif) show that there is no difference in the output information at time steps at or below 10,000 years.

This test successfully **PASSED** the criterion above for test SL-3.

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-415	<b>Software Title and Version:</b> TPA 5.0beta	<b>/Project No:</b> 20-06002-01.113
<b>Affected Software Module(s), Description of Problem(s):</b> nfenv.f (added nfenvadj.i), seismo2.f, exec.f(added seisadj.i), mechfail.f(added seisadj.i, mechadj.i), failt.f(added failtadj.i), weldfail.f(added failtadj.i) dsfailt.f, integrt.f  These modules were modified using the AUTOMATIC array declaration of f77 version 5.0. This feature is not supported in the f77 version 4.2 compiler. The code should be modified to be compatible with the version 4.2 compiler.		
<b>Change Requested by:</b> R. Janetzke Date: 11-8-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 11-8-02 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  Removed automatic arrays from the code modules. Automatic arrays were redefined statically using the maximum number of dimensions in the associated include file.  NFENV.F: Added include file nfenvadj.i. This include file is used in subroutine assignConcentrations. SEISMO2.F: Subroutine buildMechfailInputFile. Modified local variable arrays to use maxnsubarea defined in maxnsuba.i. EXEC.F: Moved variable maxseismicevents to include file seisadj.i MECHFAIL.F: Added references to maxnsuba.i, maxntime.i, and added new include files mechadj.i and seisadj.i. Mechfail uses these files to dimension its local arrays and check its input number of subareas, number of time steps, number of block size points and number of seismic events against the maximums identified in these files. FAILT.F: Removed automatic arrays from subroutine calculateWeldFailure. Moved nintv to include file, failtadj.i. This include file is used to dimension arrays in FAILT.F and WELDFAIL.F WELDFAIL.F: Eliminated automatic arrays by redimensioning local variable arrays from include file failtadj.i. DSFAILT.F: Removed automatic arrays from subroutine getDSThickness and subroutine dsfailtime INTEGRT.F: Subroutine getIntegral was modified to accept a maximum dimension for alignment purposes.		
<b>Implemented by:</b> G. Adams 	<b>Date:</b> November 14, 2002	
<b>Description of Acceptance Tests:</b>  The test plan for TPA SCR #415 consists of one system level test designed to verify that the TPA code generates the same output data when automatic arrays are removed from the code.  The software successfully passed the system level test in accordance with the Test Plan for "TPA SCR #415 and TPA SCR 416.". The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #415 and TPA SCR 416."		
<b>Tested by:</b> B. Winfrey 	<b>Date:</b> 1-6-03	

# Test Plan for TPA SCR#s # 415 and #416

**Test Plan Name:** REMOVE AUTOMATIC ARRAYS

**Tested By:** George Adams and Brandi Winfrey

**Date:** December 13, 2002

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0Beta

**Test Versions:** 5.0BetaA and  
5.0BetaE

## System Level Tests

This system level test incorporates both SCR 415 and SCR 416. It is designed to verify that the code will generate the same results when automatic arrays are removed from the code modules in each respective SCR. SCR 415 is tested on 5.0BetaA and SCR 416 is tested on 5.0BetaE.

### SL-1 Verify No Change in Output

#### 1.0 Path for Run Directory

<<Run Directory Code 5.0 Beta >> = \$HOME/PA-SCR-415/test/sltest/sl-1/code50beta

<<Run Directory Code 5.0 Beta1>> = \$HOME/PA-SCR-415/test/sltest/sl-1/code50beta1

<<Run Directory Code 5.0 Beta2 >> = \$HOME/PA-SCR-415/test/sltest/sl-1/code50beta2

<<Run Directory Code 5.0 Beta3 >> = \$HOME/PA-SCR-415/test/sltest/sl-1/code50beta3

#### 2.0 Path for Archived Results

\$HOME/PA-SCR-415/test/sltest/sl-1

#### 3.0 Environment Variables

For Test Case A:

TPA\_TEST = \$HOME/PA-SCR-415/code50beta

TPA\_DATA = \$HOME/PA-SCR-415/code50beta

For Test Case B:

TPA\_TEST = \$HOME/PA-SCR-415/code50beta1

TPA\_DATA = \$HOME/PA-SCR-415/code50beta1

For Test Case C:

TPA\_TEST = \$HOME/PA-SCR-415/code50beta2

TPA\_DATA = \$HOME/PA-SCR-415/code50beta2

For Test Case D:

TPA\_TEST = \$HOME/PA-SCR-415/code50beta3

TPA\_DATA = \$HOME/PA-SCR-415/code50beta3

#### 4.0 Special Input Files or Modifications to Input Files Required

Directory	Contents
code50beta	tpa 5.0 betaA compiled with f77-5.0
code50beta1	tpa 5.0 betaA compiled with f77-4.2
code50beta2	tpa 5.0 betaE compiled with f77-5.0
code50beta3	tpa 5.0 betaE compiled with f77-4.2

4.1 The following is a contents listing for applicable test directories:

Parameter	Value
OutputMode	1
MaximumTime[yr]	1.0e5
NumberOfRealizations	10
VolcanismDisruptiveScenarioFlag(yes=1,no=0)	1
FaultingDisruptiveScenarioFlag(yes=1,no=0)	1

4.2 Using the TPA.INP file from the 5.0BetaA distribution, set the values in this file in accordance with the following table:

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Sections 4.0.

7.0 Utility Scripts Needed to Perform the Test

compare\_415.scr

compare\_416.scr

8.0 Test Description

8.1 Objective: This test is designed to verify that removing automatic arrays do not affect the test results

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: SelectAppendOption 1 will allow all output files to be generated.

8.5 Procedure:

1. Copy the appropriate tpa.e and tpa.inp files into test directories as specified in the table of step 4.1.
2. For Test Case A, at the command prompt from the <<Run Directory Code 5.0 Beta>> directory, type the following:, "tpa.e > PA-SCR-415\_SL1-A.out." The screen output will be captured to file PA-SCR-415\_SL1-A.out.
3. Verify the code executes to completion without aborting.
4. For Test Case B, at the command prompt from the <<Run Directory Code 5.0 Beta1>> directory, type the following:, "tpa.e > PA-SCR-415\_SL1-B.out." The screen output will be captured to file PA-SCR-415\_SL1-B.out.
5. Verify the code executes to completion without aborting.
6. For Test Case C, at the command prompt from the <<Run Directory Code 5.0 Beta2>> directory, type the following, "tpa.e > PA-SCR-416\_SL1-C.out." The screen output will be captured to file PA-SCR-416\_SL1-C.out.
7. Verify the code executes to completion without aborting.
8. For Test Case D, at the command prompt from the <<Run Directory Code 5.0 Beta3>> directory, type the following, "tpa.e > PA-SCR-416\_SL1-D.out." The screen output will be captured to file PA-SCR-416\_SL1-D.out.



9. Verify the code executes to completion without aborting.

10. Using the script *compare\_415.scr* in the archive directory, compare the output files generated in test cases A and B using the command “./compare\_415.scr > 415.diff”. The only difference in any file will be the date and time of creation.

11. Using the script *compare\_416.scr* in the archive directory, compare the output files generated in test cases C and D using the command “./compare\_416.scr > 416.diff”. The only difference in any file will be the date and time of creation.

8.6 Pass/Fail Criteria: The code runs to completion and generates the same output with the exception of the date and time in the output files created.

## 9.0 Test Results

9.1 Output and Supporting Files: All files will be archived on a CD labeled, “Test Plan and Test Results for PA-SCR-415 and PA-SCR-416”.

9.2 Criterion 1: Verify the tpa code executes to successful completion, that is, there is a non-zero value for calculated dose (see Peak Mean Dose in the \*.out files). Both Peak Mean Dose values are the same.

9.3 Criterion 2: Verify the output files are the same with the exception of the date and time executed (see section 8.5 steps 10 and 11).

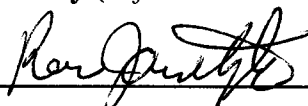
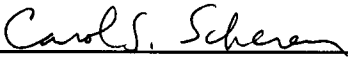
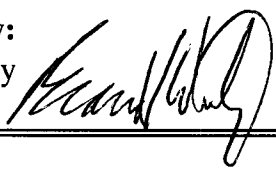
### 9.4 Overall Test Status:

This test successfully **PASSED** the criterion above for test SL-1.

The code executed to completion for all test cases.

A comparison of output results shows that the difference between test cases is the date and time executed. The outputs from scripts *compare\_415.scr* and *compare\_416.scr* are in files *SCR\_415.out* and *SCR\_416.out* (respectively) archived on the CD labeled, “Test Plan and Test Results for PA-SCR-415 and PA-SCR-416.”

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-416	<b>Software Title and Version:</b> TPA 5.0beta	<b>/Project No:</b> 20-06002-01.113
<b>Affected Software Module(s), Description of Problem(s):</b> szft.i, uzszt.i, szft.f, uzft.f  These modules were modified using the AUTOMATIC array declaration of f77 version 5.0. This feature is not supported in the f77 version 4.2 compiler. The code should be modified to be compatible with the version 4.2 compiler.		
<b>Change Requested by:</b> R. Janetzke Date: 11-8-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 11-8-02 	
<b>Description of Change(s) or Problem Resolution</b> <i>(If changes not implemented, please justify):</i>  Declare local arrays in a subroutine using parameters from include files instead of using the input parameter to the subroutine. Found problem with maxlayers being set to different numbers in several places; removed inconsistencies. See attached difference files.		
<b>Implemented by:</b> C. Scherer 	<b>Date:</b> 11-12-02	
<b>Description of Acceptance Tests:</b>  Run TPA 5.0beta compiled with the default compiler that allows automatic arrays. Run the base case tpa.inp. Compile TPA with the modified files (szft.i, uzszt.i, szft.f, uzft.f) using the 4.2 compiler. Run the base case tpa.inp again. Compare the screen output and files created/modified during the TPA run. If the results are the same (excluding time/date stamps), the two versions can be considered equivalent.  See documentation for SCR 415 for tp_scr416.wpd and CD containing the test plan and test runs.		
<b>Tested by:</b> B. Winfrey 	<b>Date:</b> 1-6-03	

11/13/2

## **Test Plan for TPA SCR #416**

**Test Plan Name:** Remove automatic arrays from szft.f and uzft.f.

**Tested By:** Carol S. Scherer

**Date:** November 13, 2002

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** SUN Solaris 5.8

**Baseline Version:** TPA 5.0beta  
(compiled w/ default compiler)

**Test Version:** TPA 5.0beta modified  
(compiled with 4.2 compiler)

### **REQUIRED SETUP FOR ALL TESTS:**

Copy TPA version 5.0beta to /net/spock/home/cscherer/tpatest/scr416 and to /net/spock/home/cscherer/tpatest/tpa50beta. Modify szft.i, uzszft.i, uzft.f, and szft.f in .../scr416 as specified in SCR #416 (scr\_416.wpd). Re-compile and link tpa.e in .../tpa50beta and .../scr416.

### **System Level Tests:**

1. Name: Compare Modified Code to Base Code TPA 5.0beta.

Paths for run directories:

modified code tests:

/net/spock/home/cscherer/tpatest/scr416

baseline code tests:

/net/spock/home/cscherer/tpatest/tpa50beta

Paths for archives of results:

modified code tests:

/net/spock/home/cscherer/tpatest/scr416

baseline code tests:

/net/spock/home/cscherer/tpatest/tpa50beta

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Environment variables: setenv TPA\_TEST and TPA\_DATA to:

modified code tests:

`/net/spock/home/cscherer/tpatest/scr416`

baseline code tests:

`/net/spock/home/cscherer/tpatest/tpa50beta`

Special input files or modifications to input files required: none.

Special diagnostic code modifications required: none.

Program modes to be used: use TPA 5.0beta base case tpa.inp.

Utility scripts needed to perform the test: none.

Utility codes needed in the analysis of the test data: diff\_files, a unix command file (see attached).

Test description:

- objective: to show that the modified code functions correctly and causes no unwanted side effects by demonstrating that the modified code can generate the same output as the base code for residential at 10 km.
- assumptions: none
- constraints: the files tpa\_50beta.out and tpa\_mod416.out do not exist in the run directories.
- output files to compare or examine: the files identified in diff\_files
- disposition of documentation of results: All modified/new source code files, all executables used in the test, and all input/output files will be kept in the archive directory. The contents of the archive directory will be written out to a CD (attached).
- step by step test procedure to be used:
  1. change directory to baseline run directory and set environment variables

2. run tpa.e using command "tpa.e > tpa\_50beta.out"
  3. change directory to modified code run directory and set environment variables
  4. run tpa.e using command "tpa.e > tpa\_mod416.out"
  5. run diff\_files using command " diff\_files > scr416files50.diff"
  6. compare tpa\_50beta.out with tpa\_mod416.out
- pass/fail criteria: the test passes if:
1. There are no differences between the files generated during the TPA run except for heading/title differences or the time/date stamp. (See scr416files50.diff attached.)
  2. TPA ran to successful completion: there is a non-zero value for calculated dose (see Peak Mean Dose in tpa\_50beta.out and tpa\_mod416.out). Both Peak Mean Dose values are the same.

Results of running test:

**PASSED.**

## DIFF\_FILES

```

echo ' 1) diff FILENAME.DAT ../tpa50beta/FILENAME.DAT'
diff FILENAME.DAT ../tpa50beta/FILENAME.DAT
echo ' 2) diff NEFII.VEL ../tpa50beta/NEFII.VEL'
diff NEFII.VEL ../tpa50beta/NEFII.VEL
echo ' 3) diff airpkdos.res ../tpa50beta/airpkdos.res'
diff airpkdos.res ../tpa50beta/airpkdos.res
echo ' 4) diff arpkds_c.res ../tpa50beta/arpkds_c.res'
diff arpkds_c.res ../tpa50beta/arpkds_c.res
echo ' 5) diff ashout.res ../tpa50beta/ashout.res'
diff ashout.res ../tpa50beta/ashout.res
echo ' 6) diff burnup.dat ../tpa50beta/burnup.dat'
diff burnup.dat ../tpa50beta/burnup.dat
echo ' 7) diff chlrdmf.dat ../tpa50beta/chlrdmf.dat'
diff chlrdmf.dat ../tpa50beta/chlrdmf.dat
echo ' 8) diff corrode.out ../tpa50beta/corrode.out'
diff corrode.out ../tpa50beta/corrode.out
echo ' 9) diff cp.tpa ../tpa50beta/cp.tpa'
diff cp.tpa ../tpa50beta/cp.tpa
echo '10) diff cumrel.res ../tpa50beta/cumrel.res'
diff cumrel.res ../tpa50beta/cumrel.res
echo '11) diff cumrel_c.res ../tpa50beta/cumrel_c.res'
diff cumrel_c.res ../tpa50beta/cumrel_c.res
echo '12) diff cumrelse.out ../tpa50beta/cumrelse.out'
diff cumrelse.out ../tpa50beta/cumrelse.out
echo '13) diff deltaec.inp ../tpa50beta/deltaec.inp'
diff deltaec.inp ../tpa50beta/deltaec.inp
echo '14) diff diagnose.out ../tpa50beta/diagnose.out'
diff diagnose.out ../tpa50beta/diagnose.out
echo '15) diff drifts.dat ../tpa50beta/drifts.dat'
diff drifts.dat ../tpa50beta/drifts.dat
echo '16) diff drythick.dat ../tpa50beta/drythick.dat'
diff drythick.dat ../tpa50beta/drythick.dat
echo '17) diff dsfailt.dat ../tpa50beta/dsfailt.dat'
diff dsfailt.dat ../tpa50beta/dsfailt.dat
echo '18) diff dsfailt.def ../tpa50beta/dsfailt.def'
diff dsfailt.def ../tpa50beta/dsfailt.def

```

```

echo '19) diff dsfail.inp ../tpa50beta/dsfail.inp'
diff dsfail.inp ../tpa50beta/dsfail.inp
echo '20) diff dsfail.out ../tpa50beta/dsfail.out'
diff dsfail.out ../tpa50beta/dsfail.out
echo '21) diff ebscld.out ../tpa50beta/ebscld.out'
diff ebscld.out ../tpa50beta/ebscld.out
echo '22) diff ebsfail.def ../tpa50beta/ebsfail.def'
diff ebsfail.def ../tpa50beta/ebsfail.def
echo '23) diff ebsfail.inp ../tpa50beta/ebsfail.inp'
diff ebsfail.inp ../tpa50beta/ebsfail.inp
echo '24) diff ebsfilt.def ../tpa50beta/ebsfilt.def'
diff ebsfilt.def ../tpa50beta/ebsfilt.def
echo '25) diff ebsfilt.inp ../tpa50beta/ebsfilt.inp'
diff ebsfilt.inp ../tpa50beta/ebsfilt.inp
echo '26) diff ebsfilt.out ../tpa50beta/ebsfilt.out'
diff ebsfilt.out ../tpa50beta/ebsfilt.out
echo '27) diff ebsflo.dat ../tpa50beta/ebsflo.dat'
diff ebsflo.dat ../tpa50beta/ebsflo.dat
echo '28) diff ebsnef.dat ../tpa50beta/ebsnef.dat'
diff ebsnef.dat ../tpa50beta/ebsnef.dat
echo '29) diff ebsnef.out ../tpa50beta/ebsnef.out'
diff ebsnef.out ../tpa50beta/ebsnef.out
echo '30) diff ebsnef2.dat ../tpa50beta/ebsnef2.dat'
diff ebsnef2.dat ../tpa50beta/ebsnef2.dat
echo '31) diff ebsspac.nuc ../tpa50beta/ebsspac.nuc'
diff ebsspac.nuc ../tpa50beta/ebsspac.nuc
echo '32) diff ebsrel.def ../tpa50beta/ebsrel.def'
diff ebsrel.def ../tpa50beta/ebsrel.def
echo '33) diff ebsrel.inp ../tpa50beta/ebsrel.inp'
diff ebsrel.inp ../tpa50beta/ebsrel.inp
echo '34) diff ebssf.dat ../tpa50beta/ebssf.dat'
diff ebssf.dat ../tpa50beta/ebssf.dat
echo '35) diff ebstrh.dat ../tpa50beta/ebstrh.dat'
diff ebstrh.dat ../tpa50beta/ebstrh.dat
echo '36) diff ebstrhc.inp ../tpa50beta/ebstrhc.inp'
diff ebstrhc.inp ../tpa50beta/ebstrhc.inp
echo '37) diff echofail.dat ../tpa50beta/echofail.dat'
diff echofail.dat ../tpa50beta/echofail.dat

```

```

echo '38) diff echofilt.dat ../tpa50beta/echofilt.dat'
diff echofilt.dat ../tpa50beta/echofilt.dat
echo '39) diff epa_ave.out ../tpa50beta/epa_ave.out'
diff epa_ave.out ../tpa50beta/epa_ave.out
echo '40) diff epapktim.out ../tpa50beta/epapktim.out'
diff epapktim.out ../tpa50beta/epapktim.out
echo '41) diff failt.out ../tpa50beta/failt.out'
diff failt.out ../tpa50beta/failt.out
echo '42) diff fluoride.dat ../tpa50beta/fluoride.dat'
diff fluoride.dat ../tpa50beta/fluoride.dat
echo '43) diff frac_rel.out ../tpa50beta/frac_rel.out'
diff frac_rel.out ../tpa50beta/frac_rel.out
echo '44) diff gbioac1.dat ../tpa50beta/gbioac1.dat'
diff gbioac1.dat ../tpa50beta/gbioac1.dat
echo '45) diff gdefault.def ../tpa50beta/gdefault.def'
diff gdefault.def ../tpa50beta/gdefault.def
echo '46) diff gdefault.inp ../tpa50beta/gdefault.inp'
diff gdefault.inp ../tpa50beta/gdefault.inp
echo '47) diff gdosinc2.dat ../tpa50beta/gdosinc2.dat'
diff gdosinc2.dat ../tpa50beta/gdosinc2.dat
echo '48) diff gentoo.out ../tpa50beta/gentoo.out'
diff gentoo.out ../tpa50beta/gentoo.out
echo '49) diff genv.in ../tpa50beta/genv.in'
diff genv.in ../tpa50beta/genv.in
echo '50) diff genv.out ../tpa50beta/genv.out'
diff genv.out ../tpa50beta/genv.out
echo '51) diff gftrans.def ../tpa50beta/gftrans.def'
diff gftrans.def ../tpa50beta/gftrans.def
echo '52) diff gftrans.inp ../tpa50beta/gftrans.inp'
diff gftrans.inp ../tpa50beta/gftrans.inp
echo '53) diff ggamen.dat ../tpa50beta/ggamen.dat'
diff ggamen.dat ../tpa50beta/ggamen.dat
echo '54) diff ggenii.def ../tpa50beta/ggenii.def'
diff ggenii.def ../tpa50beta/ggenii.def
echo '55) diff ggenii.inp ../tpa50beta/ggenii.inp'
diff ggenii.inp ../tpa50beta/ggenii.inp
echo '56) diff ggenii.out ../tpa50beta/ggenii.out'
diff ggenii.out ../tpa50beta/ggenii.out

```



```
echo ' 57) diff ggrdf.dat ../tpa50beta/ggrdf.dat'
diff ggrdf.dat ../tpa50beta/ggrdf.dat
echo ' 58) diff gmedia.out ../tpa50beta/gmedia.out'
diff gmedia.out ../tpa50beta/gmedia.out
echo ' 59) diff gnewdf.dat ../tpa50beta/gnewdf.dat'
diff gnewdf.dat ../tpa50beta/gnewdf.dat
echo ' 60) diff grmdlib.dat ../tpa50beta/grmdlib.dat'
diff grmdlib.dat ../tpa50beta/grmdlib.dat
echo ' 61) diff gsccdf.res ../tpa50beta/gsccdf.res'
diff gsccdf.res ../tpa50beta/gsccdf.res
echo ' 62) diff gsccdf_c.res ../tpa50beta/gsccdf_c.res'
diff gsccdf_c.res ../tpa50beta/gsccdf_c.res
echo ' 63) diff gw_cb_ad.dat ../tpa50beta/gw_cb_ad.dat'
diff gw_cb_ad.dat ../tpa50beta/gw_cb_ad.dat
echo ' 64) diff gw_cb_ci.dat ../tpa50beta/gw_cb_ci.dat'
diff gw_cb_ci.dat ../tpa50beta/gw_cb_ci.dat
echo ' 65) diff gw_pb_ad.dat ../tpa50beta/gw_pb_ad.dat'
diff gw_pb_ad.dat ../tpa50beta/gw_pb_ad.dat
echo ' 66) diff gw_pb_ci.dat ../tpa50beta/gw_pb_ci.dat'
diff gw_pb_ci.dat ../tpa50beta/gw_pb_ci.dat
echo ' 67) diff gwccdf.res ../tpa50beta/gwccdf.res'
diff gwccdf.res ../tpa50beta/gwccdf.res
echo ' 68) diff gwccdf_c.res ../tpa50beta/gwccdf_c.res'
diff gwccdf_c.res ../tpa50beta/gwccdf_c.res
echo ' 69) diff gwork.buf ../tpa50beta/gwork.buf'
diff gwork.buf ../tpa50beta/gwork.buf
echo ' 70) diff gwpkdos.res ../tpa50beta/gwpkdos.res'
diff gwpkdos.res ../tpa50beta/gwpkdos.res
echo ' 71) diff gwpkds_c.res ../tpa50beta/gwpkds_c.res'
diff gwpkds_c.res ../tpa50beta/gwpkds_c.res
echo ' 72) diff gwtuzsz.res ../tpa50beta/gwtuzsz.res'
diff gwtuzsz.res ../tpa50beta/gwtuzsz.res
echo ' 73) diff infilper.res ../tpa50beta/infilper.res'
diff infilper.res ../tpa50beta/infilper.res
echo ' 74) diff inv1000.out ../tpa50beta/inv1000.out'
diff inv1000.out ../tpa50beta/inv1000.out
echo ' 75) diff lhs.csv ../tpa50beta/lhs.csv'
diff lhs.csv ../tpa50beta/lhs.csv
```

```

echo '76) diff lhs.inp    ../tpa50beta/lhs.inp'
diff lhs.inp    ../tpa50beta/lhs.inp
echo '77) diff lhs.out    ../tpa50beta/lhs.out'
diff lhs.out    ../tpa50beta/lhs.out
echo '78) diff lhse.out    ../tpa50beta/lhse.out'
diff lhse.out    ../tpa50beta/lhse.out
echo '79) diff maxrel.dat  ../tpa50beta/maxrel.dat'
diff maxrel.dat  ../tpa50beta/maxrel.dat
echo '80) diff maydtbl.dat ../tpa50beta/maydtbl.dat'
diff maydtbl.dat ../tpa50beta/maydtbl.dat
echo '81) diff mechfail.dat ../tpa50beta/mechfail.dat'
diff mechfail.dat ../tpa50beta/mechfail.dat
echo '82) diff mechfail.def ../tpa50beta/mechfail.def'
diff mechfail.def ../tpa50beta/mechfail.def
echo '83) diff mechfail.inp ../tpa50beta/mechfail.inp'
diff mechfail.inp ../tpa50beta/mechfail.inp
echo '84) diff mechfail.out ../tpa50beta/mechfail.out'
diff mechfail.out ../tpa50beta/mechfail.out
echo '85) diff multifaf.dat ../tpa50beta/multifaf.dat'
diff multifaf.dat ../tpa50beta/multifaf.dat
echo '86) diff multifbe.dat ../tpa50beta/multifbe.dat'
diff multifbe.dat ../tpa50beta/multifbe.dat
echo '87) diff mv.tpa      ../tpa50beta/mv.tpa'
diff mv.tpa      ../tpa50beta/mv.tpa
echo '88) diff nearfld.res ../tpa50beta/nearfld.res'
diff nearfld.res ../tpa50beta/nearfld.res
echo '89) diff nefii.dis   ../tpa50beta/nefii.dis'
diff nefii.dis   ../tpa50beta/nefii.dis
echo '90) diff nefii.inp   ../tpa50beta/nefii.inp'
diff nefii.inp   ../tpa50beta/nefii.inp
echo '91) diff nefii.out   ../tpa50beta/nefii.out'
diff nefii.out   ../tpa50beta/nefii.out
echo '92) diff nefii.rel   ../tpa50beta/nefii.rel'
diff nefii.rel   ../tpa50beta/nefii.rel
echo '93) diff nefiisz.dis ../tpa50beta/nefiisz.dis'
diff nefiisz.dis ../tpa50beta/nefiisz.dis
echo '94) diff nefiisz.inp ../tpa50beta/nefiisz.inp'
diff nefiisz.inp ../tpa50beta/nefiisz.inp

```

```
echo '95) diff nefiisz.out ../tpa50beta/nefiisz.out'
diff nefiisz.out ../tpa50beta/nefiisz.out
echo '96) diff nefiisz.src ../tpa50beta/nefiisz.src'
diff nefiisz.src ../tpa50beta/nefiisz.src
echo '97) diff nefiisz.vel ../tpa50beta/nefiisz.vel'
diff nefiisz.vel ../tpa50beta/nefiisz.vel
echo '98) diff nefiuz.dis ../tpa50beta/nefiuz.dis'
diff nefiuz.dis ../tpa50beta/nefiuz.dis
echo '99) diff nefiuz.inp ../tpa50beta/nefiuz.inp'
diff nefiuz.inp ../tpa50beta/nefiuz.inp
echo '100) diff nefiuz.out ../tpa50beta/nefiuz.out'
diff nefiuz.out ../tpa50beta/nefiuz.out
echo '101) diff nefiuz.src ../tpa50beta/nefiuz.src'
diff nefiuz.src ../tpa50beta/nefiuz.src
echo '102) diff nefiuz.vel ../tpa50beta/nefiuz.vel'
diff nefiuz.vel ../tpa50beta/nefiuz.vel
echo '103) diff nefmks.log ../tpa50beta/nefmks.log'
diff nefmks.log ../tpa50beta/nefmks.log
echo '104) diff npkdoset.res ../tpa50beta/npkdoset.res'
diff npkdoset.res ../tpa50beta/npkdoset.res
echo '105) diff npkdst_c.res ../tpa50beta/npkdst_c.res'
diff npkdst_c.res ../tpa50beta/npkdst_c.res
echo '106) diff nuclides.dat ../tpa50beta/nuclides.dat'
diff nuclides.dat ../tpa50beta/nuclides.dat
echo '107) diff organdf.dat ../tpa50beta/organdf.dat'
diff organdf.dat ../tpa50beta/organdf.dat
echo '108) diff pkmndose.out ../tpa50beta/pkmndose.out'
diff pkmndose.out ../tpa50beta/pkmndose.out
echo '109) diff pkreltim.res ../tpa50beta/pkreltim.res'
diff pkreltim.res ../tpa50beta/pkreltim.res
echo '110) diff pkrltm_c.res ../tpa50beta/pkrltm_c.res'
diff pkrltm_c.res ../tpa50beta/pkrltm_c.res
echo '111) diff rel_flow.out ../tpa50beta/rel_flow.out'
diff rel_flow.out ../tpa50beta/rel_flow.out
echo '112) diff relccdf.res ../tpa50beta/relccdf.res'
diff relccdf.res ../tpa50beta/relccdf.res
echo '113) diff relcum.out ../tpa50beta/relcum.out'
diff relcum.out ../tpa50beta/relcum.out
```

```

echo '114) diff releaset.out ../tpa50beta/releaset.out'
diff releaset.out ../tpa50beta/releaset.out
echo '115) diff relfrac.out ../tpa50beta/relfrac.out'
diff relfrac.out ../tpa50beta/relfrac.out
echo '116) diff relgwgs.res ../tpa50beta/relgwgs.res'
diff relgwgs.res ../tpa50beta/relgwgs.res
echo '117) diff repdes.dat ../tpa50beta/repdes.dat'
diff repdes.dat ../tpa50beta/repdes.dat
echo '118) diff rgwna.tpa ../tpa50beta/rgwna.tpa'
diff rgwna.tpa ../tpa50beta/rgwna.tpa
echo '119) diff rgwnapani.tpa ../tpa50beta/rgwnapani.tpa'
diff rgwnapani.tpa ../tpa50beta/rgwnapani.tpa
echo '120) diff rgwnapdw.tpa ../tpa50beta/rgwnapdw.tpa'
diff rgwnapdw.tpa ../tpa50beta/rgwnapdw.tpa
echo '121) diff rgwnapext.tpa ../tpa50beta/rgwnapext.tpa'
diff rgwnapext.tpa ../tpa50beta/rgwnapext.tpa
echo '122) diff rgwnapinh.tpa ../tpa50beta/rgwnapinh.tpa'
diff rgwnapinh.tpa ../tpa50beta/rgwnapinh.tpa
echo '123) diff rgwnapmlk.tpa ../tpa50beta/rgwnapmlk.tpa'
diff rgwnapmlk.tpa ../tpa50beta/rgwnapmlk.tpa
echo '124) diff rgwnappla.tpa ../tpa50beta/rgwnappla.tpa'
diff rgwnappla.tpa ../tpa50beta/rgwnappla.tpa
echo '125) diff rgwnr.tpa ../tpa50beta/rgwnr.tpa'
diff rgwnr.tpa ../tpa50beta/rgwnr.tpa
echo '126) diff rgwsa.tpa ../tpa50beta/rgwsa.tpa'
diff rgwsa.tpa ../tpa50beta/rgwsa.tpa
echo '127) diff rgwsap.tpa ../tpa50beta/rgwsap.tpa'
diff rgwsap.tpa ../tpa50beta/rgwsap.tpa
echo '128) diff rgwsr.tpa ../tpa50beta/rgwsr.tpa'
diff rgwsr.tpa ../tpa50beta/rgwsr.tpa
echo '129) diff rlccdf_c.res ../tpa50beta/rlccdf_c.res'
diff rlccdf_c.res ../tpa50beta/rlccdf_c.res
echo '130) diff rlgwgs_c.res ../tpa50beta/rlgwgs_c.res'
diff rlgwgs_c.res ../tpa50beta/rlgwgs_c.res
echo '131) diff seisbs1.dis ../tpa50beta/seisbs1.dis'
diff seisbs1.dis ../tpa50beta/seisbs1.dis
echo '132) diff seisbs2.dis ../tpa50beta/seisbs2.dis'
diff seisbs2.dis ../tpa50beta/seisbs2.dis

```

```
echo '133) diff smaydtbl.dat ../tpa50beta/smaydtbl.dat'
diff smaydtbl.dat ../tpa50beta/smaydtbl.dat
echo '134) diff sotnef.dat ../tpa50beta/sotnef.dat'
diff sotnef.dat ../tpa50beta/sotnef.dat
echo '135) diff sp.tpa ../tpa50beta/sp.tpa'
diff sp.tpa ../tpa50beta/sp.tpa
echo '136) diff totdos_c.res ../tpa50beta/totdos_c.res'
diff totdos_c.res ../tpa50beta/totdos_c.res
echo '137) diff totdose.res ../tpa50beta/totdose.res'
diff totdose.res ../tpa50beta/totdose.res
echo '138) diff tpa.inp ../tpa50beta/tpa.inp'
diff tpa.inp ../tpa50beta/tpa.inp
echo '139) diff tpa_.out ../tpa50beta/tpa_.out'
diff tpa_.out ../tpa50beta/tpa_.out
echo '140) diff tpameans.out ../tpa50beta/tpameans.out'
diff tpameans.out ../tpa50beta/tpameans.out
echo '141) diff trelease.out ../tpa50beta/trelease.out'
diff trelease.out ../tpa50beta/trelease.out
echo '142) diff weldfail.out ../tpa50beta/weldfail.out'
diff weldfail.out ../tpa50beta/weldfail.out
echo '143) diff wpflow.dat ../tpa50beta/wpflow.dat'
diff wpflow.dat ../tpa50beta/wpflow.dat
echo '144) diff wpflow.def ../tpa50beta/wpflow.def'
diff wpflow.def ../tpa50beta/wpflow.def
echo '145) diff wpsfail.res ../tpa50beta/wpsfail.res'
diff wpsfail.res ../tpa50beta/wpsfail.res
```

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## SCR416FILES50.DIFF

```
1) diff FILENAME.DAT ../tpa50beta/FILENAME.DAT
2) diff NEFII.VEL ../tpa50beta/NEFII.VEL
3) diff airpkdos.res ../tpa50beta/airpkdos.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
4) diff arpkds_c.res ../tpa50beta/arpkds_c.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
5) diff ashout.res ../tpa50beta/ashout.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
6) diff burnup.dat ../tpa50beta/burnup.dat
7) diff chlrdmf.dat ../tpa50beta/chlrdmf.dat
8) diff corrode.out ../tpa50beta/corrode.out
9) diff cp.tpa ../tpa50beta/cp.tpa
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
10) diff cumrel.res ../tpa50beta/cumrel.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
11) diff cumrel_c.res ../tpa50beta/cumrel_c.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
12) diff cumrelse.out ../tpa50beta/cumrelse.out
```

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13) diff deltaec.inp ../tpa50beta/deltaec.inp  
14) diff diagnose.out ../tpa50beta/diagnose.out  
15) diff drifts.dat ../tpa50beta/drifts.dat  
16) diff drythick.dat ../tpa50beta/drythick.dat  
17) diff dsfail.dat ../tpa50beta/dsfail.dat  
18) diff dsfail.def ../tpa50beta/dsfail.def  
19) diff dsfail.inp ../tpa50beta/dsfail.inp  
20) diff dsfail.out ../tpa50beta/dsfail.out  
21) diff ebscld.out ../tpa50beta/ebscld.out  
22) diff ebsfail.def ../tpa50beta/ebsfail.def  
23) diff ebsfail.inp ../tpa50beta/ebsfail.inp  
24) diff ebsfilt.def ../tpa50beta/ebsfilt.def  
25) diff ebsfilt.inp ../tpa50beta/ebsfilt.inp  
26) diff ebsfilt.out ../tpa50beta/ebsfilt.out  
27) diff ebsflo.dat ../tpa50beta/ebsflo.dat  
28) diff ebsnef.dat ../tpa50beta/ebsnef.dat  
29) diff ebsnef.out ../tpa50beta/ebsnef.out  
30) diff ebsnef2.dat ../tpa50beta/ebsnef2.dat  
31) diff ebspac.nuc ../tpa50beta/ebspac.nuc  
32) diff ebsrel.def ../tpa50beta/ebsrel.def  
33) diff ebsrel.inp ../tpa50beta/ebsrel.inp  
34) diff ebssf.dat ../tpa50beta/ebssf.dat  
35) diff ebstrh.dat ../tpa50beta/ebstrh.dat  
36) diff ebstrhc.inp ../tpa50beta/ebstrhc.inp  
37) diff echofail.dat ../tpa50beta/echofail.dat  
38) diff echofilt.dat ../tpa50beta/echofilt.dat  
39) diff epa\_ave.out ../tpa50beta/epa\_ave.out

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

40) diff epapktim.out ../tpa50beta/epapktim.out

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

41) diff failt.out ../tpa50beta/failt.out

4c4

11/13/2

< Tue Nov 12 11:10:06 2002

---

> Tue Nov 12 11:17:47 2002

42) diff fluoride.dat ../tpa50beta/fluoride.dat  
43) diff frac\_rel.out ../tpa50beta/frac\_rel.out  
44) diff gbioac1.dat ../tpa50beta/gbioac1.dat  
45) diff gdefault.def ../tpa50beta/gdefault.def  
46) diff gdefault.inp ../tpa50beta/gdefault.inp  
47) diff gdosinc2.dat ../tpa50beta/gdosinc2.dat  
48) diff gentoo.out ../tpa50beta/gentoo.out  
49) diff genv.in ../tpa50beta/genv.in  
50) diff genv.out ../tpa50beta/genv.out  
51) diff gftrans.def ../tpa50beta/gftrans.def  
52) diff gftrans.inp ../tpa50beta/gftrans.inp  
53) diff ggamen.dat ../tpa50beta/ggamen.dat  
54) diff ggenii.def ../tpa50beta/ggenii.def  
55) diff ggenii.inp ../tpa50beta/ggenii.inp  
56) diff ggenii.out ../tpa50beta/ggenii.out

27c27

< Executed on: 12-Nov-02 at 11:10:20

Page 0

---

> Executed on: 12-Nov-02 at 11:18:05

Page 0

35c35

< Executed on: 12-Nov-02 at 11:10:20

Page A. 1

---

> Executed on: 12-Nov-02 at 11:18:05

Page A. 1

57) diff ggrdf.dat ../tpa50beta/ggrdf.dat  
58) diff gmedia.out ../tpa50beta/gmedia.out

7c7

< Executed on: 12-Nov-02 at 11:10:21

Page 1

---

> Executed on: 12-Nov-02 at 11:18:05

Page 1

59) diff gnewdf.dat ../tpa50beta/gnewdf.dat  
60) diff grmdlib.dat ../tpa50beta/grmdlib.dat  
61) diff gsccdf.res ../tpa50beta/gsccdf.res

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---



11/13/2

```
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
62) diff gsccdf_c.res ../tpa50beta/gsccdf_c.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
63) diff gw_cb_ad.dat ../tpa50beta/gw_cb_ad.dat
64) diff gw_cb_ci.dat ../tpa50beta/gw_cb_ci.dat
65) diff gw_pb_ad.dat ../tpa50beta/gw_pb_ad.dat
66) diff gw_pb_ci.dat ../tpa50beta/gw_pb_ci.dat
67) diff gwccdf.res ../tpa50beta/gwccdf.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
68) diff gwccdf_c.res ../tpa50beta/gwccdf_c.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
69) diff gwork.buf ../tpa50beta/gwork.buf
70) diff gwpkdos.res ../tpa50beta/gwpkdos.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
71) diff gwpkds_c.res ../tpa50beta/gwpkds_c.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
72) diff gwtuuzsz.res ../tpa50beta/gwtuuzsz.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
73) diff infilper.res ../tpa50beta/infilper.res
3c3
```

11/13/2

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

74) diff inv1000.out ../tpa50beta/inv1000.out

75) diff lhs.csv ../tpa50beta/lhs.csv

76) diff lhs.inp ../tpa50beta/lhs.inp

77) diff lhs.out ../tpa50beta/lhs.out

78) diff lhse.out ../tpa50beta/lhse.out

79) diff maxrel.dat ../tpa50beta/maxrel.dat

80) diff maydtbl.dat ../tpa50beta/maydtbl.dat

81) diff mechfail.dat ../tpa50beta/mechfail.dat

2c2

< DATE/Time: Tue Nov 12 11:08:03 2002

---

> DATE/Time: Tue Nov 12 11:15:17 2002

82) diff mechfail.def ../tpa50beta/mechfail.def

83) diff mechfail.inp ../tpa50beta/mechfail.inp

2c2

< DATE/Time: Tue Nov 12 11:08:03 2002

---

> DATE/Time: Tue Nov 12 11:15:17 2002

84) diff mechfail.out ../tpa50beta/mechfail.out

85) diff multifaf.dat ../tpa50beta/multifaf.dat

86) diff multifbe.dat ../tpa50beta/multifbe.dat

87) diff mv.tpa ../tpa50beta/mv.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

88) diff nearfld.res ../tpa50beta/nearfld.res

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

89) diff nefii.dis ../tpa50beta/nefii.dis

2c2

< EXECUTION DATE Nov 12 AND TIME 11:10:1

---

11/13/2

```
> EXECUTION DATE Nov 12 AND TIME 11:17:5
90) diff nefii.inp ../tpa50beta/nefii.inp
91) diff nefii.out ../tpa50beta/nefii.out
8c8
< * EXECUTION DATE Nov 12 AND TIME 11:10:1 *
---
> * EXECUTION DATE Nov 12 AND TIME 11:17:5 *
92) diff nefii.rel ../tpa50beta/nefii.rel
93) diff nefiisz.dis ../tpa50beta/nefiisz.dis
2c2
< EXECUTION DATE Nov 12 AND TIME 11:10:1
---
> EXECUTION DATE Nov 12 AND TIME 11:17:5
94) diff nefiisz.inp ../tpa50beta/nefiisz.inp
95) diff nefiisz.out ../tpa50beta/nefiisz.out
8c8
< * EXECUTION DATE Nov 12 AND TIME 11:10:1 *
---
> * EXECUTION DATE Nov 12 AND TIME 11:17:5 *
96) diff nefiisz.src ../tpa50beta/nefiisz.src
97) diff nefiisz.vel ../tpa50beta/nefiisz.vel
98) diff nefiiuz.dis ../tpa50beta/nefiuz.dis
2c2
< EXECUTION DATE Nov 12 AND TIME 11:10:0
---
> EXECUTION DATE Nov 12 AND TIME 11:17:5
99) diff nefiiuz.inp ../tpa50beta/nefiuz.inp
100) diff nefiiuz.out ../tpa50beta/nefiuz.out
8c8
< * EXECUTION DATE Nov 12 AND TIME 11:10:0 *
---
> * EXECUTION DATE Nov 12 AND TIME 11:17:5 *
101) diff nefiiuz.src ../tpa50beta/nefiuz.src
102) diff nefiiuz.vel ../tpa50beta/nefiuz.vel
103) diff nefmks.log ../tpa50beta/nefmks.log
104) diff npkdoset.res ../tpa50beta/npkdoset.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
```

11/13/2

```
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
105) diff npkdst_c.res ../tpa50beta/npkdst_c.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
106) diff nuclides.dat ../tpa50beta/nuclides.dat
107) diff organdf.dat ../tpa50beta/organdf.dat
108) diff pkmndose.out ../tpa50beta/pkmndose.out
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
109) diff pkreltim.res ../tpa50beta/pkreltim.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
110) diff pkrltm_c.res ../tpa50beta/pkrltm_c.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
111) diff rel_flow.out ../tpa50beta/rel_flow.out
112) diff relccdf.res ../tpa50beta/relccdf.res
3c3
< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002
---
> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002
113) diff relcum.out ../tpa50beta/relcum.out
114) diff releaset.out ../tpa50beta/releaset.out
3c3
< Tue Nov 12 11:10:07 2002
---
> Tue Nov 12 11:17:47 2002
115) diff relfrac.out ../tpa50beta/relfrac.out
116) diff relgwgs.res ../tpa50beta/relgwgs.res
```

11/13/2

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

117) diff repdes.dat ../tpa50beta/repdes.dat

118) diff rgwna.tpa ../tpa50beta/rgwna.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

119) diff rgwnapani.tpa ../tpa50beta/rgwnapani.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

120) diff rgwnapdw.tpa ../tpa50beta/rgwnapdw.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

121) diff rgwnapext.tpa ../tpa50beta/rgwnapext.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

122) diff rgwnapinh.tpa ../tpa50beta/rgwnapinh.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

123) diff rgwnapmlk.tpa ../tpa50beta/rgwnapmlk.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

124) diff rgwnappla.tpa ../tpa50beta/rgwnappla.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

11/13/2

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

125) diff rgwnr.tpa ../tpa50beta/rgwnr.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

126) diff rgwsa.tpa ../tpa50beta/rgwsa.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

127) diff rgwsap.tpa ../tpa50beta/rgwsap.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

128) diff rgwsr.tpa ../tpa50beta/rgwsr.tpa

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

129) diff rlccdf\_c.res ../tpa50beta/rlccdf\_c.res

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

130) diff rlgwgs\_c.res ../tpa50beta/rlgwgs\_c.res

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

131) diff seisbs1.dis ../tpa50beta/seisbs1.dis

132) diff seisbs2.dis ../tpa50beta/seisbs2.dis

133) diff smaydtbl.dat ../tpa50beta/smaydtbl.dat

134) diff sotnef.dat ../tpa50beta/sotnef.dat

135) diff sp.tpa ../tpa50beta/sp.tpa

3c3

11/13/2

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

136) diff totdos\_c.res ../tpa50beta/todos\_c.res

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

137) diff totdose.res ../tpa50beta/totdose.res

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

138) diff tpa.inp ../tpa50beta/tpa.inp

139) diff tpa\_.out ../tpa50beta/tpa\_.out

140) diff tpameans.out ../tpa50beta/tpameans.out

7c7

< \*\* \*\* submitted for the run on Tue Nov 12 11:07:43 2002.

---

> \*\* \*\* submitted for the run on Tue Nov 12 11:14:53 2002.

141) diff trelease.out ../tpa50beta/trelease.out

142) diff weldfail.out ../tpa50beta/weldfail.out

143) diff wpflow.dat ../tpa50beta/wpflow.dat

144) diff wpflow.def ../tpa50beta/wpflow.def

145) diff wpsfail.res ../tpa50beta/wpsfail.res

3c3

< TPA 5.0beta, Job started: Tue Nov 12 11:07:43 2002

---

> TPA 5.0beta, Job started: Tue Nov 12 11:14:53 2002

## Difference files (modified file vs 5.0beta file):

### SZFT.I

```
2,10c2
<
< cc css - 11-12-02; SCR #416 - include szft.i to
< cc          dimension local arrays; set value
< cc          of maxlayers to 20
<
<          integer      maxlayers
<
<cc          parameter (maxlayers = 15)
```

### UZZSZFT.I

```
7,10d6
< cc css - 11-12-02; SCR #416; maxlayers is already
< cc          declared in szft.i;
< cc          both uzzszft.i and szft.i
< cc          are used in the same files
16,17c12,13
< cc          integer      maxlayers
< cc          parameter    (maxlayers = 15)
---
>          integer      maxlayers
>          parameter    (maxlayers = 15)
```

### SZFT.F

```
59,63d58
< c NOTE:  the parameter mxntime is passed from exec.f and has the value
< c        of maxntime, a constant set in maxntime.i; szft, in turn, calls
< c        other subroutines using mxntime and these subroutines may also
< c        pass it down to others; mxntime and maxntime must always be the
< c        same value throughout the parameter-passing chain
116,119d110
< cc css - 11-12-2002; SCR #416:  include szft.i which contains maxlayers
< cc          uzzszft.i no longer contains maxlayers
<          include 'szft.i'
< cc end change:  SCR #416
515,519d505
< cc css 11-8-2002; SCR #416:  include this file so local
< cc          arrays can be dimensioned with
< cc          maximum number of time steps instead of using
< cc          the passed parameter mxntime
<          include 'maxntime.i'
532c518
<          double precision tim(maxntime)
---
```



```

>      double precision tim(mxntime)
619c605
<      double precision mixvel(maxntime)
---
>      double precision mixvel(mxntime)
621,623c607,609
<      double precision tvel(maxntime, maxlyr)
<      double precision vell(maxntime, maxlyr)
<      double precision vtim(maxntime)
---
>      double precision tvel(mxntime, maxlyr)
>      double precision vell(mxntime, maxlyr)
>      double precision vtim(mxntime)
1715,1716c1701,1702
< c      salength(maxlyers) = double precision, length of each unit in m
< c      sawidth(maxlyers)  = double precision, width of stream tube
---
> c      salength(maxlayers) = double precision, length of each unit in m
> c      sawidth(maxlayers)  = double precision, width of stream tube
2841,2845d2826
< cc css 11-8-2002; SCR #416: include this file so local
< cc      arrays can be dimensioned with
< cc      maximum number of time steps instead of using
< cc      the passed parameter mxntime
<      include 'maxntime.i'
2876,2881d2856
< cc css 11-8-2002; SCR #416: include this file so local
< cc      arrays can be dimensioned with maxlayers,
< cc      maximum number of layers instead of using
< cc      the passed parameter maxlyr
<      include 'szft.i'
<
2884,2887c2859
< cc css 11-8-200; SCR #416: change dimensions - can't use a passed
< cc      dimension to declare a local array
< cc      double precision gwtt(mxntime,maxlyr)
<      double precision gwtt(maxntime,maxlayers)
---
>      double precision gwtt(mxntime,maxlyr)
2963c2935
<      subroutine setvelfile(mxntime, tim, ntim, numlayers, maxlyr,
---
>      subroutine setvelfile(mxntime, tim, ntim, numsalayers, maxlyr,
2984c2956
< c numlayers      = input, integer, number of actual layers
---
> c numsalayers    = input, integer, number of actual layers
3021c2993
<      integer numlayers
---
>      integer numsalayers
3060,3065d3031
< cc css 11-8-2002; SCR #416: include this file so local

```

```

< cc          arrays can be dimensioned with maxlayers,
< cc          maximum number of layers instead of using
< cc          the passed parameter maxlyr
<      include 'szft.i'
<
3071,3074c3037
< cc css 11-8-200; SCR #416: change dimensions - can't used a passed
< cc          dimension to declare a local array
< cc          double precision vellast(maxlyr)
<          double precision vellast(maxlayers)
---
>          double precision vellast(maxlyr)
3105c3068
<          do j = 1, numlayers
---
>          do j = 1, numsalayers
3119c3082
<          do layer1 = 1, numlayers
---
>          do layer1 = 1, numsalayers
3143c3106
<          do layer2 = 1, numlayers
---
>          do layer2 = 1, numsalayers
3180c3143
<          do layer3 = 1, numlayers
---
>          do layer3 = 1, numsalayers

```

## UZFT.F

```

101,104d100
< cc css - 11-12-2002; SCR #416:  include szft.i which contains maxlayers
< cc                                uzzszft.i no longer contains maxlayers
<      include 'szft.i'
< cc end change:  SCR #416
125,134d120
<
< cc css 11-11-2002; SCR #416: include this file so local
< cc          arrays can be dimensioned with maxntime,
< cc          maximum number of time steps instead of using
< cc          the passed parameter mxntime; both values
< cc          should be the same
< cc          include maxnnucl.i for use of maxnnucl
<      include 'maxntime.i'
<      include 'maxnnucl.i'
< cc css; end change SCR #416
142,144c128,129
< cc css 11-11-200; SCR #416: change dimensions - can't use a passed
< cc          dimension to declare a local array
< cc          dimension ciperyrinsaintouzfracture( mxntime, mxnnucl )
---

```

```

>      dimension ciperyrinsaintouzfracture( mxntime, mxnnucl )
> c css
146,149d130
<      dimension ciperyrinsaintouzfracture( maxntime, maxnnucl )
<
< c css; end change SCR #416
<
796,798d776
< cc css - 11-12-2002; SCR #416:  include szft.i which contains maxlayers
<      include 'szft.i'
< cc end change:  SCR #416
820a799
>      dimension ciperyrinsaintouzmatrix( mxntime, mxnnucl )
822,838c801
< cc css 11-11-2002; SCR #416: include this file so local
< cc          arrays can be dimensioned with maxntime,
< cc          maximum number of time steps instead of using
< cc          the passed parameter mxntime; both values
< cc          should be the same
< cc          include maxnnucl.i for use of maxnnucl
<      include 'maxntime.i'
<      include 'maxnnucl.i'
< cc change dimensions - can't use a passed
< cc          dimension to declare a local array
< cc      dimension ciperyrinsaintouzmatrix( mxntime, mxnnucl )
<      dimension ciperyrinsaintouzmatrix( maxntime, maxnnucl )
<
< cc      dimension tptime_infil(mxntime)
<      dimension tptime_infil(maxntime)
< c css; end change SCR #416
<
---
>      dimension tptime_infil(mxntime)
842c805
< c css; end change SCR #374
---
> c css
868,871c831
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc          instead of maxlyr
< cc      INTEGER MAXPTH,MAXPRT,MAXLYR,MAXCHN,MAXISO
<      INTEGER MAXPTH,MAXPRT,MAXCHN,MAXISO
---
>      INTEGER MAXPTH,MAXPRT,MAXLYR,MAXCHN,MAXISO
877,878c837
< cc      PARAMETER (MAXLYR=15)
< cc end change:  SCR #416
---
>      PARAMETER (MAXLYR=15)
888,891c847
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc          instead of maxlyr
< cc      PARAMETER (MAXNEF=MAXLYR*2+1)

```

```

<      PARAMETER (MAXNEF=maxlayers*2+1)
---
>      PARAMETER (MAXNEF=MAXLYR*2+1)
926,932c882,888
< C    MAXPTH      =  MAXIMUM NUMBER OF PATHS
< C    MAXPRT      =  MAXIMUM NUMBER OF AREAL PATHS
< C    maxlayers   =  MAXIMUM NUMBER OF LAYERS TO BE ANALYSED
< C    MAXCHN      =  MAXIMUM NUMBER OF CHAINS TO BE ANALYSED
< C    MAXISO      =  MAXIMUM NUMBER OF ISOTOPES TO BE ANALYSED
< C    MAXDEX      =  MAXIMUM NUMBER OF ENTRIES IN THE AREAL INFIL TABLE PER
< C                      AREA
---
> C    MAXPTH      =  MAXIMUM NUMBER OF PATHS
> C    MAXPRT      =  MAXIMUM NUMBER OF AREAL PATHS
> C    MAXLYR      =  MAXIMUM NUMBER OF LAYERS TO BE ANALYSED
> C    MAXCHN      =  MAXIMUM NUMBER OF CHAINS TO BE ANALYSED
> C    MAXISO      =  MAXIMUM NUMBER OF ISOTOPES TO BE ANALYSED
> C    MAXDEX      =  MAXIMUM NUMBER OF ENTRIES IN THE AREAL INFIL TABLE PER
> C                      AREA
1043,1048c999,1000
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc                      instead of MAXLYR
< cc      REAL*8 gwt (max500yr, MAXLYR)
< cc      REAL*8 avgwt (MAXLYR)
<      REAL*8 gwt (max500yr, maxlayers)
<      REAL*8 avgwt (maxlayers)
---
>      REAL*8 gwt (max500yr, MAXLYR)
>      REAL*8 avgwt (MAXLYR)
1070,1079c1022
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc                      instead of MAXLYR
< cc      DIMENSION SATM(MAXLYR), SATF(MAXLYR)
< cc      DIMENSION vell(max500yr,MAXLYR)
< cc      DIMENSION tvel(max500yr,MAXLYR)
<      double precision SATM(maxlayers)
<      double precision SATF(maxlayers)
<      double precision vell(max500yr,maxlayers)
<      double precision tvel(max500yr,maxlayers)
< cc end change:  SCR #416
---
>      DIMENSION SATM(MAXLYR), SATF(MAXLYR)
1080a1024,1027
>      DIMENSION vell(max500yr,MAXLYR)
>
>      DIMENSION tvel(max500yr,MAXLYR)
>
1110,1111d1056
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc                      instead of MAXLYR
1113,1114c1058
<      &      DISPER(maxlayers), GDENSE, PERM
< cc      &      DISPER(MAXLYR), GDENSE, PERM

```

```

---
>      &      DISPER(MAXLYR), GDENSE, PERM
1116,1131d1059
< cc      DIMENSION GDENSE(MAXLYR,2)
< cc      DIMENSION LEGLEN(MAXPRT,MAXLYR)
< cc      DIMENSION PERM (maxlyr,2)
< cc      DIMENSION COND(MAXLYR,2), POR(MAXLYR,2), BETA(MAXLYR,2)
< cc      DIMENSION KD(MAXISO,MAXLYR,2)
< cc      dimension lmedia(MAXLYR)
<      double precision LEGLEN(MAXPRT,maxlayers)
<      double precision GDENSE(maxlayers,2)
<      double precision PERM(maxlayers,2)
<      double precision COND(maxlayers,2)
<      double precision POR(maxlayers,2)
<      double precision BETA(maxlayers,2)
<      double precision KD(MAXISO,maxlayers,2)
<      double precision lmedia(maxlayers)
< cc end change: SCR #416
<
1132a1061,1062
>      DIMENSION GDENSE(MAXLYR,2)
>      DIMENSION LEGLEN(MAXPRT,MAXLYR)
1139a1070,1072
>      DIMENSION PERM (maxlyr,2)
>      DIMENSION COND(MAXLYR,2), POR(MAXLYR,2), BETA(MAXLYR,2)
>      DIMENSION KD(MAXISO,MAXLYR,2)
1151a1085
>      dimension lmedia(MAXLYR)
1165,1168c1099
< cc css - 11-12-2002; SCR #416: maxlayers is included in
< cc      szft.i
< cc      parameter (maxlayers = 15)
< cc end change: SCR #416
---
>      parameter (maxlayers = 15)
1236,1240c1167
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc      instead of MAXLYR
< cc      dimension vellast(MAXLYR)
<      double precision vellast(maxlayers)
< cc end change: SCR #416
---
>      dimension vellast(MAXLYR)

```

## Difference files (modified file vs 5.0beta file):

### SZFT.I

```
2,10c2
<
< cc css - 11-12-02; SCR #416 - include szft.i to
< cc          dimension local arrays; set value
< cc          of maxlayers to 20
<
<          integer      maxlayers
<
<cc          parameter (maxlayers = 15)
```

### UZZSZFT.I

```
7,10d6
< cc css - 11-12-02; SCR #416; maxlayers is already
< cc          declared in szft.i;
< cc          both uzzszft.i and szft.i
< cc          are used in the same files
16,17c12,13
< cc          integer      maxlayers
< cc          parameter    (maxlayers = 15)
---
>          integer      maxlayers
>          parameter    (maxlayers = 15)
```

### SZFT.F

```
59,63d58
< c NOTE:  the parameter mxntime is passed from exec.f and has the value
< c        of maxntime, a constant set in maxntime.i; szft, in turn, calls
< c        other subroutines using mxntime and these subroutines may also
< c        pass it down to others; mxntime and maxntime must always be the
< c        same value throughout the parameter-passing chain
116,119d110
< cc css - 11-12-2002; SCR #416:  include szft.i which contains maxlayers
< cc          uzzszft.i no longer contains maxlayers
<          include 'szft.i'
< cc end change:  SCR #416
515,519d505
< cc css 11-8-2002; SCR #416:  include this file so local
< cc          arrays can be dimensioned with
< cc          maximum number of time steps instead of using
< cc          the passed parameter mxntime
<          include 'maxntime.i'
532c518
<          double precision tim(maxntime)
---
```

```

>      double precision tim(mxntime)
619c605
<      double precision mixvel(maxntime)
---
>      double precision mixvel(mxntime)
621,623c607,609
<      double precision tvel(maxntime, maxlyr)
<      double precision vell(maxntime, maxlyr)
<      double precision vtim(maxntime)
---
>      double precision tvel(mxntime, maxlyr)
>      double precision vell(mxntime, maxlyr)
>      double precision vtim(mxntime)
1715,1716c1701,1702
< c      salength(maxlyers) = double precision, length of each unit in m
< c      sawidth(maxlyers) = double precision, width of stream tube
---
> c      salength(maxlayers) = double precision, length of each unit in m
> c      sawidth(maxlayers) = double precision, width of stream tube
2841,2845d2826
< cc css 11-8-2002; SCR #416: include this file so local
< cc      arrays can be dimensioned with
< cc      maximum number of time steps instead of using
< cc      the passed parameter mxntime
<      include 'maxntime.i'
2876,2881d2856
< cc css 11-8-2002; SCR #416: include this file so local
< cc      arrays can be dimensioned with maxlayers,
< cc      maximum number of layers instead of using
< cc      the passed parameter maxlyr
<      include 'szft.i'
<
2884,2887c2859
< cc css 11-8-200; SCR #416: change dimensions - can't use a passed
< cc      dimension to declare a local array
< cc      double precision gwtt(mxntime,maxlyr)
<      double precision gwtt(maxntime,maxlayers)
---
>      double precision gwtt(mxntime,maxlyr)
2963c2935
<      subroutine setvelfile(mxntime, tim, ntim, numlayers, maxlyr,
---
>      subroutine setvelfile(mxntime, tim, ntim, numsalayers, maxlyr,
2984c2956
< c numlayers      = input, integer, number of actual layers
---
> c numsalayers    = input, integer, number of actual layers
3021c2993
<      integer numlayers
---
>      integer numsalayers
3060,3065d3031
< cc css 11-8-2002; SCR #416: include this file so local

```

```

< cc          arrays can be dimensioned with maxlayers,
< cc          maximum number of layers instead of using
< cc          the passed parameter maxlyr
<      include 'szft.i'
<
3071,3074c3037
< cc css 11-8-200; SCR #416: change dimensions - can't used a passed
< cc          dimension to declare a local array
< cc          double precision vellast(maxlyr)
<          double precision vellast(maxlayers)
---
>          double precision vellast(maxlyr)
3105c3068
<          do j = 1, numlayers
---
>          do j = 1, numsalayers
3119c3082
<          do layer1 = 1, numlayers
---
>          do layer1 = 1, numsalayers
3143c3106
<          do layer2 = 1, numlayers
---
>          do layer2 = 1, numsalayers
3180c3143
<          do layer3 = 1, numlayers
---
>          do layer3 = 1, numsalayers

```

## UZFT.F

```

101,104d100
< cc css - 11-12-2002; SCR #416:  include szft.i which contains maxlayers
< cc                                uzszft.i no longer contains maxlayers
<      include  'szft.i'
< cc end change:  SCR #416
125,134d120
<
< cc css 11-11-2002; SCR #416: include this file so local
< cc          arrays can be dimensioned with maxntime,
< cc          maximum number of time steps instead of using
< cc          the passed parameter mxntime; both values
< cc          should be the same
< cc          include maxnnucl.i for use of maxnnucl
<      include 'maxntime.i'
<      include 'maxnnucl.i'
< cc css; end change SCR #416
142,144c128,129
< cc css 11-11-200; SCR #416: change dimensions - can't use a passed
< cc          dimension to declare a local array
< cc          dimension ciperyrinsaintouzfracture( mxntime, mxnnucl )
---

```



```

>      dimension ciperyrinsaintouzfracture( mxntime, mxnnucl )
> c css
146,149d130
<      dimension ciperyrinsaintouzfracture( maxntime, maxnnucl )
<
< c css; end change SCR #416
<
796,798d776
< cc css - 11-12-2002; SCR #416:  include szft.i which contains maxlayers
<      include 'szft.i'
< cc end change:  SCR #416
820a799
>      dimension ciperyrinsaintouzmatrix( mxntime, mxnnucl )
822,838c801
< cc css 11-11-2002; SCR #416: include this file so local
< cc          arrays can be dimensioned with maxntime,
< cc          maximum number of time steps instead of using
< cc          the passed parameter mxntime; both values
< cc          should be the same
< cc          include maxnnucl.i for use of maxnnucl
<      include 'maxntime.i'
<      include 'maxnnucl.i'
< cc change dimensions - can't use a passed
< cc          dimension to declare a local array
< cc      dimension ciperyrinsaintouzmatrix( mxntime, mxnnucl )
<      dimension ciperyrinsaintouzmatrix( maxntime, maxnnucl )
<
< cc      dimension tptime_infil(mxntime)
<      dimension tptime_infil(maxntime)
< c css; end change SCR #416
<
---
>      dimension tptime_infil(mxntime)
842c805
< c css; end change SCR #374
---
> c css
868,871c831
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc          instead of maxlyr
< cc      INTEGER MAXPTH,MAXPRT,MAXLYR,MAXCHN,MAXISO
<      INTEGER MAXPTH,MAXPRT,MAXCHN,MAXISO
---
>      INTEGER MAXPTH,MAXPRT,MAXLYR,MAXCHN,MAXISO
877,878c837
< cc      PARAMETER (MAXLYR=15)
< cc end change:  SCR #416
---
>      PARAMETER (MAXLYR=15)
888,891c847
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc          instead of maxlyr
< cc      PARAMETER (MAXNEF=MAXLYR*2+1)

```

```

<      PARAMETER (MAXNEF=maxlayers*2+1)
---
>      PARAMETER (MAXNEF=MAXLYR*2+1)
926,932c882,888
< C    MAXPTH      =  MAXIMUM NUMBER OF PATHS
< C    MAXPRT      =  MAXIMUM NUMBER OF AREAL PATHS
< C    maxlayers   =  MAXIMUM NUMBER OF LAYERS TO BE ANALYSED
< C    MAXCHN      =  MAXIMUM NUMBER OF CHAINS TO BE ANALYSED
< C    MAXISO      =  MAXIMUM NUMBER OF ISOTOPES TO BE ANALYSED
< C    MAXDEX      =  MAXIMUM NUMBER OF ENTRIES IN THE AREAL INFIL TABLE PER
< C                      AREA
---
> C    MAXPTH      =  MAXIMUM NUMBER OF PATHS
> C    MAXPRT      =  MAXIMUM NUMBER OF AREAL PATHS
> C    MAXLYR      =  MAXIMUM NUMBER OF LAYERS TO BE ANALYSED
> C    MAXCHN      =  MAXIMUM NUMBER OF CHAINS TO BE ANALYSED
> C    MAXISO      =  MAXIMUM NUMBER OF ISOTOPES TO BE ANALYSED
> C    MAXDEX      =  MAXIMUM NUMBER OF ENTRIES IN THE AREAL INFIL TABLE PER
> C                      AREA
1043,1048c999,1000
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc                      instead of MAXLYR
< cc      REAL*8 gwt (max500yr, MAXLYR)
< cc      REAL*8 avgwt (MAXLYR)
<      REAL*8 gwt (max500yr, maxlayers)
<      REAL*8 avgwt (maxlayers)
---
>      REAL*8 gwt (max500yr, MAXLYR)
>      REAL*8 avgwt (MAXLYR)
1070,1079c1022
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc                      instead of MAXLYR
< cc      DIMENSION SATM(MAXLYR), SATF(MAXLYR)
< cc      DIMENSION vell(max500yr,MAXLYR)
< cc      DIMENSION tvel(max500yr,MAXLYR)
<      double precision SATM(maxlayers)
<      double precision SATF(maxlayers)
<      double precision vell(max500yr,maxlayers)
<      double precision tvel(max500yr,maxlayers)
< cc end change:  SCR #416
---
>      DIMENSION SATM(MAXLYR), SATF(MAXLYR)
1080a1024,1027
>      DIMENSION vell(max500yr,MAXLYR)
>
>      DIMENSION tvel(max500yr,MAXLYR)
>
1110,1111d1056
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc                      instead of MAXLYR
1113,1114c1058
<      &      DISPER(maxlayers), GDENSE, PERM
< cc      &      DISPER(MAXLYR), GDENSE, PERM

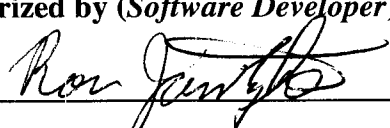
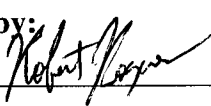
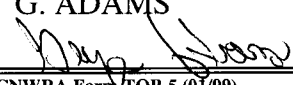
```

```

---
>      &      DISPER(MAXLYR), GDENSE, PERM
1116,1131d1059
< cc      DIMENSION GDENSE(MAXLYR,2)
< cc      DIMENSION LEGLEN(MAXPRT,MAXLYR)
< cc      DIMENSION PERM (maxlyr,2)
< cc      DIMENSION COND(MAXLYR,2), POR(MAXLYR,2), BETA(MAXLYR,2)
< cc      DIMENSION KD(MAXISO,MAXLYR,2)
< cc      dimension lmedia(MAXLYR)
<      double precision LEGLEN(MAXPRT,maxlayers)
<      double precision GDENSE(maxlayers,2)
<      double precision PERM(maxlayers,2)
<      double precision COND(maxlayers,2)
<      double precision POR(maxlayers,2)
<      double precision BETA(maxlayers,2)
<      double precision KD(MAXISO,maxlayers,2)
<      double precision lmedia(maxlayers)
< cc end change: SCR #416
<
1132a1061,1062
>      DIMENSION GDENSE(MAXLYR,2)
>      DIMENSION LEGLEN(MAXPRT,MAXLYR)
1139a1070,1072
>      DIMENSION PERM (maxlyr,2)
>      DIMENSION COND(MAXLYR,2), POR(MAXLYR,2), BETA(MAXLYR,2)
>      DIMENSION KD(MAXISO,MAXLYR,2)
1151a1085
>      dimension lmedia(MAXLYR)
1165,1168c1099
< cc css - 11-12-2002; SCR #416: maxlayers is included in
< cc      szft.i
< cc      parameter (maxlayers = 15)
< cc end change: SCR #416
---
>      parameter (maxlayers = 15)
1236,1240c1167
< cc css - 11-12-2002; SCR #416: use maxlayers from szft.i
< cc      instead of MAXLYR
< cc      dimension vellast(MAXLYR)
<      double precision vellast(maxlayers)
< cc end change: SCR #416
---
>      dimension vellast(MAXLYR)

```

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-417	<b>Software Title and Version:</b> TPA 5.0 Beta F	<b>Project No:</b> 20-1402-762
<p><b>Affected Software Module(s), Description of Problem(s):</b> dcagw.f, dcags.f, iareader.f, ia.dat, dilution.dat</p> <p>Testing of the importance analysis feature revealed a few required changes to the code. The leaching rate formulas in gentpa and gentpags compute negative numbers when setting ComponentWellWaterStudy to 1. iareader fails to retain the parameter values that it reads from ia.dat. ia.dat needs to be updated due to changes in tpa.inp. ia.dat sets WellPumpingRateAtReceptorGroup[gal/day] to 1.0, which is below the acceptable value for variable pumpm3perday in dcagw. (continued in attachment)</p>		
<b>Change Requested by:</b> R. Rogers <b>Date:</b> 12-6-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke <b>Date:</b> 12-6-02 	
<p><b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b></p> <p>See attachment for details.</p>		
<b>Implemented by:</b> R. Rogers 	<b>Date:</b> 12-13-02 (updated 1-2-03)	
<p><b>Description of Acceptance Tests:</b></p> <p>The Test Plan for TPA SCR #417 consists of two system level tests designed to verify the operation of the importance analysis feature when run as part of the integrated version of the TPA code. System level test 1 verifies the TPA code will execute to completion when importance analysis is invoked. System level test 2 verifies the TPA code will abort execution and generate the appropriate error message when a negative leaching rate is calculated.</p> <p>The software successfully passed the system level tests in accordance with the Test Plan for TPA SCR #417. The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #417."</p>		
<b>Tested by:</b> G. ADAMS 	<b>Date:</b> 1-3-2003	

### **Affected Software Module(s), Description of Problem(s) (cont.):**

\*\* A modification was made to iareader.f after the initial submittal of software changes for this SCR on 12-13-02. This change was not a part of tpa50betaE. During testing, the following parameters were identified as having incorrect values in ia.ech:

- a) InnerWPThickness[m] was 0.0000000, but its actual value was 0.1e-8,
- b) OuterWPThickness[m] was 0.0000000, but its actual value was 0.1e-8,
- c) ThermalConductivityofYMRock[W/(m-k)] was 0.0000000, but its actual value was 0.1e-10,

### **Description of Change(s) or Problem Resolution (cont.):**

iareader.f

In iareader.f, the subroutine iavalue() makes a call to subroutine nextline(), but the values for cparamvalue and dparamvalue are lost when the call returns. The fix was to explicitly declare these variables in iavalue(). Also, the function aiafilter() was deleted since it was not being used.

\*\* A modification was made to iareader.f after the initial submittal of software changes for this SCR on 12-13-02. This change was not a part of tpa50betaE. A format statement in iareader.f was changed from f15.7 to e15.7 to correctly output very small numbers to ia.ech. \*\*

dcagw.f

In gentpa(), we added an check for negative leaching rates to prevent errors in dcagw. tpa.e was stopping with an error message saying that in env.e (which was called by gentpa) a call was made to redcha(), which fails to read a negative number (from the file genv.in). Tracing the problem backwards from the call to redcha() revealed that it started with gentpa() which had computed a negative leaching rate, as described below, and stored the value in the file gfttrans.inp. envlib() then read this value from gfttrans.inp and stored it in the global array LEACHT. ritenv() stored the values from LEACHT into the file genv.in. gentpa() calls env.e which uses redcha() to read the numbers from genv.in.

What identified this problem was that if ComponentWellWaterStudy (or any of its higher level importance analysis study flags) is set to 1 in tpa.inp, iareader() currently resets the value of AnnualIrrigation[m/yr] to 0.0 (as defined in ia.dat). When dcagw subsequently uses the following leaching rate formula, it produces a negative number, since the current value for TotalAnnualEvapotranspiration[m/yr] in tpa.inp was greater than the value for AnnualPrecipitation[m/yr].

The formula for computing leaching rate (r2) is:

$$r2 = ( \text{rain} + \text{water} - \text{et} ) / ( \text{svwc} * ( \text{doss}/100 ) * ( 1 + \text{sbd}/\text{svwc} * \text{retcoef} ) )$$

where

- rain is from AnnualPrecipitation[m/yr]
- water is from AnnualIrrigation[m/yr]
- et is from TotalAnnualEvapotranspiration[m/yr]
- svwc is from SoilVolumetricWaterContent
- doss is from DepthOfSurfaceSoil[cm]

sbdb is from SoilBulkDensity[g/cm<sup>3</sup>]

retcoef is from KD\_Soil\_Am[cm<sup>3</sup>/g] and similar parameters for other radionuclides

Our check for negative leaching rates in gentpa() prevents the values of these parameters in tpa.inp from producing negative leaching rates as well.

dcags.f

In gentpags(), we added an error message to check for and prevent gentpags() from using a negative leaching rate (see dcagw.f section above). We also corrected the other error messages in gentpags() to output "\*\*\*>>> Error in Gentpags <<<\*\*\*".

ia.dat

In previous versions of TPA, some of the parameter names had been changed in tpa.inp, and others had been added or deleted. The parameters in ia.dat needed to be updated to reflect these changes.

In conjunction with the problem with negative leaching rates in both dcagw and dcags (see details described above), the following three parameters are explicitly set for the study ComponentWellWaterStudy: AnnualPrecipitation[m/yr], AnnualIrrigation[m/yr], and TotalAnnualEvapotranspiration[m/yr]. Previously, only AnnualIrrigation[m/yr] was set to zero for ComponentWellWaterStudy. Due to the formula used in gentpa() and gentpags() for computing leaching rate, the default values for AnnualPrecipitation[m/yr] and TotalAnnualEvapotranspiration[m/yr] would result in a negative leaching rate. We now set these remaining two parameters equal to each other in ia.dat, which produces a leaching rate of zero.

dilution.dat

When the parameter ComponentWellWaterStudy in tpa.inp is set to 1, iareader() (using the values from ia.dat) sets the parameter WellPumpingRateAtReceptorGroup[gal/day] to 1.0. dcagw uses this pumping rate value as the initial value of the variable pumprate, and then proceeds with the following equations to compute pumpm3perday:

$$\begin{aligned} \text{pumprate} &= (\text{pumprate} * 365.25\text{d0} / 264.172\text{d0}) \\ \text{pumpm3perday} &= \text{pumprate} / 365.25\text{d0} \end{aligned}$$

The resulting value for pumpm3perday is then 3.78541d-03. dcagw then compares pumpm3perday against the minimum and maximum pumping rates specified in dilution.dat. dcagw was currently failing to accept this value for pumpm3perday since the minimum rate was defined as 3.4. For now, we have changed the minimum pumping rate in dilution.dat to 0.003, so that dcagw would accept the value of pumpm3perday.

## Details on Code Changes

1. The following change was made in dcagw.f:

on line 3227

added:

```
cc rlr 12/13/02 SCR417 Added an error message to prevent gentpa from
cc using negative leaching rates.
```

```
    if( r2 .lt. 0 ) then
      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' Computed a negative leaching rate.'
      print *, ' In tpa.inp and/or ia.dat,'
      print *, ' AnnualPrecipitation[m/yr] + '
      print *, ' AnnualIrrigation[m/yr]'
      print *, ' must be greater than or equal to'
      print *, ' TotalAnnualEvapotranspiration[m/yr]. '
      print *, ''
      print *, ' AnnualPrecipitation[m/yr] = ', rain
      print *, ' AnnualIrrigation[m/yr] = ', water
      print *, ' TotalAnnualEvapotranspiration[m/yr] = ', et
      stop
    endif
```

```
cc rlr 12/13/02 SCR417 end of change
```

2. The following changes were made in dcags.f:

on line 1222

from:

```
    print *, ' ***>>> Error in Gentpa <<<*** '
```

to:

```
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '
```

on line 1236

from:

```
    print *, ' ***>>> Error in Gentpa <<<*** '
```

to:

```
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '
```

on line 1253

from:

```
    print *, ' ***>>> Error in Gentpa <<<*** '
```

to:

```
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '
```

on line 1267

from:

```
    print *, ' ***>>> Error in Gentpa <<<*** '
```

to:

```
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '
```

on line 1281

from:

```
    print *, ' ***>>> Error in Gentpa <<<*** '
```

to:

```
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
```

```

cc          print *, ' ***>>> Error in Gentpa <<<*** '
           print *, ' ***>>> Error in Gentpags <<<*** '

on line 1295
from:
           print *, ' ***>>> Error in Gentpa <<<*** '
to:
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc          print *, ' ***>>> Error in Gentpa <<<*** '
           print *, ' ***>>> Error in Gentpags <<<*** '

on line 1309
from:
           print *, ' ***>>> Error in Gentpa <<<*** '
to:
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc          print *, ' ***>>> Error in Gentpa <<<*** '
           print *, ' ***>>> Error in Gentpags <<<*** '

on line 1323
from:
           print *, ' ***>>> Error in Gentpa <<<*** '
to:
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc          print *, ' ***>>> Error in Gentpa <<<*** '
           print *, ' ***>>> Error in Gentpags <<<*** '

on line 1340
from:
           print *, ' ***>>> Error in Gentpa <<<*** '
to:
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc          print *, ' ***>>> Error in Gentpa <<<*** '
           print *, ' ***>>> Error in Gentpags <<<*** '

on line 1358
from:
           print *, ' ***>>> Error in Gentpa <<<*** '
to:
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc          print *, ' ***>>> Error in Gentpa <<<*** '
           print *, ' ***>>> Error in Gentpags <<<*** '

on line 1369
from:
           print *, ' ***>>> Error in Gentpa <<<*** '
to:
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc          print *, ' ***>>> Error in Gentpa <<<*** '
           print *, ' ***>>> Error in Gentpags <<<*** '

on line 1380
from:
           print *, ' ***>>> Error in Gentpa <<<*** '
to:
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc          print *, ' ***>>> Error in Gentpa <<<*** '
           print *, ' ***>>> Error in Gentpags <<<*** '

on line 1874
from:
           print *, ' ***>>> Error in Gentpa <<<*** '
to:

```



```

cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '

```

on line 1991

added:

```

cc rlr 12/13/02 SCR417 Added an error message to prevent gentpags from
cc using negative leaching rates.

```

```

      if( r2 .lt. 0 ) then
        print *, ' ***>>> Error in Gentpags <<<*** '
        print *, ' Computed a negative leaching rate.'
        print *, ' In tpa.inp and/or ia.dat,'
        print *, ' AnnualPrecipitation[m/yr] + '
        print *, ' AnnualIrrigation[m/yr]'
        print *, ' must be greater than or equal to'
        print *, ' TotalAnnualEvapotranspiration[m/yr]. '
        print *, ''
        print *, ' AnnualPrecipitation[m/yr] = ', rain
        print *, ' AnnualIrrigation[m/yr] = ', water
        print *, ' TotalAnnualEvapotranspiration[m/yr] = ', et
        stop
      endif

```

```

cc rlr 12/13/02 SCR417 end of change

```

on line 2145

from:

```

      print *, ' ***>>> Error in Gentpa <<<*** '

```

to:

```

cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '

```

on line 2153

from:

```

      print *, ' ***>>> Error in Gentpa <<<*** '

```

to:

```

cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '

```

on line 2289

from:

```

      print *, ' ***>>> Error in Gentpa <<<*** '

```

to:

```

cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '

```

on line 2302

from:

```

      print *, ' ***>>> Error in Gentpa <<<*** '

```

to:

```

cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '

```

on line 2320

from:

```

      print *, ' ***>>> Error in Gentpa <<<*** '

```

to:

```

cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
cc      print *, ' ***>>> Error in Gentpa <<<*** '
      print *, ' ***>>> Error in Gentpags <<<*** '

```

on line 2334

from:

```
print *, ' ***>>> Error in Gentpa <<<*** '
```

to:

```
cc rlr 12/13/02 SCR417 Modified error message to output Gentpags
```

```
cc      print *, ' ***>>> Error in Gentpa <<<*** '
```

```
print *, ' ***>>> Error in Gentpags <<<*** '
```

3. The following changes were made in iareader.f:

on line 57

added:

```
cc rlr 12-3-02 SCR417 Removed the function aiafilter, which had been
```

```
cc replaced earlier by changes to the functions in sampler.f
```

```
c
```

**\*\* The following change to line 161 was made to iareader.f after the initial submittal of software changes for this SCR on 12-13-02. This change was not a part of tpa50betaE. The format statement was changed from f15.7 to e15.7 to correctly output very small numbers to ia.ech. \*\***

on line 161

from:

```
write(iaounit, '(24x,f15.7)')
```

to:

```
cc rlr 1-2-03 SCR417(cont.) Change to format statement to properly record
```

```
cc very small numbers. This change was not included in tpa50betaG.
```

```
cc      write(iaounit, '(24x,f15.7)')
```

```
write(iaounit, '(24x,e15.7)')
```

on lines 240-729

deleted:

```
c=====
c      function aiafilter( param_name, sample_value)
c=====
c This function is used to overwrite the values of sampled variables.
c The values used to overwrite the sampled variables are initialized in the
c iasetup subroutine.
c
c param_name = input, character*80, parameter name from the tpa.inp file.
c sample_value = input, double precision, sampled values from LHS. This
c               value will be used if no overwrite is performed.
c aiafilter    = output, double precision, new value for the input
c               parameter param_name. The value is one two possibilities:
c               1) the sampled value from LHS in sample_value (no change)
c               2) the value from the aiacompctrlvalue array initialized
c               in subroutine iasetup.
```

```
implicit double precision (a-h,o-z)
```

```
implicit integer (i-n)
```

```
cc rwr 1/17/00 modified to allow for temporal variability
```

```
cc      in Fmult and Fow
```

```
common / ia / ikeyia
```

```
double precision aiafilter
```

```
double precision sample_value
```

```
character*(*) param_name
```

```
include 'ia.i'
```

```

cc rwr 1/17/00 modified to allow for temporal variability
cc      in Fow and Fmult
      integer zportsh
      external igetunitnumber
      external zportsh
      character*80 command
      character*100 aline

cc Start here.

cc Only perform overwrites if the importance analysis flag is on.

      if (iaflag .eq. 1 ) then

        if (param_name .eq. 'ThicknessOfCladding[m]') then
          if (iacompctrlflag(1) .eq. 1) then
            aiafilter = aiacompctrlvalue(1)
          else
            aiafilter = sample_value
          end if
        else if (param_name .eq. 'InnerWPThickness[m]') then
          if (iacompctrlflag(2) .eq. 1) then
            aiafilter = aiacompctrlvalue(2)
          else
            aiafilter = sample_value
          end if
        else if (param_name .eq. 'OuterWPThickness[m]') then
          if (iacompctrlflag(3) .eq. 1) then
            aiafilter = aiacompctrlvalue(3)
          else
            aiafilter = sample_value
          end if
        else if (param_name .eq.
&      'MinimumInfiltrationPrecipitationRatio') then
          if (iacompctrlflag(23) .eq. 1) then
            aiafilter = aiacompctrlvalue(23)
          else
            aiafilter = sample_value
          end if

cc
cc      Upper Unsaturated Layer
cc
        else if (param_name .eq. 'MassDensityofYMRock[kg/m^3]') then
          if (iacompctrlflag(25) .eq. 1) then
            aiafilter = aiacompctrlvalue(25)
          else
            aiafilter = sample_value
          end if
        else if (param_name .eq. 'SpecificHeatofYMRock[J/(kg-K)]') then
          if (iacompctrlflag(25) .eq. 1) then
            aiafilter = aiacompctrlvalue(31)
          else
            aiafilter = sample_value
          end if
        else if (param_name .eq.
&      'ThermalConductivityofYMRock[W/(m-K)]') then
          if (iacompctrlflag(25) .eq. 1) then
            aiafilter = aiacompctrlvalue(32)
          else
            aiafilter = sample_value
          end if
        else if (param_name .eq. 'EmissivityOfDriftWall[-]') then
          if (iacompctrlflag(25) .eq. 1) then

```

```

        aiafilter = aiacompctrlvalue(33)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'ElevationOfGroundSurface[m]') then
    if (iacompctrlflag(25) .eq. 1) then
        aiafilter = aiacompctrlvalue(34)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'ChlorideConcentration') then
    if (iacompctrlflag(25) .eq. 1) then
        aiafilter = aiacompctrlvalue(35)
    else
        aiafilter = sample_value
    end if
cc rwr 1/17/00 modified to allow for temporal variaibility
cc      in Fow and Fmult
cc      else if (param_name .eq. 'FmultFactor') then
cc          if (iacompctrlflag(25) .eq. 1) then
cc              aiafilter = aiacompctrlvalue(36)
cc          else
cc              aiafilter = sample_value
cc          end if
cc      else if (param_name .eq. 'FowFactor') then
cc          if (iacompctrlflag(25) .eq. 1) then
cc              aiafilter = aiacompctrlvalue(37)
cc          else
cc              aiafilter = sample_value
cc          end if
cc      else if (param_name .eq.
& 'WastePackageFlowMultiplicationFactor') then
        if (iacompctrlflag(25) .eq. 1) then
            aiafilter = aiacompctrlvalue(39)
cc rwr 1/17/00 make sure the following is only performed once
            if (ikeyia .ne. 543262) then
                iunitwpflow1 = igetunitnumber('ebsrel ')
                iunitwpflow2 = igetunitnumber('ebsrel ')
cc rwr 1/17/00 replace the values in wpflow.dat with
cc      the Fow and Fmult values specified in this
cc      subroutine (use wpflow.old as a template)
                call clearchar( 80, command)
                command = 'cp wpflow.dat wpflow.old'
                istatus=zportsh(command)
                if (istatus .ne. 0) then
                    print *, ' ***>>> Error in ia <<<*** '
                    print *, ' istatus .ne. 0 '
                    print *, ' istatus = sh( ',command, ' )'
                    print *, ' istatus = ', istatus
                    stop
                endif
                call clearchar( 80, command)
                command = 'rm wpflow.dat '
                istatus=zportsh(command)
                if (istatus .ne. 0) then
                    print *, ' ***>>> Error in ia <<<*** '
                    print *, ' istatus .ne. 0 '
                    print *, ' istatus = sh( ',command, ' )'
                    print *, ' istatus = ', istatus
                    stop
                endif
                open(unit=iunitwpflow1,file='wpflow.old',status='old')
                open(unit=iunitwpflow2,file='wpflow.dat',status='new')

```

```

        read(iunitwpflow1,'(a80)',err=400,end=500) aline
        write(iunitwpflow2,'(a80)') aline
        read(iunitwpflow1,'(a80)',err=400,end=500) aline
        write(iunitwpflow2,'(a80)') aline
        do while (.true.)
            read(iunitwpflow1,*,err=400,end=500) val1,val2,val3
            write(iunitwpflow2,'(3(lpe14.5,2x))' ) val1,
&                aiacompctrlvalue(36), aiacompctrlvalue(37)
        enddo
400        continue
        print *, ' ***>>> Error in ia <<<*** '
        print *, ' trouble reading from the wpflow.dat '
        print *, ' file template (wpflow.old) '
        stop
500        continue
        close(iunitwpflow1)
        close(iunitwpflow2)
        call clearchar( 80, command)
        command = 'rm wpflow.old '
        istatus=zportsh(command)
        if (istatus .ne. 0) then
            print *, ' ***>>> Error in ia <<<*** '
            print *, ' istatus .ne. 0 '
            print *, ' istatus = sh( ',command, ' )'
            print *, ' istatus = ', istatus
            stop
        endif
        ikeyia = 543262
    endif
    else
        aiafilter = sample_value
    end if

    else if (param_name .eq. 'SubAreaWetFraction') then
        if (iacompctrlflag(25) .eq. 1) then
            aiafilter = aiacompctrlvalue(38)
        else
            aiafilter = sample_value
        end if

cc
cc Pumping Well
cc
        else if (param_name .eq.
&                'WellPumpingRateAtCriticalGroup5km[gal/day]') then
            if (iacompctrlflag(17) .eq. 1) then
                aiafilter = aiacompctrlvalue(17)
            else
                aiafilter = sample_value
            end if
        else if (param_name .eq.
&                'WellPumpingRateAtCriticalGroup20km[gal/day]') then
            if (iacompctrlflag(17) .eq. 1) then
                aiafilter = aiacompctrlvalue(17)
            else
                aiafilter = sample_value
            end if

cc
cc Lower Unsaturated Zone
cc
        else if (param_name .eq. 'TSw_Thickness_1SubArea[m]') then
            if (iacompctrlflag(10) .eq. 1) then
                aiafilter = aiacompctrlvalue(10)
            else

```

```

        aiafilter = sample_value
    end if
else if (param_name .eq. 'TSw_Thickness_2SubArea[m]') then
    if (iacompctrlflag(10) .eq. 1) then
        aiafilter = aiacompctrlvalue(10)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'TSw_Thickness_3SubArea[m]') then
    if (iacompctrlflag(10) .eq. 1) then
        aiafilter = aiacompctrlvalue(10)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'TSw_Thickness_4SubArea[m]') then
    if (iacompctrlflag(10) .eq. 1) then
        aiafilter = aiacompctrlvalue(10)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'TSw_Thickness_5SubArea[m]') then
    if (iacompctrlflag(10) .eq. 1) then
        aiafilter = aiacompctrlvalue(10)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'TSw_Thickness_6SubArea[m]') then
    if (iacompctrlflag(10) .eq. 1) then
        aiafilter = aiacompctrlvalue(10)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'TSw_Thickness_7SubArea[m]') then
    if (iacompctrlflag(10) .eq. 1) then
        aiafilter = aiacompctrlvalue(10)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'CHnvThickness_1SubArea[m]') then
    if (iacompctrlflag(11) .eq. 1) then
        aiafilter = aiacompctrlvalue(11)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'CHnvThickness_2SubArea[m]') then
    if (iacompctrlflag(11) .eq. 1) then
        aiafilter = aiacompctrlvalue(11)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'CHnvThickness_3SubArea[m]') then
    if (iacompctrlflag(11) .eq. 1) then
        aiafilter = aiacompctrlvalue(11)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'CHnvThickness_4SubArea[m]') then
    if (iacompctrlflag(11) .eq. 1) then
        aiafilter = aiacompctrlvalue(11)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'CHnvThickness_5SubArea[m]') then

```

```

        if (iacompctrlflag(11) .eq. 1) then
            aiafilter = aiacompctrlvalue(11)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnvThickness_6SubArea[m]') then
        if (iacompctrlflag(11) .eq. 1) then
            aiafilter = aiacompctrlvalue(11)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnvThickness_7SubArea[m]') then
        if (iacompctrlflag(11) .eq. 1) then
            aiafilter = aiacompctrlvalue(11)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnzThickness_1SubArea[m]') then
        if (iacompctrlflag(12) .eq. 1) then
            aiafilter = aiacompctrlvalue(12)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnzThickness_2SubArea[m]') then
        if (iacompctrlflag(12) .eq. 1) then
            aiafilter = aiacompctrlvalue(12)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnzThickness_3SubArea[m]') then
        if (iacompctrlflag(12) .eq. 1) then
            aiafilter = aiacompctrlvalue(12)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnzThickness_4SubArea[m]') then
        if (iacompctrlflag(12) .eq. 1) then
            aiafilter = aiacompctrlvalue(12)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnzThickness_5SubArea[m]') then
        if (iacompctrlflag(12) .eq. 1) then
            aiafilter = aiacompctrlvalue(12)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnzThickness_6SubArea[m]') then
        if (iacompctrlflag(12) .eq. 1) then
            aiafilter = aiacompctrlvalue(12)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'CHnzThickness_7SubArea[m]') then
        if (iacompctrlflag(12) .eq. 1) then
            aiafilter = aiacompctrlvalue(12)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'PPw_Thickness_1SubArea[m]') then
        if (iacompctrlflag(13) .eq. 1) then
            aiafilter = aiacompctrlvalue(13)
        else

```

```

        aiafilter = sample_value
    end if
else if (param_name .eq. 'PPw_Thickness_2SubArea[m]') then
    if (iacompctrlflag(13) .eq. 1) then
        aiafilter = aiacompctrlvalue(13)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'PPw_Thickness_3SubArea[m]') then
    if (iacompctrlflag(13) .eq. 1) then
        aiafilter = aiacompctrlvalue(13)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'PPw_Thickness_4SubArea[m]') then
    if (iacompctrlflag(13) .eq. 1) then
        aiafilter = aiacompctrlvalue(13)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'PPw_Thickness_5SubArea[m]') then
    if (iacompctrlflag(13) .eq. 1) then
        aiafilter = aiacompctrlvalue(13)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'PPw_Thickness_6SubArea[m]') then
    if (iacompctrlflag(13) .eq. 1) then
        aiafilter = aiacompctrlvalue(13)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'PPw_Thickness_7SubArea[m]') then
    if (iacompctrlflag(13) .eq. 1) then
        aiafilter = aiacompctrlvalue(13)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'UCF_Thickness_1SubArea[m]') then
    if (iacompctrlflag(14) .eq. 1) then
        aiafilter = aiacompctrlvalue(14)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'UCF_Thickness_2SubArea[m]') then
    if (iacompctrlflag(14) .eq. 1) then
        aiafilter = aiacompctrlvalue(14)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'UCF_Thickness_3SubArea[m]') then
    if (iacompctrlflag(14) .eq. 1) then
        aiafilter = aiacompctrlvalue(14)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'UCF_Thickness_4SubArea[m]') then
    if (iacompctrlflag(14) .eq. 1) then
        aiafilter = aiacompctrlvalue(14)
    else
        aiafilter = sample_value
    end if
else if (param_name .eq. 'UCF_Thickness_5SubArea[m]') then

```



```

        if (iacompctrlflag(14) .eq. 1) then
            aiafilter = aiacompctrlvalue(14)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'UCF_Thickness_6SubArea[m]') then
        if (iacompctrlflag(14) .eq. 1) then
            aiafilter = aiacompctrlvalue(14)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'UCF_Thickness_7SubArea[m]') then
        if (iacompctrlflag(14) .eq. 1) then
            aiafilter = aiacompctrlvalue(14)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'BFW_Thickness_1SubArea[m]') then
        if (iacompctrlflag(15) .eq. 1) then
            aiafilter = aiacompctrlvalue(15)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'BFW_Thickness_2SubArea[m]') then
        if (iacompctrlflag(15) .eq. 1) then
            aiafilter = aiacompctrlvalue(15)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'BFW_Thickness_3SubArea[m]') then
        if (iacompctrlflag(15) .eq. 1) then
            aiafilter = aiacompctrlvalue(15)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'BFW_Thickness_4SubArea[m]') then
        if (iacompctrlflag(15) .eq. 1) then
            aiafilter = aiacompctrlvalue(15)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'BFW_Thickness_5SubArea[m]') then
        if (iacompctrlflag(15) .eq. 1) then
            aiafilter = aiacompctrlvalue(15)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'BFW_Thickness_6SubArea[m]') then
        if (iacompctrlflag(15) .eq. 1) then
            aiafilter = aiacompctrlvalue(15)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'BFW_Thickness_7SubArea[m]') then
        if (iacompctrlflag(15) .eq. 1) then
            aiafilter = aiacompctrlvalue(15)
        else
            aiafilter = sample_value
        end if
cc
cc Saturated Zone
cc
        else if (param_name .eq. 'STFF') then

```

```

        if (iacompctrlflag(26) .eq. 1) then
            aiafilter = aiacompctrlvalue(26)
        else
            aiafilter = sample_value
        end if
    else if (param_name .eq. 'SAV ') then
        if (iacompctrlflag(27) .eq. 1) then
            aiafilter = aiacompctrlvalue(27)
        else
            aiafilter = sample_value
        end if
    end if

    else
        aiafilter = sample_value
    end if

    return
end

```

on line 760

added:

```

cc rlr 12-3-02 SCR417 Added decrement of ilinenum to keep track with
cc backspace command above.
        ilinenum = ilinenum - 1

```

on line 805

added:

```

cc rlr 12-3-02 SCR417 Added decrement of ilinenum to keep track with
cc backspace command above.
        ilinenum = ilinenum - 1

```

on line 856

added:

```

cc rlr 12-3-02 SCR417 Added decrement of ilinenum to keep track with
cc backspace command above.
        ilinenum = ilinenum - 1

```

on line 969

added:

```

cc rlr 12-3-02 SCR417 Added declarations for cparamvalue and dparamvalue
cc to correct loss of data in call to nextline.
        character*60 cparamvalue
        double precision dparamvalue

```

4. The following changes were made in ia.dat:

on line 72

from:

```

parameter = 'TSw_Thickness10SubArea[m]'

```

to:

```

parameter = 'TSw_Thickness_10SubArea[m]'

```

on line 104

from:

```

parameter = 'CHnvThickness10SubArea[m]'

```

to:

```

parameter = 'CHnvThickness_10SubArea[m]'

```

on line 109

from:

```

parameter = 'CHnzThickness_1SubArea[m]'

```

```
to:
    parameter = 'CH_Total_Thickness_1SubArea[m] '

on line 112
from:
    parameter = 'CHnzThickness_2SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_2SubArea[m] '

on line 115
from:
    parameter = 'CHnzThickness_3SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_3SubArea[m] '

on line 118
from:
    parameter = 'CHnzThickness_4SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_4SubArea[m] '

on line 121
from:
    parameter = 'CHnzThickness_5SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_5SubArea[m] '

on line 124
from:
    parameter = 'CHnzThickness_6SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_6SubArea[m] '

on line 127
from:
    parameter = 'CHnzThickness_7SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_7SubArea[m] '

on line 130
from:
    parameter = 'CHnzThickness_8SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_8SubArea[m] '

on line 133
from:
    parameter = 'CHnzThickness_9SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_9SubArea[m] '

on line 136
from:
    parameter = 'CHnzThickness10SubArea[m] '
to:
    parameter = 'CH_Total_Thickness_10SubArea[m] '

on line 168
from:
    parameter = 'PPw_Thickness10SubArea[m] '
to:
    parameter = 'PPw_Thickness_10SubArea[m] '
```

```
on line 200
from:
    parameter = 'UCF_Thickness10SubArea[m]'
to:
    parameter = 'UCF_Thickness_10SubArea[m]'

on line 232
from:
    parameter = 'BFw_Thickness10SubArea[m]'
to:
    parameter = 'BFw_Thickness_10SubArea[m]'

on line 244
deleted:
    parameter = 'FractureRD_STFF_Am'
    value      = 1
**
    parameter = 'FractureRD_STFF_Np'
    value      = 1
**

on line 257
from:
    parameter = 'FractureRD_STFF_U'
to:
    parameter = 'FractureRD_STFF_Ja'

on line 260
from:
    parameter = 'FractureRD_STFF_Pu'
to:
    parameter = 'FractureRD_STFF_Jc'

on line 263
from:
    parameter = 'FractureRD_STFF_Th'
to:
    parameter = 'FractureRD_STFF_Jp'
    value      = 1
**
    parameter = 'FractureRD_STFF_Jt'

on line 289
deleted:
    parameter = 'ImmobileRD_STFF_Am'
    value      = 1
**
    parameter = 'ImmobileRD_STFF_Np'
    value      = 1
**

on line 302
from:
    parameter = 'ImmobileRD_STFF_U'
to:
    parameter = 'ImmobileRD_STFF_Ja'
    value      = 1
**
    parameter = 'ImmobileRD_STFF_Jc'

on line 308
from:
    parameter = 'ImmobileRD_STFF_Pu'
to:
```

```

parameter = 'ImmobileRD_STFF_Jp'

on line 311
from:
    parameter = 'ImmobileRD_STFF_Th'
to:
    parameter = 'ImmobileRD_STFF_Jt'

on line 347
deleted:
    parameter = 'PluvialDilutionModel(1=UserDefined,2=PumpingRate)'
    value      = 1
**

on line 360
added:
    parameter = 'AnnualPrecipitation[m/yr]'
    value      = 0.085
**
    parameter = 'TotalAnnualEvapotranspiration[m/yr]'
    value      = 0.084
**

```

5. The following changes were made to dilution.dat:

```

on line 24
from:
    3.4      82.    82.    82.    82.    82.
to:
    0.003    82.    82.    82.    82.    82.

on line 40
from:
    3.4      41.    41.    41.    41.    41.
to:
    0.003    41.    41.    41.    41.    41.

on line 58
from:
    3.4      3.
to:
    0.003    3.

```

# Test Plan for TPA SCR # 417

**Test Plan Name:** VERIFICATION OF IMPORTANCE ANALYSIS

**Tested By:** George Adams

**Date:** January 3, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0BetaF

**Test Version:** 5.0BetaGmod  
(modification to iareader.f to correctly  
format very small numbers for output in  
ia.ech)

## System Level Tests

The system level tests are designed to verify that the importance analysis feature no longer generates errors when run as part of the integrated version of the TPA code.

### SL-1 Verify Code Runs to Completion

#### 1.0 Path for Run Directory

<<Run Directory>> = \$HOME/PA-SCR-417/test/sltest/sl-1

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-417/code50betagmod

TPA\_DATA = \$HOME/PA-SCR-417/code50betagmod

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 Using the TPA.INP file from the 5.0BetaG distribution, set the values in this file in accordance with the following table:

Parameter	Value
OutputMode	1
NumberOfRealizations	3
ImportanceAnalysisFlag(yes=1,no=0)	1
SubsystemNaturalStudy	1
SubsystemEngineeredStudy	1

#### 5.0 Special Diagnostic Code Modifications Required: None

#### 6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Section 4.0.

#### 7.0 Utility Scripts Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify that the TPA code runs to completion when the importance analysis feature is selected.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: OutputMode is set to 1 to generate all output files.

8.5 Procedure:

1. At the command prompt from the <<Run Directory>> directory, type the following: , "tpa.e > PA-SCR-417\_SL1.out." The screen output will be captured to file PA-SCR-417\_SL1.out.
2. Verify the code executes to completion without aborting.
3. Open file genv.in. Verify the values for LEACHT are not negative.

8.6 Pass/Fail Criteria: The code runs to completion and does not generate negative leaching rates.

#### 9.0 Test Results

9.1 Output and Supporting Files: All files will be archived on a CD labeled, "Test Plan and Test Results for PA-SCR-417."

9.2 Criterion 1: Verify the tpa code executes to completion.

9.3 Criterion 2: Verify there are no negative leaching rates in genv.in.

#### 9.4 Overall Test Status:

This test successfully **PASSED** the criterion above for test SL-1.

The code executed to completion without aborting. The last line of PA-SCR-417\_SL1.out displays, "exec: Run Successfully Completed."

The file genv.in contains non-negative leaching rates (non-negative values for LEACHT).



## **SL-2 Verify Code Detects Negative Leaching Rate**

### **1.0 Path for Run Directory**

<<Run Directory>> = \$HOME/PA-SCR-417/test/sltest/sl-2

### **2.0 Path for Archived Results**

<<Run Directory>>

### **3.0 Environment Variables**

TPA\_TEST = \$HOME/PA-SCR-417/code50betagmod

TPA\_DATA = \$HOME/PA-SCR-417/code50betagmod

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 Using the TPA.INP file from the 5.0BetaG distribution, set the values in this file in accordance with the following table:

Parameter	Value
OutputMode	1
NumberOfRealizations	3
ImportanceAnalysisFlag(yes=1,no=0)	1
SubsystemNaturalStudy	1
SubsystemEngineeredStudy	1

4.2 Within the IA.DAT file from the 5.0BetaG distribution, set the values in this file in accordance with the following table:

Parameter	Value
TotalAnnualEvapotranspiration[m/yr]	5.8
AnnualPrecipitation[m/yr]	0.085
AnnualIrrigation[m/yr]	1.52

#### 5.0 Special Diagnostic Code Modifications Required: None

#### 6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Section 4.0.

#### 7.0 Utility Scripts Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify that the TPA code aborts and generates an appropriate error message when a negative leaching rate is encountered.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: OutputMode is set to 1 to generate all output files.

8.5 Procedure:

1. At the command prompt from the <<Run Directory>> directory, type the following: "tpa.e > PA-SCR-417\_SL2.out." The screen output will be captured to file PA-SCR-417\_SL2.out.
2. Verify the code aborts and generates an error message identifying the negative leaching rate.

8.6 Pass/Fail Criteria: The code aborts execution upon calculating a negative leaching rate.

## 9.0 Test Results

9.1 Output and Supporting Files: All files will be archived on a CD labeled, "Test Plan and Test Results for PA-SCR-417."

9.2 Criterion 1: Verify the tpa code aborts execution and generates the appropriate error message.

### 9.3 Overall Test Status:

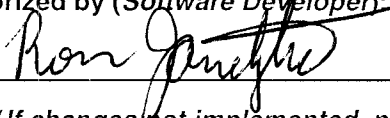
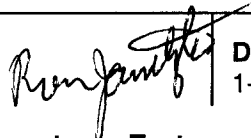

This test successfully **PASSED** the criterion above for test SL-2.

The TPA code aborted execution and generated the following error message as shown in PA-SCR-417\_SL2.out:

```
exec: calling dcagw
***>>> Error in Gentpa <<<***
Computed a negative leaching rate.
In tpa.inp and/or ia.dat,
AnnualPrecipitation[m/yr] +
  AnnualIrrigation[m/yr]
must be greater than or equal to
TotalAnnualEvapotranspiration[m/yr].

AnnualPrecipitation[m/yr] =      8.50000000000000D-02
AnnualIrrigation[m/yr] =      1.52000000000000
TotalAnnualEvapotranspiration[m/yr] =      5.80000000000000
```

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-418	<b>Software Title and Version:</b> TPA 5.0BetaJ	<b>/Project No:</b> 20-06002-01.113
<b>Affected Software Module(s), Description of Problem(s):</b> szft.f, samplerx.i, uzft.f, tpa.inp, tpanames.dbs  The new Saturated Zone Rd values for the colloids require a user specified log distribution. However, the SNLLHS module does not accept this distribution and therefore cannot be specified in the <i>tpa.inp</i> file. The colloid parameters are specified in an e-mail from D. Pickett. (See attachment.)		
<b>Change Requested by:</b> R. Janetzke <b>Date:</b> 1-10-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke  <b>Date:</b> 1-10-03	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  SNNLHS will accept a user specified piece-wise linear distribution. The SZ Rd sampled values must be specified in the tpa.inp file in the log domain and converted to Rds in the szft.f module before they can be used. The parameter names in tpa.inp are changed to indicate that the values are Log base 10 Rd distributions.		
<b>Implemented by:</b>  <b>Date:</b> 1-13-03 <b>Description of Acceptance Tests:</b>  The test plan (test_plan_418.txt) and test results are on the attached CD. The test plan contains one system level test to verify that the SNLLHS module correctly processes the user-specified piece-wise linear distribution. The RDLog10 parameter values from tpa.inp were compared with their values in lhs.out, to verify that the SNLLHS module is correctly producing the specified logtransformed cumulative distribution. These same values from lhs.out were then compared with their corresponding values in nefiisz.inp to verify that the correct Rd values are being produced.  The tpa program successfully passed the test.		
<b>Tested by:</b>  R. Rogers	<b>Date:</b> 1-29-03	

\*\*\* Test Plan for SCR-418 \*\*\*

\*Test Plan Name: SCR-418 Added a user-specified piece-wise linear distribution approximating a log distribution for new Saturated Zone RD values.

\*Tested by: Robert Rogers

\*Date: January 28, 2003

\*Host Machine: masaya.geophysics.swri.edu

\*Host OS: SuSE Linux

\*Baseline Version:  
5.0betaI

\*Test Version:  
5.0betaK

\*\* System Level Tests \*\*

-----  
\*SL-1. Verification that the user-defined piece-wise linear distribution, which is an approximated log distribution, is properly processed by the SNLLHS module for the new parameters for the elements Ja, Jc, Jp, and Jt.

\*Path for run directory:  
/home/brogers/tpa/tpa50betaK

\*Path for archive of results:  
/home/brogers/tpa/test/scr418\_test

\*Environment variables:  
TPA\_DATA=/home/brogers/tpa/tpa50betaK  
TPA\_TEST=/home/brogers/tpa/tpa50betaK

\*Special input files or modifications to input files required:  
See modifications to tpa.inp described below.

\*Special diagnostic code modifications required:  
none

\*Program modes to be used (append flags, scenario/model switches, etc.):

Set the following parameters in tpa.inp:

NumberOfRealizations 1000

\*Utility scripts needed to perform the test:

none

\*Utility codes needed in the analysis of the test data:

The program "extract" (from extract.c) is used to extract the 1000 values for FractureRDLog10\_STFF\_Ja and for AlluviumMatrixRDLog10\_SAV\_Ja from the file lhs.out.

\*Test description

Objective:

The test objective is to verify that the new approximated log distribution (defined as a user-defined piece-wise linear distribution) for elements Ja, Jc, Jp, and Jt is correctly processed by the SNLLHS module. This verification will be accomplished by comparing values between tpa.inp, lhs.out, and nefiisz.inp.

Assumptions:

none

Constraints:

none

Output files to compare or examine:

lhs.out

nefiisz.inp

Step-by-step test procedure:

1. Verify that the following parameters and their values are in tpa.inp:

usersuppliedpwisecdf  
FractureRDLog10\_STFF\_Ja  
6  
0.025308, 0.0  
0.04139, 0.039  
0.77815, 0.08125  
2.0, 0.2605  
2.4472, 0.7605  
2.9031, 1.0

AlluviumMatrixRDLog10\_SAV\_Ja

```

10
0.01, 0.0
0.1273, 0.1933
0.38086, 0.3088
1.3958, 0.5311
2.556, 0.7432
3.013, 0.8244
3.5105, 0.9047
3.9989, 0.9655
4.8795, 0.9978
6.3624, 1.0

```

```

usersuppliedpwiseCDF
ImmobileRDLog10_STFF_Ja
6
0.025308, 0.0
0.04139, 0.039
0.77815, 0.08125
2.0, 0.2605
2.4472, 0.7605
2.9031, 1.0

```

The elements Jc, Jp, and Jt have similar parameters to those listed above for Ja.

2. Run tpa.e for tpa50betaK. Redirect the screen output as follows:  
`tpa.e > test_run_verK.txt`
3. After the test run, extract from lhs.out the values for FractureRDLog10\_STFF\_Ja and AlluviumMatrixRDLog10\_SAV\_Ja. According to samplpar.hdr, the values for these parameters are located in positions 255 and 256, respectively, in the arrays in lhs.out. Sort these values (1000 values per parameter, from the 1000 realizations) and plot them on the same graph as the values listed in step 1 above. Verify that the graph of lhs.out data for each parameter is the same as the graph of the values listed in step 1.
4. Verify that the inverse log of the values for the nine parameters from the last computed realization data in lhs.out match the values in nefiisz.inp. For example:  

$$10^{**}(\text{FractureRDLog10\_STFF\_Ja from lhs.out}) = \text{FractureRDLog10\_STFF\_Ja from nefiisz.inp}$$

Pass/fail criteria:

Verify the results of steps 3 and 4. These results verify that the

approximated log distribution is being processed by the SNLLHS module. Since the values for the parameters are unique, the correctness of the computation can be verified.

#### \*Test Results

See the files in scr418\_test for results. The file data.xls contains the data from step 3. The graphs show that the data in lhs.out follow the graph of the user-defined piece-wise linear distributions defined in tpa.inp.

The file compare.xls compare the values for the nine parameters in lhs.out for the last realization with their corresponding values in nefiisz.inp.

The values in nefiisz.inp are computed using the following formula:

$$\text{value in nefiisz.inp} = 10^{**}(\text{value in lhs.out})$$

The spreadsheet compare.xls shows that the values are the same to three digits, the precision to which the numbers are written out to nefiisz.inp.

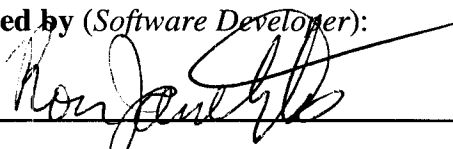
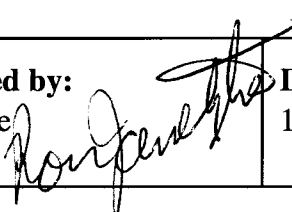
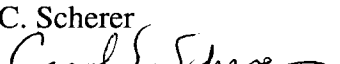
The only exception is FractureRDLog10\_STFF\_Jp, which is off by 0.01 or less than 1 percent.

Based on these results, the test verifies that tpa program successfully computes the new numbers for the new distribution.

Overall Test Status (PASS/FAIL): PASS



## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-419	<b>Software Title and Version:</b> TPA 5.0betaQ	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> ebsrel.f, uzft.f, ebsfilt.f, tpa.inp, tpanames.dbs  The TPA code does not process the colloidal nuclides un the UZ except to pass them straight to the SZ. This is not flexible enough to consider the DOE-TSPA model.		
<b>Change Requested by:</b> T. McCartin Date: 12-23-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke  Date: 12-23-02	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  New parameters were added to the tpa.inp file to specify the element specific permanent loss colloid filter factor for the invert, and the layer specific filter factor for the UZ. The colloidal nuclides still retain their UZ Kd parameters, but they are set to 0, and the Rd are set to 1 so that the only influential parameters are the filter factors. The SZ does not apply the filter factors, but does use regular Kd and Rd controls.		
<b>Implemented by:</b> Ron Janetzke  <b>Date:</b> 1-13-03		
<b>Description of Acceptance Tests:</b>  The software was tested in accordance with the Test Plan for TPA SCR #419.  The software successfully passed all functional level and all system level tests. The software, test directories, and test results are contained on a CD labeled, "TPA SCR #419 - Test Directories."		
<b>Tested by:</b> C. Scherer 	<b>Date:</b> 2-26-03	

02/26/3

## Test Plan/Report for TPA SCR #419

**Test Plan Name:** Add Colloid Filter Factors

**Tested By:** Carol S. Scherer

**Date:** February 26, 2003

**Host Machine:** SUN Ultra-4 server: Spock

**Host OS:** Sun Solaris 5.8

**Baseline Version:** TPA 5.0betaQ  
(4.2 solapps compiler)

**Test Version:** TPA 5.0betaR  
(4.2 solapps compiler)

### Code Modifications:

The following code modifications were made to TPA for SCR # 419 :

1. ebsfilt.f: read in colloid names and halflives; if irreversible colloid, apply filter factor for all times
2. ebsrel.f: get filter factors; separate solute nuclides & colloids
3. uzft.f: get filter factors; find total effective permanent loss colloid filter factor for all layers; multiply ciperyrinsaintoloweruz by colloid matrix loss factor for each layer; compute aggregate filter factor; remove fraction of colloids permanently from repository system (SZ does not apply the filter factors, but does use regular Kd and Rd controls)
4. tpa.inp: added 11 new parameters PermanentLossColloidFilterFactor\_\* to specify the element-specific permanent loss colloid filter factor for the invert and the layer-specific filter factor for the UZ; UZ Kd parameters set to 0 for colloidal nuclides and Rd parameters set to 1 so that the only influential parameters are the filter factors

### Testing Setup:

Directories/paths used for testing:

**\$HOME** = /net/spock/home/cscherer

Path for run directory: **\$HOME/tpatest/scr419**

Environment variables:

**TPA\_TEST** = **\$HOME/tpatest/scr419**

**TPA\_DATA** = **\$HOME/tpatest/scr419**

Disposition of documentation of results: All modified/new source code files, all executables used in testing, and all input/output files will be kept in the archive directories. The contents of the archive directories will be written out to a CD titled "TPA SCR # 419 - Test Directories" (attached).

Test preparation instructions:

5. In the directory **\$HOME/tpatest**, create the following subdirectory: **scr419** (run directory).
6. In the run directory, create the following subdirectories: **flt1**, **slt1**, **slt2**, **slt3**, and **tpa50betaQ** (baseline directory).
7. Copy **TPA** version 5.0betaR to the run directory. In the run directory, save a copy of **tpa.inp** as **tpa\_orig.inp**. Save a copy of **uzft.f** as **uzft\_orig.f**.
8. Copy **TPA** version 5.0betaQ to the baseline directory.
9. In the run directory, recompile **TPA** using **Makefile4.2**. Save a copy of **tpa.e** as **tpa\_42compR.e**.
10. In the baseline directory, recompile **TPA** using **Makefile4.2**. Save a copy of **tpa.e** as **tpa\_42compQ.e**.

### Functional Level Tests:

These tests are designed to demonstrate that the modified code performs correctly.

1. Name: Modified Code Functionality Test

Path for archive of results: **\$HOME/tpatest/scr419/flt1**

Special input files or modifications to input files required:

1. copy **ebsfilt.inp** from SLT #3d to **ebsfilt\_orig.inp**
2. copy **ebsfilt.inp** to **ebsfilt\_flt1.inp**
3. in **ebsfilt\_flt1.inp**, modify the value for **flux** so that it is larger than the value for **ksat**

Special diagnostic code modifications required:

Program modes to be used: none.

Utility scripts needed to perform the test: none.

Utility codes needed in the analysis of the test data: none.

Test description:

- objective: to test the functionality of the modified code in the standalone module *ebsfilt.f* regarding colloid filter factors. In *ebsfilt.inp*, values are listed for flux (1<sup>st</sup> value) and *ksat* (3<sup>rd</sup> value). If flux is greater than *ksat*, then the new filter factors will be bypassed. If *ksat* is larger than flux, then the filter factors will be utilized.
- assumptions: SLT #3 has already been run.
- constraints: the file *scr419\_flt1.out* does not exist in the run directory.
- output files to compare or examine: *scr419\_flt1.out*, *ebsnef2\_orig.dat*, *ebsnef2\_flt1.dat*
- step by step test procedure to be used:
  1. —> change directory to the run directory
  2. using an existing *ebsfilt.inp*, run *ebsfilt.e* standalone using the command “*ebsfilt.e > ebsfilt\_orig.out*”
  3. cp *echofilt.dat* to *echofilt\_orig.dat* and *ebsnef2.dat* to *ebsnef\_orig.dat* in the archive directory
  4. make the changes listed above to *ebsfilt\_flt1.inp*
  5. cp *ebsfilt\_flt1.inp* to *ebsfilt.inp*
  6. run *ebsfilt.e* standalone using the command “*ebsfilt.e > ebsfilt\_orig.out*”
  7. cp *echofilt.dat* to *echofilt\_flt1.dat* and *ebsnef2.dat* to *ebsnef\_flt1.dat* in the archive directory
  8. cp executable and input files to archive directory
  9. look at the files *ebsfilt\_flt1.out*, *ebsfilt\_orig.out*, *ebsnef2\_orig.dat*, and *ebsnef2\_flt1.dat*
- pass/fail criteria: the test passes if:
  1. The code runs to completion with no error messages.
  2. In *ebsfilt\_flt1.out*, the **flux** value listed is greater than the **ksat** value listed.
  3. In *ebsfilt\_orig.out*, the **ksat** value listed is greater than the **flux** value listed.
  4. In *ebsnef2\_flt1.dat*, for colloids (Ja, Jc, Jp, and Jt), some release values are greater than 0.0. (The test in *ebsfilt* passed so colloid filter factors were bypassed and no values calculated. *Ebsnef.dat* was copied to *ebsnef2.dat* directly.) So, even though the filter factors were set to remove all colloids from the system, they were never used.

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5. In *ebsnef2\_orig.dat*, for colloids (Ja, Jc, Jp, and Jt), all release values are equal to 0.0. (The test in *ebsfilt* failed so colloid filter factors were used and values calculated.) Filter factors were set to 1.0 so all colloids were lost from the system.

Results of running test:

**FAILED.** In both cases, the release values for the colloids were greater than zero. Repeating the test using an *ebsfilt.inp* where the colloid filter factors were set to 0 and modifying the file so that *ksat* was greater than flux also gave unexpected results. Since filter factors in this instance were 0.0, both cases should have listed release values for colloids greater than zero, but the results were the ones expected for filter factors of 1.0. This led to the discovery of an error in *ebsfilt.f*. Filter factor was being multiplied by the release value instead of  $1.0 - \text{filter factor}$ . SCR #443 generated to look at this problem.

## System Level Tests:

These tests are designed to demonstrate that the modified code affects overall **TPA** processing and output as planned with no unwanted side effects.

### 1. Name: Compare Modified Code to Base Code.

Paths for archives of results: *\$HOME/tpatest/scr419*  
*\$HOME/tpatest/scr419*

Special input files or modifications to input files required: none.

Special diagnostic code modifications required: none.

Program modes to be used: use *tpa\_orig.inp*.

Utility scripts needed to perform the test: none.

Utility codes needed in the analysis of the test data: none.

#### Test description:

- objective: to show that the modified code produces different results.
- assumptions: none.
- constraints: the files *scr419\_sl1a.out* and *scr419\_sl1b.out* do not exist in the run directory.
- output files to compare or examine: *tpa\_sl1a.out*, *tpa\_sl1b.out*, and intermediate/output/result files from the run
- step by step test procedure to be used:
  1. —> change directory to baseline directory
  2. change data environment variables to point to the baseline directory; enter command “*setenv TPA\_DATA \$HOME/tpatest/scr419/tpa50betaQ*”
  3. change test environment variable to point to the baseline directory; enter command “*setenv TPA\_TEST \$HOME/tpatest/scr419/tpa50betaQ*”
  4. copy *tpa\_42origQ.e* to *tpa.e*
  5. copy *tpa\_orig.inp* to *tpa.inp*

6. run *tpa.e* using command "*tpa.e > scr419\_slt1a.out*"
  7. copy *scr419\_slt1a.out*, and all output files to the *slt1/testa* archive directory
  8. change test environment variable to point to the test directory; enter command "*setenv TPA\_TEST \$HOME/tpatest/scr419*"
  9. change the data environment variable to point to the test directory; enter command "*setenv TPA\_DATA \$HOME/tpatest/scr419*"
  10. copy *tpa\_42origR.e* to *tpa.e*
  11. copy *tpa\_orig.inp* to *tpa.inp*
  12. run *tpa.e* using command "*tpa.e > scr419\_slt1b.out*"
  13. copy *scr419\_slt1b.out* and the output/result/intermediate files to the *slt1/testb* archive directory
  14. look at files *scr419\_slt1a.out* and *scr419\_slt1b.out*
  15. compare output/result/intermediate files from both runs
- pass/fail criteria: the test passes if:
1. **TPA** ran to successful completion: there is a non-zero value for calculated dose (see **Peak Mean Dose** in both *scr419\_slt1a.out* and *scr419\_slt1b.out*). **Peak Mean Dose** is different in the baseline case than in the test case.
  2. Files generated before ebsfilt was run are the same in both cases except for time/date stamps and version information.
  3. Files generated after ebsfilt was run than contain information about colloids contained different values.
  4. In *ebsfilt.inp*, colloids list filter factors instead of RDs.
  5. In *nefiisz.dis*, *nefiisz.out*, *nefiuz.dis*, and *nefiuz.out*, release values for colloids appear in the test case that were zero in the base case.
  6. In *scr419\_slt1b.out*, some colloids are appearing in the release lists.

Results of running test:

**PASSED.**

2. Name: Test Effects of IrreversibleColloidModel flag.

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Paths for archives of results: *\$HOME/tpatest/scr419*  
*\$HOME/tpatest/scr419*

Special input files or modifications to input files required: none.

Special diagnostic code modifications required: none.

Program modes to be used: copy *tpa\_origR.inp* to *tpa\_sl2.inp*, and make the following modification:

Set IrreversibleColloidModel[0=no,1=yes] to 0

Utility scripts needed to perform the test: none.

Utility codes needed in the analysis of the test data: none.

Test description:

- objective: to show that the effects of using colloid filter factors can be turned off.
- assumptions: none.
- constraints: the file *scr419\_sl2.out* does not exist in the run directory.
- output files to compare or examine: *tpa\_sl2.out*, files generated by the run
- step by step test procedure to be used:
  1. —> change directory to run directory
  2. copy *tpa\_origR.e* to *tpa.e*
  3. copy *tpa\_sl2.inp* to *tpa.inp*
  4. run *tpa.e* using command "*tpa.e > scr419\_sl2.out*"
  5. copy *scr419\_sl2.out* and files generated by the run to the archive directory
  6. look at file *scr419\_sl2.out*
  7. compare files generated by the run to files generated in SLT #1a
- pass/fail criteria: the test passes if:
  1. **TPA** ran to successful completion: there is a non-zero value for calculated dose (see *Peak Mean Dose* in *scr419\_sl2.out*).



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2. Files and release values from the test run compare favorably with files and release values from the base case run (SLT #1a).

Results of running test:

**FAILED.** The run aborted reading ebsfilt.inp. SCR #440 was generated to look at this problem.

3. Name: Compare Permanent Loss Colloid Filter Factors Sset To 0 Against Permanent Loss Colloid Filter Factors Set To 1.

Paths for archives of results: *\$HOME/tpatest/scr419*  
*\$HOME/tpatest/scr419*

Special input files or modifications to input files required: none.

Special diagnostic code modifications required: none.

Program modes to be used: copy *tpa\_origR.inp* to *tpa\_sl3a.inp*, *tpa\_sl3b.inp*, *tpa\_sl3c.inp*, and *tpa\_sl3d.inp* and make the following modifications:

Test Case A(*tpa\_sl3a.inp*):

```
Set ColloidReleaseFraction_Jc246[] to 0.0
Set ColloidReleaseFraction_Jt230[] to 0.0
Set ColloidReleaseFraction_Jp239[] to 0.0
Set ColloidReleaseFraction_Ja243[] to 0.0
Set ColloidReleaseFraction_Jc245[] to 0.0
Set ColloidReleaseFraction_Ja241[] to 0.0
Set ColloidReleaseFraction_Jp240[] to 0.0
Set PermanentLossColloidFilterFactor_Invert_Ja[] to 0.0
Set PermanentLossColloidFilterFactor_Invert_Jc[] to 0.0
Set PermanentLossColloidFilterFactor_Invert_Jp[] to 0.0
Set PermanentLossColloidFilterFactor_Invert_Jt[] to 0.0
Set PermanentLossColloidFilterFactor_TSw[] to 0.0
Set PermanentLossColloidFilterFactor_CHnv[] to 0.0
Set PermanentLossColloidFilterFactor_CHnz[] to 0.0
Set PermanentLossColloidFilterFactor_PPw[] to 0.0
Set PermanentLossColloidFilterFactor_UCF[] to 0.0
Set PermanentLossColloidFilterFactor_BFw[] to 0.0
```

Set PermanentLossColloidFilterFactor\_UFz\_[] to 0.0

Test Case B(*tpa\_sl3b.inp*):

Set ColloidReleaseFraction\_Jc246[] t0.0  
Set ColloidReleaseFraction\_Jt230[] t0.0  
Set ColloidReleaseFraction\_Jp239[] t0.0  
Set ColloidReleaseFraction\_Ja243[] t0.0  
Set ColloidReleaseFraction\_Jc245[] t0.0  
Set ColloidReleaseFraction\_Ja241[] t0.0  
Set ColloidReleaseFraction\_Jp240[] t0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Ja[] t0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jc[] t0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jp[] t0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jt[] t0.0  
Set PermanentLossColloidFilterFactor\_TSw\_[] to 0.0  
Set PermanentLossColloidFilterFactor\_CHnv[] to 0.0  
Set PermanentLossColloidFilterFactor\_CHnz[] to 0.0  
Set PermanentLossColloidFilterFactor\_PPw\_[] to 0.0  
Set PermanentLossColloidFilterFactor\_UCF\_[] to 0.0  
Set PermanentLossColloidFilterFactor\_BFw\_[] to 0.0  
Set PermanentLossColloidFilterFactor\_UFz\_[] to 0.0

Test Case C(*tpa\_sl3c.inp*):

Set ColloidReleaseFraction\_Jc246[] t0.0  
Set ColloidReleaseFraction\_Jt230[] t0.0  
Set ColloidReleaseFraction\_Jp239[] t0.0  
Set ColloidReleaseFraction\_Ja243[] t0.0  
Set ColloidReleaseFraction\_Jc245[] t0.0  
Set ColloidReleaseFraction\_Ja241[] t0.0  
Set ColloidReleaseFraction\_Jp240[] t0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Ja[] t0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jc[] t0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jp[] t0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jt[] t0.0  
Set PermanentLossColloidFilterFactor\_TSw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_CHnv[] to 1.0  
Set PermanentLossColloidFilterFactor\_CHnz[] to 1.0  
Set PermanentLossColloidFilterFactor\_PPw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_UCF\_[] to 1.0

Set PermanentLossColloidFilterFactor\_BFw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_UFz\_[] to 1.0

Test Case D(*tpa\_slt3d.inp*):

Set ColloidReleaseFraction\_Jc246[] to 0.0  
Set ColloidReleaseFraction\_Jt230[] to 0.0  
Set ColloidReleaseFraction\_Jp239[] to 0.0  
Set ColloidReleaseFraction\_Ja243[] to 0.0  
Set ColloidReleaseFraction\_Jc245[] to 0.0  
Set ColloidReleaseFraction\_Ja241[] to 0.0  
Set ColloidReleaseFraction\_Jp240[] to 0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Ja[] to 0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jc[] to 0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jp[] to 0.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jt[] to 0.0  
Set PermanentLossColloidFilterFactor\_TSw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_CHnv[] to 1.0  
Set PermanentLossColloidFilterFactor\_CHnz[] to 1.0  
Set PermanentLossColloidFilterFactor\_PPw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_UCF\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_BFw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_UFz\_[] to 1.0

Utility scripts needed to perform the test: none.

Utility codes needed in the analysis of the test data: none.

Test description:

- objective: to demonstrate the interaction among Colloid Release Fractions and Permanent Loss Colloid Filter Factors
- assumptions: none.
- constraints: the files *scr419\_slt3a.out*, *scr419\_slt3b.out*, *scr419\_slt3c.out*, and *scr419\_slt3d.out* do not exist in the run directory.
- output files to compare or examine: *scr419\_slt3a.out*, *scr419\_slt3b.out*, *scr419\_slt3c.out*, and *scr419\_slt3d.out*

- step by step test procedure to be used:
  1. —> change directory to run directory
  2. copy *tpa\_42origR.e* to *tpa.e*  
Test Case A:
    3. copy *tpa\_sl3a.inp* to *tpa.inp*
    4. run *tpa.e* using command "*tpa.e > scr419\_sl3a.out*"
    5. copy *scr419\_sl3a.out* to the slt3/testa archive directory
 Test Case B:
    6. copy *tpa\_sl3b.inp* to *tpa.inp*
    7. run *tpa.e* using command "*tpa.e > scr419\_sl3b.out*"
    8. copy *scr419\_sl3b.out* to the slt3/testb archive directory
 Test Case C:
    9. copy *tpa\_sl3c.inp* to *tpa.inp*
    10. run *tpa.e* using command "*tpa.e > scr419\_sl3c.out*"
    11. copy *scr419\_sl3c.out* to the slt3/testc archive directory
 Test Case D:
    12. copy *tpa\_sl3d.inp* to *tpa.inp*
    13. run *tpa.e* using command "*tpa.e > scr419\_sl3d.out*"
    14. copy *scr419\_sl3d.out* to the slt3/testd archive directory
    15. look at files *scr419\_sl3a.out*, *scr419\_sl3b.out*, *scr419\_sl3c.out*,  
and *scr419\_sl3d.out*
    16. compare release values listed for each case
- pass/fail criteria: the test passes if:
  1. **TPA** ran to successful completion: there is a non-zero value for calculated dose (see **Peak Mean Dose** in all cases.
  2. Colloids appear in release lists when Colloid ReleaseFractions are set to 1 and Permanent Loss Colloid Filters are set to 0.
  3. Colloids do not appear in release lists when Colloid Release Fractions are set to 0.
  4. Colloids do not appear in release lists when Permanent Loss Colloid Filters are set to 1 unless they can be accounted for decay growth.
  5. When Colloid Release Fractions are set to 1, the associated colloid for a listed element appears in the next list with all the release attributed to it instead of the original element.

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Results of running test:

**FAILED.** Colloids appear in release lists even when all colloids should have been filtered out. (See FLT #1.) SCR #443 was generated to look at this problem.

**NOTES:**

scr419:

total 25412

drwxr-xr-x	12	cscherer	sunuser	8192	Feb	26	13:32	.
drwxr-xr-x	36	cscherer	sunuser	4608	Feb	26	14:25	..
-rwxr-xr-x	1	cscherer	sunuser	2001	Sep	18	16:52	CLEANUP
-rw-r--r--	1	cscherer	sunuser	965	Feb	24	17:19	FILENAME.DAT
-rw-r--r--	1	cscherer	sunuser	869	Nov	27	14:22	Makefile
-rw-rw-rw-	1	cscherer	sunuser	961	Nov	27	14:24	Makefile4.2
-rw-r--r--	1	cscherer	sunuser	450	Feb	24	17:18	NEFII.VEL
-rw-r--r--	1	cscherer	sunuser	2746	Feb	24	17:19	airpkdos.res
-rw-r--r--	1	cscherer	sunuser	2746	Feb	24	17:19	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	29502	Nov	15	17:28	array.f
-rw-r--r--	1	cscherer	sunuser	914	Feb	24	17:19	ashout.res
-rw-r--r--	1	cscherer	sunuser	20601	Sep	11	13:41	ashplumo.f
-rw-r--r--	1	cscherer	sunuser	37630	Nov	27	13:27	ashrmovo.f
-rw-r--r--	1	cscherer	sunuser	1025	Feb	24	17:18	burnup.dat
drwxr-xr-x	2	cscherer	sunuser	512	Feb	16	20:03	ccdf
-rwxrwxrwx	1	cscherer	sunuser	164	Feb	23	19:09	ch_envQ
-rwxrwxrwx	1	cscherer	sunuser	142	Feb	23	19:09	ch_envR
-rw-r--r--	1	cscherer	sunuser	5047	Feb	24	17:18	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Feb	24	17:18	climato1.dat
-rw-r--r--	1	cscherer	sunuser	2200	Feb	24	17:18	climato2.dat
drwxr-xr-x	4	cscherer	sunuser	1024	Feb	26	13:30	codes
-rw-r--r--	1	cscherer	sunuser	4791	Feb	24	17:18	coefkdeq.dat
-rw-r--r--	1	cscherer	sunuser	608	Sep	20	20:44	coefkdeq.i
-rwxrwxrwx	1	cscherer	sunuser	9121	Feb	22	16:11	comp_files_sl11
-rwxrwxrwx	1	cscherer	sunuser	9292	Feb	22	16:18	comp_files_sl11_major
-rwxrwxrwx	1	cscherer	sunuser	9145	Feb	22	16:20	comp_files_sl11_minor
-rw-r--r--	1	cscherer	sunuser	10207	Feb	15	2002	condxyzt.f
-rw-r--r--	1	cscherer	sunuser	14506	Feb	24	17:18	corrode.out
-rw-r--r--	1	cscherer	sunuser	78453	Feb	24	17:19	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2252	Feb	24	17:19	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2252	Feb	24	17:19	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb	24	17:18	cumrelse.out
drwxr-xr-x	2	cscherer	sunuser	1536	Feb	16	20:02	data
-rw-r--r--	1	cscherer	sunuser	120159	Dec	19	14:34	dcags.f
-rw-r--r--	1	cscherer	sunuser	157577	Dec	19	14:34	dcagw.f
-rw-r--r--	1	cscherer	sunuser	6693	Feb	24	17:18	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb	24	17:18	diagnose.out
drwxr-xr-x	2	cscherer	sunuser	512	Feb	22	16:05	diff_files
-rw-r--r--	1	cscherer	sunuser	2200	Feb	24	17:19	dilution.dat
drwxr-xr-x	2	cscherer	sunuser	512	Feb	26	13:38	docs
-rw-r--r--	1	cscherer	sunuser	3870	Feb	24	17:18	drifts.dat
-rw-r--r--	1	cscherer	sunuser	190	Sep	20	09:32	driftsa.i
-rw-r--r--	1	cscherer	sunuser	519	Feb	24	17:18	drythick.dat
-rw-r--r--	1	cscherer	sunuser	25470	Dec	17	17:53	dsfail.f
-rw-r--r--	1	cscherer	sunuser	1024	Feb	24	17:19	dsfail.res
-rw-r--r--	1	cscherer	sunuser	708	Feb	24	17:18	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Feb	24	17:18	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	43148	Feb	24	17:18	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Feb	24	17:18	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	24	17:18	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb	24	17:18	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5973	Feb	24	17:18	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	48867	Feb	14	19:59	ebsfail.f
-rw-r--r--	1	cscherer	sunuser	5734	Feb	24	17:18	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	790	Feb	24	17:18	ebsfilt.def

-rwxr-xr-x	1	cscherer	sunuser	46564	Feb	24	17:18	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	2554	Feb	24	17:18	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	239	Feb	24	17:18	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Feb	24	17:18	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	167701	Feb	24	17:18	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb	24	17:18	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	439749	Feb	24	17:18	ebsnef2.dat
-rwxr--r--	1	cscherer	sunuser	163328	Feb	23	18:18	ebsnef2_dat.doc
-rw-r--r--	1	cscherer	sunuser	1883	Feb	24	17:18	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5459	Feb	24	17:18	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	86105	Feb	16	19:40	ebsrel.f
-rw-r--r--	1	cscherer	sunuser	11110	Feb	24	17:18	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:15	ebsrel1.i
-rw-r--r--	1	cscherer	sunuser	124203	Feb	24	17:18	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Feb	24	17:18	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Feb	24	17:18	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2647	Feb	24	17:18	echofail.dat
-rwxr-xr-x	1	cscherer	sunuser	191112	Feb	24	17:19	env.e
-rwxr-xr-x	1	cscherer	sunuser	282724	Feb	24	17:19	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Feb	24	17:19	epa_ave.out
-rwxr--r--	1	cscherer	sunuser	37376	Feb	23	18:17	epa_ave_out.doc
-rw-r--r--	1	cscherer	sunuser	1707	Feb	24	17:19	epapktim.out
-rw-r--r--	1	cscherer	sunuser	383831	Feb	16	19:43	exec.f
-rw-r--r--	1	cscherer	sunuser	2385	Sep	21	10:07	execa.i
-rw-r--r--	1	cscherer	sunuser	486	Sep	3	1997	execb.i
-rw-r--r--	1	cscherer	sunuser	269	May	29	2002	execc.i
-rw-r--r--	1	cscherer	sunuser	104	Feb	6	14:32	execd.i
-rwxr-xr-x	1	cscherer	sunuser	136636	Feb	24	17:18	failt.e
-rw-r--r--	1	cscherer	sunuser	17384	Feb	24	17:18	failt.out
-rw-r--r--	1	cscherer	sunuser	8503	Feb	15	2002	faulto.f
-rw-r--r--	1	cscherer	sunuser	6599	May	29	2002	fileunit.f
-rw-r--r--	1	cscherer	sunuser	5784	Feb	15	2002	findelev.f
drwxr-xr-x	3	cscherer	sunuser	512	Feb	26	13:36	flt1
-rw-r--r--	1	cscherer	sunuser	6281	Feb	24	17:18	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Feb	24	17:18	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	ful.i
-rw-r--r--	1	cscherer	sunuser	609	Sep	4	19:29	fu2.i
-rw-r--r--	1	cscherer	sunuser	6513	Feb	24	17:19	gbioac1.dat
-rw-r--r--	1	cscherer	sunuser	3383	Feb	24	17:19	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Feb	24	17:19	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Feb	24	17:19	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Feb	24	17:19	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb	24	17:19	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb	24	17:19	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Feb	24	17:19	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Feb	24	17:19	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Feb	24	17:19	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	13855	Feb	24	17:19	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Feb	24	17:19	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb	24	17:19	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Feb	24	17:19	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Feb	24	17:19	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Feb	24	17:19	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Feb	24	17:19	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:19	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:19	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Feb	24	17:19	gw_cb_ad.dat

-rw-r--r--	1	cscherer	sunuser	1264	Feb	24	17:19	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Feb	24	17:19	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Feb	24	17:19	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:19	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:19	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb	24	17:19	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1738	Feb	24	17:19	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1738	Feb	24	17:19	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2170	Feb	24	17:19	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	1229	Jul	22	1999	ia.i
-rw-r--r--	1	cscherer	sunuser	956	Sep	26	2000	ial.i
-rw-r--r--	1	cscherer	sunuser	21238	Dec	19	14:34	iareader.f
-rw-r--r--	1	cscherer	sunuser	2330	Feb	24	17:19	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb	24	17:18	inv1000.out
-rw-r--r--	1	cscherer	sunuser	68997	Jan	21	14:53	invent.f
-rw-r--r--	1	cscherer	sunuser	33	Sep	25	12:15	invent_.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	inventa.i
-rw-r--r--	1	cscherer	sunuser	182	Sep	25	12:14	inventb.i
-rw-r--r--	1	cscherer	sunuser	344	Sep	25	12:14	inventc.i
-rw-r--r--	1	cscherer	sunuser	124	Sep	25	12:14	inventd.i
-rw-r--r--	1	cscherer	sunuser	131	Sep	25	12:14	invente.i
-rw-r--r--	1	cscherer	sunuser	130	Sep	25	12:14	inventf.i
-rw-r--r--	1	cscherer	sunuser	128	Sep	25	12:14	inventg.i
-rw-r--r--	1	cscherer	sunuser	127	Sep	25	12:14	inventh.i
-rw-r--r--	1	cscherer	sunuser	75	Aug	16	1997	inventi.i
-rw-r--r--	1	cscherer	sunuser	288	Sep	25	12:14	inventj.i
-rw-r--r--	1	cscherer	sunuser	332	Sep	25	12:14	inventk.i
-rw-r--r--	1	cscherer	sunuser	150	Dec	6	14:29	inventl.i
-rw-r--r--	1	cscherer	sunuser	315	Dec	11	09:33	inventm.i
-rw-r--r--	1	cscherer	sunuser	175	Sep	25	12:15	inventn.i
-rw-r--r--	1	cscherer	sunuser	249	Jan	29	2000	invento.i
-rw-r--r--	1	cscherer	sunuser	267	Sep	25	12:15	inventp.i
-rw-r--r--	1	cscherer	sunuser	0	Feb	22	16:08	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb	24	17:18	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb	24	17:18	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb	24	17:18	lhse.out
-rw-r--r--	1	cscherer	sunuser	78	Aug	16	1997	max500yr.i
-rw-r--r--	1	cscherer	sunuser	99	Sep	25	12:10	maxchain.i
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:50	maxclchn.i
-rw-r--r--	1	cscherer	sunuser	144	Sep	25	12:50	maxclnuc.i
-rw-r--r--	1	cscherer	sunuser	508	Sep	25	12:11	maxnnucl.i
-rw-r--r--	1	cscherer	sunuser	299	Jul	10	1998	maxnsuba.i
-rw-r--r--	1	cscherer	sunuser	206	May	28	1999	maxntime.i
-rw-r--r--	1	cscherer	sunuser	1095	Feb	24	17:18	maxrel.dat
-rwxr-xr-x	1	cscherer	sunuser	943775	Feb	24	17:18	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31768	Feb	24	17:18	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Feb	24	17:18	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	82068	Feb	24	17:18	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9767	Feb	24	17:18	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	24	17:18	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1251	Feb	24	17:18	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1252	Feb	24	17:18	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	11850	Feb	15	2002	mv.f
-rw-r--r--	1	cscherer	sunuser	61241	Feb	24	17:19	mv.tpa
-rw-r--r--	1	cscherer	sunuser	111	Sep	4	1997	mva.i
-rw-r--r--	1	cscherer	sunuser	56	Aug	16	1997	mvb.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	mvc.i



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-rw-r--r-- 1 cscherer sunuser      101 Aug 16 1997 mvd.i
-rw-r--r-- 1 cscherer sunuser       72 Aug 16 1997 mve.i
-rw-r--r-- 1 cscherer sunuser       72 Aug 16 1997 mvf.i
-rw-r--r-- 1 cscherer sunuser    2330 Feb 24 17:19 nearfld.res
-rw-r--r-- 1 cscherer sunuser   36843 Feb 24 17:19 nefii.dis
-rw-r--r-- 1 cscherer sunuser   10104 Feb 24 17:18 nefii.inp
-rw-r--r-- 1 cscherer sunuser  172338 Feb 24 17:19 nefii.out
-rw-r--r-- 1 cscherer sunuser     603 Feb 24 17:19 nefii.rel
-rw-r--r-- 1 cscherer sunuser   36843 Feb 24 17:19 nefiisz.dis
-rw-r--r-- 1 cscherer sunuser   10104 Feb 24 17:19 nefiisz.inp
-rw-r--r-- 1 cscherer sunuser  172338 Feb 24 17:19 nefiisz.out
-rw-r--r-- 1 cscherer sunuser  226474 Feb 24 17:19 nefiisz.src
-rw-r--r-- 1 cscherer sunuser     450 Feb 24 17:19 nefiisz.vel
-rwxr--r-- 1 cscherer sunuser   161280 Feb 23 18:03 nefiisz_src.doc
-rw-r--r-- 1 cscherer sunuser   18274 Feb 24 17:18 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser   10100 Feb 24 17:18 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser   61772 Feb 24 17:18 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser  205498 Feb 24 17:18 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser     171 Feb 24 17:18 nefiiuz.vel
-rwxr--r-- 1 cscherer sunuser  845312 Feb 23 17:52 nefiiuz_dis.doc
-rwxr--r-- 1 cscherer sunuser  832000 Feb 23 17:54 nefiiuz_out.doc
-rwxr--r-- 1 cscherer sunuser   161280 Feb 23 18:01 nefiiuz_src.doc
-rwxr-xr-x 1 cscherer sunuser  408036 Feb 24 17:18 nefmks.e
-rw-r--r-- 1 cscherer sunuser    1395 Feb 24 17:18 nefmks.log
-rw-r--r-- 1 cscherer sunuser  111266 Feb 14 20:06 nfenv.f
-rw-r--r-- 1 cscherer sunuser     326 Nov 17 18:24 nfenvadj.i
-rw-r--r-- 1 cscherer sunuser     94 Aug 16 1997 nintv.i
-rw-r--r-- 1 cscherer sunuser   1502 Jun 11 1997 notice.i
-rw-r--r-- 1 cscherer sunuser   2506 Feb 24 17:19 npkdoset.res
-rw-r--r-- 1 cscherer sunuser   2506 Feb 24 17:19 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser   6890 Feb 24 17:18 nuclides.dat
-rw-r--r-- 1 cscherer sunuser   6579 Feb 15 2002 numrecip.f
-rw-r--r-- 1 cscherer sunuser   7111 Feb 24 17:19 organdf.dat
-rw-r--r-- 1 cscherer sunuser    259 Aug 16 1997 path.i
-rw-r--r-- 1 cscherer sunuser   6584 Feb 15 2002 peakfind.f
-rw-r--r-- 1 cscherer sunuser    698 Feb 24 17:19 pkmdose.out
-rw-r--r-- 1 cscherer sunuser   8244 Feb 24 17:19 pkreltim.res
-rw-r--r-- 1 cscherer sunuser   8244 Feb 24 17:19 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser   46322 Feb 15 2002 ran.f
-rw-r--r-- 1 cscherer sunuser  148482 Dec 19 14:32 reader.f
-rw-r--r-- 1 cscherer sunuser    185 May 21 1998 reader.i
-rw-r--r-- 1 cscherer sunuser    106 Aug 27 1999 reader1.i
-rw-r--r-- 1 cscherer sunuser     58 Aug 27 1999 reader2.i
-rw-r--r-- 1 cscherer sunuser    102 Aug 27 1999 reader3.i
-rw-r--r-- 1 cscherer sunuser     89 Aug 27 1999 reader4.i
-rw-r--r-- 1 cscherer sunuser     58 Aug 16 1997 reflux2.i
-rw-r--r-- 1 cscherer sunuser    682 Feb 24 17:18 rel_flow.out
-rw-r--r-- 1 cscherer sunuser    572 Feb 24 17:19 relccdf.res
-rw-r--r-- 1 cscherer sunuser    2253 Feb 24 17:18 relcum.out
-rwxr-xr-x 1 cscherer sunuser  120000 Feb 24 17:18 releaset.e
-rw-r--r-- 1 cscherer sunuser    412 Feb 24 17:18 releaset.out
-rw-r--r-- 1 cscherer sunuser    665 Feb 24 17:18 relfrac.out
-rw-r--r-- 1 cscherer sunuser    722 Feb 24 17:19 relgwgs.res
-rw-r--r-- 1 cscherer sunuser    548 Feb 24 17:18 repdes.dat
-rw-r--r-- 1 cscherer sunuser   47561 Feb 24 17:19 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser   47561 Feb 24 17:19 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser   47561 Feb 24 17:19 rgwnapdw.tpa

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-rw-r--r--	1	cscherer	sunuser	47561	Feb 24	17:19	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 24	17:19	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 24	17:19	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 24	17:19	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 24	17:19	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5137	Feb 24	17:19	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16137	Feb 24	17:19	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5183	Feb 24	17:19	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	572	Feb 24	17:19	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	722	Feb 24	17:19	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	95694	May 29	2002	sampler.f
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	sampler0.i
-rw-r--r--	1	cscherer	sunuser	79	Aug 16	1997	sampler1.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	sampler2.i
-rw-r--r--	1	cscherer	sunuser	178	Apr 3	1998	sampler3.i
-rw-r--r--	1	cscherer	sunuser	145	Sep 19	2000	sampler4.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	samplera.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	samplerb.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	samplerc.i
-rw-r--r--	1	cscherer	sunuser	68	Aug 16	1997	samplerd.i
-rw-r--r--	1	cscherer	sunuser	133	Aug 16	1997	samlpere.i
-rw-r--r--	1	cscherer	sunuser	111	Aug 16	1997	samplerf.i
-rw-r--r--	1	cscherer	sunuser	84	Aug 16	1997	samplerg.i
-rw-r--r--	1	cscherer	sunuser	68	Aug 16	1997	samplerh.i
-rw-r--r--	1	cscherer	sunuser	83	Aug 16	1997	sampleri.i
-rw-r--r--	1	cscherer	sunuser	61	Aug 16	1997	samplerj.i
-rw-r--r--	1	cscherer	sunuser	208	Aug 16	1997	samplerk.i
-rw-r--r--	1	cscherer	sunuser	104	Aug 16	1997	samplerl.i
-rw-r--r--	1	cscherer	sunuser	63	Aug 16	1997	samplerm.i
-rw-r--r--	1	cscherer	sunuser	79	Aug 16	1997	samplern.i
-rw-r--r--	1	cscherer	sunuser	63	Aug 16	1997	samplero.i
-rw-r--r--	1	cscherer	sunuser	260	Mar 14	2002	samplerp.i
-rw-r--r--	1	cscherer	sunuser	103	Aug 16	1997	samplerq.i
-rw-r--r--	1	cscherer	sunuser	176	Aug 16	1997	samplerr.i
-rw-r--r--	1	cscherer	sunuser	336	Apr 3	1998	samplers.i
-rw-r--r--	1	cscherer	sunuser	70	Aug 16	1997	samlpert.i
-rw-r--r--	1	cscherer	sunuser	69	Aug 16	1997	sampleru.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	samlperv.i
-rw-r--r--	1	cscherer	sunuser	60	Aug 16	1997	samplerw.i
-rw-r--r--	1	cscherer	sunuser	316	Jan 14	17:30	samplerx.i
-rw-r--r--	1	cscherer	sunuser	299	Apr 30	2001	samlpery.i
-rw-r--r--	1	cscherer	sunuser	60	Aug 16	1997	samplerz.i
-rw-r--r--	1	cscherer	sunuser	3867	Feb 24	17:18	samlpar.abb
-rw-r--r--	1	cscherer	sunuser	29767	Feb 24	17:18	samlpar.hdr
-rw-r--r--	1	cscherer	sunuser	6376	Feb 24	17:19	samlpar.res
-rw-r--r--	1	cscherer	sunuser	22846	Feb 24	16:29	scr419_slt4.out
-rw-r--r--	1	cscherer	sunuser	4823	Feb 24	17:19	scr419_slt4sa5.out
-rw-r--r--	1	cscherer	sunuser	322	Nov 17	18:24	seisadj.i
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb 24	17:18	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb 24	17:18	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	74226	Dec 17	17:52	seismo2.f
-rwxrwxrwx	1	cscherer	sunuser	30	Sep 12	16:53	show_env
drwxr-xr-x	4	cscherer	sunuser	512	Feb 24	11:18	slt1
-rw-r--r--	1	cscherer	sunuser	1608404	Feb 22	16:20	slt1_major1.dif
-rw-r--r--	1	cscherer	sunuser	1608404	Feb 23	16:45	slt1_major2.dif
-rw-r--r--	1	cscherer	sunuser	1307768	Feb 23	17:35	slt1_major3.dif
-rwxr--r--	1	cscherer	sunuser	2091520	Feb 23	17:44	slt1_major3.doc

-rw-r--r--	1	cscherer	sunuser	34919	Feb	22	16:20	slt1_minor1.dif
-rw-r--r--	1	cscherer	sunuser	35061	Feb	23	16:45	slt1_minor2.dif
-rw-r--r--	1	cscherer	sunuser	22117	Feb	23	17:35	slt1_minor3.dif
-rwxr--r--	1	cscherer	sunuser	58368	Feb	23	17:45	slt1_minor3.doc
drwxr-xr-x	2	cscherer	sunuser	512	Feb	23	19:10	slt2
drwxr-xr-x	6	cscherer	sunuser	512	Feb	24	15:37	slt3
-rw-r--r--	1	cscherer	sunuser	22846	Feb	24	12:16	slt3c2.out
-rwxr-xr-x	1	cscherer	sunuser	943788	Feb	24	17:18	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	243536	Feb	24	17:18	snllhs.e
-rw-r--r--	1	cscherer	sunuser	226474	Feb	24	17:18	sotnef.dat
-rwxr--r--	1	cscherer	sunuser	173056	Feb	23	18:16	sotnef_dat.doc
-rw-r--r--	1	cscherer	sunuser	30919	Feb	24	17:19	sp.tpa
-rw-r--r--	1	cscherer	sunuser	144	Sep	3	1997	stop.i
-rw-r--r--	1	cscherer	sunuser	4506	Feb	24	17:18	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	38273	Sep	3	10:13	subarea.f
-rw-r--r--	1	cscherer	sunuser	255	Feb	4	2000	subareaa.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	subareab.i
-rw-r--r--	1	cscherer	sunuser	82	Aug	16	1997	subareac.i
-rw-r--r--	1	cscherer	sunuser	81	Aug	16	1997	subaread.i
-rw-r--r--	1	cscherer	sunuser	77	Aug	16	1997	subareae.i
-rw-r--r--	1	cscherer	sunuser	60	Feb	3	2000	subareaf.i
-rw-r--r--	1	cscherer	sunuser	64	Feb	2	2000	subareag.i
-rw-r--r--	1	cscherer	sunuser	115415	Feb	10	11:35	szft.f
-rw-r--r--	1	cscherer	sunuser	264	Nov	17	18:23	szft.i
-rw-r--r--	1	cscherer	sunuser	13122	Feb	24	17:19	totdos_c.res
-rw-r--r--	1	cscherer	sunuser	13122	Feb	24	17:19	totdose.res
-rwxr--r--	1	cscherer	sunuser	19456	Feb	23	17:59	totdose_res.doc
-rwxr-xr-x	1	cscherer	sunuser	2522088	Feb	23	16:31	tpa.e
-rw-r--r--	1	cscherer	sunuser	90454	Feb	24	17:12	tpa.inp
drwxr-xr-x	5	cscherer	sunuser	7680	Feb	26	13:30	tpa50betaQ
-r--r--r--	1	cscherer	sunuser	9325	Mar	4	2002	tpa_out
-rwxr-xr-x	1	cscherer	sunuser	2522088	Feb	23	16:31	tpa_comp42R.e
-rw-r--r--	1	cscherer	sunuser	90454	Feb	16	19:42	tpa_origR.inp
-rw-r--r--	1	cscherer	sunuser	4848	Feb	24	15:13	tpa_sa2slt3d.out
-rw-r--r--	1	cscherer	sunuser	4823	Feb	24	15:39	tpa_sa3slt3b.out
-rw-r--r--	1	cscherer	sunuser	90454	Feb	24	15:38	tpa_slt3b.inp
-rw-r--r--	1	cscherer	sunuser	90454	Feb	24	15:11	tpa_slt3d.inp
-rw-r--r--	1	cscherer	sunuser	90454	Feb	24	16:24	tpa_slt4.inp
-rw-r--r--	1	cscherer	sunuser	90454	Feb	24	17:12	tpa_slt4_sa5.inp
-rw-r--r--	1	cscherer	sunuser	90454	Feb	24	18:15	tpa_slt5.inp
-rw-r--r--	1	cscherer	sunuser	91356	Feb	24	17:18	tpameans.out
-rw-r--r--	1	cscherer	sunuser	101223	Feb	24	17:18	tpanames.dbs
-rw-r--r--	1	cscherer	sunuser	181127	Feb	24	17:18	trelease.out
-rw-r--r--	1	cscherer	sunuser	314	Aug	16	1997	uz_climi.i
-rw-r--r--	1	cscherer	sunuser	1219	Sep	6	20:05	uz_climr.i
-rw-r--r--	1	cscherer	sunuser	341	Aug	16	1997	uz_climz.i
-rw-r--r--	1	cscherer	sunuser	1323	Sep	26	14:28	uz_flowi.i
-rw-r--r--	1	cscherer	sunuser	1170	Sep	26	14:29	uz_flowr.i
-rw-r--r--	1	cscherer	sunuser	176	Aug	16	1997	uz_flowz.i
-rw-r--r--	1	cscherer	sunuser	3225	Sep	26	14:30	uz_parms.i
-rw-r--r--	1	cscherer	sunuser	68541	Dec	30	19:33	uzflow.f
-rw-r--r--	1	cscherer	sunuser	127287	Feb	16	19:42	uzft.f
-rw-r--r--	1	cscherer	sunuser	755	Nov	17	18:23	uzszft.i
-rw-r--r--	1	cscherer	sunuser	14215	Feb	15	2002	volcano.f
-rw-r--r--	1	cscherer	sunuser	14132	Feb	24	17:18	weldfail.out
-rw-r--r--	1	cscherer	sunuser	8805	Feb	24	17:18	wpflow.dat
-rw-r--r--	1	cscherer	sunuser	17410	Feb	24	17:18	wpflow.def

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-rw-r--r-- 1 cscherer sunuser      818 Feb 24 17:19 wpsfail.res
-rw-r--r-- 1 cscherer sunuser    11721 Feb 15  2002 zportunx.f
```

## scr419/ccdf:

total 35

```
drwxr-xr-x  2 cscherer sunuser      512 Feb 16 20:03 .
drwxr-xr-x 12 cscherer sunuser     8192 Feb 26 13:32 ..
-rw-r--r--  1 cscherer sunuser      267 Mar 14  2000 Makefile
-rw-r--r--  1 cscherer sunuser    23390 Jul 22  1999 tccdf.f
-rw-r--r--  1 cscherer sunuser       66 Aug  1  1997 tccdf.i
-rw-r--r--  1 cscherer sunuser      640 Jan 29  2001 tccdf.inp
```

## scr419/codes:

total 2961

```
drwxr-xr-x  4 cscherer sunuser     1024 Feb 26 13:30 .
drwxr-xr-x 12 cscherer sunuser     8192 Feb 26 13:32 ..
-rw-r--r--  1 cscherer sunuser     1403 Nov 27 14:19 Makefile
-rw-rw-rw-  1 cscherer sunuser     1812 Feb 22 15:52 Makefile4.2
-rw-rw-rw-  1 cscherer sunuser     1698 Nov 27 16:22 Makefile_orig4.2
-rw-r--r--  1 cscherer sunuser      499 Jun  2  1997 README
-rw-r--r--  1 cscherer sunuser     2320 May 28  1998 SIZES.INC
-rw-r--r--  1 cscherer sunuser      164 Feb 17  1998 SIZES2.INC
-rwxr-xr-x  1 cscherer sunuser    165124 Feb 23 16:32 ashplume.e
-rw-r--r--  1 cscherer sunuser     95611 Sep 26  2000 ashplume.f
-rw-r--r--  1 cscherer sunuser    25361 Jul 17  2002 corrosn.f
-rwxr-xr-x  1 cscherer sunuser    43148 Feb 23 16:33 dsfailt.e
-rw-r--r--  1 cscherer sunuser    23303 Dec 17 17:21 dsfailt.f
-rwxr-xr-x  1 cscherer sunuser    46564 Feb 23 16:33 ebsfilt.e
-rw-r--r--  1 cscherer sunuser    17737 Feb 16 19:36 ebsfilt.f
-rwxr-xr-x  1 cscherer sunuser    191112 Feb 23 16:34 env.e
-rwxr-xr-x  1 cscherer sunuser    282724 Feb 23 16:34 envin.e
-rwxr-xr-x  1 cscherer sunuser    136636 Feb 23 16:32 fault.e
-rw-r--r--  1 cscherer sunuser    101968 Feb 14 19:56 fault.f
-r--r--r--  1 cscherer sunuser      450 Nov 17 18:03 failtadj.i
drwxr-xr-x  2 cscherer sunuser     3072 Feb 26 13:30 gentpa
-rwxr-xr-x  1 cscherer sunuser     4633 Nov 17 18:01 integrt.f
drwxr-xr-x  3 cscherer sunuser      512 Feb 16 20:03 itym
-r--r--r--  1 cscherer sunuser      868 Dec 17 16:59 lhs1.i
-r--r--r--  1 cscherer sunuser    1308 Mar 14  2002 lhs2.i
-r--r--r--  1 cscherer sunuser      438 Mar 14  2002 lhs3.i
-r--r--r--  1 cscherer sunuser      437 Mar 14  2002 lhs4.i
-r--r--r--  1 cscherer sunuser      374 Mar 14  2002 lhs5.i
-r--r--r--  1 cscherer sunuser      450 Mar 14  2002 lhs6.i
-r--r--r--  1 cscherer sunuser      464 Mar 14  2002 lhs7.i
-r--r--r--  1 cscherer sunuser      431 Mar 14  2002 lhs8.i
-rwxr-xr-x  1 cscherer sunuser     5229 May 29  2002 linintrp.f
-r--r--r--  1 cscherer sunuser      331 Nov 17 18:03 mechadj.i
-rwxr-xr-x  1 cscherer sunuser    82068 Feb 23 16:31 mechfail.e
-rw-r--r--  1 cscherer sunuser    126625 Dec 17 17:57 mechfail.f
-rwxr-xr-x  1 cscherer sunuser    408036 Feb 23 16:32 nefmks.e
-rw-r--r--  1 cscherer sunuser    308005 Sep 26  2000 nefmks.f
-rwxr-xr-x  1 cscherer sunuser   120000 Feb 23 16:32 releaset.e
-rw-r--r--  1 cscherer sunuser   168121 Jan  7 11:17 releaset.f
-rwxr-xr-x  1 cscherer sunuser   243536 Feb 23 16:33 snllhs.e
-rw-r--r--  1 cscherer sunuser   224558 Sep  6 10:21 snllhs.f
-rwxr-xr-x  1 cscherer sunuser      4303 May 29  2002 srchpos.f
-rwxr-xr-x  1 cscherer sunuser    19890 Nov 17 18:01 weldfail.f
```

scr419/codes/gentpa:

total 413

drwxr-xr-x	2	cscherer	sunuser	3072	Feb 26	13:30	.
drwxr-xr-x	4	cscherer	sunuser	1024	Feb 26	13:30	..
-rw-r--r--	1	cscherer	sunuser	543	Feb 11	2000	AFPPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1044	Feb 11	2000	AIRPAR.CMN
-rw-r--r--	1	cscherer	sunuser	872	Feb 11	2000	ANMPAR.CMN
-rw-r--r--	1	cscherer	sunuser	615	Feb 11	2000	AQUPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1089	Feb 11	2000	CONC.CMN
-rw-r--r--	1	cscherer	sunuser	461	Feb 11	2000	DAYPC.CMN
-rw-r--r--	1	cscherer	sunuser	400	Feb 11	2000	DECAY.CMN
-rw-r--r--	1	cscherer	sunuser	571	Feb 11	2000	DFPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1359	Feb 11	2000	DOSALL.CMN
-rw-r--r--	1	cscherer	sunuser	574	Feb 11	2000	ENVPAR.CMN
-rw-r--r--	1	cscherer	sunuser	310	Feb 11	2000	EXPALL.CMN
-rw-r--r--	1	cscherer	sunuser	637	Feb 11	2000	EXTPAR.CMN
-rw-r--r--	1	cscherer	sunuser	327	Feb 11	2000	FILES.CMN
-rw-r--r--	1	cscherer	sunuser	814	Feb 11	2000	FODPAR.CMN
-rw-r--r--	1	cscherer	sunuser	438	Feb 11	2000	INVIN.CMN
-rw-r--r--	1	cscherer	sunuser	569	Feb 11	2000	LABELS.CMN
-rw-r--r--	1	cscherer	sunuser	1161	Feb 11	2000	MTBPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1688	Feb 28	2000	Make.bat
-rw-r--r--	1	cscherer	sunuser	1849	Feb 24	2000	Makefile
-rw-rw-rw-	1	cscherer	sunuser	1938	Nov 27	14:12	Makefile4.2
-rw-r--r--	1	cscherer	sunuser	1746	Feb 11	2000	Mkenv.fig
-rw-r--r--	1	cscherer	sunuser	1548	Feb 11	2000	Mkenvin.fig
-rw-r--r--	1	cscherer	sunuser	2762	Feb 11	2000	OPT.CMN
-rw-r--r--	1	cscherer	sunuser	444	Feb 11	2000	ORGMAS.CMN
-rw-r--r--	1	cscherer	sunuser	728	Feb 11	2000	ORGPAP.CMN
-rw-r--r--	1	cscherer	sunuser	589	Feb 11	2000	RAD.CMN
-rw-r--r--	1	cscherer	sunuser	788	Feb 11	2000	RADIN.CMN
-rw-r--r--	1	cscherer	sunuser	722	Feb 11	2000	RMD.CMN
-rw-r--r--	1	cscherer	sunuser	489	Feb 11	2000	RMD2.CMN
-rw-r--r--	1	cscherer	sunuser	891	Feb 11	2000	SOLPAR.CMN
-rw-r--r--	1	cscherer	sunuser	489	Feb 11	2000	SWPAR.CMN
-rw-r--r--	1	cscherer	sunuser	586	Feb 11	2000	TIMES.CMN
-rw-r--r--	1	cscherer	sunuser	316	Feb 11	2000	TITL.CMN
-rw-r--r--	1	cscherer	sunuser	12777	Feb 11	2000	accmod.f
-rw-r--r--	1	cscherer	sunuser	10094	Feb 11	2000	acutel.f
-rw-r--r--	1	cscherer	sunuser	9579	Feb 11	2000	acutea.f
-rw-r--r--	1	cscherer	sunuser	7118	Feb 11	2000	acutec.f
-rw-r--r--	1	cscherer	sunuser	8669	Feb 11	2000	aircal.f
-rw-r--r--	1	cscherer	sunuser	8383	Feb 11	2000	anmcal.f
-rw-r--r--	1	cscherer	sunuser	2043	Feb 11	2000	aqucal.f
-rw-r--r--	1	cscherer	sunuser	1217	Feb 11	2000	biocal.f
-rw-r--r--	1	cscherer	sunuser	4174	Feb 11	2000	blockd.f
-rw-r--r--	1	cscherer	sunuser	1405	Feb 11	2000	bsort.f
-rw-r--r--	1	cscherer	sunuser	13008	Feb 11	2000	candh.f
-rw-r--r--	1	cscherer	sunuser	6653	Feb 11	2000	chain.f
-rw-r--r--	1	cscherer	sunuser	23921	Feb 11	2000	check.f
-rw-r--r--	1	cscherer	sunuser	10189	Feb 11	2000	cronmod.f
-rw-r--r--	1	cscherer	sunuser	5153	Feb 11	2000	crpcal.f
-rw-r--r--	1	cscherer	sunuser	3842	Feb 11	2000	dkharv.f
-rw-r--r--	1	cscherer	sunuser	5426	Feb 11	2000	dose.f
-rw-r--r--	1	cscherer	sunuser	2398	Feb 11	2000	drfbiv.f
-rw-r--r--	1	cscherer	sunuser	6728	Feb 11	2000	drfsec.f

-rw-r--r--	1	cscherer	sunuser	1877	Feb	11	2000	drkcal.f
-rw-r--r--	1	cscherer	sunuser	1325	Feb	11	2000	dumred.f
-rw-r--r--	1	cscherer	sunuser	3958	Feb	11	2000	edranm.f
-rw-r--r--	1	cscherer	sunuser	3567	Feb	11	2000	edrcrp.f
-rw-r--r--	1	cscherer	sunuser	2525	Feb	11	2000	edrnnon.f
-rw-r--r--	1	cscherer	sunuser	2853	Feb	11	2000	edrres.f
-rw-r--r--	1	cscherer	sunuser	10581	Feb	11	2000	env.f
-rw-r--r--	1	cscherer	sunuser	4885	Feb	11	2000	envin.f
-rw-r--r--	1	cscherer	sunuser	4561	Feb	11	2000	envlib.f
-rw-r--r--	1	cscherer	sunuser	1912	Feb	11	2000	exposr.f
-rw-r--r--	1	cscherer	sunuser	6774	Feb	11	2000	extcal.f
-rw-r--r--	1	cscherer	sunuser	1489	Feb	11	2000	filerr.f
-rw-r--r--	1	cscherer	sunuser	1986	Feb	11	2000	fntdrf.f
-rw-r--r--	1	cscherer	sunuser	3003	Feb	11	2000	headng.f
-rw-r--r--	1	cscherer	sunuser	2203	Feb	11	2000	idnuc.f
-rw-r--r--	1	cscherer	sunuser	2842	Feb	11	2000	inhcal.f
-rw-r--r--	1	cscherer	sunuser	2392	Feb	11	2000	initnv.f
-rw-r--r--	1	cscherer	sunuser	1841	Feb	11	2000	intpol.f
-rw-r--r--	1	cscherer	sunuser	1348	Feb	11	2000	invmol.f
-rw-r--r--	1	cscherer	sunuser	677	Feb	11	2000	makda2.f
-rw-r--r--	1	cscherer	sunuser	5870	Feb	11	2000	opnfil.f
-rw-r--r--	1	cscherer	sunuser	4217	Feb	11	2000	order.f
-rw-r--r--	1	cscherer	sunuser	2325	Feb	11	2000	packag.f
-rw-r--r--	1	cscherer	sunuser	3366	Feb	11	2000	plmriz.f
-rw-r--r--	1	cscherer	sunuser	1861	Feb	11	2000	prior.f
-rw-r--r--	1	cscherer	sunuser	4080	Feb	11	2000	prob.f
-rw-r--r--	1	cscherer	sunuser	2079	Feb	11	2000	profile.f
-rw-r--r--	1	cscherer	sunuser	11351	Feb	11	2000	readin.f
-rw-r--r--	1	cscherer	sunuser	6174	Feb	11	2000	redcas.f
-rw-r--r--	1	cscherer	sunuser	3867	Feb	11	2000	redcha.f
-rw-r--r--	1	cscherer	sunuser	8483	Feb	11	2000	redflt.f
-rw-r--r--	1	cscherer	sunuser	1694	Feb	11	2000	redist.f
-rw-r--r--	1	cscherer	sunuser	8548	Feb	11	2000	ritenv.f
-rw-r--r--	1	cscherer	sunuser	4371	Feb	11	2000	ritexp.f
-rw-r--r--	1	cscherer	sunuser	2584	Feb	11	2000	ritmed.f
-rw-r--r--	1	cscherer	sunuser	27222	Feb	11	2000	ritqa.f
-rw-r--r--	1	cscherer	sunuser	4346	Feb	11	2000	rlibin.f
-rw-r--r--	1	cscherer	sunuser	4399	Feb	11	2000	rwake.f
-rw-r--r--	1	cscherer	sunuser	2396	Feb	11	2000	sigma.f
-rw-r--r--	1	cscherer	sunuser	8387	Feb	11	2000	swcal.f
-rw-r--r--	1	cscherer	sunuser	1894	Feb	11	2000	trnspt.f
-rw-r--r--	1	cscherer	sunuser	1771	Feb	11	2000	ustar.f
-rw-r--r--	1	cscherer	sunuser	9276	Feb	11	2000	xqcal.f
-rw-r--r--	1	cscherer	sunuser	5277	Feb	11	2000	xqin.f

## scr419/codes/itym:

total 4

drwxr-xr-x	3	cscherer	sunuser	512	Feb	16	20:03	.
drwxr-xr-x	4	cscherer	sunuser	1024	Feb	26	13:30	..
-rw-r--r--	1	cscherer	sunuser	596	Oct	1	10:06	makefile
drwxr-xr-x	2	cscherer	sunuser	512	Feb	16	20:03	src

## scr419/codes/itym/src:

total 328

drwxr-xr-x	2	cscherer	sunuser	512	Feb	16	20:03	.
drwxr-xr-x	3	cscherer	sunuser	512	Feb	16	20:03	..
-rw-r--r--	1	cscherer	sunuser	29776	Mar	22	2000	array.f

```

-rw-r--r-- 1 cscherer sunuser 15856 Mar 22 2000 check_valid.f
-rw-r--r-- 1 cscherer sunuser 60931 Dec 30 19:29 estimator.f
-rw-r--r-- 1 cscherer sunuser 5384 Dec 30 19:31 init_itym.f
-rw-r--r-- 1 cscherer sunuser 9420 Sep 25 18:55 itym.f
-rw-r--r-- 1 cscherer sunuser 11640 Dec 30 19:31 itym.i
-rw-r--r-- 1 cscherer sunuser 26752 Sep 26 14:19 itymutils.f
-rw-r--r-- 1 cscherer sunuser 261 Mar 22 2000 path.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 preuzf.i
-rw-r--r-- 1 cscherer sunuser 42671 Mar 22 2000 ran.f
-rw-r--r-- 1 cscherer sunuser 38406 Sep 26 14:20 strtokfunc.f
-rw-r--r-- 1 cscherer sunuser 60346 Sep 26 14:22 uncertain.f
-rw-r--r-- 1 cscherer sunuser 12265 Mar 22 2000 uncertain.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 unctab.i
-rw-r--r-- 1 cscherer sunuser 10904 Mar 22 2000 zportunx.f

```

scr419/data:

total 7086

```

drwxr-xr-x 2 cscherer sunuser 1536 Feb 16 20:02 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 13:32 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 11 2000 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 121789 Mar 22 2000 bunitdem.dat
-rw-r--r-- 1 cscherer sunuser 1025 Mar 29 2000 burnup.dat
-rwxr-xr-x 1 cscherer sunuser 468925 Sep 25 19:00 careadem.dat
-rwxr-xr-x 1 cscherer sunuser 515693 Sep 25 19:01 cdepdem.dat
-rw-r--r-- 1 cscherer sunuser 850000 Aug 15 1997 climato1.dat
-rw-r--r-- 1 cscherer sunuser 2200 Feb 1 1999 climato2.dat
-rw-r--r-- 1 cscherer sunuser 4791 Sep 25 17:29 coefkdeg.dat
-rw-r--r-- 1 cscherer sunuser 2200 Dec 19 13:50 dilution.dat
-rw-r--r-- 1 cscherer sunuser 519 Oct 19 2000 drythick.dat
-rw-r--r-- 1 cscherer sunuser 791 Jul 23 2002 dsfailt.def
-rw-r--r-- 1 cscherer sunuser 5973 Feb 14 19:57 ebsfail.def
-rw-r--r-- 1 cscherer sunuser 790 May 28 1998 ebsfilt.def
-rw-r--r-- 1 cscherer sunuser 5459 Jan 7 11:17 ebsrel.def
-rw-r--r-- 1 cscherer sunuser 298679 Mar 22 2000 elevdem.dat
-rw-r--r-- 1 cscherer sunuser 9381 May 29 2002 fluoride.dat
-rw-r--r-- 1 cscherer sunuser 6513 Feb 11 2000 gbioacl.dat
-rw-r--r-- 1 cscherer sunuser 3383 Sep 4 19:18 gdefaults.def
-rw-r--r-- 1 cscherer sunuser 3383 Feb 11 2000 gdefault.def
-rw-r--r-- 1 cscherer sunuser 64 Feb 11 2000 gdosinc2.dat
-rw-r--r-- 1 cscherer sunuser 7011 Feb 11 2000 gftrans.def
-rw-r--r-- 1 cscherer sunuser 7011 Sep 4 19:18 gftranss.def
-rw-r--r-- 1 cscherer sunuser 15214 Feb 11 2000 ggamen.dat
-rw-r--r-- 1 cscherer sunuser 13855 Feb 11 2000 ggenii.def
-rw-r--r-- 1 cscherer sunuser 13173 Sep 4 19:18 ggeniis.def
-rw-r--r-- 1 cscherer sunuser 5351 Feb 11 2000 ggrdf.dat
-rw-r--r-- 1 cscherer sunuser 9897 Mar 29 2000 gnewdf.dat
-rw-r--r-- 1 cscherer sunuser 13200 Mar 20 2000 grmdlib.dat
-rw-r--r-- 1 cscherer sunuser 3048 Sep 15 2000 gs_cb_ad.dat
-rw-r--r-- 1 cscherer sunuser 2487 Jun 4 1998 gs_cb_ci.dat
-rw-r--r-- 1 cscherer sunuser 3045 Sep 15 2000 gs_pb_ad.dat
-rw-r--r-- 1 cscherer sunuser 2487 Jun 4 1998 gs_pb_ci.dat
-rw-r--r-- 1 cscherer sunuser 8153 Dec 20 09:54 ia.dat
-rw-r--r-- 1 cscherer sunuser 20698 Dec 30 19:26 itym.dat
-rw-r--r-- 1 cscherer sunuser 943774 Mar 29 2000 maidtbl.dat
-rw-r--r-- 1 cscherer sunuser 10978 Mar 22 2000 maswtbl.dat
-rwxr-xr-x 1 cscherer sunuser 943775 Dec 30 19:18 maydtbl.dat
-rw-r--r-- 1 cscherer sunuser 9729 Dec 17 17:31 mechfail.def

```

```

-rw-r--r-- 1 cscherer sunuser 1251 Feb 6 14:39 multifaf.dat
-rw-r--r-- 1 cscherer sunuser 1252 Feb 6 14:39 multifbe.dat
-rw-r--r-- 1 cscherer sunuser 116965 Jul 17 2002 multiflo.dat
-rw-r--r-- 1 cscherer sunuser 6890 Jan 15 11:09 nuclides.dat
-rw-r--r-- 1 cscherer sunuser 7111 Sep 24 2000 organdf.dat
-rw-r--r-- 1 cscherer sunuser 548 Sep 21 2000 repdes.dat
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs2.dis
-rwxr-xr-x 1 cscherer sunuser 943788 Dec 30 19:18 smaydtbl.dat
-rw-r--r-- 1 cscherer sunuser 489858 Mar 22 2000 soildem.dat
-rw-r--r-- 1 cscherer sunuser 4506 Feb 7 2000 strmtube.dat
-rw-r--r-- 1 cscherer sunuser 119673 Mar 22 2000 sunitdem.dat
-rw-r--r-- 1 cscherer sunuser 162404 May 8 2000 tefkti.inp
-rw-r--r-- 1 cscherer sunuser 101223 Feb 16 19:37 tpanames.db5
-rw-r--r-- 1 cscherer sunuser 471041 Mar 22 2000 windem.dat
-rw-r--r-- 1 cscherer sunuser 17410 Feb 2 2000 wpflow.def

```

## scr419/diff\_files:

total 20

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 22 16:05 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 13:32 ..
-rw-r--r-- 1 cscherer sunuser 3332 Feb 19 14:48 ebsfiltQR.dif
-rw-r--r-- 1 cscherer sunuser 3183 Feb 19 14:48 ebsrelQR.dif
-rw-r--r-- 1 cscherer sunuser 759 Feb 19 14:48 tpa_inpQR.dif
-rw-r--r-- 1 cscherer sunuser 1922 Feb 19 14:49 uzftQR.dif

```

## scr419/docs:

total 106

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 26 13:38 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 13:32 ..
-rwxr--r-- 1 cscherer sunuser 15587 Feb 26 08:53 scr419.wpd
-rwxr--r-- 1 cscherer sunuser 82436 Feb 26 13:41 tp_scr419.wpd

```

## scr419/flt1:

total 1301

```

drwxr-xr-x 3 cscherer sunuser 512 Feb 26 13:36 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 13:32 ..
-rwxr-xr-x 1 cscherer sunuser 46564 Feb 24 17:18 ebsfilt.e
-rw-r--r-- 1 cscherer sunuser 2554 Feb 26 10:01 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 239 Feb 26 10:01 ebsfiltflt1.out
-rw-r--r-- 1 cscherer sunuser 304 Feb 26 09:58 ebsfilt_orig.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 24 17:18 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 439749 Feb 26 10:01 ebsnef2flt1.dat
-rw-r--r-- 1 cscherer sunuser 167681 Feb 26 09:58 ebsnef2_orig.dat
-rw-r--r-- 1 cscherer sunuser 445601 Feb 26 10:01 echofilt.dat
drwxr-xr-x 2 cscherer sunuser 512 Feb 26 10:08 filter0test

```

## scr419/flt1/filter0test:

total 1617

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 26 10:08 .
drwxr-xr-x 3 cscherer sunuser 512 Feb 26 13:36 ..
-rw-r--r-- 1 cscherer sunuser 2554 Feb 24 18:01 ebsfilt_modslt4sa5.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 24 18:01 ebsfilt_modslt4sa5.out
-rw-r--r-- 1 cscherer sunuser 2554 Feb 24 13:21 ebsfilt_sl4sa5.inp
-rw-r--r-- 1 cscherer sunuser 167681 Feb 24 18:01 ebsnef2_modslt4sa5.dat
-rw-r--r-- 1 cscherer sunuser 439749 Feb 24 17:54 ebsnef2_sl4sa5.dat
-rw-r--r-- 1 cscherer sunuser 167701 Feb 24 17:18 ebsnef_sl4sa5.dat

```



```
-rw-r--r-- 1 cscherer sunuser 364409 Feb 24 18:01 echofilt_modslt4sa5.dat
-rw-r--r-- 1 cscherer sunuser 445601 Feb 24 17:54 echofilt_sl4sa5.dat
```

## scr419/slt1:

total 1408

```
drwxr-xr-x 4 cscherer sunuser 512 Feb 24 11:18 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 13:32 ..
-rwxrwxrwx 1 cscherer sunuser 9121 Feb 22 16:11 comp_files_sl41
-rwxrwxrwx 1 cscherer sunuser 9292 Feb 22 16:18 comp_files_sl41_major
-rwxrwxrwx 1 cscherer sunuser 9145 Feb 22 16:20 comp_files_sl41_minor
-rw-r--r-- 1 cscherer sunuser 22846 Feb 23 17:34 scr419_sl41a.out
-rw-r--r-- 1 cscherer sunuser 22846 Feb 23 17:33 scr419_sl41b.out
-rw-r--r-- 1 cscherer sunuser 1307768 Feb 23 17:35 sl41_major3.dif
-rw-r--r-- 1 cscherer sunuser 22117 Feb 23 17:35 sl41_minor3.dif
drwxr-xr-x 2 cscherer sunuser 7168 Feb 23 18:23 testa_Q
drwxr-xr-x 2 cscherer sunuser 7680 Feb 23 18:25 testb_R
```

## scr419/slt1/testa\_Q:

total 6648

```
drwxr-xr-x 2 cscherer sunuser 7168 Feb 23 18:23 .
drwxr-xr-x 4 cscherer sunuser 512 Feb 24 11:18 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 23 17:34 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 23 17:34 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2746 Feb 23 17:34 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2746 Feb 23 17:34 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 914 Feb 23 17:34 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 23 17:33 corrode.out
-rw-r--r-- 1 cscherer sunuser 77507 Feb 23 17:34 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2252 Feb 23 17:34 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2252 Feb 23 17:34 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 23 17:33 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 23 17:33 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 23 17:33 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1915 Feb 23 17:34 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 23 17:33 dsfail.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 23 17:30 dsfail.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 23 17:33 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 23 17:33 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 3030 Feb 23 17:33 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 222 Feb 23 17:33 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 124252 Feb 23 17:33 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 1883 Feb 23 17:33 ebaspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 23 17:33 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 23 17:33 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39354 Feb 23 17:34 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1707 Feb 23 17:34 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 23 17:33 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 23 17:33 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 23 17:34 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 23 17:34 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 23 17:34 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 23 17:34 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 23 17:34 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 23 17:34 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 23 17:34 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 23 17:34 gmedia.out
-rw-r--r-- 1 cscherer sunuser 572 Feb 23 17:34 gscddf.res
```

```

-rw-r--r-- 1 cscherer sunuser 572 Feb 23 17:34 gsccdf_c.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 23 17:34 gwccdf.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 23 17:34 gwccdf_c.res
-rw-r--r-- 1 cscherer sunuser 9 Feb 23 17:34 gwork.buf
-rw-r--r-- 1 cscherer sunuser 1738 Feb 23 17:34 gwpkdos.res
-rw-r--r-- 1 cscherer sunuser 1738 Feb 23 17:34 gwpkds_c.res
-rw-r--r-- 1 cscherer sunuser 2170 Feb 23 17:34 gwttuksz.res
-rw-r--r-- 1 cscherer sunuser 2330 Feb 23 17:34 infilter.res
-rw-r--r-- 1 cscherer sunuser 1102 Feb 23 17:33 invl000.out
-rw-r--r-- 1 cscherer sunuser 0 Feb 22 16:07 lhs.csv
-rw-r--r-- 1 cscherer sunuser 47014 Feb 23 17:29 lhs.inp
-rw-r--r-- 1 cscherer sunuser 5730 Feb 23 17:29 lhs.out
-rw-r--r-- 1 cscherer sunuser 79104 Feb 23 17:29 lhse.out
-rw-r--r-- 1 cscherer sunuser 9575 Feb 23 17:33 mechfail.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 23 17:33 mechfail.out
-rw-r--r-- 1 cscherer sunuser 61241 Feb 23 17:34 mv.tpa
-rw-r--r-- 1 cscherer sunuser 2330 Feb 23 17:34 nearfld.res
-rw-r--r-- 1 cscherer sunuser 28139 Feb 23 17:34 nefii.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 23 17:34 nefii.inp
-rw-r--r-- 1 cscherer sunuser 164022 Feb 23 17:34 nefii.out
-rw-r--r-- 1 cscherer sunuser 603 Feb 23 17:34 nefii.rel
-rw-r--r-- 1 cscherer sunuser 28139 Feb 23 17:34 nefiisz.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 23 17:34 nefiisz.inp
-rw-r--r-- 1 cscherer sunuser 164022 Feb 23 17:34 nefiisz.out
-rw-r--r-- 1 cscherer sunuser 149942 Feb 23 17:34 nefiisz.src
-rw-r--r-- 1 cscherer sunuser 450 Feb 23 17:34 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser 815410 Feb 23 17:34 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser 10100 Feb 23 17:34 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser 858614 Feb 23 17:34 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser 151120 Feb 23 17:34 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser 171 Feb 23 17:34 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser 190 Feb 23 17:34 nefmks.log
-rw-r--r-- 1 cscherer sunuser 2506 Feb 23 17:34 npkdoset.res
-rw-r--r-- 1 cscherer sunuser 2506 Feb 23 17:34 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser 698 Feb 23 17:34 pkmdose.out
-rw-r--r-- 1 cscherer sunuser 8244 Feb 23 17:34 pkreltm.res
-rw-r--r-- 1 cscherer sunuser 8244 Feb 23 17:34 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser 682 Feb 23 17:33 rel_flow.out
-rw-r--r-- 1 cscherer sunuser 572 Feb 23 17:34 relccdf.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 23 17:33 relcum.out
-rw-r--r-- 1 cscherer sunuser 412 Feb 23 17:33 releaset.out
-rw-r--r-- 1 cscherer sunuser 665 Feb 23 17:33 relfrac.out
-rw-r--r-- 1 cscherer sunuser 722 Feb 23 17:34 relgwgs.res
-rw-r--r-- 1 cscherer sunuser 47561 Feb 23 17:34 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 23 17:34 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 23 17:34 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 23 17:34 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 23 17:34 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 23 17:34 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 23 17:34 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 23 17:34 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5137 Feb 23 17:34 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16137 Feb 23 17:34 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5183 Feb 23 17:34 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 572 Feb 23 17:34 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 722 Feb 23 17:34 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3867 Feb 23 17:29 samplpar.abb

```

```

-rw-r--r-- 1 cscherer sunuser 29767 Feb 23 17:29 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6376 Feb 23 17:34 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22846 Feb 23 17:34 scr419_sl1a.out
-rw-r--r-- 1 cscherer sunuser 30919 Feb 23 17:34 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13122 Feb 23 17:34 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13122 Feb 23 17:34 totdose.res
-rw-r--r-- 1 cscherer sunuser 89815 Feb 8 15:59 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rwxr-xr-x 1 cscherer sunuser 2520304 Feb 22 16:02 tpa_comp42Q.e
-rw-r--r-- 1 cscherer sunuser 90717 Feb 23 17:29 tpameans.out
-rw-r--r-- 1 cscherer sunuser 180151 Feb 23 17:33 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 23 17:33 weldfail.out
-rw-r--r-- 1 cscherer sunuser 818 Feb 23 17:34 wpsfail.res

```

scr419/sl1/testb\_R:

total 11333

```

drwxr-xr-x 2 cscherer sunuser 7680 Feb 23 18:25 .
drwxr-xr-x 4 cscherer sunuser 512 Feb 24 11:18 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 23 17:33 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 23 17:33 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2746 Feb 23 17:33 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2746 Feb 23 17:33 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 914 Feb 23 17:33 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 23 17:33 corrode.out
-rw-r--r-- 1 cscherer sunuser 78453 Feb 23 17:33 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2252 Feb 23 17:33 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2252 Feb 23 17:33 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 23 17:33 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 23 17:33 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 23 17:33 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1915 Feb 23 17:33 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 23 17:33 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 23 17:29 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 23 17:33 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 23 17:33 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 23 17:33 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 23 17:33 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 124252 Feb 23 17:33 ebsnef.out
-rwxr--r-- 1 cscherer sunuser 163328 Feb 23 18:18 ebsnef2_dat.doc
-rw-r--r-- 1 cscherer sunuser 1883 Feb 23 17:33 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 23 17:33 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 23 17:33 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39354 Feb 23 17:33 epa_ave.out
-rwxr--r-- 1 cscherer sunuser 37376 Feb 23 18:17 epa_ave_out.doc
-rw-r--r-- 1 cscherer sunuser 1707 Feb 23 17:33 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 23 17:33 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 23 17:33 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 23 17:33 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 23 17:33 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 23 17:33 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 23 17:33 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 23 17:33 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 23 17:33 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 23 17:33 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 23 17:33 gmedia.out
-rw-r--r-- 1 cscherer sunuser 572 Feb 23 17:33 gsccdf.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 23 17:33 gsccdf_c.res

```

-rw-r--r--	1	cscherer	sunuser	572	Feb 23	17:33	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 23	17:33	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 23	17:33	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1738	Feb 23	17:33	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1738	Feb 23	17:33	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2170	Feb 23	17:33	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2330	Feb 23	17:33	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 23	17:33	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 22	16:08	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb 23	17:28	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb 23	17:29	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb 23	17:29	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 23	17:33	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 23	17:33	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61241	Feb 23	17:33	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2330	Feb 23	17:33	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28253	Feb 23	17:33	nefi.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 23	17:33	nefi.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 23	17:33	nefi.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 23	17:33	nefi.rel
-rw-r--r--	1	cscherer	sunuser	28253	Feb 23	17:33	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 23	17:33	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 23	17:33	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	174414	Feb 23	17:33	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 23	17:33	nefiisz.vel
-rwxr--r--	1	cscherer	sunuser	161280	Feb 23	18:03	nefiisz_src.doc
-rw-r--r--	1	cscherer	sunuser	815543	Feb 23	17:33	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 23	17:33	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	858614	Feb 23	17:33	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	175592	Feb 23	17:33	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb 23	17:33	nefiuiz.vel
-rwxr--r--	1	cscherer	sunuser	845312	Feb 23	17:52	nefiuiz_dis.doc
-rwxr--r--	1	cscherer	sunuser	832000	Feb 23	17:54	nefiuiz_out.doc
-rwxr--r--	1	cscherer	sunuser	161280	Feb 23	18:01	nefiuiz_src.doc
-rw-r--r--	1	cscherer	sunuser	285	Feb 23	17:33	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2506	Feb 23	17:33	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2506	Feb 23	17:33	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 23	17:33	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8244	Feb 23	17:33	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8244	Feb 23	17:33	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 23	17:33	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	572	Feb 23	17:33	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2253	Feb 23	17:33	relcum.out
-rw-r--r--	1	cscherer	sunuser	412	Feb 23	17:33	releaset.out
-rw-r--r--	1	cscherer	sunuser	665	Feb 23	17:33	relfrac.out
-rw-r--r--	1	cscherer	sunuser	722	Feb 23	17:33	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	47561	Feb 23	17:33	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 23	17:33	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 23	17:33	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 23	17:33	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 23	17:33	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 23	17:33	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 23	17:33	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 23	17:33	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5137	Feb 23	17:33	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16137	Feb 23	17:33	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5183	Feb 23	17:33	rgwsr.tpa

```

-rw-r--r-- 1 cscherer sunuser      572 Feb 23 17:33 rlcddf_c.res
-rw-r--r-- 1 cscherer sunuser      722 Feb 23 17:33 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser     3867 Feb 23 17:28 samplpar.abb
-rw-r--r-- 1 cscherer sunuser    29767 Feb 23 17:28 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser     6376 Feb 23 17:33 samplpar.res
-rw-r--r-- 1 cscherer sunuser    22846 Feb 23 17:33 scr419_slt1b.out
-rwxr--r-- 1 cscherer sunuser   2091520 Feb 23 17:44 slt1_major3.doc
-rwxr--r-- 1 cscherer sunuser    58368 Feb 23 17:45 slt1_minor3.doc
-rwxr--r-- 1 cscherer sunuser   173056 Feb 23 18:16 sotnef_dat.doc
-rw-r--r-- 1 cscherer sunuser    30919 Feb 23 17:33 sp.tpa
-rw-r--r-- 1 cscherer sunuser    13122 Feb 23 17:33 totdos_c.res
-rw-r--r-- 1 cscherer sunuser    13122 Feb 23 17:33 totdose.res
-rwxr--r-- 1 cscherer sunuser    19456 Feb 23 17:59 totdose_res.doc
-rw-r--r-- 1 cscherer sunuser    90454 Feb 16 19:42 tpa.inp
-r--r--r-- 1 cscherer sunuser     9325 Mar  4 2002 tpa_.out
-rwxr-xr-x 1 cscherer sunuser   2522088 Feb 23 16:31 tpa_comp42R.e
-rw-r--r-- 1 cscherer sunuser    91356 Feb 23 17:28 tpameans.out
-rw-r--r-- 1 cscherer sunuser   101223 Feb 23 17:28 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser   180151 Feb 23 17:33 trelease.out
-rw-r--r-- 1 cscherer sunuser    14132 Feb 23 17:33 weldfail.out
-rw-r--r-- 1 cscherer sunuser      818 Feb 23 17:33 wpsfail.res

```

## scr419/slt2:

total 103

```

drwxr-xr-x 2 cscherer sunuser      512 Feb 23 19:10 .
drwxr-xr-x 12 cscherer sunuser     8192 Feb 26 13:32 ..
-rw-r--r-- 1 cscherer sunuser     4852 Feb 23 18:32 scr419_slt2.out
-rw-r--r-- 1 cscherer sunuser    90454 Feb 23 18:29 tpa_slt2.inp

```

## scr419/slt3:

total 578

```

drwxr-xr-x 6 cscherer sunuser      512 Feb 24 15:37 .
drwxr-xr-x 12 cscherer sunuser     8192 Feb 26 13:32 ..
-rw-r--r-- 1 cscherer sunuser    22846 Feb 24 12:29 scr419_slt3a.out
-rw-r--r-- 1 cscherer sunuser    22846 Feb 24 12:43 scr419_slt3b.out
-rw-r--r-- 1 cscherer sunuser    22846 Feb 24 12:59 scr419_slt3c.out
-rw-r--r-- 1 cscherer sunuser    22846 Feb 24 13:21 scr419_slt3d.out
drwxr-xr-x 2 cscherer sunuser     7680 Feb 24 13:34 testa
drwxr-xr-x 2 cscherer sunuser     7680 Feb 24 13:37 testb
drwxr-xr-x 2 cscherer sunuser     7680 Feb 24 13:39 testc
drwxr-xr-x 2 cscherer sunuser     7680 Feb 24 13:41 testd
-rw-r--r-- 1 cscherer sunuser    90454 Feb 24 15:37 tpa.inp
-rw-r--r-- 1 cscherer sunuser      0 Feb 24 15:37 tpa_sa3slt3b.out
-rw-r--r-- 1 cscherer sunuser    90454 Feb 24 12:21 tpa_slt3a.inp
-rw-r--r-- 1 cscherer sunuser    90454 Feb 24 15:52 tpa_slt3b.inp
-rw-r--r-- 1 cscherer sunuser    90454 Feb 24 12:22 tpa_slt3c.inp
-rw-r--r-- 1 cscherer sunuser    90454 Feb 24 12:23 tpa_slt3d.inp

```

## scr419/slt3/testa:

total 4700

```

drwxr-xr-x 2 cscherer sunuser     7680 Feb 24 13:34 .
drwxr-xr-x 6 cscherer sunuser      512 Feb 24 15:37 ..
-rw-r--r-- 1 cscherer sunuser     965 Feb 24 12:29 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser     450 Feb 24 12:29 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser    2746 Feb 24 12:29 airpkdos.res
-rw-r--r-- 1 cscherer sunuser    2746 Feb 24 12:29 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser     914 Feb 24 12:29 ashout.res

```

```

-rw-r--r-- 1 cscherer sunuser 14506 Feb 24 12:28 corrode.out
-rw-r--r-- 1 cscherer sunuser 78453 Feb 24 12:29 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2252 Feb 24 12:29 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2252 Feb 24 12:29 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 24 12:28 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 24 12:28 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 24 12:28 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1915 Feb 24 12:29 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 24 12:28 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 24 12:24 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 24 12:28 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 24 12:28 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 24 12:28 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 24 12:28 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 24 12:28 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 24 12:28 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 24 12:28 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 24 12:28 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 24 12:28 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 24 12:28 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39354 Feb 24 12:29 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1707 Feb 24 12:29 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 24 12:28 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 24 12:28 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 24 12:29 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 24 12:29 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 24 12:29 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 24 12:29 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 24 12:29 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 24 12:29 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 24 12:29 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 24 12:29 gmedia.out
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 12:29 gsccdf.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 12:29 gsccdf_c.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 12:29 gwccdf.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 12:29 gwccdf_c.res
-rw-r--r-- 1 cscherer sunuser 9 Feb 24 12:29 gwork.buf
-rw-r--r-- 1 cscherer sunuser 1738 Feb 24 12:29 gwpkdos.res
-rw-r--r-- 1 cscherer sunuser 1738 Feb 24 12:29 gwpkds_c.res
-rw-r--r-- 1 cscherer sunuser 2170 Feb 24 12:29 gwtuzsz.res
-rw-r--r-- 1 cscherer sunuser 2330 Feb 24 12:29 infilper.res
-rw-r--r-- 1 cscherer sunuser 1102 Feb 24 12:28 invl000.out
-rw-r--r-- 1 cscherer sunuser 0 Feb 22 16:08 lhs.csv
-rw-r--r-- 1 cscherer sunuser 47014 Feb 24 12:24 lhs.inp
-rw-r--r-- 1 cscherer sunuser 5730 Feb 24 12:24 lhs.out
-rw-r--r-- 1 cscherer sunuser 79104 Feb 24 12:24 lhse.out
-rw-r--r-- 1 cscherer sunuser 9575 Feb 24 12:28 mechfail.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 24 12:28 mechfail.out
-rw-r--r-- 1 cscherer sunuser 61241 Feb 24 12:29 mv.tpa
-rw-r--r-- 1 cscherer sunuser 2330 Feb 24 12:29 nearfld.res
-rw-r--r-- 1 cscherer sunuser 28139 Feb 24 12:29 nefii.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 24 12:29 nefii.inp
-rw-r--r-- 1 cscherer sunuser 164022 Feb 24 12:29 nefii.out
-rw-r--r-- 1 cscherer sunuser 603 Feb 24 12:29 nefii.rel
-rw-r--r-- 1 cscherer sunuser 28139 Feb 24 12:29 nefiisz.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 24 12:29 nefiisz.inp
-rw-r--r-- 1 cscherer sunuser 164022 Feb 24 12:29 nefiisz.out

```

```

-rw-r--r-- 1 cscherer sunuser 149942 Feb 24 12:29 nefiisz.src
-rw-r--r-- 1 cscherer sunuser 450 Feb 24 12:29 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser 815410 Feb 24 12:29 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser 10100 Feb 24 12:29 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser 858614 Feb 24 12:29 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser 151120 Feb 24 12:29 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser 171 Feb 24 12:29 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser 865 Feb 24 12:29 nefmks.log
-rw-r--r-- 1 cscherer sunuser 2506 Feb 24 12:29 npkdoset.res
-rw-r--r-- 1 cscherer sunuser 2506 Feb 24 12:29 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser 698 Feb 24 12:29 pkmdose.out
-rw-r--r-- 1 cscherer sunuser 8244 Feb 24 12:29 pkrltm.res
-rw-r--r-- 1 cscherer sunuser 8244 Feb 24 12:29 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser 682 Feb 24 12:28 rel_flow.out
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 12:29 relccdf.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 24 12:28 relcum.out
-rw-r--r-- 1 cscherer sunuser 412 Feb 24 12:28 releaset.out
-rw-r--r-- 1 cscherer sunuser 665 Feb 24 12:28 relfrac.out
-rw-r--r-- 1 cscherer sunuser 722 Feb 24 12:29 relgwgs.res
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 12:29 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 12:29 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 12:29 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 12:29 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 12:29 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 12:29 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 12:29 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 12:29 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5137 Feb 24 12:29 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16137 Feb 24 12:29 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5183 Feb 24 12:29 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 12:29 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 722 Feb 24 12:29 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3867 Feb 24 12:24 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29767 Feb 24 12:24 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6376 Feb 24 12:29 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22846 Feb 24 12:29 scr419_slt3a.out
-rw-r--r-- 1 cscherer sunuser 30919 Feb 24 12:29 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13122 Feb 24 12:29 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13122 Feb 24 12:29 totdose.res
-rw-r--r-- 1 cscherer sunuser 90454 Feb 24 12:21 tpa.inp
-rw-r--r-- 1 cscherer sunuser 90454 Feb 16 19:42 tpa_origR.inp
-rw-r--r-- 1 cscherer sunuser 90454 Feb 23 18:44 tpa_slt3a.inp
-rw-r--r-- 1 cscherer sunuser 91356 Feb 24 12:24 tpameans.out
-rw-r--r-- 1 cscherer sunuser 180151 Feb 24 12:28 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 24 12:28 weldfail.out
-rw-r--r-- 1 cscherer sunuser 818 Feb 24 12:29 wpsfail.res

```

## scr419/slt3/testb:

total 4710

```

drwxr-xr-x 2 cscherer sunuser 7680 Feb 24 13:37 .
drwxr-xr-x 6 cscherer sunuser 512 Feb 24 15:37 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 24 12:43 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 24 12:43 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2746 Feb 24 12:43 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2746 Feb 24 12:43 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 914 Feb 24 12:43 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 24 12:42 corrode.out

```

-rw-r--r--	1	cscherer	sunuser	78453	Feb 24 12:43	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2252	Feb 24 12:43	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2252	Feb 24 12:43	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb 24 12:42	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	6693	Feb 24 12:42	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb 24 12:42	diagnose.out
-rw-r--r--	1	cscherer	sunuser	1915	Feb 24 12:43	dsfail.res
-rw-r--r--	1	cscherer	sunuser	610	Feb 24 12:42	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 24 12:39	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb 24 12:42	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5734	Feb 24 12:42	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	2554	Feb 24 12:42	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	304	Feb 24 12:42	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	167701	Feb 24 12:42	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb 24 12:42	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	167681	Feb 24 12:42	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb 24 12:42	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	11110	Feb 24 12:42	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	12335	Feb 24 12:42	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	39354	Feb 24 12:43	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1707	Feb 24 12:43	epapktim.out
-rw-r--r--	1	cscherer	sunuser	17384	Feb 24 12:42	failt.out
-rw-r--r--	1	cscherer	sunuser	46580	Feb 24 12:42	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	3387	Feb 24 12:43	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 24 12:43	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 24 12:43	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 24 12:43	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb 24 12:43	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb 24 12:43	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 24 12:43	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 24 12:43	gmedia.out
-rw-r--r--	1	cscherer	sunuser	572	Feb 24 12:43	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 24 12:43	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 24 12:43	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 24 12:43	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 24 12:43	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1738	Feb 24 12:43	gwpkds.res
-rw-r--r--	1	cscherer	sunuser	1738	Feb 24 12:43	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2170	Feb 24 12:43	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2330	Feb 24 12:43	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 24 12:42	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 22 16:08	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb 24 12:38	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb 24 12:38	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb 24 12:38	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 24 12:42	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 24 12:42	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61241	Feb 24 12:43	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2330	Feb 24 12:43	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28139	Feb 24 12:43	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 24 12:43	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 24 12:43	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 24 12:43	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28139	Feb 24 12:43	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 24 12:43	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 24 12:43	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	149942	Feb 24 12:43	nefiisz.src



```

-rw-r--r-- 1 cscherer sunuser      450 Feb 24 12:43 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser    815410 Feb 24 12:43 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser     10100 Feb 24 12:43 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser    858614 Feb 24 12:43 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser    151120 Feb 24 12:43 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser      171 Feb 24 12:43 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser      960 Feb 24 12:43 nefmks.log
-rw-r--r-- 1 cscherer sunuser     2506 Feb 24 12:43 npkdoset.res
-rw-r--r-- 1 cscherer sunuser     2506 Feb 24 12:43 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser      698 Feb 24 12:43 pkmdose.out
-rw-r--r-- 1 cscherer sunuser     8244 Feb 24 12:43 pkreltim.res
-rw-r--r-- 1 cscherer sunuser     8244 Feb 24 12:43 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser      682 Feb 24 12:42 rel_flow.out
-rw-r--r-- 1 cscherer sunuser      572 Feb 24 12:43 relccdf.res
-rw-r--r-- 1 cscherer sunuser     2253 Feb 24 12:42 relcum.out
-rw-r--r-- 1 cscherer sunuser      412 Feb 24 12:42 releaset.out
-rw-r--r-- 1 cscherer sunuser      665 Feb 24 12:42 relfrac.out
-rw-r--r-- 1 cscherer sunuser      722 Feb 24 12:43 relgwgs.res
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:43 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:43 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:43 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:43 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:43 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:43 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:43 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:43 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser      5137 Feb 24 12:43 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser    16137 Feb 24 12:43 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser      5183 Feb 24 12:43 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser      572 Feb 24 12:43 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser      722 Feb 24 12:43 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser     3867 Feb 24 12:38 samplpar.abb
-rw-r--r-- 1 cscherer sunuser    29767 Feb 24 12:38 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser     6376 Feb 24 12:43 samplpar.res
-rw-r--r-- 1 cscherer sunuser    22846 Feb 24 12:43 scr419_slt3b.out
-rw-r--r-- 1 cscherer sunuser    30919 Feb 24 12:43 sp.tpa
-rw-r--r-- 1 cscherer sunuser    13122 Feb 24 12:43 totdos_c.res
-rw-r--r-- 1 cscherer sunuser    13122 Feb 24 12:43 totdose.res
-rw-r--r-- 1 cscherer sunuser    90454 Feb 24 12:21 tpa.inp
-r--r--r-- 1 cscherer sunuser     9325 Mar  4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser    90454 Feb 16 19:42 tpa_origR.inp
-rw-r--r-- 1 cscherer sunuser    90454 Feb 23 18:46 tpa_slt3b.inp
-rw-r--r-- 1 cscherer sunuser    91356 Feb 24 12:38 tpameans.out
-rw-r--r-- 1 cscherer sunuser   180151 Feb 24 12:42 trelease.out
-rw-r--r-- 1 cscherer sunuser    14132 Feb 24 12:42 weldfail.out
-rw-r--r-- 1 cscherer sunuser      818 Feb 24 12:43 wpsfail.res

```

scr419/slt3/testc:

total 4711

```

drwxr-xr-x 2 cscherer sunuser    7680 Feb 24 13:39 .
drwxr-xr-x 6 cscherer sunuser     512 Feb 24 15:37 ..
-rw-r--r-- 1 cscherer sunuser     965 Feb 24 12:59 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser     450 Feb 24 12:59 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser    2746 Feb 24 12:59 airpkdos.res
-rw-r--r-- 1 cscherer sunuser    2746 Feb 24 12:59 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser     914 Feb 24 12:59 ashout.res
-rw-r--r-- 1 cscherer sunuser   14506 Feb 24 12:58 corrode.out

```

-rw-r--r--	1	cscherer	sunuser	78453	Feb 24	12:59	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2252	Feb 24	12:59	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2252	Feb 24	12:59	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb 24	12:58	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	6693	Feb 24	12:58	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb 24	12:58	diagnose.out
-rw-r--r--	1	cscherer	sunuser	1915	Feb 24	12:59	dsfail.res
-rw-r--r--	1	cscherer	sunuser	610	Feb 24	12:58	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 24	12:54	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb 24	12:58	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5734	Feb 24	12:58	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	2554	Feb 24	12:58	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	304	Feb 24	12:58	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	167701	Feb 24	12:58	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb 24	12:58	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	167681	Feb 24	12:58	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb 24	12:58	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	11110	Feb 24	12:58	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	12335	Feb 24	12:58	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	39354	Feb 24	12:59	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1707	Feb 24	12:59	epapktim.out
-rw-r--r--	1	cscherer	sunuser	17384	Feb 24	12:58	failt.out
-rw-r--r--	1	cscherer	sunuser	46580	Feb 24	12:58	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	3387	Feb 24	12:59	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 24	12:59	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 24	12:59	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 24	12:59	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb 24	12:59	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb 24	12:59	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 24	12:59	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 24	12:59	gmedia.out
-rw-r--r--	1	cscherer	sunuser	572	Feb 24	12:59	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 24	12:59	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 24	12:59	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 24	12:59	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 24	12:59	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1738	Feb 24	12:59	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1738	Feb 24	12:59	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2170	Feb 24	12:59	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2330	Feb 24	12:59	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 24	12:58	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 22	16:08	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb 24	12:54	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb 24	12:54	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb 24	12:54	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 24	12:58	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 24	12:58	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61241	Feb 24	12:59	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2330	Feb 24	12:59	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28139	Feb 24	12:59	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 24	12:59	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 24	12:59	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 24	12:59	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28139	Feb 24	12:59	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 24	12:59	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 24	12:59	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	149942	Feb 24	12:59	nefiisz.src

```

-rw-r--r-- 1 cscherer sunuser      450 Feb 24 12:59 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser    815410 Feb 24 12:59 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser     10100 Feb 24 12:59 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser    858614 Feb 24 12:59 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser    151120 Feb 24 12:59 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser      171 Feb 24 12:59 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser     1155 Feb 24 12:59 nefmks.log
-rw-r--r-- 1 cscherer sunuser     2506 Feb 24 12:59 npkdoset.res
-rw-r--r-- 1 cscherer sunuser     2506 Feb 24 12:59 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser      698 Feb 24 12:59 pkmdose.out
-rw-r--r-- 1 cscherer sunuser     8244 Feb 24 12:59 pkreltim.res
-rw-r--r-- 1 cscherer sunuser     8244 Feb 24 12:59 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser      682 Feb 24 12:58 rel_flow.out
-rw-r--r-- 1 cscherer sunuser      572 Feb 24 12:59 relccdf.res
-rw-r--r-- 1 cscherer sunuser     2253 Feb 24 12:58 relcum.out
-rw-r--r-- 1 cscherer sunuser      412 Feb 24 12:58 releaset.out
-rw-r--r-- 1 cscherer sunuser      665 Feb 24 12:58 relfrac.out
-rw-r--r-- 1 cscherer sunuser      722 Feb 24 12:59 relgwgs.res
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:59 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:59 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:59 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:59 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:59 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:59 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:59 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser    47561 Feb 24 12:59 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser     5137 Feb 24 12:59 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser    16137 Feb 24 12:59 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser     5183 Feb 24 12:59 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser      572 Feb 24 12:59 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser      722 Feb 24 12:59 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser     3867 Feb 24 12:54 samplpar.abb
-rw-r--r-- 1 cscherer sunuser    29767 Feb 24 12:54 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser     6376 Feb 24 12:59 samplpar.res
-rw-r--r-- 1 cscherer sunuser    22846 Feb 24 12:59 scr419_slt3c.out
-rw-r--r-- 1 cscherer sunuser    30919 Feb 24 12:59 sp.tpa
-rw-r--r-- 1 cscherer sunuser    13122 Feb 24 12:59 totdos_c.res
-rw-r--r-- 1 cscherer sunuser    13122 Feb 24 12:59 totdose.res
-rw-r--r-- 1 cscherer sunuser    90454 Feb 24 12:22 tpa.inp
-r--r--r-- 1 cscherer sunuser     9325 Mar  4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser    90454 Feb 16 19:42 tpa_origR.inp
-rw-r--r-- 1 cscherer sunuser    90454 Feb 23 19:04 tpa_slt3c.inp
-rw-r--r-- 1 cscherer sunuser    91356 Feb 24 12:54 tpameans.out
-rw-r--r-- 1 cscherer sunuser   180151 Feb 24 12:58 trelease.out
-rw-r--r-- 1 cscherer sunuser    14132 Feb 24 12:58 weldfail.out
-rw-r--r-- 1 cscherer sunuser      818 Feb 24 12:59 wpsfail.res

```

scr419/slt3/testd:

total 4759

```

drwxr-xr-x 2 cscherer sunuser    7680 Feb 24 13:41 .
drwxr-xr-x 6 cscherer sunuser     512 Feb 24 15:37 ..
-rw-r--r-- 1 cscherer sunuser     965 Feb 24 13:21 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser     450 Feb 24 13:21 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser    2746 Feb 24 13:21 airpkdos.res
-rw-r--r-- 1 cscherer sunuser    2746 Feb 24 13:21 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser     914 Feb 24 13:21 ashout.res
-rw-r--r-- 1 cscherer sunuser   14506 Feb 24 13:21 corrode.out

```

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-rw-r--r-- 1 cscherer sunuser 78453 Feb 24 13:21 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2252 Feb 24 13:21 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2252 Feb 24 13:21 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 24 13:21 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 24 13:21 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 24 13:21 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1915 Feb 24 13:21 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 24 13:21 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 24 13:16 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 24 13:21 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 24 13:21 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 24 13:21 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 24 13:21 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 24 13:21 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 24 13:21 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 24 13:21 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 24 13:21 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 24 13:21 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 24 13:21 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39354 Feb 24 13:21 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1707 Feb 24 13:21 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 24 13:21 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 24 13:21 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 24 13:21 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 24 13:21 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 24 13:21 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 24 13:21 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 24 13:21 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 24 13:21 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 24 13:21 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 24 13:21 gmedia.out
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 13:21 gscddf.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 13:21 gscddf_c.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 13:21 gwccdf.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 24 13:21 gwccdf_c.res
-rw-r--r-- 1 cscherer sunuser 9 Feb 24 13:21 gwork.buf
-rw-r--r-- 1 cscherer sunuser 1738 Feb 24 13:21 gwpkdos.res
-rw-r--r-- 1 cscherer sunuser 1738 Feb 24 13:21 gwpkds_c.res
-rw-r--r-- 1 cscherer sunuser 2170 Feb 24 13:21 gwtuzsz.res
-rw-r--r-- 1 cscherer sunuser 2330 Feb 24 13:21 infilter.res
-rw-r--r-- 1 cscherer sunuser 1102 Feb 24 13:21 invl000.out
-rw-r--r-- 1 cscherer sunuser 0 Feb 22 16:08 lhs.csv
-rw-r--r-- 1 cscherer sunuser 47014 Feb 24 13:15 lhs.inp
-rw-r--r-- 1 cscherer sunuser 5730 Feb 24 13:16 lhs.out
-rw-r--r-- 1 cscherer sunuser 79104 Feb 24 13:16 lhse.out
-rw-r--r-- 1 cscherer sunuser 9575 Feb 24 13:21 mechfail.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 24 13:21 mechfail.out
-rw-r--r-- 1 cscherer sunuser 61241 Feb 24 13:21 mv.tpa
-rw-r--r-- 1 cscherer sunuser 2330 Feb 24 13:21 nearfld.res
-rw-r--r-- 1 cscherer sunuser 28253 Feb 24 13:21 nefii.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 24 13:21 nefii.inp
-rw-r--r-- 1 cscherer sunuser 164022 Feb 24 13:21 nefii.out
-rw-r--r-- 1 cscherer sunuser 603 Feb 24 13:21 nefii.rel
-rw-r--r-- 1 cscherer sunuser 28253 Feb 24 13:21 nefiisz.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 24 13:21 nefiisz.inp
-rw-r--r-- 1 cscherer sunuser 164022 Feb 24 13:21 nefiisz.out
-rw-r--r-- 1 cscherer sunuser 174414 Feb 24 13:21 nefiisz.src

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-rw-r--r-- 1 cscherer sunuser      450 Feb 24 13:21 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser 815543 Feb 24 13:21 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser   10100 Feb 24 13:21 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser 858614 Feb 24 13:21 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser 175592 Feb 24 13:21 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser    171 Feb 24 13:21 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser   1250 Feb 24 13:21 nefmks.log
-rw-r--r-- 1 cscherer sunuser   2506 Feb 24 13:21 npkdoset.res
-rw-r--r-- 1 cscherer sunuser   2506 Feb 24 13:21 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser    698 Feb 24 13:21 pkmdose.out
-rw-r--r-- 1 cscherer sunuser   8244 Feb 24 13:21 pkreltim.res
-rw-r--r-- 1 cscherer sunuser   8244 Feb 24 13:21 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser    682 Feb 24 13:21 rel_flow.out
-rw-r--r-- 1 cscherer sunuser    572 Feb 24 13:21 relccdf.res
-rw-r--r-- 1 cscherer sunuser   2253 Feb 24 13:21 relcum.out
-rw-r--r-- 1 cscherer sunuser    412 Feb 24 13:21 releaset.out
-rw-r--r-- 1 cscherer sunuser    665 Feb 24 13:21 relfrac.out
-rw-r--r-- 1 cscherer sunuser    722 Feb 24 13:21 relgwgs.res
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 13:21 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 13:21 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 13:21 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 13:21 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 13:21 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 13:21 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 13:21 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47561 Feb 24 13:21 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser   5137 Feb 24 13:21 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16137 Feb 24 13:21 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser   5183 Feb 24 13:21 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser    572 Feb 24 13:21 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser    722 Feb 24 13:21 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser   3867 Feb 24 13:15 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29767 Feb 24 13:15 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser   6376 Feb 24 13:21 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22846 Feb 24 13:21 scr419_slt3d.out
-rw-r--r-- 1 cscherer sunuser 30919 Feb 24 13:21 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13122 Feb 24 13:21 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13122 Feb 24 13:21 totdose.res
-rw-r--r-- 1 cscherer sunuser 90454 Feb 24 12:23 tpa.inp
-r--r--r-- 1 cscherer sunuser   9325 Mar  4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 90454 Feb 16 19:42 tpa_origR.inp
-rw-r--r-- 1 cscherer sunuser 90454 Feb 23 19:05 tpa_slt3d.inp
-rw-r--r-- 1 cscherer sunuser 91356 Feb 24 13:15 tpameans.out
-rw-r--r-- 1 cscherer sunuser 180151 Feb 24 13:21 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 24 13:21 weldfail.out
-rw-r--r-- 1 cscherer sunuser    818 Feb 24 13:21 wpsfail.res

```

scr419/tpa50betaQ:

total 14218

```

drwxr-xr-x 5 cscherer sunuser 7680 Feb 26 13:30 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 13:32 ..
-rwxr-xr-x 1 cscherer sunuser 2001 Sep 18 16:52 CLEANUP
-rw-r--r-- 1 cscherer sunuser 965 Feb 24 17:12 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 869 Nov 27 14:22 Makefile
-rw-rw-rw- 1 cscherer sunuser 961 Nov 27 14:24 Makefile4.2
-rw-r--r-- 1 cscherer sunuser 450 Feb 24 17:12 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2746 Feb 24 17:12 airpkdos.res

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-rw-r--r--	1	cscherer	sunuser	2746	Feb	24	17:12	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	29502	Nov	15	17:28	array.f
-rw-r--r--	1	cscherer	sunuser	914	Feb	24	17:12	ashout.res
-rw-r--r--	1	cscherer	sunuser	20601	Sep	11	13:41	ashplumo.f
-rw-r--r--	1	cscherer	sunuser	37630	Nov	27	13:27	ashrmovo.f
-rw-r--r--	1	cscherer	sunuser	1025	Feb	24	17:11	burnup.dat
drwxr-xr-x	2	cscherer	sunuser	512	Feb	14	20:10	ccdf
-rw-r--r--	1	cscherer	sunuser	5047	Feb	24	17:12	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Feb	24	17:11	climato1.dat
-rw-r--r--	1	cscherer	sunuser	2200	Feb	24	17:11	climato2.dat
drwxr-xr-x	4	cscherer	sunuser	1024	Feb	26	13:30	codes
-rw-r--r--	1	cscherer	sunuser	4791	Feb	24	17:12	coefkdeg.dat
-rw-r--r--	1	cscherer	sunuser	608	Sep	20	20:44	coefkdeg.i
-rw-r--r--	1	cscherer	sunuser	10207	Feb	15	2002	condxyzt.f
-rw-r--r--	1	cscherer	sunuser	14506	Feb	24	17:12	corrode.out
-rw-r--r--	1	cscherer	sunuser	77507	Feb	24	17:12	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2252	Feb	24	17:12	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2252	Feb	24	17:12	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb	24	17:12	cumrelse.out
drwxr-xr-x	2	cscherer	sunuser	1536	Feb	14	20:10	data
-rw-r--r--	1	cscherer	sunuser	120159	Dec	19	14:34	dcags.f
-rw-r--r--	1	cscherer	sunuser	157577	Dec	19	14:34	dcagw.f
-rw-r--r--	1	cscherer	sunuser	6693	Feb	24	17:12	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb	24	17:12	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2200	Feb	24	17:12	dilution.dat
-rw-r--r--	1	cscherer	sunuser	3870	Feb	24	17:11	drifts.dat
-rw-r--r--	1	cscherer	sunuser	190	Sep	20	09:32	driftsa.i
-rw-r--r--	1	cscherer	sunuser	519	Feb	24	17:11	drythick.dat
-rw-r--r--	1	cscherer	sunuser	25470	Dec	17	17:53	dsfail.f
-rw-r--r--	1	cscherer	sunuser	1024	Feb	24	17:12	dsfail.res
-rw-r--r--	1	cscherer	sunuser	708	Feb	24	17:12	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Feb	24	17:12	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	43192	Feb	24	17:12	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Feb	24	17:12	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	24	17:12	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb	24	17:12	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5973	Feb	24	17:12	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	48867	Feb	14	19:59	ebsfail.f
-rw-r--r--	1	cscherer	sunuser	5734	Feb	24	17:12	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	790	Feb	24	17:12	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	42516	Feb	24	17:12	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	3030	Feb	24	17:12	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	239	Feb	24	17:12	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Feb	24	17:12	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	167701	Feb	24	17:12	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb	24	17:12	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	439749	Feb	24	17:12	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb	24	17:12	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5459	Feb	24	17:12	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	84551	Feb	10	11:35	ebsrel.f
-rw-r--r--	1	cscherer	sunuser	11110	Feb	24	17:12	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:15	ebsrel1.i
-rw-r--r--	1	cscherer	sunuser	124203	Feb	24	17:12	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Feb	24	17:12	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Feb	24	17:12	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2647	Feb	24	17:12	echofail.dat
-rw-r--r--	1	cscherer	sunuser	445601	Feb	24	17:12	echofilt.dat

-rwxr-xr-x	1	cscherer	sunuser	191532	Feb	24	17:12	env.e
-rwxr-xr-x	1	cscherer	sunuser	283052	Feb	24	17:12	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Feb	24	17:12	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1707	Feb	24	17:12	epapktim.out
-rw-r--r--	1	cscherer	sunuser	383732	Feb	14	20:07	exec.f
-rw-r--r--	1	cscherer	sunuser	2385	Sep	21	10:07	execa.i
-rw-r--r--	1	cscherer	sunuser	486	Sep	3	1997	execb.i
-rw-r--r--	1	cscherer	sunuser	269	May	29	2002	execc.i
-rw-r--r--	1	cscherer	sunuser	104	Feb	6	14:32	execd.i
-rwxr-xr-x	1	cscherer	sunuser	136716	Feb	24	17:12	failt.e
-rw-r--r--	1	cscherer	sunuser	17384	Feb	24	17:12	failt.out
-rw-r--r--	1	cscherer	sunuser	8503	Feb	15	2002	faulto.f
-rw-r--r--	1	cscherer	sunuser	6599	May	29	2002	fileunit.f
-rw-r--r--	1	cscherer	sunuser	5784	Feb	15	2002	findelev.f
-rw-r--r--	1	cscherer	sunuser	6281	Feb	24	17:12	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Feb	24	17:12	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	ful.i
-rw-r--r--	1	cscherer	sunuser	609	Sep	4	19:29	fu2.i
-rw-r--r--	1	cscherer	sunuser	6513	Feb	24	17:12	gbioac1.dat
-rw-r--r--	1	cscherer	sunuser	3383	Feb	24	17:12	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Feb	24	17:12	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Feb	24	17:12	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Feb	24	17:12	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb	24	17:12	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb	24	17:12	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Feb	24	17:12	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Feb	24	17:12	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Feb	24	17:12	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	13855	Feb	24	17:12	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Feb	24	17:12	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb	24	17:12	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Feb	24	17:12	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Feb	24	17:12	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Feb	24	17:12	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Feb	24	17:12	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:12	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:12	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Feb	24	17:12	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Feb	24	17:12	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Feb	24	17:12	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Feb	24	17:12	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:12	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:12	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb	24	17:12	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1738	Feb	24	17:12	gwpkds.res
-rw-r--r--	1	cscherer	sunuser	1738	Feb	24	17:12	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2170	Feb	24	17:12	gwtutzsz.res
-rw-r--r--	1	cscherer	sunuser	1229	Jul	22	1999	ia.i
-rw-r--r--	1	cscherer	sunuser	956	Sep	26	2000	ial.i
-rw-r--r--	1	cscherer	sunuser	21238	Dec	19	14:34	iareader.f
-rw-r--r--	1	cscherer	sunuser	2330	Feb	24	17:12	infilter.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb	24	17:12	inv1000.out
-rw-r--r--	1	cscherer	sunuser	68997	Jan	21	14:53	invent.f
-rw-r--r--	1	cscherer	sunuser	33	Sep	25	12:15	invent_.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	inventa.i
-rw-r--r--	1	cscherer	sunuser	182	Sep	25	12:14	inventb.i
-rw-r--r--	1	cscherer	sunuser	344	Sep	25	12:14	inventc.i

-rw-r--r--	1	cscherer	sunuser	124	Sep	25	12:14	inventd.i
-rw-r--r--	1	cscherer	sunuser	131	Sep	25	12:14	invente.i
-rw-r--r--	1	cscherer	sunuser	130	Sep	25	12:14	inventf.i
-rw-r--r--	1	cscherer	sunuser	128	Sep	25	12:14	inventg.i
-rw-r--r--	1	cscherer	sunuser	127	Sep	25	12:14	inventh.i
-rw-r--r--	1	cscherer	sunuser	75	Aug	16	1997	inventi.i
-rw-r--r--	1	cscherer	sunuser	288	Sep	25	12:14	inventj.i
-rw-r--r--	1	cscherer	sunuser	332	Sep	25	12:14	inventk.i
-rw-r--r--	1	cscherer	sunuser	150	Dec	6	14:29	inventl.i
-rw-r--r--	1	cscherer	sunuser	315	Dec	11	09:33	inventm.i
-rw-r--r--	1	cscherer	sunuser	175	Sep	25	12:15	inventn.i
-rw-r--r--	1	cscherer	sunuser	249	Jan	29	2000	invento.i
-rw-r--r--	1	cscherer	sunuser	267	Sep	25	12:15	inventp.i
-rw-r--r--	1	cscherer	sunuser	0	Feb	22	16:07	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb	24	17:11	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb	24	17:11	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb	24	17:11	lhse.out
-rw-r--r--	1	cscherer	sunuser	78	Aug	16	1997	max500yr.i
-rw-r--r--	1	cscherer	sunuser	99	Sep	25	12:10	maxchain.i
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:50	maxclchn.i
-rw-r--r--	1	cscherer	sunuser	144	Sep	25	12:50	maxclnuc.i
-rw-r--r--	1	cscherer	sunuser	508	Sep	25	12:11	maxnnucl.i
-rw-r--r--	1	cscherer	sunuser	299	Jul	10	1998	maxnsuba.i
-rw-r--r--	1	cscherer	sunuser	206	May	28	1999	maxntime.i
-rw-r--r--	1	cscherer	sunuser	1095	Feb	24	17:12	maxrel.dat
-rwxr-xr-x	1	cscherer	sunuser	943775	Feb	24	17:11	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31768	Feb	24	17:12	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Feb	24	17:12	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	82088	Feb	24	17:12	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9767	Feb	24	17:12	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	24	17:12	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1251	Feb	24	17:11	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1252	Feb	24	17:11	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	11850	Feb	15	2002	mv.f
-rw-r--r--	1	cscherer	sunuser	61241	Feb	24	17:12	mv.tpa
-rw-r--r--	1	cscherer	sunuser	111	Sep	4	1997	mva.i
-rw-r--r--	1	cscherer	sunuser	56	Aug	16	1997	mvb.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	mvc.i
-rw-r--r--	1	cscherer	sunuser	101	Aug	16	1997	mvd.i
-rw-r--r--	1	cscherer	sunuser	72	Aug	16	1997	mve.i
-rw-r--r--	1	cscherer	sunuser	72	Aug	16	1997	mvf.i
-rw-r--r--	1	cscherer	sunuser	2330	Feb	24	17:12	nearfld.res
-rw-r--r--	1	cscherer	sunuser	36843	Feb	24	17:12	nefi.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb	24	17:12	nefi.inp
-rw-r--r--	1	cscherer	sunuser	172338	Feb	24	17:12	nefi.out
-rw-r--r--	1	cscherer	sunuser	603	Feb	24	17:12	nefi.rel
-rw-r--r--	1	cscherer	sunuser	36843	Feb	24	17:12	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb	24	17:12	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	172338	Feb	24	17:12	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	226474	Feb	24	17:12	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb	24	17:12	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	18274	Feb	24	17:12	nefiuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb	24	17:12	nefiuz.inp
-rw-r--r--	1	cscherer	sunuser	61772	Feb	24	17:12	nefiuz.out
-rw-r--r--	1	cscherer	sunuser	205498	Feb	24	17:12	nefiuz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb	24	17:12	nefiuz.vel
-rwxr-xr-x	1	cscherer	sunuser	408060	Feb	24	17:12	nefmks.e



-rw-r--r--	1	cscherer	sunuser	400	Feb	24	17:12	nefmks.log
-rw-r--r--	1	cscherer	sunuser	111266	Feb	14	20:06	nfenv.f
-rw-r--r--	1	cscherer	sunuser	326	Nov	17	18:24	nfenvadj.i
-rw-r--r--	1	cscherer	sunuser	94	Aug	16	1997	nintv.i
-rw-r--r--	1	cscherer	sunuser	1502	Jun	11	1997	notice.i
-rw-r--r--	1	cscherer	sunuser	2506	Feb	24	17:12	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2506	Feb	24	17:12	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Feb	24	17:11	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	6579	Feb	15	2002	numrecip.f
-rw-r--r--	1	cscherer	sunuser	7111	Feb	24	17:12	organdf.dat
-rw-r--r--	1	cscherer	sunuser	259	Aug	16	1997	path.i
-rw-r--r--	1	cscherer	sunuser	6584	Feb	15	2002	peakfind.f
-rw-r--r--	1	cscherer	sunuser	698	Feb	24	17:12	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8244	Feb	24	17:12	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8244	Feb	24	17:12	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	46322	Feb	15	2002	ran.f
-rw-r--r--	1	cscherer	sunuser	148482	Dec	19	14:32	reader.f
-rw-r--r--	1	cscherer	sunuser	185	May	21	1998	reader.i
-rw-r--r--	1	cscherer	sunuser	106	Aug	27	1999	reader1.i
-rw-r--r--	1	cscherer	sunuser	58	Aug	27	1999	reader2.i
-rw-r--r--	1	cscherer	sunuser	102	Aug	27	1999	reader3.i
-rw-r--r--	1	cscherer	sunuser	89	Aug	27	1999	reader4.i
-rw-r--r--	1	cscherer	sunuser	58	Aug	16	1997	reflux2.i
-rw-r--r--	1	cscherer	sunuser	682	Feb	24	17:12	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:12	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2253	Feb	24	17:12	relcum.out
-rwxr-xr-x	1	cscherer	sunuser	120020	Feb	24	17:12	reaset.e
-rw-r--r--	1	cscherer	sunuser	412	Feb	24	17:12	reaset.out
-rw-r--r--	1	cscherer	sunuser	665	Feb	24	17:12	relfrac.out
-rw-r--r--	1	cscherer	sunuser	722	Feb	24	17:12	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Feb	24	17:11	repdes.dat
-rw-r--r--	1	cscherer	sunuser	47561	Feb	24	17:12	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	24	17:12	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	24	17:12	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	24	17:12	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	24	17:12	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	24	17:12	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	24	17:12	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	24	17:12	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5137	Feb	24	17:12	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16137	Feb	24	17:12	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5183	Feb	24	17:12	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	572	Feb	24	17:12	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	722	Feb	24	17:12	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	95694	May	29	2002	sampler.f
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler0.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	sampler1.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler2.i
-rw-r--r--	1	cscherer	sunuser	178	Apr	3	1998	sampler3.i
-rw-r--r--	1	cscherer	sunuser	145	Sep	19	2000	sampler4.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.a.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.b.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.c.i
-rw-r--r--	1	cscherer	sunuser	68	Aug	16	1997	sampler.d.i
-rw-r--r--	1	cscherer	sunuser	133	Aug	16	1997	sampler.e.i
-rw-r--r--	1	cscherer	sunuser	111	Aug	16	1997	sampler.f.i
-rw-r--r--	1	cscherer	sunuser	84	Aug	16	1997	sampler.g.i

-rw-r--r--	1	cscherer	sunuser	68	Aug	16	1997	samplerh.i
-rw-r--r--	1	cscherer	sunuser	83	Aug	16	1997	sampleri.i
-rw-r--r--	1	cscherer	sunuser	61	Aug	16	1997	samplerj.i
-rw-r--r--	1	cscherer	sunuser	208	Aug	16	1997	samplerk.i
-rw-r--r--	1	cscherer	sunuser	104	Aug	16	1997	samplerl.i
-rw-r--r--	1	cscherer	sunuser	63	Aug	16	1997	samplerm.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	samlpern.i
-rw-r--r--	1	cscherer	sunuser	63	Aug	16	1997	samplero.i
-rw-r--r--	1	cscherer	sunuser	260	Mar	14	2002	samplerp.i
-rw-r--r--	1	cscherer	sunuser	103	Aug	16	1997	samplerq.i
-rw-r--r--	1	cscherer	sunuser	176	Aug	16	1997	samlperr.i
-rw-r--r--	1	cscherer	sunuser	336	Apr	3	1998	samlpers.i
-rw-r--r--	1	cscherer	sunuser	70	Aug	16	1997	samlpert.i
-rw-r--r--	1	cscherer	sunuser	69	Aug	16	1997	sampleru.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	samlperv.i
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	samplerw.i
-rw-r--r--	1	cscherer	sunuser	316	Jan	14	17:30	samlperx.i
-rw-r--r--	1	cscherer	sunuser	299	Apr	30	2001	samlpery.i
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	samlperz.i
-rw-r--r--	1	cscherer	sunuser	3867	Feb	24	17:11	samlpar.abb
-rw-r--r--	1	cscherer	sunuser	29767	Feb	24	17:11	samlpar.hdr
-rw-r--r--	1	cscherer	sunuser	6376	Feb	24	17:12	samlpar.res
-rw-r--r--	1	cscherer	sunuser	22846	Feb	23	17:34	scr419_sl1a.out
-rw-r--r--	1	cscherer	sunuser	4852	Feb	24	15:58	scr419_sl4a.out
-rw-r--r--	1	cscherer	sunuser	322	Nov	17	18:24	seisadj.i
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb	24	17:12	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb	24	17:12	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	74226	Dec	17	17:52	seismo2.f
-rwxr-xr-x	1	cscherer	sunuser	943788	Feb	24	17:11	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	243556	Feb	24	17:11	snllhs.e
-rw-r--r--	1	cscherer	sunuser	226474	Feb	24	17:12	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	30919	Feb	24	17:12	sp.tpa
-rw-r--r--	1	cscherer	sunuser	144	Sep	3	1997	stop.i
-rw-r--r--	1	cscherer	sunuser	4506	Feb	24	17:12	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	38273	Sep	3	10:13	subarea.f
-rw-r--r--	1	cscherer	sunuser	255	Feb	4	2000	subareaa.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	subareab.i
-rw-r--r--	1	cscherer	sunuser	82	Aug	16	1997	subareac.i
-rw-r--r--	1	cscherer	sunuser	81	Aug	16	1997	subaread.i
-rw-r--r--	1	cscherer	sunuser	77	Aug	16	1997	subareae.i
-rw-r--r--	1	cscherer	sunuser	60	Feb	3	2000	subareaf.i
-rw-r--r--	1	cscherer	sunuser	64	Feb	2	2000	subareag.i
-rw-r--r--	1	cscherer	sunuser	115415	Feb	10	11:35	szft.f
-rw-r--r--	1	cscherer	sunuser	264	Nov	17	18:23	szft.i
-rw-r--r--	1	cscherer	sunuser	13122	Feb	24	17:12	totdos_c.res
-rw-r--r--	1	cscherer	sunuser	13122	Feb	24	17:12	totdose.res
-rw-r--r--	1	cscherer	sunuser	89815	Feb	24	17:10	tpa.inp
-rw-r--r--	1	cscherer	sunuser	1892	Feb	24	14:40	tpaQ_CRF1.out
-r--r--r--	1	cscherer	sunuser	9325	Mar	4	2002	tpa.out
-rw-r--r--	1	cscherer	sunuser	89815	Feb	24	15:54	tpa_CRF0.inp
-rw-r--r--	1	cscherer	sunuser	89815	Feb	24	14:39	tpa_CRF1.inp
-rw-r--r--	1	cscherer	sunuser	22846	Feb	24	16:52	tpa_CRF1.out
-rwxr-xr-x	1	cscherer	sunuser	2520304	Feb	22	16:02	tpa_comp42Q.e
-rw-r--r--	1	cscherer	sunuser	89815	Feb	8	15:59	tpa_orig.inp
-rw-r--r--	1	cscherer	sunuser	89815	Feb	24	17:10	tpa_orig_sa5.inp
-rw-r--r--	1	cscherer	sunuser	4823	Feb	24	17:12	tpa_orig_sa5.out
-rw-r--r--	1	cscherer	sunuser	90717	Feb	24	17:11	tpameans.out

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-rw-r--r-- 1 cscherer sunuser 100464 Feb 24 17:11 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser 181127 Feb 24 17:12 trelease.out
-rw-r--r-- 1 cscherer sunuser 314 Aug 16 1997 uz_climi.i
-rw-r--r-- 1 cscherer sunuser 1219 Sep 6 20:05 uz_climr.i
-rw-r--r-- 1 cscherer sunuser 341 Aug 16 1997 uz_climz.i
-rw-r--r-- 1 cscherer sunuser 1323 Sep 26 14:28 uz_flowi.i
-rw-r--r-- 1 cscherer sunuser 1170 Sep 26 14:29 uz_flowr.i
-rw-r--r-- 1 cscherer sunuser 176 Aug 16 1997 uz_flowz.i
-rw-r--r-- 1 cscherer sunuser 3225 Sep 26 14:30 uz_parms.i
-rw-r--r-- 1 cscherer sunuser 68541 Dec 30 19:33 uzflow.f
-rw-r--r-- 1 cscherer sunuser 126274 Feb 25 17:00 uzft.f
-rw-r--r-- 1 cscherer sunuser 126147 Feb 8 15:57 uzft_orig.f
-rw-r--r-- 1 cscherer sunuser 755 Nov 17 18:23 uzszft.i
-rw-r--r-- 1 cscherer sunuser 14215 Feb 15 2002 volcano.f
-rw-r--r-- 1 cscherer sunuser 14132 Feb 24 17:12 weldfail.out
-rw-r--r-- 1 cscherer sunuser 8805 Feb 24 17:12 wpflow.dat
-rw-r--r-- 1 cscherer sunuser 17410 Feb 24 17:12 wpflow.def
-rw-r--r-- 1 cscherer sunuser 818 Feb 24 17:12 wpsfail.res
-rw-r--r-- 1 cscherer sunuser 11721 Feb 15 2002 zportunx.f

```

## scr419/tpa50betaQ/ccdf:

total 35

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 14 20:10 .
drwxr-xr-x 5 cscherer sunuser 7680 Feb 26 13:30 ..
-rw-r--r-- 1 cscherer sunuser 267 Mar 14 2000 Makefile
-rw-r--r-- 1 cscherer sunuser 23390 Jul 22 1999 tccdf.f
-rw-r--r-- 1 cscherer sunuser 66 Aug 1 1997 tccdf.i
-rw-r--r-- 1 cscherer sunuser 640 Jan 29 2001 tccdf.inp

```

## scr419/tpa50betaQ/codes:

total 2954

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drwxr-xr-x 4 cscherer sunuser 1024 Feb 26 13:30 .
drwxr-xr-x 5 cscherer sunuser 7680 Feb 26 13:30 ..
-rw-r--r-- 1 cscherer sunuser 1403 Nov 27 14:19 Makefile
-rw-rw-rw- 1 cscherer sunuser 1812 Feb 22 15:53 Makefile4.2
-rw-rw-rw- 1 cscherer sunuser 1698 Nov 27 16:22 Makefile_orig4.2
-rw-r--r-- 1 cscherer sunuser 499 Jun 2 1997 README
-rw-r--r-- 1 cscherer sunuser 2320 May 28 1998 SIZES.INC
-rw-r--r-- 1 cscherer sunuser 164 Feb 17 1998 SIZES2.INC
-rwxr-xr-x 1 cscherer sunuser 165144 Feb 22 16:04 ashplume.e
-rw-r--r-- 1 cscherer sunuser 95611 Sep 26 2000 ashplume.f
-rw-r--r-- 1 cscherer sunuser 25361 Jul 17 2002 corrosn.f
-rwxr-xr-x 1 cscherer sunuser 43192 Feb 22 16:05 dsfailt.e
-rw-r--r-- 1 cscherer sunuser 23303 Dec 17 17:21 dsfailt.f
-rwxr-xr-x 1 cscherer sunuser 42516 Feb 22 16:05 ebsfilt.e
-rw-r--r-- 1 cscherer sunuser 15355 Feb 8 15:42 ebsfilt.f
-rwxr-xr-x 1 cscherer sunuser 191532 Feb 22 16:06 env.e
-rwxr-xr-x 1 cscherer sunuser 283052 Feb 22 16:05 envin.e
-rwxr-xr-x 1 cscherer sunuser 136716 Feb 22 16:04 failt.e
-rw-r--r-- 1 cscherer sunuser 101968 Feb 14 19:56 failt.f
-r--r--r-- 1 cscherer sunuser 450 Nov 17 18:03 failtadj.i
drwxr-xr-x 2 cscherer sunuser 3072 Feb 26 13:30 gentpa
-rwxr-xr-x 1 cscherer sunuser 4633 Nov 17 18:01 integrt.f
drwxr-xr-x 3 cscherer sunuser 512 Feb 14 20:10 itym
-r--r--r-- 1 cscherer sunuser 868 Dec 17 16:59 lhs1.i
-r--r--r-- 1 cscherer sunuser 1308 Mar 14 2002 lhs2.i
-r--r--r-- 1 cscherer sunuser 438 Mar 14 2002 lhs3.i

```

```

-r--r--r-- 1 cscherer sunuser      437 Mar 14 2002 lhs4.i
-r--r--r-- 1 cscherer sunuser      374 Mar 14 2002 lhs5.i
-r--r--r-- 1 cscherer sunuser      450 Mar 14 2002 lhs6.i
-r--r--r-- 1 cscherer sunuser      464 Mar 14 2002 lhs7.i
-r--r--r-- 1 cscherer sunuser      431 Mar 14 2002 lhs8.i
-rwxr-xr-x 1 cscherer sunuser    5229 May 29 2002 linintrp.f
-r--r--r-- 1 cscherer sunuser       331 Nov 17 18:03 mechadj.i
-rwxr-xr-x 1 cscherer sunuser   82088 Feb 22 16:03 mechfail.e
-rw-r--r-- 1 cscherer sunuser  126625 Dec 17 17:57 mechfail.f
-rwxr-xr-x 1 cscherer sunuser  408060 Feb 22 16:03 nefmks.e
-rw-r--r-- 1 cscherer sunuser  308005 Sep 26 2000 nefmks.f
-rwxr-xr-x 1 cscherer sunuser  120020 Feb 22 16:04 releaset.e
-rw-r--r-- 1 cscherer sunuser  168121 Jan  7 11:17 releaset.f
-rwxr-xr-x 1 cscherer sunuser  243556 Feb 22 16:04 snllhs.e
-rw-r--r-- 1 cscherer sunuser  224558 Sep  6 10:21 snllhs.f
-rwxr-xr-x 1 cscherer sunuser    4303 May 29 2002 srchpos.f
-rwxr-xr-x 1 cscherer sunuser   19890 Nov 17 18:01 weldfail.f

```

scr419/tpa50betaQ/codes/gentpa:

total 413

```

drwxr-xr-x 2 cscherer sunuser    3072 Feb 26 13:30 .
drwxr-xr-x 4 cscherer sunuser   1024 Feb 26 13:30 ..
-rw-r--r-- 1 cscherer sunuser     543 Feb 11 2000 AFPPAR.CMN
-rw-r--r-- 1 cscherer sunuser   1044 Feb 11 2000 AIRPAR.CMN
-rw-r--r-- 1 cscherer sunuser     872 Feb 11 2000 ANMPAR.CMN
-rw-r--r-- 1 cscherer sunuser     615 Feb 11 2000 AQUPAR.CMN
-rw-r--r-- 1 cscherer sunuser   1089 Feb 11 2000 CONC.CMN
-rw-r--r-- 1 cscherer sunuser     461 Feb 11 2000 DAYPC.CMN
-rw-r--r-- 1 cscherer sunuser     400 Feb 11 2000 DECAY.CMN
-rw-r--r-- 1 cscherer sunuser     571 Feb 11 2000 DFPAR.CMN
-rw-r--r-- 1 cscherer sunuser   1359 Feb 11 2000 DOSALL.CMN
-rw-r--r-- 1 cscherer sunuser     574 Feb 11 2000 ENVPAR.CMN
-rw-r--r-- 1 cscherer sunuser     310 Feb 11 2000 EXPALL.CMN
-rw-r--r-- 1 cscherer sunuser     637 Feb 11 2000 EXTPAR.CMN
-rw-r--r-- 1 cscherer sunuser     327 Feb 11 2000 FILES.CMN
-rw-r--r-- 1 cscherer sunuser     814 Feb 11 2000 FODPAR.CMN
-rw-r--r-- 1 cscherer sunuser     438 Feb 11 2000 INVIN.CMN
-rw-r--r-- 1 cscherer sunuser     569 Feb 11 2000 LABELS.CMN
-rw-r--r-- 1 cscherer sunuser   1161 Feb 11 2000 MTBPAR.CMN
-rw-r--r-- 1 cscherer sunuser   1688 Feb 28 2000 Make.bat
-rw-r--r-- 1 cscherer sunuser   1849 Feb 24 2000 Makefile
-rw-rw-rw- 1 cscherer sunuser   1938 Nov 27 14:12 Makefile4.2
-rw-r--r-- 1 cscherer sunuser   1746 Feb 11 2000 Mkenv.fig
-rw-r--r-- 1 cscherer sunuser   1548 Feb 11 2000 Mkenvin.fig
-rw-r--r-- 1 cscherer sunuser   2762 Feb 11 2000 OPT.CMN
-rw-r--r-- 1 cscherer sunuser     444 Feb 11 2000 ORGMAS.CMN
-rw-r--r-- 1 cscherer sunuser     728 Feb 11 2000 ORGPAR.CMN
-rw-r--r-- 1 cscherer sunuser     589 Feb 11 2000 RAD.CMN
-rw-r--r-- 1 cscherer sunuser     788 Feb 11 2000 RADIN.CMN
-rw-r--r-- 1 cscherer sunuser     722 Feb 11 2000 RMD.CMN
-rw-r--r-- 1 cscherer sunuser     489 Feb 11 2000 RMD2.CMN
-rw-r--r-- 1 cscherer sunuser     891 Feb 11 2000 SOLPAR.CMN
-rw-r--r-- 1 cscherer sunuser     489 Feb 11 2000 SWPAR.CMN
-rw-r--r-- 1 cscherer sunuser     586 Feb 11 2000 TIMES.CMN
-rw-r--r-- 1 cscherer sunuser     316 Feb 11 2000 TITL.CMN
-rw-r--r-- 1 cscherer sunuser  12777 Feb 11 2000 accmod.f
-rw-r--r-- 1 cscherer sunuser   10094 Feb 11 2000 acutel.f

```

-rw-r--r--	1	cscherer	sunuser	9579	Feb 11	2000	acutea.f
-rw-r--r--	1	cscherer	sunuser	7118	Feb 11	2000	acutec.f
-rw-r--r--	1	cscherer	sunuser	8669	Feb 11	2000	aircal.f
-rw-r--r--	1	cscherer	sunuser	8383	Feb 11	2000	anmcal.f
-rw-r--r--	1	cscherer	sunuser	2043	Feb 11	2000	agucal.f
-rw-r--r--	1	cscherer	sunuser	1217	Feb 11	2000	biocal.f
-rw-r--r--	1	cscherer	sunuser	4174	Feb 11	2000	blockd.f
-rw-r--r--	1	cscherer	sunuser	1405	Feb 11	2000	bsort.f
-rw-r--r--	1	cscherer	sunuser	13008	Feb 11	2000	candh.f
-rw-r--r--	1	cscherer	sunuser	6653	Feb 11	2000	chain.f
-rw-r--r--	1	cscherer	sunuser	23921	Feb 11	2000	check.f
-rw-r--r--	1	cscherer	sunuser	10189	Feb 11	2000	cronmod.f
-rw-r--r--	1	cscherer	sunuser	5153	Feb 11	2000	crpcal.f
-rw-r--r--	1	cscherer	sunuser	3842	Feb 11	2000	dkharv.f
-rw-r--r--	1	cscherer	sunuser	5426	Feb 11	2000	dose.f
-rw-r--r--	1	cscherer	sunuser	2398	Feb 11	2000	drfbiv.f
-rw-r--r--	1	cscherer	sunuser	6728	Feb 11	2000	drfsec.f
-rw-r--r--	1	cscherer	sunuser	1877	Feb 11	2000	drkcal.f
-rw-r--r--	1	cscherer	sunuser	1325	Feb 11	2000	dumred.f
-rw-r--r--	1	cscherer	sunuser	3958	Feb 11	2000	edranm.f
-rw-r--r--	1	cscherer	sunuser	3567	Feb 11	2000	edrcrp.f
-rw-r--r--	1	cscherer	sunuser	2525	Feb 11	2000	edrnnon.f
-rw-r--r--	1	cscherer	sunuser	2853	Feb 11	2000	edrres.f
-rw-r--r--	1	cscherer	sunuser	10581	Feb 11	2000	env.f
-rw-r--r--	1	cscherer	sunuser	4885	Feb 11	2000	envin.f
-rw-r--r--	1	cscherer	sunuser	4561	Feb 11	2000	envlib.f
-rw-r--r--	1	cscherer	sunuser	1912	Feb 11	2000	exposr.f
-rw-r--r--	1	cscherer	sunuser	6774	Feb 11	2000	extcal.f
-rw-r--r--	1	cscherer	sunuser	1489	Feb 11	2000	filerr.f
-rw-r--r--	1	cscherer	sunuser	1986	Feb 11	2000	fntdrf.f
-rw-r--r--	1	cscherer	sunuser	3003	Feb 11	2000	headng.f
-rw-r--r--	1	cscherer	sunuser	2203	Feb 11	2000	idnuc.f
-rw-r--r--	1	cscherer	sunuser	2842	Feb 11	2000	inhcal.f
-rw-r--r--	1	cscherer	sunuser	2392	Feb 11	2000	initnv.f
-rw-r--r--	1	cscherer	sunuser	1841	Feb 11	2000	intpol.f
-rw-r--r--	1	cscherer	sunuser	1348	Feb 11	2000	invmol.f
-rw-r--r--	1	cscherer	sunuser	677	Feb 11	2000	makda2.f
-rw-r--r--	1	cscherer	sunuser	5870	Feb 11	2000	opnfil.f
-rw-r--r--	1	cscherer	sunuser	4217	Feb 11	2000	order.f
-rw-r--r--	1	cscherer	sunuser	2325	Feb 11	2000	packag.f
-rw-r--r--	1	cscherer	sunuser	3366	Feb 11	2000	plmriz.f
-rw-r--r--	1	cscherer	sunuser	1861	Feb 11	2000	prior.f
-rw-r--r--	1	cscherer	sunuser	4080	Feb 11	2000	prob.f
-rw-r--r--	1	cscherer	sunuser	2079	Feb 11	2000	profile.f
-rw-r--r--	1	cscherer	sunuser	11351	Feb 11	2000	readin.f
-rw-r--r--	1	cscherer	sunuser	6174	Feb 11	2000	redcas.f
-rw-r--r--	1	cscherer	sunuser	3867	Feb 11	2000	redcha.f
-rw-r--r--	1	cscherer	sunuser	8483	Feb 11	2000	redflt.f
-rw-r--r--	1	cscherer	sunuser	1694	Feb 11	2000	redist.f
-rw-r--r--	1	cscherer	sunuser	8548	Feb 11	2000	ritenv.f
-rw-r--r--	1	cscherer	sunuser	4371	Feb 11	2000	ritexp.f
-rw-r--r--	1	cscherer	sunuser	2584	Feb 11	2000	ritmed.f
-rw-r--r--	1	cscherer	sunuser	27222	Feb 11	2000	ritqa.f
-rw-r--r--	1	cscherer	sunuser	4346	Feb 11	2000	rlibin.f
-rw-r--r--	1	cscherer	sunuser	4399	Feb 11	2000	rwake.f
-rw-r--r--	1	cscherer	sunuser	2396	Feb 11	2000	sigma.f
-rw-r--r--	1	cscherer	sunuser	8387	Feb 11	2000	swcal.f

```

-rw-r--r-- 1 cscherer sunuser 1894 Feb 11 2000 trnspt.f
-rw-r--r-- 1 cscherer sunuser 1771 Feb 11 2000 ustar.f
-rw-r--r-- 1 cscherer sunuser 9276 Feb 11 2000 xqcal.f
-rw-r--r-- 1 cscherer sunuser 5277 Feb 11 2000 xqin.f

```

scr419/tpa50betaQ/codes/itym:

total 4

```

drwxr-xr-x 3 cscherer sunuser 512 Feb 14 20:10 .
drwxr-xr-x 4 cscherer sunuser 1024 Feb 26 13:30 ..
-rw-r--r-- 1 cscherer sunuser 596 Oct 1 10:06 makefile
drwxr-xr-x 2 cscherer sunuser 512 Feb 14 20:10 src

```

scr419/tpa50betaQ/codes/itym/src:

total 328

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 14 20:10 .
drwxr-xr-x 3 cscherer sunuser 512 Feb 14 20:10 ..
-rw-r--r-- 1 cscherer sunuser 29776 Mar 22 2000 array.f
-rw-r--r-- 1 cscherer sunuser 15856 Mar 22 2000 check_valid.f
-rw-r--r-- 1 cscherer sunuser 60931 Dec 30 19:29 estimator.f
-rw-r--r-- 1 cscherer sunuser 5384 Dec 30 19:31 init_itym.f
-rw-r--r-- 1 cscherer sunuser 9420 Sep 25 18:55 itym.f
-rw-r--r-- 1 cscherer sunuser 11640 Dec 30 19:31 itym.i
-rw-r--r-- 1 cscherer sunuser 26752 Sep 26 14:19 itymutils.f
-rw-r--r-- 1 cscherer sunuser 261 Mar 22 2000 path.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 preuzf.i
-rw-r--r-- 1 cscherer sunuser 42671 Mar 22 2000 ran.f
-rw-r--r-- 1 cscherer sunuser 38406 Sep 26 14:20 strtokfunc.f
-rw-r--r-- 1 cscherer sunuser 60346 Sep 26 14:22 uncertain.f
-rw-r--r-- 1 cscherer sunuser 12265 Mar 22 2000 uncertain.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 unctab.i
-rw-r--r-- 1 cscherer sunuser 10904 Mar 22 2000 zportunx.f

```

scr419/tpa50betaQ/data:

total 7086

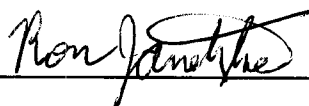

```

drwxr-xr-x 2 cscherer sunuser 1536 Feb 14 20:10 .
drwxr-xr-x 5 cscherer sunuser 7680 Feb 26 13:30 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 11 2000 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 121789 Mar 22 2000 bunitdem.dat
-rw-r--r-- 1 cscherer sunuser 1025 Mar 29 2000 burnup.dat
-rwxr-xr-x 1 cscherer sunuser 468925 Sep 25 19:00 careadem.dat
-rwxr-xr-x 1 cscherer sunuser 515693 Sep 25 19:01 cdepdem.dat
-rw-r--r-- 1 cscherer sunuser 850000 Aug 15 1997 climato1.dat
-rw-r--r-- 1 cscherer sunuser 2200 Feb 1 1999 climato2.dat
-rw-r--r-- 1 cscherer sunuser 4791 Sep 25 17:29 coefkdeq.dat
-rw-r--r-- 1 cscherer sunuser 2200 Dec 19 13:50 dilution.dat
-rw-r--r-- 1 cscherer sunuser 519 Oct 19 2000 drythick.dat
-rw-r--r-- 1 cscherer sunuser 791 Jul 23 2002 dsfailt.def
-rw-r--r-- 1 cscherer sunuser 5973 Feb 14 19:57 ebsfail.def
-rw-r--r-- 1 cscherer sunuser 790 May 28 1998 ebsfilt.def
-rw-r--r-- 1 cscherer sunuser 5459 Jan 7 11:17 ebsrel.def
-rw-r--r-- 1 cscherer sunuser 298679 Mar 22 2000 elevdem.dat
-rw-r--r-- 1 cscherer sunuser 9381 May 29 2002 fluoride.dat
-rw-r--r-- 1 cscherer sunuser 6513 Feb 11 2000 gbioac1.dat
-rw-r--r-- 1 cscherer sunuser 3383 Sep 4 19:18 gdefaults.def
-rw-r--r-- 1 cscherer sunuser 3383 Feb 11 2000 gdefault.def
-rw-r--r-- 1 cscherer sunuser 64 Feb 11 2000 gdosinc2.dat
-rw-r--r-- 1 cscherer sunuser 7011 Feb 11 2000 gftrans.def

```

-rw-r--r--	1	cscherer	sunuser	7011	Sep	4	19:18	gftranss.def
-rw-r--r--	1	cscherer	sunuser	15214	Feb	11	2000	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	13855	Feb	11	2000	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13173	Sep	4	19:18	ggeniis.def
-rw-r--r--	1	cscherer	sunuser	5351	Feb	11	2000	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	9897	Mar	29	2000	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Mar	20	2000	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	3048	Sep	15	2000	gs_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	2487	Jun	4	1998	gs_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3045	Sep	15	2000	gs_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	2487	Jun	4	1998	gs_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	8153	Dec	20	09:54	ia.dat
-rw-r--r--	1	cscherer	sunuser	20698	Dec	30	19:26	itym.dat
-rw-r--r--	1	cscherer	sunuser	943774	Mar	29	2000	maidtbl.dat
-rw-r--r--	1	cscherer	sunuser	10978	Mar	22	2000	maswtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	943775	Dec	30	19:18	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	9729	Dec	17	17:31	mechfail.def
-rw-r--r--	1	cscherer	sunuser	1251	Feb	6	14:39	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1252	Feb	6	14:39	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	116965	Jul	17	2002	multiflo.dat
-rw-r--r--	1	cscherer	sunuser	6890	Jan	15	11:09	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Sep	24	2000	organdf.dat
-rw-r--r--	1	cscherer	sunuser	548	Sep	21	2000	repdes.dat
-rwxr-xr-x	1	cscherer	sunuser	130758	Dec	17	17:31	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Dec	17	17:31	seisbs2.dis
-rwxr-xr-x	1	cscherer	sunuser	943788	Dec	30	19:18	smaydtbl.dat
-rw-r--r--	1	cscherer	sunuser	489858	Mar	22	2000	soildem.dat
-rw-r--r--	1	cscherer	sunuser	4506	Feb	7	2000	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	119673	Mar	22	2000	sunitdem.dat
-rw-r--r--	1	cscherer	sunuser	162404	May	8	2000	tefkti.inp
-rw-r--r--	1	cscherer	sunuser	100464	Jan	14	17:06	tpanames.dbs
-rw-r--r--	1	cscherer	sunuser	471041	Mar	22	2000	winddem.dat
-rw-r--r--	1	cscherer	sunuser	17410	Feb	2	2000	wpflow.def

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-420	<b>Software Title and Version:</b> TPA 5.0betaL	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> ebsfilt.f, ebsrel.f  When exercising the code with different inventories and a fixed value of the seepage rate the code shows oscillations in the release after the invert. These oscillations appear to be numerical. Especially the oscillations for Ra226. Increasing the number of integration steps in the ebsfilt.f module only worsened the amount of noise. A temporary fix is removing the linear interpolation and performing trapezoidal integration using the TPA time-steps.		
<b>Change Requested by:</b> O. Pensado Date: 11-20-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 12-2-02 	
<b>Description of Change(s) or Problem Resolution</b> <i>(If changes not implemented, please justify):</i> The main change was to narrow the integration range for the convolution integral so the upper limit couldn't exceed the actual time the function was to be evaluated. Clearly the upper integration range should not exceed the actual time but it wasn't checked, and for low Peclet numbers, the upper limit could become very large. The second change I made was to increase the integration steps from 25 to 250. This gave much better results for low Pe. The third change I made was to formally include the correct dimensions for the time and release arrays in the main and interp routines. This wasn't causing any problems but it was sloppy the way it stood, and this makes it more consistent. Modified the conditional for bypassing calculations to also check for invert thickness less than or equal to 0.[GADAMS]		
<b>Implemented by:</b> Dick Codell	<b>Date:</b> 1-13-03	
<b>Description of Acceptance Tests:</b>  The test plan for TPA SCR #420 consists of one process level test designed to verify that oscillations in the release of radionuclides through the invert has been corrected and that the release through the invert of at least one other radionuclide is reasonable.  The software successfully passed the process level test in accordance with the Test Plan for TPA SCR #420. The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #420."		
<b>Tested by:</b> G. Adams 	<b>Date:</b> 2-11-03	



## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-420	<b>Software Title and Version:</b> TPA 5.0betaL	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> ebsfilt.f, ebsrel.f  When exercising the code with different inventories and a fixed value of the seepage rate the code shows oscillations in the release after the invert. These oscillations appear to be numerical. Especially the oscillations for Ra226. Increasing the number of integration steps in the ebsfilt.f module only worsened the amount of noise. A temporary fix is removing the linear interpolation and performing trapezoidal integration using the TPA time-steps.		
<b>Change Requested by:</b> O. Pensado Date: 11-20-02	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 12-2-02	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b> The main change was to narrow the integration range for the convolution integral so the upper limit couldn't exceed the actual time the function was to be evaluated. Clearly the upper integration range should not exceed the actual time but it wasn't checked, and for low Peclet numbers, the upper limit could become very large. The second change I made was to increase the integration steps from 25 to 250. This gave much better results for low Pe. The third change I made was to formally include the correct dimensions for the time and release arrays in the main and interp routines. This wasn't causing any problems but it was sloppy the way it stood, and this makes it more consistent. Modified the conditional for bypassing calculations to also check for invert thickness less than or equal to 0.[GADAMS]		
<b>Implemented by:</b> Dick Codell	<b>Date:</b> 1-13-03 <i>Rick Codell</i>	
<b>Description of Acceptance Tests:</b>  The test plan for TPA SCR #420 consists of one process level test designed to verify that oscillations in the release of radionuclides through the invert has been corrected and that the release through the invert of at least one other radionuclide is reasonable.  The software successfully passed the process level test in accordance with the Test Plan for TPA SCR #420. The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #420."		
<b>Tested by:</b> G. Adams	<b>Date:</b> 2-11-03	

# Test Plan for TPA SCR # 420

**Test Plan Name:** OSCILLATIONS IN THE RELEASE AFTER THE INVERT

**Tested By:** George Adams

**Date:** February 10-11, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0BetaL

**Test Version:** 5.0BetaO (With one modification to ebsfilt.f. The file was modified to bypass calculations if the invert thickness is less than or equal to 0)

## Process Level Test

The process level test is designed to verify that oscillations in the release of radionuclides through the invert has been corrected and that the release through the invert of at least one other radionuclide is reasonable.

### PL-1 Verify Oscillations Are No Longer Present and Release is Reasonable

#### 1.0 Path for Run Directory

Test Case A:

<<Run Directory>> = \$HOME/PA-SCR-420/test/pltest/pl-1/testA

Test Case B:

<<Run Directory>> = \$HOME/PA-SCR-368/test/pltest/pl-1/testB

#### 2.0 Path for Archived Results

The appropriate <<Run Directory>> for each test case.

#### 3.0 Environment Variables

Test Case A:

TPA\_TEST = \$HOME/PA-SCR-420/code50betao

TPA\_DATA = \$HOME/PA-SCR-420/code50betao

Test Case B:

TPA\_TEST = \$HOME/PA-SCR-420/code50betal

TPA\_DATA = \$HOME/PA-SCR-420/code50betal

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 For both test cases, special ebsfilt.inp and ebsnef.dat files will be used. The ebsfilt.inp file was received from Osvaldo Pensado. The time and release rate in ebsnef.dat was received from Osvaldo Pensado and a solubility limit affected column of all zeros was added by G Adams to accommodate the new TPA code version. Both files used in the test will be included in the archive.

#### 5.0 Special Diagnostic Code Modifications Required: None

#### 6.0 Program Modes to be Used

None

#### 7.0 Utility Scripts Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify that the standalone module, EBSFILT, no longer produces release rates for RA226 that oscillate and that the release rate through the invert of at least one other radionuclide is reasonable for the input.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: ebsnef2.dat

8.5 Procedure:

1. For Test Case A, copy ebsfilt.e from the tpa 5.0BetaO distribution to the <<Run Directory>>. Copy the special input files, ebsfilt.inp and ebsnef.dat, to the <<Run Directory>>. At the command prompt from the <<Run Directory>> directory, type the following, "ebsfilt.e > PA-SCR-420\_PL1-A.out." The screen output will be captured to file PA-SCR-420\_PL1-A.out.

2. For Test Case B, copy ebsfilt.e from the tpa 5.0BetaL distribution to the <<Run Directory>>. Copy the special input files, ebsfilt.inp and ebsnef.dat, to the <<Run Directory>>. At the command prompt from the <<Run Directory>> directory, type the following, "ebsfilt.e > PA-SCR-420\_PL1-B.out." The screen output will be captured to file PA-SCR-420\_PL1-B.out.

3. Plot the radionuclide release rates for Test Case A and Test Case B from ebsnef2.dat. Verify that in Test Case B for RA226, the release oscillates and that the oscillations are no longer present for Test Case A.

4. Plot the release rate for one additional radionuclide and verify that the release rate through the invert is reasonable for the input release rate.

8.6 Pass/Fail Criteria: The code runs to completion and plots of radionuclide release rate versus time are reasonable and reveal that there are no longer oscillations in the radionuclide release rates.

#### 9.0 Test Results

9.1 Output and Supporting Files: Files will be archived on a CD labeled, "Test Plan and Test Results for PA-SCR-420."

9.2 Criterion 1: Verify the EBSFILT code executes to completion without aborting.

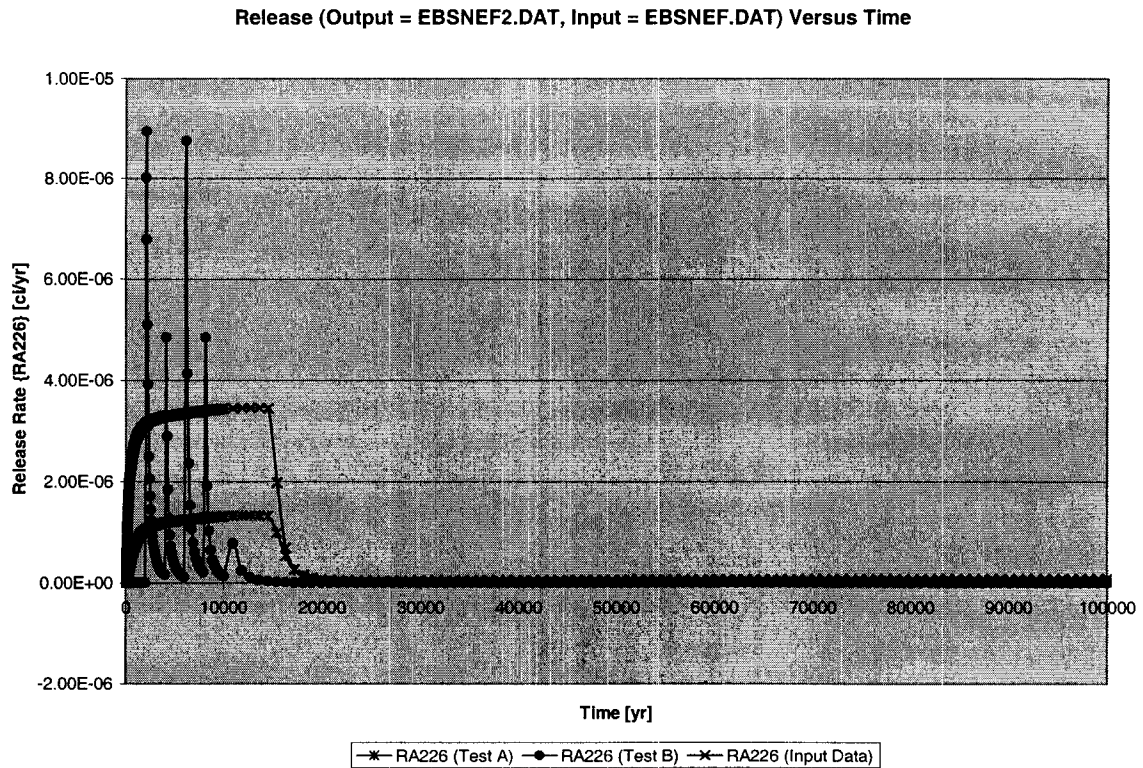
9.3 Criterion 2: Verify there are no longer oscillations in the radionuclide release rates for RA226.

9.4 Criterion 3: Verify the release rate through the invert is reasonable for one other radionuclide.

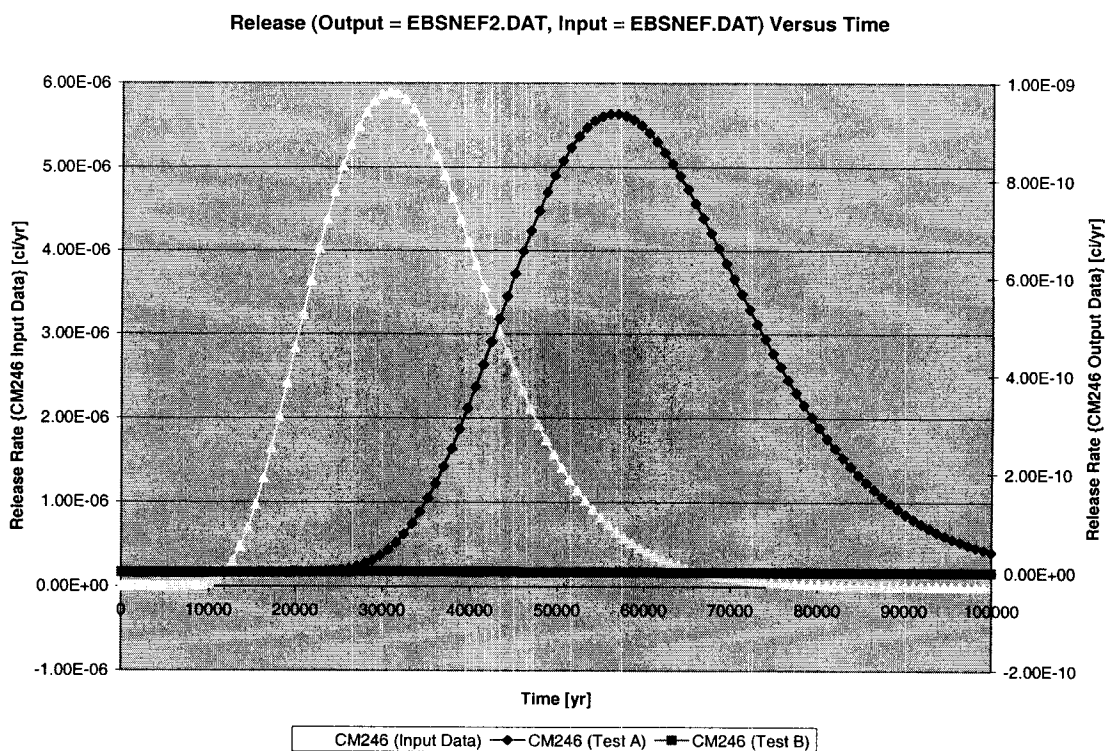
## 9.5 Overall Test Status:

The software successfully **PASSED** the criterion above for test PL-1.

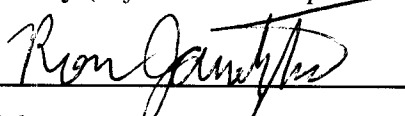
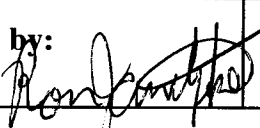

The following plot shows the input to ebsfilt and the output from ebsfilt. The updated code module (Test A) correctly shows the output following the input with the lack of oscillations previously observed in the original code module (Test B).



The following plot shows the input to ebsfilt and the output from ebsfilt. The updated code module (Test A) correctly shows the lower peak that occurs later which is reasonable for CM246 transport through the invert. The original code module (Test B) had a much smaller release rate through the invert and appears almost horizontal in the figure.



## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-421	<b>Software Title and Version:</b> TPA 5.0betaL	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> invent.f, nuclides.dat  <p>The colloid <b>Ja243</b> can be better placed in the chain tree as a parent to <b>Jp239</b>. The chain designation of <b>2c</b> will still apply as used in the <i>invent.f</i> module, however the chain sequence will change for the input prepared for the <i>chainsolver</i> subroutine.</p>		
<b>Change Requested by:</b> G. Adams Date: 1-17-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 1-17-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  <p>The input to the <i>chainsolver</i> subroutine when solving chain <b>2c</b> is changed to reflect the new position of the <b>Ja243</b> colloid in the chain tree. The old sequence was 51, 12, 13, 14, 15 corresponding to Ja243, Pu239, U235, Pa231, Ac227. The new sequence is 51, 50, 13, 14, 15 corresponding to Ja243, Jp239, U235, Pa231, Ac227. See attached figure for the complete list of the TPA <b>Cm243</b> decay chains.</p>		
<b>Implemented by:</b> Ron Janetzke  <b>Date:</b> 1-21-03		
<b>Description of Acceptance Tests:</b>  <p>The Test Plan for TPA SCR #421 consisted of one system level test designed to verify the movement of Ja243 in chain number 2 from its position as parent to Pu239 to parent of Jp239. Print statements were generated to the screen to display the moles per MTU for the individual radionuclides after the call to subroutine allchains within INVENT.F. In the new code version, (5.0BetaV), the amount of Pu239 decreased and the amount of Jp239 increased as expected.</p> <p>The software successfully passed the system level test in accordance with the Test Plan for TPA SCR #421. The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #421."</p>		
<b>Tested by:</b> GADAMS 	<b>Date:</b> 2-20-03	

# Test Plan for TPA SCR # 421

**Test Plan Name:** JA243 PARENT TO JP239

**Tested By:** George Adams

**Date:** February 20, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0BetaL

**Test Version:** 5.0BetaU

## System Level Tests

The system level test is designed to verify the movement of Ja243 in chain #2 from its position as parent to Pu239 to parent of Jp239.

### SL-1 Verify Daughter Products for Decay Chain #2

#### 1.0 Path for Run Directory

Test Case A:

<<Run Directory>> = \$HOME/PA-SCR-421/test/sltest/sl-1/testA

Test Case B:

<<Run Directory>> = \$HOME/PA-SCR-421/test/sltest/sl-1/testB

#### 2.0 Path for Archived Results

The appropriate <<Run Directory>> for each test case.

#### 3.0 Environment Variables

Test Case A:

TPA\_TEST = \$HOME/PA-SCR-421/code50betav

TPA\_DATA = \$HOME/PA-SCR-421/code50betav

Test Case B:

TPA\_TEST = \$HOME/PA-SCR-421/code50betal

TPA\_DATA = \$HOME/PA-SCR-421/code50betal



#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 For both test cases, modify the TPA.INP file in accordance with the following table:

Parameter	Value
OutputMode	1
MaximumTime[yr]	1.0e5

4.2 For both test cases, modify the NUCLIDES.DAT file in accordance with the following table:

Parameter	Value
For index 51, Ja243, set CPMTU@10	2.64d+01

#### 5.0 Special Diagnostic Code Modifications Required: None

#### 6.0 Program Modes to be Used

6.1 Input files are modified in accordance with Section 4.

6.2 Invent code module, INVENT.F, version 5.0 BetaL is modified as follows:

After line 2234, make the following change to the do loop.

```
c      GADAMS PA-SCR-421 2-20-03: Changed the stop index back to 43
c      in the following do loop.  The colloidal nuclides are included
c      in the chains already with the exception of colloid Jt229,
c      number 57.
      do i = 25,43
c      do i = 25,maxinvnuc

      do j = 1,nt
        dn(j,i) = dnt1(i) * dmyexp(-dlt(i) * (time(j) -time(1)))
      end do

      end do
      DO j = 1, nt
        dn(j,57) = dnt1(57) * dmyexp(-dlt(57) * (time(j) - time(1)))
      ENDDO
c      GADAMS PA-SCR-421 2-20-03: End of change
```

6.3 Add the following print statements to both version 5.0BetaV and 5.0BetaL of INVENT.F:

After line 1602, add the following print statement:

```
c      GADAMS PA-SCR-421 2-20-03: Print statements added for testing.
      PRINT *, 'Radionuclide Index: ', i,
```

```
&      ', Moles Per MTU at time step 2: ', amolepermtu(2,i)
c      GADAMS PA-SCR-421 2-20-03: End of change
```

## 7.0 Utility Scripts Needed to Perform the Test

None

## 8.0 Test Description

8.1 Objective: This test is designed to verify that Ja243 performs as a parent to Jp239 instead of Pu239.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: OutputMode is set to 1 to generate all output files.

8.5 Procedure:

1. For Test Case A, after making the code modification to INVENT.F and rebuilding the code, at the command prompt from the <<Run Directory>> directory, type the following, "tpa.e > PA-SCR-421\_SL1-A.out." The screen output will be captured to file PA-SCR-421\_SL1-A.out.
2. For Test Case B after making the code modification to INVENT.F and rebuilding the code, at the command prompt from the <<Run Directory>> directory, type the following, "tpa.e > PA-SCR-421\_SL1-B.out." The screen output will be captured to file PA-SCR-421\_SL1-B.out.
3. Using the information printed to the screen, compare the moles per MTU of Pu239 and Jp239 between the two test cases. For Test Case A (new code version), Jp239 will have a positive moles per MTU; whereas, in Test Case B (original code), Jp239 will have a value of 0. In addition, Pu239 will have a smaller value in Test Case A (new code version) than it has in Test Case B (original code).

8.6 Pass/Fail Criteria: The code runs to completion and generates the required output information in accordance with Section 8.5, Step 3.

## 9.0 Test Results

9.1 Output and Supporting Files: Files will be archived on a CD labeled, "Test Plan and Test Results for TPA SCR #421."

9.2 Criterion 1: Verify the tpa code executes to completion without aborting.

9.3 Criterion 2: Verify the output information in accordance with Section 8.5, Step 3.

## 9.4 Overall Test Status:

The software successfully **PASSED** the criterion above for test SL-1.

For both test cases, the code executes to completion without aborting.

As shown below, in the new code version (Test Case A - TPA Version 5.0betaV), the Moles Per MTU of Pu239 (radionuclide index 12) is lower than it is for the original code version (Test Case B - TPA Version 5.0betaL). In addition, the Moles Per MTU of Jp239 is 0 in the original code; however, it has a positive value in the new code version. The following calculation shows these results:

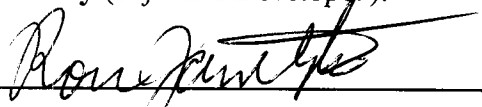
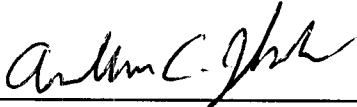

Moles Per MTU of Pu239 (original code) = 24.804581267346

Moles Per MTU of Pu239 (new code version) + Moles Per MTU of Jp239 (new code version) =  
 $24.803763757515 + 0.00081750983124373 = 24.80458126734624373$  which agrees with the amount of Pu239 in the original code.

A portion of the screen output follows:

```
diff ./testA/PA-SCR-421_SL1-A.out ./testB/PA-SCR-421_SL1-B.out
2,3c2,3
<      exec: Welcome to TPA Version 5.0betaV
<      Job started: Thu Feb 20 16:40:43 2003
---
>      exec: Welcome to TPA Version 5.0betaL
>      Job started: Thu Feb 20 16:43:31 2003
16c16
< Radionuclide Index: 12, Moles Per MTU at time step 2: 24.803763757515
---
> Radionuclide Index: 12, Moles Per MTU at time step 2: 24.804581267346
54c54
< Radionuclide Index: 50, Moles Per MTU at time step 2: 8.1750983124373D-04
---
> Radionuclide Index: 50, Moles Per MTU at time step 2: 0.
```

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-422	<b>Software Title and Version:</b> TPA 5.0betaP	<b>Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b>  The RELEASET module needs to have hard-coded array references replaced with references from include files. Waste package fill time needs to be corrected. Also remove dead code sections.		
<b>Change Requested by:</b> O. Pensado Date: 1-23-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 1-23-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b> Array references are retrieved from maxntime.i (currently set to 401). The previous values were all hard-coded to 402, so now the arrays are all 1 index smaller than before. Added output of variables fill time, fill start, and fill stop to preliminary table of relcum.out. Modified calculation of waste package fill time to be a weighted average of all failed packages. Also added report of flow-through packages to relcum.out. Removed deprecated code.		
<b>Implemented by:</b> A. Jank	<b>Date:</b> 2-19-03 	
<b>Description of Acceptance Tests:</b> Verify that output file releaset.out differs only in timestamp and format of the line containing the other output filenames. Output files ebsnef.out, maxrel.out, and inv1000.out are identical. Verify that output file relcum.out contains additional information that will allow the calculated confirmation of the new weighted average parameter. Verify that output file relfrac.out produces the same average fill time as relcum.out. Verify that the system output corresponds in both the bathtub and flow-through modes. <div style="margin-top: 10px;"> <i>Full Test Plan is attached. RG 2-24-03</i> </div>		
<b>Tested by:</b> B. Rogers and B. Winfrey 	<b>Date:</b> 2-21-2003	

# Test Plan for TPA SCR# 422

**Test Plan Name:** Correct waste package fill time and remove hard-coded array references

**Tested By:** Bob Rogers

**Date:** February 19, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0 beta

**Test Version:** 5.0 beta (with modifications to exec.f, ebsrel.f, releaset.f)

## Process Level Tests

The process level tests identified in this section are designed to verify that the RELEASET module will produce the correct weighted average waste package fill time, based on the individual fill times due to each type of failure and weighted by the number of package failures. The number of flow-through packages has been added to relcum.out, which are also produced in ebsrel.out. Module RELEASET was also modified to change array references to standard values. The output variables of fill time, fill start, and fill stop were added to the initial table of relcum.out, and are also presented in ebsrel.out.

### PL-1 Verification of Bathtub Model Calculations

#### 1.0 Path for Run Directory

TPA Code:

<<Run Directory>> = \$HOME/PA-SCR-422/test/pltest/pl-1

Standalone Case A:

<<Run Directory>>=\$HOME/PA-SCR-422/test/pltest/pl-1/testA

Standalone Case B:

<<Run Directory>>=\$HOME/PA-SCR-422/test/pltest/pl-1/testB

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-422/code50betap

TPA\_DATA = \$HOME/PA-SCR-422/code50betap

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file "tpa.inp" from the 5.0betap distribution is required.

The following modifications are necessary:

Modify the Following Parameters to tpa.ini	
Parameter	Value
VolcanismDisruptiveScenarioFlag	1
FaultingDisruptiveScenarioFlag	1
StartAtSubarea	3
StopAtSubarea	3
MaximumTime[yr]	5.0e4
OutputMode	1
WaterContactMode_Initial	0
WaterContactMode_Faulting	0
WaterContactMode_Volcanism	0
SubareaOfVolcanicEvent	3

#### 5.0 Special Diagnostic Code Modifications Required:

None

#### 6.0 Program Modes to be Used:

None

#### 7.0 Utility Scripts Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify the RELEASET module produces the correct calculation of the average waste package fill time, based on a weighted average of all waste package failures (for all type of failures). Additional diagnostic output is also provided in relcum.dat for verification purposes. This applies to setting the volcanism and faulting parameters to the "bathtub" model for initial, faulting and volcanism failures. Subarea #3 was selected, since occurrences of volcanic activity and faulting seem prevalent, with the given input parameters.

8.2 Assumptions: All input parameters are identical.

8.3 Constraints: None.

8.4 Output Files: relcum.out, rel\_flow.out, ebsrel.rlt, release.out, ebsnef.dat, relfrac.out, maxrel.dat, inv1000.out, screen output (wpfillstats.out for modified version only)

#### 8.5 Procedure

8.5.1 Test Case A (baseline code): At the command prompt from the TPA Code <<Run Directory>>, type the following: "tpa.e > PA-SCR-422\_PL1-A.out." The screen output will be captured to a file labeled, "PA-SCR-422\_PL1.out."

8.5.2 Copy the PA-SCR-422\_PL1.out, relcum.out, rel\_flow.out, and ebsrel.rlt to the Standalone Test Case A subdirectory.

8.5.3 Test Case B (revised code): At the command prompt from the <<Run Directory>> of the revised version, type the following: "tpa.e > PA-SCR-422\_PL1-B.out."

8.5.4 Copy the PA-SCR-422\_PL1-B.out, relcum.out, rel\_flow.out, ebsrel.rlt and wpsfillstats.out to the Standalone Test Case B subdirectory.

8.5.5 Compare the PA-SCR-422\_PL1-A.out, PA-SCR-422\_PL1-B.out, relcum.out, rel\_flow.out, and ebsrel.rlt output files. Compare the revised version output files for similar output in wpsfillstats.out.

#### 8.6 Pass/Fail Criteria:

8.6.1 The screen captured output files should differ only in the timestamp.

8.6.2 The rel\_flow output files should be the same.

8.6.3 The relcum.out files will indicate the addition of the fill time, fill start, and fill stop. The new package fill time is a weighted average of the fill time with respect to the number of failed waste packages. This can be manually calculated using the new variables include in the output file. The number of waste package failures due to flow-through are excluded in the calculation, but summed and reported as well. The file relcum.out values will correspond to those reported in ebsrel.rlt.

#### 9.0 Test Results

9.1 Output and Supporting Files: All files from the archive directory will be placed on a CD labeled, "TPA SCR#423/ Scientific Notebook."

9.2 Overall Test Status:

Waste Package Fail and Fill Times from ebsrel.rlt (Revised model)						
Type	# Failed	Fail Time[yr]	Fill Time[yr]	Fill Start[yr]	Fill Stop[yr]	Wgt Avg
1	6	876.74	3097.2	89.957	3996.8	3097.2
2	12	2932.8	3474.5	2932.8	6407.3	3618.7
3	7	5307.7	2859.0	5434.3	8293.3	3211.6
4	0	99.639	0	0	0	
5	0	3465.9	0	0	0	
6	0	7376.3	0	0	0	
7	0	30000	0	0	0	
8	0	50000	0	0	0	
Cumulative total: (as reported by output ebsrel.rlt)						3211.60
Cumulative total: (as reported by output relcum.out)						3211.60
Cumulative total: (as reported by output wpsfillstats.out)						3211.6

No flow-through package failures reported. Total corresponds to that in ebsrel.rlt.

This test successfully **PASSED** the criterion above.

## **PL-2 Verification of Flow Through Model Calculations**

### **1.0 Path for Run Directory**

TPA Code:

<<Run Directory>> = \$HOME/PA-SCR-422/test/pltest/pl-2

Standalone Case A:

<<Run Directory>>=\$HOME/PA-SCR-422/test/pltest/pl-2/testA

Standalone Case B:

<<Run Directory>>=\$HOME/PA-SCR-422/test/pltest/pl-2/testB

### **2.0 Path for Archived Results**

<<Run Directory>>

### **3.0 Environment Variables**

TPA\_TEST = \$HOME/PA-SCR-422/code50betap

TPA\_DATA = \$HOME/PA-SCR-422/code50betap

### **4.0 Special Input Files or Modifications to Input Files Required**

4.1 The file "tpa.inp" from the 5.0betap distribution is required.

The following modifications are necessary:

<b>Modify the Following Parameters to tpa.ini</b>	
<b>Parameter</b>	<b>Value</b>
VolcanismDisruptiveScenarioFlag	1
FaultingDisruptiveScenarioFlag	1
StartAtSubarea	3
StopAtSubarea	3
MaximumTime[yr]	5.0e4
OutputMode	1
WaterContactMode_Initial	0
WaterContactMode_Faulting	1



Modify the Following Parameters to tpa.ini	
WaterContactMode_Volcanism	1
SubareaOfVolcanicEvent	3

#### 5.0 Special Diagnostic Code Modifications Required:

None

#### 6.0 Program Modes to be Used:

None

#### 7.0 Utility Scripts Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify the RELEASET module produces the correct calculation of the average waste package fill time, based on a weighted average of all waste package failures (for all type of failures). Additional diagnostic output is also provided in relcum.dat for verification purposes. This applies to setting the volcanism and faulting parameters to the "flow through" model for faulting and volcanism failures, while leaving initial failures as the "bath tub" model. Subarea #3 was selected, since occurrences of volcanic activity and faulting seem prevalent, with the given input parameters.

8.2 Assumptions: All input parameters are identical.

8.3 Constraints: None.

8.4 Output Files: relcum.out, rel\_flow.out, ebsrel.rlt, release.out, ebsnef.dat, relfrac.out, maxrel.dat, inv1000.out, screen output (wpfillstats.out for modified version only)

#### 8.5 Procedure

8.5.1 Test Case A (baseline code): At the command prompt from the TPA Code <<Run Directory>>, type the following: "tpa.e > PA-SCR-422\_PL2-A.out." The screen output will be captured to a file labeled, "PA-SCR-422\_PL2.out."

8.5.2 Copy the PA-SCR-422\_PL2.out, relcum.out, rel\_flow.out, and ebsrel.rlt to the Standalone Test Case A subdirectory.

8.5.3 Test Case B (revised code): At the command prompt from the <<Run Directory>> of the revised version, type the following: "tpa.e > PA-SCR-422\_PL2-B.out."

8.5.4 Copy the PA-SCR-422\_PL2-B.out, relcum.out, rel\_flow.out, ebsrel.rlt and wpfillstats.out to the Standalone Test Case B subdirectory.

8.5.5 Compare the PA-SCR-422\_PL2-A.out, PA-SCR-422\_PL2-B.out, relcum.out, rel\_flow.out, and ebsrel.rlt output files. Compare the revised

version output files for similar output in wfillstats.out.

#### 8.6 Pass/Fail Criteria:

8.6.1 The screen captured output files should differ only in the timestamp.

8.6.2 The rel\_flow output files should be the same.

8.6.3 The relcum.out files will indicate the addition of the fill time, fill start, and fill stop. The new package fill time is a weighted average of the fill time with respect to the number of failed waste packages. This can be manually calculated using the new variables include in the output file. The number of waste package failures due to flow-through are excluded in the calculation, but summed and reported as well. The file relcum.out values will correspond to those reported in ebsrel.rlt.

#### 9.0 Test Results

9.1 Output and Supporting Files: All files from the archive directory will be placed on a CD labeled, "TPA SCR#423/ Scientific Notebook."

9.2 Overall Test Status:

Waste Package Fail and Fill Times from ebsrel.rlt (Revised model)						
Type	# Failed	Fail Time[yr]	Fill Time[yr]	Fill Start[yr]	Fill Stop[yr]	Wgt Avg
1	6	876.74	3097.2	89.957	3996.8	3097.2
2	12	2932.8	0	2932.8	2932.8	3097.2
3	7	5307.7	0	5434.3	5434.3	3097.2
4	0	99.639	0	0	0	
5	0	3465.9	0	0	0	
6	0	7376.3	0	0	0	
7	0	30000	0	0	0	
8	0	50000	0	0	0	
Cumulative total: (as reported by output ebsrel.rlt)						3097.23
Cumulative total: (as reported by output relcum.out)						3097.23
Cumulative total: (as reported by output wfillstats.out)						3097.2

19 flow-through package failures reported. Total corresponds to that in ebsrel.rlt.

This test successfully PASSED the criterion above.

## System Level Tests

The system level tests in this section are designed to verify that the system will produce the correct weighted average waste package fill time for all subareas and for multiple realizations while taking into account the flow-through waste packages.

### SL-1 Verification of Calculated Fill Times for Bath Tub Model

#### 1.0 Path for Run Directory

TPA Code:

<<Run Directory>> = \$HOME/PA-SCR-422/test/sltest/sl-1

Standalone Case A:

<<Run Directory>>=\$HOME/PA-SCR-422/test/sltest/sl-1/testA

Standalone Case B:

<<Run Directory>>=\$HOME/PA-SCR-422/test/sltest/sl-1/testB

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-422/code50betap

TPA\_DATA = \$HOME/PA-SCR-422/code50betap

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file "tpa.inp" from the 5.0betap distribution is required.

The following modifications are necessary:

Modify the Following Parameters to tpa.ini	
Parameter	Value
VolcanismDisruptiveScenarioFlag	1
FaultingDisruptiveScenarioFlag	1
StartAtSubarea	1
StopAtSubarea	0
NumberOfRealizations	5
MaximumTime[yr]	5.0e4
OutputMode	1

Modify the Following Parameters to tpa.ini	
WaterContactMode_Initial	0
WaterContactMode_Faulting	0
WaterContactMode_Volcanism	0
SubareaOfVolcanicEvent	3

#### 5.0 Special Diagnostic Code Modifications Required:

None

#### 6.0 Program Modes to be Used

None

#### 7.0 Utility Program Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to verify that the system produces the correct calculation of the average waste package fill time, based on a weighted average of all waste package failures (for all types of failures across multiple realizations and subareas. Diagnostic output can be verified in ebsrel.rlt. This applies to setting the volcanism and faulting parameters to the bathtub model for these types of failures.

8.2 Assumptions: All input parameters are identical.

8.3 Constraints: None.

8.4 Output Files: relcum.out, rel\_flow.out, ebsrel.rlt, release.out, ebsnef.dat, relfrac.out, maxrel.dat, inv1000.out, screen output, (wpfillstats.out for modified version only)

#### 8.5 Procedure

8.5.1 Test Case A (baseline code): At the command prompt from the TPA Code <<Run Directory>>, type the following: "tpa.e > PA-SCR-422\_SL1-A.out." The screen output will be captured to a file labeled, "PA-SCR-422\_SL1.out."

8.5.2 Copy the PA-SCR-422\_SL1.out, relcum.out, rel\_flow.out, and ebsrel.rlt to the Standalone Test Case A subdirectory.

8.5.3 Test Case B (revised code): At the command prompt from the <<Run Directory>> of the revised version, type the following: "tpa.e > PA-SCR-422\_SL1-B.out."

8.5.4 Copy the PA-SCR-422\_SL1-B.out, relcum.out, rel\_flow.out, ebsrel.rlt and wpfillstats.out to the Standalone Test Case B subdirectory.

8.5.5 Compare the PA-SCR-422\_SL1-A.out, PA-SCR-422\_SL1-B.out, relcum.out, rel\_flow.out, and ebsrel.rlt output files. Compare the revised

version output files for similar output in wpsfillstats.out.

#### 8.6 Pass/Fail Criteria:

8.6.1 The waste package minimum, maximum, and average times should be properly calculated and the results displayed in ebsrel.rlt and wpsfillstats.out.

#### 9.0 Test Results

9.1 Output and Supporting Files: All files from the archive directory will be placed on a CD labeled, "TPA SCR#422/ Scientific Notebook."

#### 9.2 Overall Test Status:

Values obtained from ebsrel.rlt, which correspond to the values reported in wpsfillstats for the revised model:

Waste Package Fill Times[yr] for 50,000 Year Simulation		
	Original Model	Modified Version
Waste package Fill Time Min	0.0000	162.26
Waste Package Fill Time Avg	3590.7	4609.2
Waste Package Fill Time Max	15030	13869

This test successfully **PASSED** the criterion above.

#### SL-2 Verification of Calculated Fill Times for Flow Through Model

##### 1.0 Path for Run Directory

TPA Code:

<<Run Directory>> = \$HOME/PA-SCR-422/test/sltest/sl-2

Standalone Case A:

<<Run Directory>>=\$HOME/PA-SCR-422/test/sltest/sl-2/testA

Standalone Case B:

<<Run Directory>>=\$HOME/PA-SCR-422/test/sltest/sl-2/testB

##### 2.0 Path for Archived Results

<<Run Directory>>

3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-422/code50betap

TPA\_DATA = \$HOME/PA-SCR-422/code50betap

4.0 Special Input Files or Modifications to Input Files Required

4.1 The file "tpa.inp" from the 5.0betap distribution is required.

The following modifications are necessary:

Modify the Following Parameters to tpa.ini	
Parameter	Value
VolcanismDisruptiveScenarioFlag	1
FaultingDisruptiveScenarioFlag	1
StartAtSubarea	1
StopAtSubarea	0
NumberOfRealizations	5
MaximumTime[yr]	5.0e4
OutputMode	1
WaterContactMode_Initial	0
WaterContactMode_Faulting	1
WaterContactMode_Volcanism	1
SubareaOfVolcanicEvent	3

5.0 Special Diagnostic Code Modifications Required:

None

6.0 Program Modes to be Used

None

7.0 Utility Program Needed to Perform the Test

None

8.0 Test Description

8.1 Objective: This test is designed to verify that the system produces the correct calculation of the average waste package fill time, based on a weighted average of all waste package failures (for all types of failures across multiple realizations

and subareas. Diagnostic output can be verified in ebsrel.rlt. This applies to setting the volcanism and faulting parameters to the flow through model for these types of failures.

8.2 Assumptions: All input parameters are identical.

8.3 Constraints: None.

8.4 Output Files: relcum.out, rel\_flow.out, ebsrel.rlt, release.out, ebsnef.dat, relfrac.out, maxrel.dat, inv1000.out, screen output (wfillstats.out for modified version only)

#### 8.5 Procedure

8.5.1 Test Case A (baseline code): At the command prompt from the TPA Code <<Run Directory>>, type the following: "tpa.e > PA-SCR-422\_SL1-A.out." The screen output will be captured to a file labeled, "PA-SCR-422\_SL1.out."

8.5.2 Copy the PA-SCR-422\_SL1.out, relcum.out, rel\_flow.out, and ebsrel.rlt to the Standalone Test Case A subdirectory.

8.5.3 Test Case B (revised code): At the command prompt from the <<Run Directory>> of the revised version, type the following: "tpa.e > PA-SCR-422\_SL1-B.out."

8.5.4 Copy the PA-SCR-422\_SL1-B.out, relcum.out, rel\_flow.out, ebsrel.rlt and wfillstats.out to the Standalone Test Case B subdirectory.

8.5.5 Compare the PA-SCR-422\_SL1-A.out, PA-SCR-422\_SL1-B.out, relcum.out, rel\_flow.out, and ebsrel.rlt output files. Compare the revised version output files for similar output in wfillstats.out.

#### 8.6 Pass/Fail Criteria:

8.6.1 The waste package minimum, maximum, and average times should be properly calculated and the results displayed in ebsrel.rlt and wfillstats.out.

#### 9.0 Test Results

9.1 Output and Supporting Files: All files from the archive directory will be placed on a CD labeled, "TPA SCR#423/ Scientific Notebook."

#### 9.2 Overall Test Status:

Values obtained from ebsrel.rlt, which correspond to the values reported in wfillstats for the revised model:


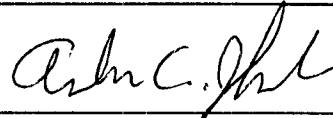
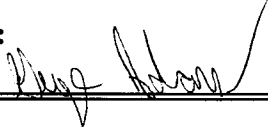
Waste Package Fill Times[yr] for 50,000 Year Simulation		
	Original Model	Modified Version
Waste package Fill Time Min	0.0000	8.0736
Waste Package Fill Time Avg	2526.3	4474.6

Waste Package Fill Times[yr] for 50,000 Year Simulation		
Waste Package Fill Time Max	13413	13869

This test successfully **PASSED** the criterion above.



## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-423	<b>Software Title and Version:</b> TPA 5.0betaP	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> ebsfail.f, ebsfail.def/ebsfail.inp, failt.f, nfenv.f  WP temperature should be used for near field concentrations. Iflagtpa should not be used as a parameter under "choose source of temperature data".		
<b>Change Requested by:</b> O. Pensado Date: 1-23-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 1-23-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  Module nfenv.f, added a call to zero for array tempwp to initialize values. Modified subroutine assignConcentrations to receive tempwp rather than temprep. Module failt.f, subroutines chloride and tempstry were modified to remove iflagtpa as a parameter and the code was cleaned of obsolete options according to this change. Age and nset were also removed, since they were unused. Data file ebsfail.def was modified to remove iflagtpa, iflag, nset, timintv and age parameters. Sections of code were deprecated in failt.f to force reading of "ebstrhc.inp" input file. Modified ebsfail.f and failt.f to properly read new data file format.		
<b>Implemented by:</b> A. Jank	<b>Date:</b> 2-10-03 	
<b>Description of Acceptance Tests:</b>  The test plan for TPA SCR #423 consists of one process level test designed to verify that the "choose source of temperature data" section and the "other temperature parameters" section of ebsfail.def/ebsfail.inp could be removed without affecting the output. In addition, the test plan contained one system level test designed to verify that the correct chemistry is obtained from NFENV using the waste package temperature instead of the repository temperature.  The software successfully passed the process level test and the system level test in accordance with the Test Plan for TPA SCR #423. The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #423."		
<b>Tested by:</b> G. Adams 	<b>Date:</b> 2-13-03	

# Test Plan for TPA SCR# 423

**Test Plan Name:** NFENV Chemistry Correction and EBSFAIL code cleanup

**Tested By:** GADAMS

**Date:** February 13, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0BetaP

**Test Version:** 5.0BetaP  
(modified to include new nfenv.f,  
ebsfail.f, failt.f, and ebsfail.def  
files)

## Process Level Tests

The process level test identified in this section is designed to verify that the FAILT module will produce the same results as it did before the code change was made. EBSFAIL/FAILT was modified to remove references to input data in ebsfail.def/ebsfail.inp that were no longer used in the code.

### PL-1 Verification of Output Files

#### 1.0 Path for Run Directory

TPA Code:

<<Run Directory>> = \$HOME/PA-SCR-423/test/pltest/pl-1

Standalone Test Case A:

<<Run Directory>> = \$HOME/PA-SCR-423/test/pltest/pl-1/testA

Standalone Test Case B:

<<Run Directory>> = \$HOME/PA-SCR-423/test/pltest/pl-1/testB

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-423/code50betap

TPA\_DATA = \$HOME/PA-SCR-423/code50betap

#### 4.0 Special Input Files or Modifications to Input Files Required:

For the new code version, ebsfail.def/ebsfail.inp was modified to remove the "choose source of temperature data" section and the "other temperature parameters" section. The ebsfail.inp file is generated using version 5.0BetaP for one subarea and one realization. Afterwards, for Test Case A, the "choose source of temperature data" section and the "other temperature parameters" section of ebsfail.inp are removed.

#### 5.0 Special Diagnostic Code Modifications Required: None

## 6.0 Program Modes to be Used

None

## 7.0 Utility Scripts Needed to Perform the Test

None

## 8.0 Test Description

8.1 Objective: This test is designed to verify that the updated FAILT module produces identical output to that of the base version (with the exception of the runtime/date.)

8.2 Assumptions: Parameters not included in the “choose source of temperature data” section and the “other temperature parameters” section of the ebsfail.inp file are identical between the two test cases.

8.3 Constraints: none

8.4 Output Files: ebstrh.dat, corrode.out, redirected screen output

8.5 Procedure:

1. First, generate the input files for the two test cases. From the TPA Code <<Run Directory>>, type the following: “tpa.e > PA-SCR-423\_PL1.out.” The screen output will be captured to a file labeled, “PA-SCR-423\_PL1.out.”
2. Copy ebsfail.inp, ebstrhc.inp, chlrdmf.dat, and deltaec.inp to the Standalone Test Case A and B subdirectories. For Test Case A, delete the “choose source of temperature data” section and the “other temperature parameters” section of the ebsfail.inp file.
3. For Test Case A (the new code version), at the command prompt from the <<Run Directory>>, type the following: “failt.e > PA-SCR-423\_PL1-A.out. The screen output is captured to a file labeled, “PA-SCR-423\_PL1-A.out”.
4. For Test Case B (the baseline version), type the following: “failt.e > PA-SCR-423\_PL1-B.out.” The screen output is captured to a file labeled, “PA-SCR-423\_PL1-B.out.”
5. Compare the resulting PA-SCR-423\_PL1-A.out, PA-SCR-423\_PL1-B.out, ebstrh.dat, corrode.out, echofail.dat, and weldfail.out output files.

8.6 Pass/Fail Criteria:

1. The screen-captured output files should indicate that the waste package and repository temperatures are the same, as well as the resulting output. The only differences should be the time stamp and that iflagtpa is no longer reported.
2. The files ebstrh.dat, corrode.out, and weldfail.out should contain identical information.
3. The echofail.dat file should show that the parameters in the removed sections are no longer displayed.

## 9.0 Test Results

9.1 Output and Supporting Files: Files will be placed on a CD labeled, “Test Plan and Test Results for TPA SCR #423.”

9.2 Criterion 1: Verify the output doesn’t change (with the exception of time stamp and lack of echoing removed parameters) for the new FAILT code module.

9.3 Overall Test Status:

This test successfully **PASSED** the criterion above.

The following file differences were generated and are shown below. The screen-captured output files show that the only difference is the time stamp and that the iflagtpa value is no longer reported. There are no differences in the ebstrh.dat, corrode.out, and weldfail.out output files. In addition, the echofail.dat file for the new version no longer shows the ebsfail.inp data that was removed.

```
diff ../testA/PA-SCR-423_PL1-A.out ../testB/PA-SCR-423_PL1-B.out
4c4,5
< Thu Feb 13 07:47:59 2003
---
> Thu Feb 13 07:48:27 2003
> iflagtpa= 1
diff ../testA/ebstrh.dat ../testB/ebstrh.dat
diff ../testA/corrode.out ../testB/corrode.out
diff ../testA/echofail.dat ../testB/echofail.dat
4a5,7
> iflag,nset= 2 1
> timintv= 49.999999900000
> age [y] = 0.
diff ../testA/weldfail.out ../testB/weldfail.out
```

## System Level Tests

The system level test in this section is designed to verify that the correct chemistry is obtained from NFENV using the waste package temperature instead of the repository temperature.

### SL-1 Verification of Chemistry Values

#### 1.0 Path for Run Directory

Test Case A:

<<Run Directory>> = \$HOME/PA-SCR-423/test/sltest/sl-1/testA

Test Case B:

<<Run Directory>> = \$HOME/PA-SCR-423/test/sltest/sl-1/testB

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

For Test Case A:

TPA\_TEST = \$HOME/PA-SCR-423/code50betapmod

TPA\_DATA = \$HOME/PA-SCR-423/code50betapmod

For Test Case B:

TPA\_TEST = \$HOME/PA-SCR-423/code50betap

TPA\_DATA = \$HOME/PA-SCR-423/code50betap

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, "tpa.inp" from the 5.0betap distribution is required. The following modifications are required in this file:

Modify the Following Parameters	
Parameter	Value
StopAtSubArea	1
OutputMode	1
MaximumTime[yr]	1.0e5

4.2 In order to verify the chemistry values retrieved, modify the values in the multifaf.dat file as follows:

<b>Modify the Following Parameters in MULTIFAF.DAT</b>					
Temperature[C]	Cl[mol/L]	F[mol/L]	CO3[mol/L]	pH[]	deltaECritical[VSHE]
2.00E+01	6.65E-03	4.08E-04	2.11E-03	8.37E+00	0.0E+00
4.00E+01	6.66E-03	4.09E-04	2.12E-03	8.38E+00	0.1E+00
6.00E+01	6.67E-03	4.10E-04	2.13E-03	8.39E+00	0.2E+00
8.00E+01	6.68E-03	4.11E-04	2.14E-03	8.40E+00	0.3E+00
1.00E+02	6.69E-03	4.12E-04	2.15E-03	8.41E+00	0.4E+00

4.3 In order to verify the chemistry values retrieved, modify the values in the multifbe.dat file as follows:

<b>Modify the Following Parameters in MULTIFBE.DAT</b>					
Temperature[C]	Cl[mol/L]	F[mol/L]	CO3[mol/L]	pH[]	deltaECritical[VSHE]
2.00E+01	6.70E-03	4.13E-04	2.16E-03	8.42E+00	0.5E+00
4.00E+01	6.71E-03	4.14E-04	2.17E-03	8.43E+00	0.6E+00
6.00E+01	6.72E-03	4.15E-04	2.18E-03	8.44E+00	0.7E+00
8.00E+01	6.73E-03	4.16E-04	2.19E-03	8.45E+00	0.8E+00
1.00E+02	6.74E-03	4.17E-04	2.20E-03	8.46E+00	0.9E+00

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

None

7.0 Utility Program Needed to Perform the Test

None

8.0 Test Description

8.1 Objective: This test will verify that with the substitution of the waste package temperature for the repository temperature in the assignConcentrations module of NFENV, the correct chemistry values are retrieved.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: nfenv.rlt

8.5 Procedure:

1. For Test Case A, at the command prompt from the <<Run Directory>>, type the following: tpa.e > PA-SCR-423\_SL1-A.out.

2. For Test Case B, at the command prompt from the <<Run Directory>>, type the following: tpa.e > PA-SCR-423\_SLI-B.out.

3. Compare the chemistry values placed in file nfenv.rit for both test cases. Retrieve 2 sample points from the two test cases and verify that the chemistry retrieved is the correct chemistry for the waste package temperature instead of the repository temperature.

8.6 Pass/Fail Criteria: The NFENV module uses the waste package temperature instead of the repository temperature to generate chemistry information.

## 9.0 Test Results

9.1 Output and Supporting Files: Files will be placed on a CD labeled, "Test Plan and Test Results for TPA SCR #423."

9.2 Criterion 1: The NFENV module generates chemistry values for the waste package temperature and not the repository temperature.

### 9.3 Overall Test Status:

This test successfully **PASSED** the criterion above.

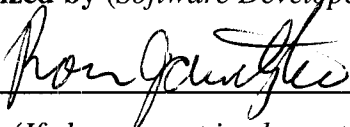

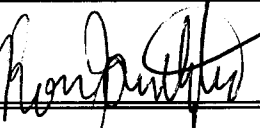
For simplicity, only the chloride chemistry and pH values are compared in the table below since the other chemistry values are retrieved in the same manner.

		Output Chemistry (From NFENV.RLT)					
		Repository	Waste Package	Test Case A (New Version)		Test Case B (Original)	
Point	Time [yr]	Temp[C]	Temp[C]	Cl[mol/L]	pH[]	Cl[mol/L]	pH[]
132	1946.8	96.866	97.566	0.0448	8.4	0.0066884	8.4084
159	3722.1	79.627	80.165	0.0066801	8.4001	0.0066798	8.3998

For point 132, Test Case B is using the information from multifaf.dat since the temperature that it is using is below 97 degrees C. However, Test Case A correctly uses the TPA.INP value for Indrift\_Cl\_PostTemperaturePeak[mol/L] for Cl and the TPA.INP value for Indrift\_pH\_PostTemperaturePeak[] for pH since the temperature it is using is above 97 degrees C.

For point 159, both test cases are using information from multifaf.dat. Test Case B generates values slightly below the 80 degree C values of 0.00668 and 8.4 for Cl and pH, respectively, because the original code used the lower repository temperature. However, Test Case A correctly generates values slightly above the 80 degree C values since it is instead using the waste package temperature which is just above 80 degrees C.

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-424	<b>Software Title and Version:</b> TPA 5.0betaP	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> samplerx.i, tpa.inp, and tpanames.dbs  Sampler.f has an error when counting the number of usersuppliedpwisecdf parameters. The maximum allowable is less than the amount being counted.		
<b>Change Requested by:</b> B. Winfrey Date: 2-13-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 2-13-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  See attachment.		
<b>Implemented by:</b> B. Winfrey 	<b>Date:</b> 2-13-03	
<b>Description of Acceptance Tests:</b>  See attachment hard copy and CD labeled "TPA SCR424 Test Results"		
<b>Tested by:</b> R. Janetzke 	<b>Date:</b> 2-23-03	



## Description of Change(s) or Problem Resolution

1. Change the following SZ colloid parameters to **usersuppliedpwisecdf** distribution in *tpa.inp*.

AlluviumMatrixRD\_SAV\_\*

where the asterisk (\*) is replaced with the following chemical symbols: Am, Np, U, Pu, Th, Ra, Pb, Cs, Ni, Se, and Nb.

2. Change the following UZ colloid parameters to **usersuppliedpwisecdf** distribution in *tpa.inp*.

MatrixKD\_TSw\_\* [m3/kg]  
MatrixKD\_Chnv\* [m3/kg]  
MatrixKD\_Chnz\* [m3/kg]  
MatrixKD\_PPw\_\* [m3/kg]  
MatrixKD\_UCF\_\* [m3/kg]  
MatrixKD\_BFw\_\* [m3/kg]  
MatrixKD\_UFZ\_\* [m3/kg]

where the asterisk (\*) is replaced with the following chemical symbols: Am, Np, U, Pu, Th, Ra, Pb, Cs, Ni, and Se.

3. Change the following SZ RD colloids to **constant** distribution in *tpa.inp*.

AlluviumMatrixRD_SAV_Cm	2.03E+04
ImmobilizedRD_STFF_Am	3.60E+04
ImmobilizedRD_STFF_Np	1.90E+01
ImmobilizedRD_STFF_Cm	3.60E+04
ImmobilizedRD_STFF_U	3.71E+01
ImmobilizedRD_STFF_Pu	1.98E+03
ImmobilizedRD_STFF_Th	3.60E+04
ImmobilizedRD_STFF_Ra	7.02E+03
ImmobilizedRD_STFF_Pb	7.02E+03
ImmobilizedRD_STFF_Cs	1.35E+04
ImmobilizedRD_STFF_Ni	1.98E+03
ImmobilizedRD_STFF_Se	5.52E+01
ImmobilizedRD_STFF_Nb	3.60E+04

4. Create a utility program that converts original data files to a format suitable for *tpa.inp*. It reads in the parameter names and two columns of values. For every identical value in column 1, it only saves the last (largest) corresponding value from column 2. It then prints, on separate lines, the distribution **usersuppliedpwisecdf**, the parameter name, the number of data lines to follow, and the column1 and 2 values. Each parameter set is separated by a line with two asterisks. This utility uses redirection for file input and output.

# Test Plan for TPA SCR # 424

**Test Plan Name:** Reversible Colloids.

**Tested By:** Ron Janetzke

**Date:** Feb. 22, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0betaW

**Test Version:** 5.0betaY

**Baseline Compiler:** f77 V5.0

**Test Compiler:** f77 V5.0

The baseline version was initially compiled in /home/janetzke/tpa50betaW and run in /home/janetzke/scr424/base.

The test results for this test plan are archived on CD "TPA SCR 424 Test Results".

## Process Level Tests

### PL-1 Verification of emulation of previous version.

#### 1.0 Path for Run Directory

/home/janetzke/scr424/PL-1

#### 2.0 Path for Archived Results

/home/janetzke/scr424/PL-1

#### 3.0 Environment Variables

TPA\_TEST = /home/janetzke/tpa50betaY

TPA\_DATA = /home/janetzke/tpa50betaY

#### 4.0 Special Input Files or Modifications to Input Files Required

None

#### 5.0 Special Diagnostic Code Modifications Required:

None.

## 6.0 Program Modes to be Used

Base case.

## 7.0 Utility Scripts Needed to Perform the Test

The UNIX command script **/home/janetzke/scr424/dff** is used to compare output files from different runs.

## 8.0 Test Description

### 8.1 Objective:

This test is designed to verify that the results of a base case run are unchanged from the base case run of the baseline version.

### 8.2 Assumptions:

Directory **/home/janetzke/scr424** is the start point for the procedure.

### 8.3 Constraints: none

### 8.4 Output Files:

All

### 8.5 Procedure:

```
>mkdir PL_1
>cd PL_1
>cp $TPA_TEST/tpa.inp .
>vi tpa.inp           (Edit title lines)
>$TPA_TEST/tpa.e >tpa.out&
>../dff ../base >&dff.out
```

**8.6 Pass/Fail Criteria:** The code runs to completion and generates result files that are the same as the base case run when the differences are viewed with the **dff** utility.

## 9.0 Test Results

- 9.1 The results of the dff utility can be viewed in the dff.out file. Inspection of this files shows that all results are the same and the criterion is met.

This test **PASSED**.

**PL-2 Verification of sufficient array size for arrays in *sampler.f* that use the maxudist parameter.**

**1.0 Path for Run Directory**

`/home/janetzke/scr424/PL-2`

**2.0 Path for Archived Results**

`/home/janetzke/scr424/PL-2`

**3.0 Environment Variables**

`TPA_TEST = /home/janetzke/tpa50betaY`

`TPA_DATA = /home/janetzke/scr424/PL-2`

**4.0 Special Input Files or Modifications to Input Files Required**

*Tpa.inp* is the special reversible version copied from the *data* subdirectory.  
*../data/coefkdeq.dat* is edited to indicate 0 entries.

**5.0 Special Diagnostic Code Modifications Required:**

None.

**6.0 Program Modes to be Used**

Reversible data in *tpa.inp*, irreversible colloid flag is on.

**7.0 Utility Scripts Needed to Perform the Test**

The UNIX command script `/home/janetzke/scr424/dff` is used to compare output files from different runs.

## 8.0 Test Description

### 8.1 Objective:

This test is designed to verify that the run using the reversible file, runs to completion, and that the sampler routine does not indicate an error due to excessive number of user distributions.

### 8.2 Assumptions:

Directory */home/janetzke/scr424* is the start point for the procedure.

### 8.3 Constraints: none

### 8.4 Output Files:

*tpa.out*

### 8.5 Procedure:

```
>mkdir PL_2
>cd PL_2
>mkdir data
>cp $TPA_TEST/data/* data
>cp data/reversibles.inp tpa.inp
>vi tpa.inp
    (Edit title lines; Set irreversible flag)
>cp data/coefkdeqr.dat data/coefkdeq.dat
>$TPA_TEST/tpa.e >tpa.out&
```

8.6 Pass/Fail Criteria: The code runs to completion and no *sampler.f* error messages appears in the *tpa.out* file.

## 9.0 Test Results

9.1 The results can be viewed in the *tpa.out* file. Inspection of this file shows that no sampler error has occurred.

This test **PASSED**.

## **PL-3 Verification of reversible colloid operations with irreversible flag off.**

### 1.0 Path for Run Directory

`/home/janetzke/scr424/PL-3`

### 2.0 Path for Archived Results

`/home/janetzke/scr424/PL-3`

### 3.0 Environment Variables

`TPA_TEST = /home/janetzke/tpa50betaY`

`TPA_DATA = /home/janetzke/scr424/PL-3`

### 4.0 Special Input Files or Modifications to Input Files Required

*Tpa.inp* is the special reversible version copied from the *data* subdirectory.

*../data/coefkdeq.dat* is edited to indicate 0 entries.

### 5.0 Special Diagnostic Code Modifications Required:

None.

### 6.0 Program Modes to be Used

Reversible data in *tpa.inp*, irreversible colloid flag is **off**.

### 7.0 Utility Scripts Needed to Perform the Test

The UNIX command script `/home/janetzke/scr424/dff` is used to compare output files from different runs.

## 8.0 Test Description

### 8.1 Objective:

This test is designed to verify that the run using the reversible file with the irreversible flag off, runs to completion.

### 8.2 Assumptions:

Directory */home/janetzke/scr424* is the start point for the procedure.

### 8.3 Constraints: none

### 8.4 Output Files:

*tpa.out*

### 8.5 Procedure:

```
>mkdir PL_3
>cd PL_3
>mkdir data
>cp $TPA_TEST/data/* data
>cp data/reversibles.inp tpa.inp
>vi tpa.inp
    (Edit title lines; Clear irreversible flag)
>cp data/coefkdeqr.dat data/coefkdeq.dat
>$TPA_TEST/tpa.e >tpa.out&
```

8.6 Pass/Fail Criteria: The code runs to completion and no error messages appear in the *tpa.out* file.

## 9.0 Test Results

9.1 The results can be viewed in the *tpa.out* file. Inspection of this files shows that an error has occurred. This error will be addressed in SCR440.

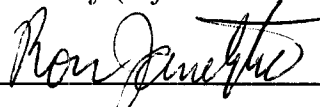
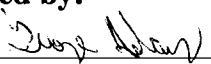


This test **FAILED**, see SCR440.



## **System Level Tests**

**None**

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-425	<b>Software Title and Version:</b> TPA 5.0betaP	<b>Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> uzflow.f, dcags.f, exec.f  Three recommendations came from the R. Benke: <ol style="list-style-type: none"> <li>1. Fix error when AnnualInfiltrationLossMode(0=NoLoss, 1=LossCalculated) is set to a value of 0.</li> <li>2. (Optional) Add comment to tpa.inp stating that noise data are present for values of up to 2.4 for StandardDeviationOfMATAboutMeanInOneTimePeriod[degC].</li> <li>3. (Optional) Add comment to tpa.inp stating that values for the iconstant, ClimatePerturbationSet, should be greater than zero.</li> </ol>		
<b>Change Requested by:</b> R. Benke Date: 2-12-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 2-12-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  Please see attachment, "Description of Change(s) or Problem Resolution."		
<b>Implemented by:</b> G. Adams 	<b>Date:</b> 2-17-03 	
<b>Description of Acceptance Tests:</b>  The test plan for TPA SCR #425 consists of two system level tests. The first test was a verification of successful TPA execution with the AnnualInfiltrationLossMode set to zero. The second test covered additional corrections to the UZFLOW module as well as to the DCAGS module.  The test plan developed by George Adams was repeated using the host machine masaya.geophysics.swri.edu, running SuSE Linux. See the accompanying CD for the test plan and test results. The TPA program successfully passed all tests.  George Adams' original test is located on a CD labeled, "Test Plan and Test Results for TPA SCR #425."		
<b>Tested by:</b> Bob Rogers 	<b>Date:</b> 2-21-03	

## **Description of Change(s) or Problem Resolution**

Modified UZFLOW to retrieve the subarea area for AnnualInfiltrationLossMode equal to 0. Formerly, the area was used before it was set. In addition, modified the parameter list to pass the isfirstsubarea flag to UZFLOW. Formerly, subarea 1 was used for initialization and screen output messages; however, the flag, isfirstsubarea is passed, because subarea 1 may not necessarily be the first subarea.

Modified DCAGS to copy env.e, envin.e and associated data files to the run directory. The DCAGS module would not copy the files over if the DirectReleaseOnlyFlag was set.

Modified EXEC to not generate EBSREL subarea summary information when the DirectReleaseOnlyFlag is set. Also, moved the AAP and AAT calculations used as input to DCAGS and DCAGW to within the isfirstsubarea IF-THEN statement preceding the call to UZFLOW. This was done to avoid the side-effect of AAPseq being changed in the subsequent call to UZFLOW.

Modified tpa.inp to include the clarifying comment: "ClimatePerturbationSet should be greater than zero."

# Test Plan for TPA SCR# 425

**Test Plan Name:** UZFLOW corrections for AnnualInfiltrationLossMode Equal to 0 and Initialization on First Subarea

**Tested By:** GADAMS

**Date:** February 14, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0BetaP

**Test Version:** 5.0BetaP  
(modified to include updated  
UZFLOW, EXEC, and DCAGS  
modules)

## System Level Tests

The system level tests are designed to verify that the following errors were corrected in the UZFLOW module. For an AnnualInfiltrationLossMode of 0, the UZFLOW code aborted because the area was not yet determined. In addition, UZFLOW was using subarea 1 instead of the first subarea (subarea 2, for example, could become the first subarea) to call subroutine climato and print messages to the screen.

### SL-1 Verification of LossMode 0

#### 1.0 Path for Run Directory

Test Case A:

<<Run Directory>> = \$HOME/PA-SCR-425/test/sltest/sl-1/testA

Test Case B:

<<Run Directory>> = \$HOME/PA-SCR-425/test/sltest/sl-1/testB

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

For Test Case A:

TPA\_TEST = \$HOME/PA-SCR-425/code50betapmod

TPA\_DATA = \$HOME/PA-SCR-425/code50betapmod

For Test Case B:

TPA\_TEST = \$HOME/PA-SCR-425/code50betap

TPA\_DATA = \$HOME/PA-SCR-425/code50betap

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, "tpa.inp" from the 5.0betap distribution is required. The following modifications are required in this file:

Modify the Following Parameters	
Parameter	Value
OutputMode	1
AnnualInfiltrationLossMode(0=NoLoss,1=LossCalculated)	0

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

None

7.0 Utility Program Needed to Perform the Test

None

8.0 Test Description

8.1 Objective: This test verifies that the TPA code will execute to completion when AnnualInfiltrationLossMode is set to 0.

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: PA-SCR-425\_SL1-A.out, PA-SCR-425\_SL1-B.out, and uzflow.rlt

8.5 Procedure:

1. For Test Case A, at the command prompt from the <<Run Directory>>, type the following: tpa.e > PA-SCR-425\_SL1-A.out.
2. For Test Case B, at the command prompt from the <<Run Directory>>, type the following: tpa.e > PA-SCR-425\_SL1-B.out.
3. Compare the screen output files and verify that for Test Case A, the TPA code executes to completion without aborting and that for Test Case B, the TPA code aborts.

8.6 Pass/Fail Criteria: For Test Case A (new code), the TPA code runs to completion for AnnualInfiltrationLossMode set to 0. For Test Case B (original code), the TPA code aborts.

9.0 Test Results

9.1 Output and Supporting Files: Files will be placed on a CD labeled, "Test Plan and Test Results for TPA SCR #425."

9.2 Criterion 1: Verify the TPA code runs to completion for Test Case A (new code) and aborts for Test Case B (original code).

**9.3 Overall Test Status:**

This test successfully **PASSED** the criterion above.

The output files, PA-SCR-425\_SL1-A.out and PA-SCR-425\_SL1-B.out, show that for Test Case A (new), the code executes to completion. However, for Test Case B (original), the code aborts with the following message:

```
exec: calling uzft
***>>> error in UZFT <<<***
Matrix infiltration is too low for the
Van Genuchten curve from DCM3D
infil(itime)= 0.
time= 0.
```

The original code (Test Case B) also displays 0 flux for all times in uzflow.rlt; whereas, the new code (Test Case A) displays nonzero values.

## SL-2 Verification of Output Values

### 1.0 Path for Run Directory

Test Case A:

<<Run Directory>> = \$HOME/PA-SCR-425/test/sltest/sl-2/testA

Test Case B:

<<Run Directory>> = \$HOME/PA-SCR-425/test/sltest/sl-2/testB

Test Case C:

<<Run Directory>> = \$HOME/PA-SCR-425/test/sltest/sl-2/testC

Test Case D:

<<Run Directory>> = \$HOME/PA-SCR-425/test/sltest/sl-2/testD

Test Case E:

<<Run Directory>> = \$HOME/PA-SCR-425/test/sltest/sl-2/testE

Test Case F:

<<Run Directory>> = \$HOME/PA-SCR-425/test/sltest/sl-2/testF

### 2.0 Path for Archived Results

<<Run Directory>>

### 3.0 Environment Variables

For Test Cases A, C, and E:

TPA\_TEST = \$HOME/PA-SCR-425/code50betapmod

TPA\_DATA = \$HOME/PA-SCR-425/code50betapmod

For Test Case B, D, and F:

TPA\_TEST = \$HOME/PA-SCR-425/code50betap

TPA\_DATA = \$HOME/PA-SCR-425/code50betap

### 4.0 Special Input Files or Modifications to Input Files Required

4.1 The file, "tpa.inp" from the 5.0betap distribution is required. The following modifications are required in this file:

#### Test Cases A and B

Modify the Following Parameters	
Parameter	Value
OutputMode	1

Modify the Following Parameters	
VolcanismDisruptiveScenarioFlag(yes=1,no=0)	1
FaultingDisruptiveScenarioFlag(yes=1,no=0)	1

### Test Cases C and D

Modify the Following Parameters	
Parameter	Value
OutputMode	1
MaximumTime[yr]	1.0e5
StartAtSubarea	3
VolcanismDisruptiveScenarioFlag(yes=1,no=0)	1
FaultingDisruptiveScenarioFlag(yes=1,no=0)	1

### Test Cases E and F

Modify the Following Parameters	
Parameter	Value
OutputMode	1
DirectReleaseOnlyFlag(yes=1,no=0)	1
VolcanismDisruptiveScenarioFlag(yes=1,no=0)	1
FaultingDisruptiveScenarioFlag(yes=1,no=0)	1

5.0 Special Diagnostic Code Modifications Required: None

#### 6.0 Program Modes to be Used

In order to run with the DirectReleaseOnlyFlag set, TPA code 5.0BetaP module DCAGS needs to be updated to transfer the env.e, envin.e, and associated data files to the run directory.

#### 7.0 Utility Program Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test is designed to execute the TPA code under a series of different input parameters to verify that flux, infiltration, and release did not change as a result of the code modifications.

8.2 Assumptions: none

8.3 Constraints: none



8.4 Output Files: PA-SCR-425\_SL2-(A, B, C, D, E, and F).out, uzflow.rlt, infilper.res, and dcags.rlt

#### 8.5 Procedure:

1. For Test Case A, at the command prompt from the <<Run Directory>>, type the following:  
tpa.e > PA-SCR-425\_SL2-A.out.
2. For Test Case B, at the command prompt from the <<Run Directory>>, type the following:  
tpa.e > PA-SCR-425\_SL2-B.out.
3. Compare the screen output files, uzflow.rlt files, and infilper.res files and verify that the only difference is the date-time stamp.
4. For Test Case C, at the command prompt from the <<Run Directory>>, type the following:  
tpa.e > PA-SCR-425\_SL2-C.out.
5. For Test Case D, at the command prompt from the <<Run Directory>>, type the following:  
tpa.e > PA-SCR-425\_SL2-D.out.
6. The files, uzflow.rlt files and infilper.res will only show a difference in the date-time stamp. The screen output files will display a difference in the date-time stamp and, since the starting subarea is 3, the screen output for Test Case C (new code) will display a message for the Uncertainty Parameter and the Mean Annual Infiltration at Start after the call to UZFLOW on subarea 3. The screen output for Test Case D (original code) will not display this message.
7. For Test Case E, at the command prompt from the <<Run Directory>>, type the following:  
tpa.e > PA-SCR-425\_SL2-E.out.
8. For Test Case F, at the command prompt from the <<Run Directory>>, type the following:  
tpa.e > PA-SCR-425\_SL2-F.out.
9. Compare the screen output files and dcags.rlt files and verify that the only difference is the date-time stamp.

8.6 Pass/Fail Criteria: The TPA code runs to completion and displays the output in accordance with Section 8.5, Steps 3, 6, and 9.

### 9.0 Test Results

9.1 Output and Supporting Files: Files will be placed on a CD labeled, "Test Plan and Test Results for TPA SCR #425."

9.2 Criterion 1: Verify the TPA code runs to completion and displays the required output in accordance with Section 8.5, Steps 3, 6, and 9.

### 9.3 Overall Test Status:

This test successfully **PASSED** the criterion above.

#### Test Cases A and B:

In accordance with Section 8.5, Step 3, the only difference between the files is the date-time stamp.

Comparison between Test Cases A and B

```
diff ./testA/PA-SCR-425_SL2-A.out ./testB/PA-SCR-425_SL2-B.out
```

```
3c3
```

```
<      Job started: Mon Feb 17 12:49:21 2003
```

```

---
> Job started: Mon Feb 17 13:01:23 2003
diff ./testA/uzflow.rlt ./testB/uzflow.rlt
3c3
< TPA 5.0betaP, Job started: Mon Feb 17 12:49:22 2003
---
> TPA 5.0betaP, Job started: Mon Feb 17 13:01:26 2003
diff ./testA/infilper.res ./testB/infilper.res
3c3
< TPA 5.0betaP, Job started: Mon Feb 17 12:49:22 2003
---
> TPA 5.0betaP, Job started: Mon Feb 17 13:01:26 2003

```

#### Test Cases C and D:

In accordance with Section 8.5, Step 6, the only difference between infilper.res and uzflow.rlt is the date-time stamp. In addition, for the screen output, there is a difference in the date-time stamp, but, in addition, the new code (Test Case C) displays the Uncertainty parameter and the Mean Annual Infiltration at Start as required.

#### Comparison between Test Cases C and D

```

diff ./testC/PA-SCR-425_SL2-C.out ./testD/PA-SCR-425_SL2-D.out
3c3
< Job started: Mon Feb 17 13:07:15 2003
---
> Job started: Mon Feb 17 13:08:23 2003
67,68d66
< UZFLOW: Uncertainty parameter: 0.0000E+00
< Mean Annual Infiltration at Start(AAI0): 9.7117E+00
diff ./testC/uzflow.rlt ./testD/uzflow.rlt
3c3
< TPA 5.0betaP, Job started: Mon Feb 17 13:07:16 2003
---
> TPA 5.0betaP, Job started: Mon Feb 17 13:08:24 2003
diff ./testC/infilper.res ./testD/infilper.res
3c3
< TPA 5.0betaP, Job started: Mon Feb 17 13:07:16 2003
---
> TPA 5.0betaP, Job started: Mon Feb 17 13:08:24 2003

```

#### Test Cases E and F:

In accordance with Section 8.5, Step 9, the only difference between the files is the date-time stamp. Note, in addition, the updated DCAGS.F file had to be included in the build for Test Case

F (original code); otherwise, the code would abort. The original code (Test Case F) would also erroneously print the following to the screen:

Subarea Averages {steps, cycles}

Cm246	0.0000E+00	0.0000E+00
U238	0.0000E+00	0.0000E+00
Cm245	0.0000E+00	0.0000E+00
Am241	0.0000E+00	0.0000E+00
Np237	0.0000E+00	0.0000E+00
Am243	0.0000E+00	0.0000E+00
Pu239	0.0000E+00	0.0000E+00
Pu240	0.0000E+00	0.0000E+00
U234	0.0000E+00	0.0000E+00
Th230	0.0000E+00	0.0000E+00
Ra226	0.0000E+00	0.0000E+00
Pb210	0.0000E+00	0.0000E+00
Cs135	0.0000E+00	0.0000E+00
I129	0.0000E+00	0.0000E+00
Tc99	0.0000E+00	0.0000E+00
Ni59	0.0000E+00	0.0000E+00
C14	0.0000E+00	0.0000E+00
Se79	0.0000E+00	0.0000E+00
Nb94	0.0000E+00	0.0000E+00
Cl36	0.0000E+00	0.0000E+00

The above error was corrected in the new code version run under Test Case E.

Comparison between Test Cases E and F

diff ./testE/PA-SCR-425\_SL2-E.out ./testF/PA-SCR-425\_SL2-F.out

3c3

< Job started: Mon Feb 17 13:16:12 2003

---

> Job started: Mon Feb 17 13:16:24 2003

./testE/dcags.rlt ./testF/dcags.rlt

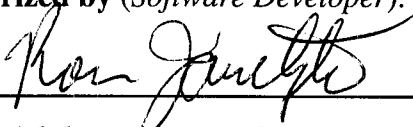
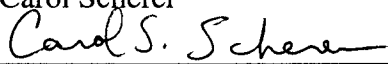
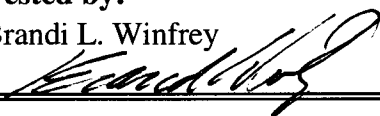
3c3

< TPA 5.0betaP, Job started: Mon Feb 17 13:16:14 2003

---

> TPA 5.0betaP, Job started: Mon Feb 17 13:16:25 2003

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-427	<b>Software Title and Version:</b> TPA 5.0betaS	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> coefkdeq.dat  Inadequate precision of coefficients in <i>coefkdeq.dat</i> .  When the results of using <i>coefkdeq.dat</i> with calc_kd (calculating Ka') were plotted (3-D) and compared to reference plots (Zhang, P.C., and P.V. Brady. <b>Geochemistry of Soil Radionuclides</b> . Soil Science Society of America, Madison, Wisconsin, USA. 2002. p.245), the results showed inadequate agreement. A better fit is needed.		
<b>Change Requested by:</b> R. Janetzke Date: 2-17-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 2-17-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  Modified file coefkdeq.dat to change coefficients from 2-place decimals to 8-place decimals (originally in scientific notation before being formatted for <i>coefkdeq.dat</i> ). (See attachment for more details.)		
<b>Implemented by:</b> Carol Scherer 	<b>Date:</b> 2-17-03	
<b>Description of Acceptance Tests:</b>  The software was tested in accordance with the Test Plan for TPA SCR #427.  The software successfully passed all tests. The software, test directories, and test results are contained on a CD labeled, "Test Plan and Test Results for PA-SCR-427."		
<b>Tested by:</b> Brandi L. Winfrey 	<b>Date:</b> 2-20-03	

## Description of Change(s) or Problem Resolution (continued):

Original coefkdeq.dat:

```
# Coefficients for equations for KD values for five radioelements: Am, Np, Pu, Th, U. Refer to equations provided by
D.Turner. Implementation by S. Mohanty
# Equation parameters and summary of fit results for model curves at discrete PCO2. Derived using complete MINTEQA2
generated data set with polynomial fitting by Microsoft Excel 97.
# Expressed in terms of log10 (Ka', in mL/m^2) = a + bx + cx^2 + dx^3 + ex^4 + fx^5 = log10 (Kd/Sa). where x is pH.
# date: 9_25_2002 <-- must have word "date" in last header line only.
5      10      !Number of radioelements, Number of data rows for each radioelement
Am(III)
logPCO2(atm) pHLow pHhigh a      b      c      d      e      f
-0.5    6.0    8.50    297.7500 -193.7500  46.9180 -5.0750  0.2284 -0.0026
-1.0    6.0    9.00   -1268.9000  960.0300 -288.5100 43.0210 -3.1719  0.0922
-1.5    6.0    9.00  -1046.3000  775.6400 -228.2400 33.2990 -2.3980  0.0679
-2.0    6.0    9.25   -535.7500  386.9800 -111.0900 15.8210 -1.1075  0.0303
-2.5    6.0    9.25     8.5719  -18.1240   8.1559 -1.5337  0.1410 -0.0052
-3.0    6.0    9.50    216.0100 -169.7800  51.9540 -7.7778  0.5800 -0.0174
-3.5    6.0    9.50    274.9300 -211.7800  63.7150 -9.3897  0.6874 -0.0201
-4.0    6.0   10.00    278.8900 -211.5000  62.5780 -9.0510  0.6487 -0.0185
-4.5    6.0   10.25    124.5200  -94.1090  27.2150 -3.7750  0.2587 -0.0071
-5.0    6.0   10.50     35.5450  -26.9950   7.1763 -0.8145  0.0422 -0.0008
Np(V)
logPCO2(atm) pHLow pHhigh a      b      c      d      e      f
-0.5    6.0    8.50   1313.4000 -910.5200  246.4000 -32.5460  2.1007 -0.0532
-1.0    6.0    9.00  -1850.7000 1422.8000 -432.7300  64.9510 -4.8036  0.1398
-1.5    6.0    9.00  -2602.8000 1937.3000 -569.7500  82.6500 -5.9076  0.1663
-2.0    6.0    9.25   -926.9100  666.0900 -188.3900  26.1120 -1.7670  0.0465
-2.5    6.0    9.25    602.8300 -470.2100  144.9700 -22.1540  1.6807 -0.0507
-3.0    6.0    9.50    764.8700 -579.7800  173.5300 -25.6990  1.8859 -0.0549
-3.5    6.0    9.50    364.9600 -275.4500   81.7640 -11.9920  0.8714 -0.0251
-4.0    6.0   10.00    204.0000 -153.0200   44.8610  -6.4814  0.4637 -0.0132
-4.5    6.0   10.25    148.6400 -110.3800   31.8430  -4.5115  0.3159 -0.0088
-5.0    6.0   10.50     98.2230  -72.1440   20.3540  -2.8023  0.1900 -0.0051
```

Pu(V)

logPCO2(atm)	pHLow	pHhigh	a	b	c	d	e	f
-0.5	6.0	8.50	1251.2000	-907.1700	258.4800	-36.2010	2.4979	-0.0681
-1.0	6.0	9.00	-592.3000	463.9300	-144.1900	22.1570	-1.6755	0.0497
-1.5	6.0	9.00	-1185.1000	884.3800	-261.1800	38.0970	-2.7380	0.0774
-2.0	6.0	9.25	-49.7650	30.4470	-7.0634	0.7055	-0.0181	-0.0008
-2.5	6.0	9.25	390.7300	-295.1200	87.9790	-12.9860	0.9545	-0.0280
-3.0	6.0	9.50	-99.3650	70.0490	-19.6700	2.7138	-0.1791	-0.0044
-3.5	6.0	9.50	-238.8600	171.4400	-48.7930	6.8516	-0.4704	0.0126
-4.0	6.0	10.00	-121.1200	82.2700	-22.1330	2.9215	-0.1851	0.0044
-4.5	6.0	10.25	-1.8503	-6.2289	3.7720	-0.8149	0.0801	-0.0030
-5.0	6.0	10.50	71.4860	-59.5450	19.0200	-2.9566	0.2276	-0.0069

Th(IV)

logPCO2(atm)	pHLow	pHhigh	a	b	c	d	e	f
-0.5	6.0	8.50	-300.2800	253.2300	-70.4740	10.3150	-0.7390	0.0207
-1.0	6.0	9.00	-177.2100	137.0100	-39.5020	5.4984	-0.3702	0.0096
-1.5	6.0	9.00	-23.2740	18.5770	-3.5032	0.0999	-0.0288	-0.0020
-2.0	6.0	9.25	17.2600	-11.3180	5.1399	-1.1198	0.1124	-0.0042
-2.5	6.0	9.25	9.0865	-3.2500	2.0826	-0.5590	0.0623	-0.0025
-3.0	6.0	9.50	-32.9920	29.2490	-7.8826	0.9581	-0.0524	0.0010
-3.5	6.0	9.50	-47.9790	41.2060	-11.6720	1.5543	-0.0990	0.0024
-4.0	6.0	10.00	-47.9190	41.2720	-11.7300	1.5694	-0.1006	0.0025
-4.5	6.0	10.25	-54.6810	46.4670	-13.3120	1.8080	-11.8500	0.0030
-5.0	6.0	10.50	-61.4430	51.6620	-14.8930	2.0466	-0.1363	0.0035

U (VI) <-- "U " 2 character radioelement name needed.

logPCO2(atm)	pHLow	pHhigh	a	b	c	d	e	f
-0.5	6.0	8.50	2002.6000	-1484.5000	433.1900	-62.0910	4.3680	-0.1208
-1.0	6.0	9.00	477.4100	-326.9200	86.2020	-10.7800	0.6283	-0.0134
-1.5	6.0	9.00	-501.7700	391.3600	-121.3400	18.7220	-1.4328	0.0432
-2.0	6.0	9.25	-561.6200	416.1200	-122.3800	17.9040	-1.2992	0.0372
-2.5	6.0	9.25	-439.6400	312.2940	-87.9480	12.3250	-0.8563	0.0234
-3.0	6.0	9.50	-451.6400	314.5800	-86.7580	11.8910	-0.8068	0.0215
-3.5	6.0	9.50	-256.7000	167.4900	-43.0320	5.4843	-0.3437	0.0083
-4.0	6.0	10.00	208.0200	-172.7000	55.2460	-8.5264	0.6423	-0.0191
-4.5	6.0	10.25	617.3000	-466.0200	138.1000	-20.0590	1.4338	-0.0405
-5.0	6.0	10.50	466.1100	-343.8100	99.2570	-13.9960	0.9687	-0.0265

Modified the file coefkdeq.dat, as follows:

```
# Coefficients for equations for KD values for five radioelements: Am, Np, Pu, Th, U. Refer to equations provided by
D.Turner. Implementation by S. Mohanty
# Equation parameters and summary of fit results for model curves at discrete PCO2. Derived using complete MINTEQA2
generated data set with polynomial fitting by Microsoft Excel 97.
# Expressed in terms of log10 (Ka', in mL/m^2) = a + bx + cx^2 + dx^3 + ex^4 + fx^5 = log10 (Kd/Sa), where x is pH.
# SCR #427: correct coefficient values and increase precision (css - 2-14-2003)
# model requires precision of at least 8 decimal places
# date: 2_13_2003 TPA 5.0betaN <-- must have word "date" in last header line only.
5 10 !Number of radioelements, Number of data rows for each radioelement
Am(III)
logPCO2(atm) pHLow pHhigh a b c d e f
-0.5 6.0 8.50 307.59001700 -200.73337400 48.86857390 -5.34389002 0.24664848 -0.00310416
-1.0 6.0 9.00 -1270.65128000 961.11970500 -288.77291100 43.05229710 -3.17369574 0.09226157
-1.5 6.0 9.00 -1045.53642000 775.07897900 -228.07702300 33.27615880 -2.39638932 0.06789750
-2.0 6.0 9.25 -529.70097000 382.57883000 -109.82740500 15.64244660 -1.09501774 0.02991442
-2.5 6.0 9.25 9.99115550 -19.12208470 8.43510534 -1.57254303 0.14374613 -0.00530121
-3.0 6.0 9.50 207.97473500 -163.91087800 50.26749810 -7.53911613 0.56336067 -0.01690361
-3.5 6.0 9.50 275.22137700 -211.82535300 63.68167270 -9.37809594 0.68606024 -0.02004885
-4.0 6.0 10.00 277.38065700 -210.45818600 62.29763580 -9.01473543 0.64646365 -0.01846756
-4.5 6.0 10.25 130.72585800 -98.62225380 28.50975860 -3.95833162 0.27147852 -0.00743480
-5.0 6.0 10.50 33.74073080 -25.65826470 6.78522964 -0.75797035 0.03813970 -0.00069526
Np(V)
logPCO2(atm) pHLow pHhigh a b c d e f
-0.5 6.0 8.50 1319.75918630 -915.16432848 247.72280134 -32.73220421 2.11361285 -0.05353161
-1.0 6.0 9.00 -1855.43486217 1426.15511096 -433.64857749 65.07682866 -4.81207261 0.14004972
-1.5 6.0 9.00 -2608.42331100 1941.29505078 -570.86753731 82.80491578 -5.91820642 0.16657268
-2.0 6.0 9.25 -929.36833158 667.75124003 -188.83097871 26.17017137 -1.77083892 0.04660477
-2.5 6.0 9.25 604.15463949 -471.18717183 145.25628277 -22.19529238 1.68365358 -0.05074650
-3.0 6.0 9.50 764.24156979 -579.32259744 173.40177062 -25.68199425 1.88477442 -0.05486468
-3.5 6.0 9.50 359.65220164 -271.53092875 80.62144476 -11.82780553 0.85976307 -0.02479575
-4.0 6.0 10.00 201.90140192 -151.49269268 44.42444548 -6.42016723 0.45942406 -0.01304250
-4.5 6.0 10.25 144.58349394 -107.42340532 30.99109298 -4.39069911 0.30744094 -0.00852804
-5.0 6.0 10.50 95.81229583 -70.41985478 19.87058564 -2.73585264 0.18548048 -0.00496593
Pu(V)
```

logPCO2(atm)	pHLow	pHhigh	a	b	c	d	e	f
-0.5	6.0	8.50	1246.30948721	-903.72709304	257.51364332	-36.06686622	2.48869143	-0.06789596
-1.0	6.0	9.00	-587.02195729	460.07381777	-143.09761162	22.00344618	-1.66475939	0.04939950
-1.5	6.0	9.00	-1184.45306764	883.86678055	-261.02854931	38.07646118	-2.73662325	0.07737175
-2.0	6.0	9.25	-50.02594030	30.68415531	-7.14589011	0.71916125	-0.01921190	-0.00076903
-2.5	6.0	9.25	393.21942695	-296.88006200	88.46809928	-13.05328221	0.95901834	-0.02814551
-3.0	6.0	9.50	-95.11976538	67.08508393	-18.86016332	2.60556000	-0.17203212	0.00424400
-3.5	6.0	9.50	-230.00692092	165.06322240	-46.98805430	6.59970619	-0.45311977	0.01211012
-4.0	6.0	10.00	-120.56773140	82.02325299	-22.11369394	2.92664506	-0.18608722	0.00447629
-4.5	6.0	10.25	7.90514519	-13.32252306	5.80401936	-1.10171044	0.10010108	-0.00352281
-5.0	6.0	10.50	74.84983790	-61.92895673	19.68327403	-3.04713289	0.23370762	-0.00711033

Th(IV)

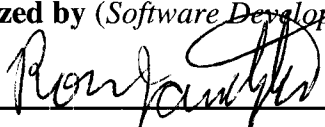
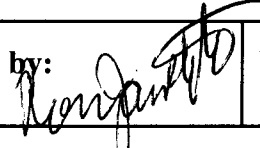
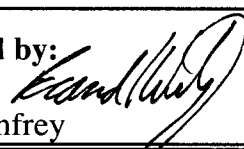
logPCO2(atm)	pHLow	pHhigh	a	b	c	d	e	f
-0.5	6.0	8.50	-312.14711523	243.99009612	-73.03800105	10.68670601	-0.76572596	0.02148313
-1.0	6.0	9.00	-178.60426661	137.73479859	-39.62233542	5.50279873	-0.36964490	0.00956996
-1.5	6.0	9.00	-22.15437259	17.78354930	-3.27591815	0.06714595	0.03117773	-0.00208040
-2.0	6.0	9.25	22.19042131	-14.82976722	6.12630097	-1.25638885	0.12171609	-0.00447272
-2.5	6.0	9.25	0.00987343	3.44007829	0.13956325	-0.28092710	0.04270240	-0.00192857
-3.0	6.0	9.50	-30.36665828	27.32153765	-7.32247331	0.87766304	-0.04670166	0.00081467
-3.5	6.0	9.50	-50.36155981	42.99824237	-12.20001276	1.63047122	-0.10434437	0.00256662
-4.0	6.0	10.00	-59.35569634	49.98525001	-14.35431507	1.96006372	-0.12936953	0.00332113
-4.5	6.0	10.25	-62.85636897	52.70342414	-15.19121240	2.08779456	-0.13903535	0.00361134
-5.0	6.0	10.50	-63.80070118	53.43751658	-15.41765407	2.12244405	-0.14166587	0.00369062

U (VI) <-- "U " 2 character radioelement name needed.

logPCO2(atm)	pHLow	pHhigh	a	b	c	d	e	f
-0.5	6.0	8.50	2003.97493902	-1485.67029530	433.57092214	-62.15156614	4.37263234	-0.12097330
-1.0	6.0	9.00	478.51153159	-327.82314738	86.48866922	-10.82526728	0.63173885	-0.01350561
-1.5	6.0	9.00	-504.79538068	393.52598368	-121.95095503	18.80798789	-1.43871348	0.04335225
-2.0	6.0	9.25	-558.47416786	413.85367777	-121.73861427	17.81411938	-1.29298327	0.03698197
-2.5	6.0	9.25	-445.08506681	316.43450502	-89.18854317	12.50756382	-0.86945763	0.02375106
-3.0	6.0	9.50	-456.35553823	317.97599454	-87.72698192	12.02812351	-0.81637025	0.02175635
-3.5	6.0	9.50	-258.61826289	168.96719847	-43.47518218	5.54955303	-0.34845941	0.00843921
-4.0	6.0	10.00	210.89440197	-174.75673790	55.82991857	-8.60831699	0.64797946	-0.01924467
-4.5	6.0	10.25	608.99699685	-459.98846072	136.36765428	-19.81478449	1.41668878	-0.04002967
-5.0	6.0	10.50	475.33711389	-350.55771236	101.20336237	-14.27289372	0.98819149	-0.02700394



## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-428	<b>Software Title and Version:</b> TPA 5.0betaS	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> nfenv.f, tpa.inp, and tpanames.dbs  EX1 continued. User supplied temperature reference point.  The code does not have the flexibility to specify a temperature reference point that can be used as a representative point for the repository.		
<b>Change Requested by:</b> R. Janetzke Date: 2-18-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 2-18-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  Four new control parameter constants were added to the tpa.inp file, and implemented in nfenv.f. TemperatureReferencePoint(1=SubareaCentroid,2=UserDefined)[] UserTemperatureReferencePoint_x[UTM] UserTemperatureReferencePoint_y[UTM] UserTemperatureReferencePoint_z[m] If the subarea centroid is used, the 3 user coordinates are not queried.		
<b>Implemented by:</b> Ron Janetzke 	<b>Date:</b> 2-19-03	
<b>Description of Acceptance Tests:</b> Using a 3-D visualization program plot the temperature contributions for each waste package and drift with the TemperatureReferencePoint set to each available flag and verify that the reference point is at the appropriate location with respect to the flag setting (i.e., when the flag is set to SubareaCentroid, the peak temperature contribution should be located at the center of the subarea).  See the Test Plan for more specific details.		
<b>Tested by:</b>  B. Winfrey	<b>Date:</b> 2-20-03	

# Test Plan for TPA SCR # 428

**Test Plan Name:** User Defined Temperature Reference Point

**Tested By:** Brandi Winfrey

**Date:** February 20, 2002

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 4.2 m

**Test Versions:** 5.0betaT

## System Level Tests

These system level tests should verify that modifications to *nfenv.f* respond accordingly to new flags set in *tpa.inp*. The temperature reference point should be able to be specified by the user. These tests will verify that when the reference point is specified, the contributions to that point will be larger as they approach the point and when no point is specified, the centroid of the subarea will be the temperature reference point with the contributions acting accordingly.

### SL-1

#### 1.0 Path for Run Directory

<<Run Directory tpa50betaT>> = \$HOME/PA-SCR-428/test/sltest/sl-1

#### 2.0 Path for Archived Results

\$HOME/PA-SCR-428/test/sltest/sl-1/tecplot

All files will be archived on a CD labeled, "Test Plan and Test Results for PA-SCR-428".

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-428/code50t

TPA\_DATA = \$HOME/PA-SCR-428/code50t

#### 4.0 Special Input Files or Modifications to Input Files Required:

4.1 Using the *tpa.inp* file, set the values in this file in accordance with the following table:

Parameter	Value
StopAtSubarea	1
StopAtRealization	1

NumberOfTimeStepsInCompliancePeriod	2
OutputMode(0=None,1=All,2=UserDefined)	1
OneTemperatureCellPerWP(yes=1,no=0)	0
TemperatureReferencePoint(1=SubareaCentroid,2=Userdefined)[[]]	1

4.2 The file *repdes.dat* created for this Test Plan is located in the *sltest* directory. It contains the Subarea and Repository outlines. It is used to better visualize the results in the Tecplot files created for each system level test.

#### *repdes.dat*

```

TITLE = "Repository and Subareas"
VARIABLES = "V1", "V2", "V3"
ZONE T=Subarea1, I=5, F=POINT
547514.88, 4079310.61, 0.
548069.2, 4079136.5, 0.
547847.3, 4077816.2, 0.
547370.95, 4077922.04, 0.
547514.88, 4079310.61, 0.
ZONE T=Subarea2, I=5, F=POINT
548069.2, 4079136.5, 0.
548569.32, 4078981., 0.
548504.06, 4077664.24, 0.
547847.3, 4077816.2, 0.
548069.2, 4079136.5, 0.
ZONE T=Subarea3, I=5, F=POINT
547370.95, 4077922.04, 0.
547847.3, 4077816.2, 0.
548322.7, 4077192.2, 0.
547474.7, 4077281.6, 0.
547370.95, 4077922.04, 0.
ZONE T=Subarea4, I=5, F=POINT
547847.3, 4077816.2, 0.
548504.06, 4077664.24, 0.
548479.71, 4077173.06, 0.
548322.7, 4077192.2, 0.
547847.3, 4077816.2, 0.
ZONE T=Subarea5, I=5, F=POINT
547474.7, 4077282.6, 0.
547887.3, 4077238.1, 0.
547897.79, 4076045.46, 0.
547655.97, 4076123.07, 0.

```

547474.7, 4077282.6, 0.  
ZONE T=Subarea6, I=5, F=POINT  
547887.3, 4077238.1, 0.  
548322.7, 4077192.2, 0.  
548155.7, 4075962.63, 0.  
547897.79, 4076045.46, 0.  
547887.3, 4077238.1, 0.  
ZONE T=Subarea7, I=5, F=POINT  
548322.7, 4077192.2, 0.  
548479.71, 4077173.06, 0.  
548455, 4076674.51, 0.  
548155.7, 4075962.63, 0.  
548322.7, 4077192.2, 0.  
ZONE T=Subarea8, I=5, F=POINT  
547645.27, 4079656.06, 0.  
548588.98, 4079377.55, 0.  
548569.32, 4078981, 0.  
547514.88, 4079310.61, 0.  
547645.27, 4079656.06, 0.  
ZONE T=Subarea9, I=5, F=POINT  
547732.82, 4080960.00, 0.  
548251.91, 4080817.50, 0.  
548116.89, 4079516.81, 0.  
547645.27, 4079656.06, 0.  
547732.82, 4080960.00, 0.  
ZONE T=Subarea10, I=5, F=POINT  
548251.91, 4080817.50, 0.  
548664.55, 4080675.00, 0.  
548588.98, 4079377.55, 0.  
548116.89, 4079516.81, 0.  
548251.91, 4080817.50, 0.  
  
ZONE T=Outline, I=15, F=POINT  
547732.8, 4081208., 0.  
548664.6, 4080902., 0.  
548588.98, 4079377.55, 0.  
548569.32, 4078981., 0.  
548504.06, 4077664.24, 0.  
548479.71, 4077173.06, 0.  
548455, 4076674.51, 0.  
548155.7, 4075962.63, 0.  
547897.79, 4076045.46, 0.  
547655.97, 4076123.07, 0.

```
547474.7, 4077282.6, 0.
547370.95, 4077922.04, 0.
547514.88, 4079310.61, 0.
547645.27, 4079656.06, 0.
547732.8, 4081208., 0.
```

## 5.0 Special Diagnostic Code Modifications Required:

5.1 In the file *nfenv.f* make the following modifications on line 784:

```
c      blw-2/3/3  print for temp contribution comparison
              write ( 1, '(a,3e15.7)' ) 'tbump, x, y', tbump, xc, yc
```

## 6.0 Program Modes to be Used: None

## 7.0 Utility Scripts Needed to Perform the Test:

```
create_3d.nwk
#!/bin/sh -e
# -----
#
#  abstract:  Shell script extracts x, y, tbump data from fort_*.1 file
#             to use as input to Tecplot format.
#
#  revised:  10-Feb-03  new create by:
#
#             Brandi Winfrey / #20
#             6220 Culebra Rd.
#             San Antonio TX 78238 usa
#             210-522-5083 (phone)
#             210-522-5155 (fax)
#             E-mail: bwinfrey@swri.edu
#
# -----

if ( test $# -ne '1' ) then
    echo Usage: $0 "infile.dat > outfile.dat"
    exit
fi

if ( test ! -f $1 ) then
    echo File: $1 not found.
    exit
```

fi

# Input looks like:

#...+....1....+....2....+....3....+....4....+....5....+....6....+....7

#tbump, x, y 0.1123401E-02 0.5485645E+06 0.4078936E+07

#tbump, x, y 0.1141813E-02 0.5485587E+06 0.4078937E+07

#tbump, x, y 0.1160638E-02 0.5485528E+06 0.4078939E+07

#tbump, x, y 0.1179249E-02 0.5485469E+06 0.4078941E+07

#

nawk '

BEGIN { }

{

print \$5, \$6, \$4

}

END {

} ' \$1

exit

create\_tec.nwk

#!/bin/sh -e

# -----

#

# abstract: Shell script converts drift.dat output file to tecplot

# format

#

# revised: 08-Jan-03 new create by:

#

# Brandi Winfrey / #20

# 6220 Culebra Rd.

# San Antonio TX 78238 usa

# 210-522-5083 (phone)

# 210-522-5155 (fax)

# E-mail: bwinfrey@swri.edu

#

#

# -----

```

if ( test $# -ne '1' ) then
    echo Usage: $0 "infile.dat > outfile.dat"
    exit
fi

if ( test ! -f $1 ) then
    echo File: $1 not found.
    exit
fi

# Input looks like:
#...+....1....+....2....+....3....+....4....+....5....+....6....+....7
#TITLE:
***
***
#Emplacement Block
#          1
***  Drift Endpoints
***    x1          y1          x2          y2          numWP
# 5.48567026E+05 4.07893471E+06 5.47510281E+05 4.07926624E+06    180
# 5.48562883E+05 4.07885112E+06 5.47501759E+05 4.07918402E+06    181
# 5.48558740E+05 4.07876753E+06 5.47493236E+05 4.07910180E+06    181
#

nawk '

BEGIN {
    printf( "TITLE = \"Drifts and WPs\"\n" )
    printf( "VARIABLES = \"V1\", \"V2\", \"V3\"\n" )
}

{
    x1 = $1
    y1 = $2
    x2 = $3
    y2 = $4
    z = 0.00
    numWP = $5
    if ( NF != 5 ){          # only count data rows for NR
        NR = NR - 1
    }

    if ( NF == 5 ) {        # get data

```

```

if ( numWP == 1 ) { # WP counted individually, too many lines for WP=zone
  if ( NR == 1 ) {
    printf( "ZONE T=\"WP\",I=17754,F=POINT\n" )
  }
  printf( "%.2f,%.2f,%.2f\n", x1, y1, z )
  printf( "%.2f,%.2f,%.2f\n", x2, y2, z )
}
else {          # drift is one line and one zone = all WP in drift
  printf( "ZONE T=\"WP%i\",I=2,F=POINT\n", NR )
  printf( "%.2f,%.2f,%.2f\n", x1, y1, z )
  printf( "%.2f,%.2f,%.2f\n", x2, y2, z )
}
}
}

END {
} ' $1

exit

```

## 8.0 Test Description

8.1 Objective: This test is designed to verify that the peak temperature contribution is located at the center of the drift closest to the centroid of the subarea when the flag is set to SubareaCentroid and there is one temperature cell per drift.

8.2 Assumptions: None

8.3 Constraints: None

8.4 Output Files:

*drifts.dat*

*fort.1*

8.5 Procedure:

1. Copy the files *tpa.e* and *tpa.inp* from their source directory *tpa50t* to the *test/sltest/sl-1* directory.
2. Ensure that the flags have been set in accordance with section 4.1 and run *tpa* with the command “*tpa.e* > PA-SCR-428\_SL-1.out”.
3. Verify *tpa* executes to completion and the files *drifts.dat* and *fort.1* are created.
4. Create a directory called “tecplot” in the *sltest/sl-1* directory and copy the following files to that directory:

*create\_3d.nwk* (from the *sltest* directory)

*create\_tec.nwk* (from the *sltest* directory)

*repdes.dat* (from the *sltest* directory)



*drifts.dat* (from the sltest/sl-1 directory)

*fort.1* (from the sltest/sl-1 directory)

5. Create tecplot input files with the following commands:

`./create_3d.nwk fort.1 > tec_fort1.dat`

`./create_tec.nwk drifts.dat > tec_drifts.dat`

6. Create a tecplot layout that includes the files *tec\_fort1.dat*, *tec\_drifts.dat* and *repdes.dat*. Save this layout file as *tbumps\_sl-1.lay* and print it to a file *tbumps\_sl-1.ps*.

7. Verify that peak temperature contribution shown in the layout file is at the center of the drift located closest to the centroid of subarea 1.

Note: When Tecplot plots the data points, it connects them all with one line that begins with the first point and ends with the last point. This line is useful to see how the data proceeds, however when jumping from one drift to another, the connecting lines created by Tecplot can be a little confusing. Be sure that you are looking at data and not a connecting line.

8.6 Pass/Fail Criteria: The code runs to completion for each execution of *tpa.e*, generates the output as specified in section 8.5 step 3, and is consistent with the results expected in section 8.5 step 7.

## 9.0 Test Results

9.1 Output and Supporting Files: All files will be archived on a CD labeled, "Test Plan and Test Results for PA-SCR-428".

9.2 Criterion 1: Verify the tpa code executes to successful completion.

9.3 Criterion 2: Verify the output files are generated in accordance with section 8.5 step 3.

9.4 Criterion 3: Verify the results are consistent with section 8.5 step 7.

### 9.5 Overall Test Status:

This test successfully **PASSED** the criterion above for test SL-1.

The code executed to completion for all test cases.

## SL-2

### 1.0 Path for Run Directory

<<Run Directory tpa50betaT>> = \$HOME/PA-SCR-428/test/sltest/sl-2

### 2.0 Path for Archived Results

\$HOME/PA-SCR-428/test/sltest/sl-2/tecplot

All files will be archived on a CD labeled, "Test Plan and Test Results for PA-SCR-428".

### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-428/code50t

TPA\_DATA = \$HOME/PA-SCR-428/code50t

#### 4.0 Special Input Files or Modifications to Input Files Required:

4.1 Using the *tpa.inp* file, set the values in this file in accordance with the following table:

Parameter	Value
StopAtSubarea	1
StopAtRealization	1
NumberOfTimeStepsInCompliancePeriod	2
OutputMode(0=None,1=All,2=UserDefined)	1
OneTemperatureCellPerWP(yes=1,no=0)	0
TemperatureReferencePoint(1=SubareaCentroid,2=Userdefined)[ ]	2
UserTemperatureReferencePoint_x[UTM]	547514.88
UserTemperatureReferencePoint_y[UTM]	4079310.61
UserTemperatureReferencePoint_z[m]	2.5

4.2 Same as for SL-1

#### 5.0 Special Diagnostic Code Modifications Required:

5.1 Same as for SL-1

6.0 Program Modes to be Used: None

7.0 Utility Scripts Needed to Perform the Test: Same as for SL-1

#### 8.0 Test Description

8.1 Objective: This test is designed to verify that the peak temperature contribution is located at the (x,y,z) point specified by the UserTemperatureReferencePoint flags when the TemperatureReferencePoint flag is set to Userdefined and there is one temperature cell per drift.

8.2 Assumptions: None

8.3 Constraints: None

8.4 Output Files:

*drifts.dat*

*fort.1*

8.5 Procedure:

1. Copy the files *tpa.e* and *tpa.inp* from their source directory *tpa50t* to the *test/sltest/sl-2* directory.
2. Ensure that the flags have been set in accordance with section 4.1 and run tpa with the command “tpa.e > PA-SCR-428\_SL-2.out”.
3. Verify tpa executes to completion and the files *drifts.dat* and *fort.1* are created.
4. Create a directory called “tecplot” in the *sltest/sl-2* directory and copy the following files to that directory:  
*create\_3d.nwk* (from the sltest directory)  
*create\_tec.nwk* (from the sltest directory)  
*repdes.dat* (from the sltest directory)  
*drifts.dat* (from the sltest/sl-2 directory)  
*fort.1* (from the sltest/sl-2 directory)
5. Create tecplot input files with the following commands:  
*./create\_3d.nwk fort.1 > tec\_fort1.dat*  
*./create\_tec.nwk drifts.dat > tec\_drifts.dat*
6. Create a tecplot layout that includes the files *tec\_fort1.dat*, *tec\_drifts.dat* and *repdes.dat*. Save this layout file as *tbumps\_sl-2.lay* and print it to a file *tbumps\_sl-2.ps*.
7. Verify that peak temperature contribution shown in the layout file is at the center of the drift located closest to the user defined (x,y,z) TemperatureReferencePoint specified in *tpa.inp*.

Note: When Tecplot plots the data points, it connects them all with one line that begins with the first point and ends with the last point. This line is useful to see how the data proceeds, however when jumping from one drift to another, the connecting lines created by Tecplot can be a little confusing. Be sure that you are looking at data and not a connecting line.

8.6 Pass/Fail Criteria: The code runs to completion for each execution of *tpa.e*, generates the output as specified in section 8.5 step 3, and is consistent with the results expected in section 8.5 step 7.

## 9.0 Test Results

9.1 Output and Supporting Files: All files will be archived on a CD labeled, “Test Plan and Test Results for PA-SCR-428”.

9.2 Criterion 1: Verify the tpa code executes to successful completion.

9.3 Criterion 2: Verify the output files are generated in accordance with section 8.5 step 3.

9.4 Criterion 3: Verify the results are consistent with section 8.5 step 7.

## 9.5 Overall Test Status:

This test successfully **PASSED** the criterion above for test SL-2.

The code executed to completion for all test cases.

## SL-3

### 1.0 Path for Run Directory

<<Run Directory tpa50betaT>> = \$HOME/PA-SCR-428/test/sltest/sl-3

### 2.0 Path for Archived Results

\$HOME/PA-SCR-428/test/sltest/sl-3/*tecplot*

All files will be archived on a CD labeled, "Test Plan and Test Results for PA-SCR-428".

### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-428/code50t

TPA\_DATA = \$HOME/PA-SCR-428/code50t

### 4.0 Special Input Files or Modifications to Input Files Required:

4.1 Using the *tpa.inp* file, set the values in this file in accordance with the following table:

Parameter	Value
StopAtSubarea	1
StopAtRealization	1
NumberOfTimeStepsInCompliancePeriod	2
OutputMode(0=None,1=All,2=UserDefined)	1
OneTemperatureCellPerWP(yes=1,no=0)	1
TemperatureReferencePoint(1=SubareaCentroid,2=Userdefined)[ ]	1

4.2 Same as for SL-1.

### 5.0 Special Diagnostic Code Modifications Required:

5.1 Same as for SL-1.

### 6.0 Program Modes to be Used: None

### 7.0 Utility Scripts Needed to Perform the Test: Same as for SL-1.

### 8.0 Test Description

8.1 Objective: This test is designed to verify that the peak temperature contribution is located at the waste package at the centroid of the subarea when the TemperatureReferencePoint flag is set to SubareaCentroid and there is one temperature cell per waste package.

8.2 Assumptions: None

8.3 Constraints: None

8.4 Output Files:

*drifts.dat*

*fort.1*

#### 8.5 Procedure:

1. Copy the files *tpa.e* and *tpa.inp* from their source directory *tpa50t* to the *test/sltest/sl-3* directory.
2. Ensure that the flags have been set in accordance with section 4.1 and run *tpa* with the command “*tpa.e* > PA-SCR-428\_SL-3.out”.
3. Verify *tpa* executes to completion and the files *drifts.dat* and *fort.1* are created.
4. Create a directory called “tecplot” in the *sltest/sl-3* directory and copy the following files to that directory:

*create\_3d.nwk* (from the *sltest* directory)

*create\_tec.nwk* (from the *sltest* directory)

*repdes.dat* (from the *sltest* directory)

*drifts.dat* (from the *sltest/sl-3* directory)

*fort.1* (from the *sltest/sl-3* directory)

5. Create tecplot input files with the following commands:

*./create\_3d.nwk fort.1 > tec\_fort1.dat*

*./create\_tec.nwk drifts.dat > tec\_drifts.dat*

5.1 Open the file *tec\_drifts.dat* and remove all lines at the end of the file that contain all zeros. These lines are caused by the last drift not being filled completely with waste packages. The zeros will cause a scaling problem for Tecplot if they are not removed. Their removal only affects visualization; since there are no waste packages in these locations, it does not affect temperature contribution.

6. Create a tecplot layout that includes the files *tec\_fort1.dat*, *tec\_drifts.dat* and *repdes.dat*. Save this layout file as *tbumps\_sl-3.lay* and print it to a file *tbumps\_sl-3.ps*.

7. Verify that peak temperature contribution shown in the layout file is at the waste package located closest to the centroid of subarea 1.

Note: When Tecplot plots the data points, it connects them all with one line that begins with the first point and ends with the last point. This line is useful to see how the data proceeds, however when jumping from one drift to another, the connecting lines created by Tecplot can be a little confusing. Be sure that you are looking at data and not a connecting line.

8.6 Pass/Fail Criteria: The code runs to completion for each execution of *tpa.e*, generates the output as specified in section 8.5 step 3, and is consistent with the results expected in section 8.5 step 7.

#### 9.0 Test Results

9.1 Output and Supporting Files: All files will be archived on a CD labeled, “Test Plan and Test

Results for PA-SCR-428”.

9.2 Criterion 1: Verify the tpa code executes to successful completion.

9.3 Criterion 2: Verify the output files are generated in accordance with section 8.5 step 3.

9.4 Criterion 3: Verify the results are consistent with section 8.5 step 7.

#### 9.5 Overall Test Status:

This test successfully **PASSED** the criterion above for test SL-3.

The code executed to completion for all test cases.

### SL-4

#### 1.0 Path for Run Directory

<<Run Directory tpa50betaT>> = \$HOME/PA-SCR-428/test/sltest/sl-4

#### 2.0 Path for Archived Results

\$HOME/PA-SCR-428/test/sltest/sl-4/tecplot

All files will be archived on a CD labeled, “Test Plan and Test Results for PA-SCR-428”.

#### 3.0 Environment Variables

TPA\_TEST = \$HOME/PA-SCR-428/code50t

TPA\_DATA = \$HOME/PA-SCR-428/code50t

#### 4.0 Special Input Files or Modifications to Input Files Required:

4.1 Using the *tpa.inp* file, set the values in this file in accordance with the following table:

Parameter	Value
StopAtSubarea	1
StopAtRealization	1
NumberOfTimeStepsInCompliancePeriod	2
OutputMode(0=None,1=All,2=UserDefined)	1
OneTemperatureCellPerWP(yes=1,no=0)	1
TemperatureReferencePoint(1=SubareaCentroid,2=Userdefined)[ ]	2
UserTemperatureReferencePoint_x[UTM]	547514.88

UserTemperatureReferencePoint_y[UTM]	4079310.61
UserTemperatureReferencePoint_z[m]	2.5

4.2 Same as for SL-1.

5.0 Special Diagnostic Code Modifications Required:

5.1 Same as for SL-1.

6.0 Program Modes to be Used: None

7.0 Utility Scripts Needed to Perform the Test: Same as for SL-1.

8.0 Test Description

8.1 Objective: This test is designed to verify that the peak temperature contribution is located at the waste package closest to the (x,y,z) point specified by the UserTemperatureReferencePoint flags when the TemperatureReferencePoint flag is set to Userdefined and there is one temperature cell per waste package.

8.2 Assumptions: None

8.3 Constraints: None

8.4 Output Files:

*drifts.dat*

*fort.1*

8.5 Procedure:

1. Copy the files *tpa.e* and *tpa.inp* from their source directory *tpa50t* to the *test/sltest/sl-4* directory.

2. Ensure that the flags have been set in accordance with section 4.1 and run *tpa* with the command “*tpa.e* > PA-SCR-428\_SL-4.out”.

3. Verify *tpa* executes to completion and the files *drifts.dat* and *fort.1* are created.

4. Create a directory called “tecplot” in the *sltest/sl-4* directory and copy the following files to that directory:

*create\_3d.nwk* (from the *sltest* directory)

*create\_tec.nwk* (from the *sltest* directory)

*repdes.dat* (from the *sltest* directory)

*drifts.dat* (from the *sltest/sl-4* directory)

*fort.1* (from the *sltest/sl-4* directory)

5. Create tecplot input files with the following commands:

*./create\_3d.nwk fort.1 > tec\_fort1.dat*

*./create\_tec.nwk drifts.dat > tec\_drifts.dat*

5.1 Open the file *tec\_drifts.dat* and remove all lines at the end of the file that contain all zeros.

These lines are caused by the last drift not being filled completely with waste packages. The zeros will cause a scaling problem for Tecplot if they are not removed. Their removal only affects visualization; since there are no waste packages in these locations, it does not affect temperature contribution.

6. Create a tecplot layout that includes the files *tec\_fort1.dat*, *tec\_drifts.dat* and *repdes.dat*. Save this layout file as *tbumps\_sl-4.lay* and print it to a file *tbumps\_sl-4.ps*.
7. Verify that peak temperature contribution shown in the layout file is at the waste package located closest to the user defined (x,y,z) TemperatureReferencePoint specified in *tpa.inp*.

Note: When Tecplot plots the data points, it connects them all with one line that begins with the first point and ends with the last point. This line is useful to see how the data proceeds, however when jumping from one drift to another, the connecting lines created by Tecplot can be a little confusing. Be sure that you are looking at data and not a connecting line.

8.6 Pass/Fail Criteria: The code runs to completion for each execution of *tpa.e*, generates the output as specified in section 8.5 step 3, and is consistent with the results expected in section 8.5 step 7.

## 9.0 Test Results

9.1 Output and Supporting Files: All files will be archived on a CD labeled, "Test Plan and Test Results for PA-SCR-428".

9.2 Criterion 1: Verify the tpa code executes to successful completion.

9.3 Criterion 2: Verify the output files are generated in accordance with section 8.5 step 3.

9.4 Criterion 3: Verify the results are consistent with section 8.5 step 7.

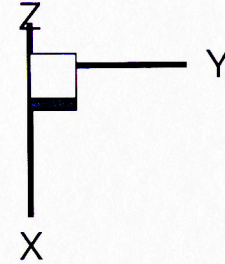
### 9.5 Overall Test Status:

This test successfully **PASSED** the criterion above for test SL-4.

The code executed to completion for all test cases.

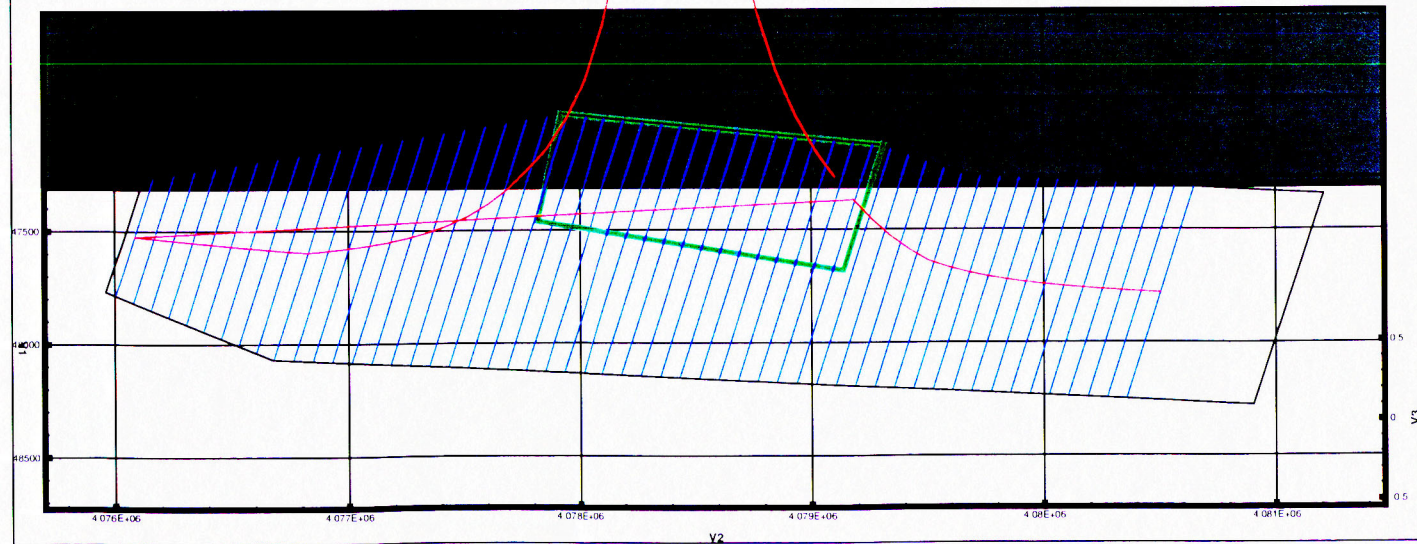


**SL-1**



blue = drifts  
 green = subarea 1  
 black = repository outline  
 red = temperature contribution

peak contribution (x, y, z)  
 (547988, 4.07844E+06, 7.62941)

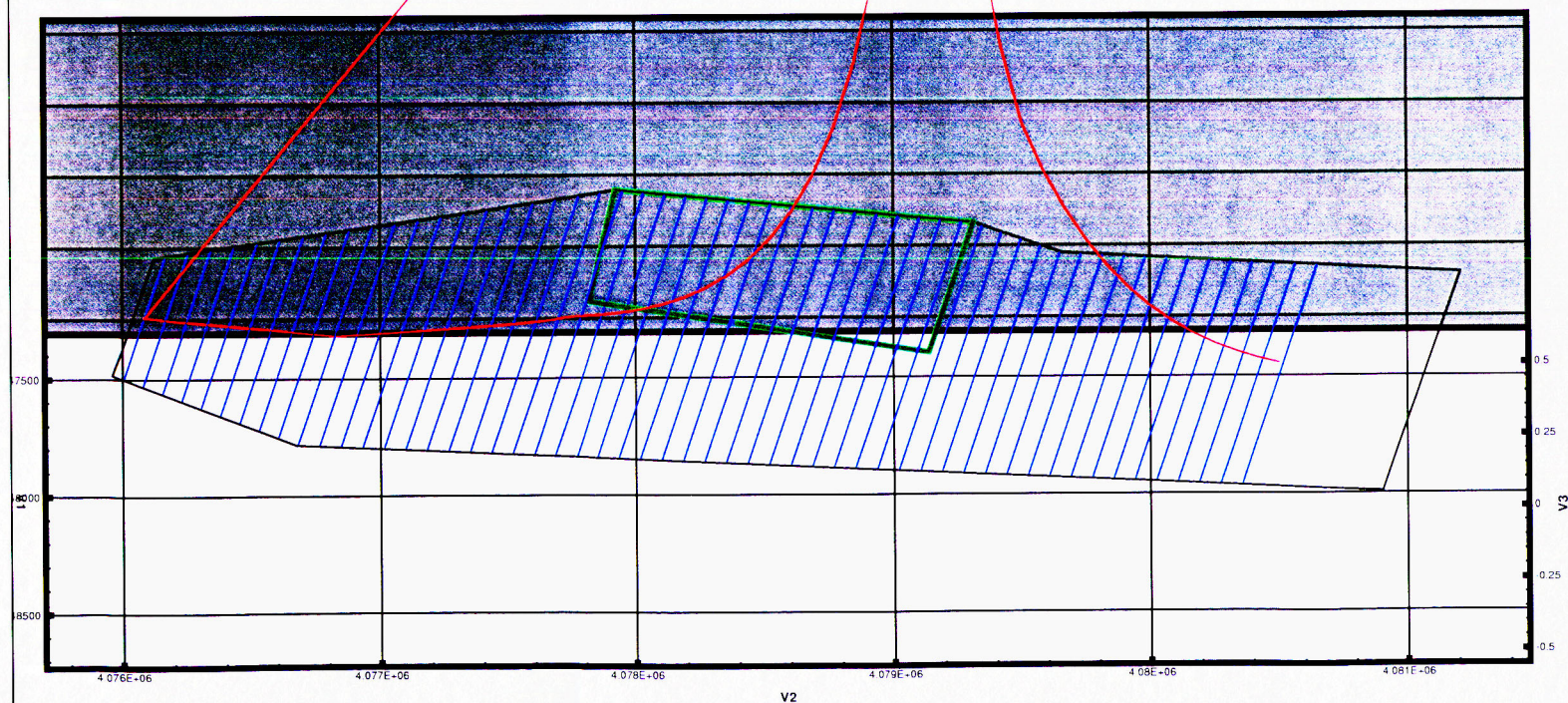
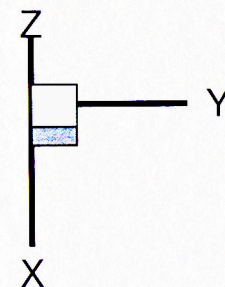




blue = drifts  
 green = subarea 1  
 black = repository outline  
 red = temperature contribution

peak contribution (x, y, z)  
 (548050, 4.07918E+06, 3.46266)

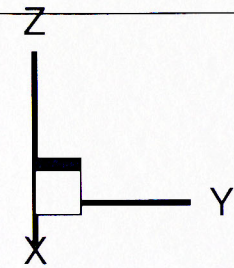
**SL-2**



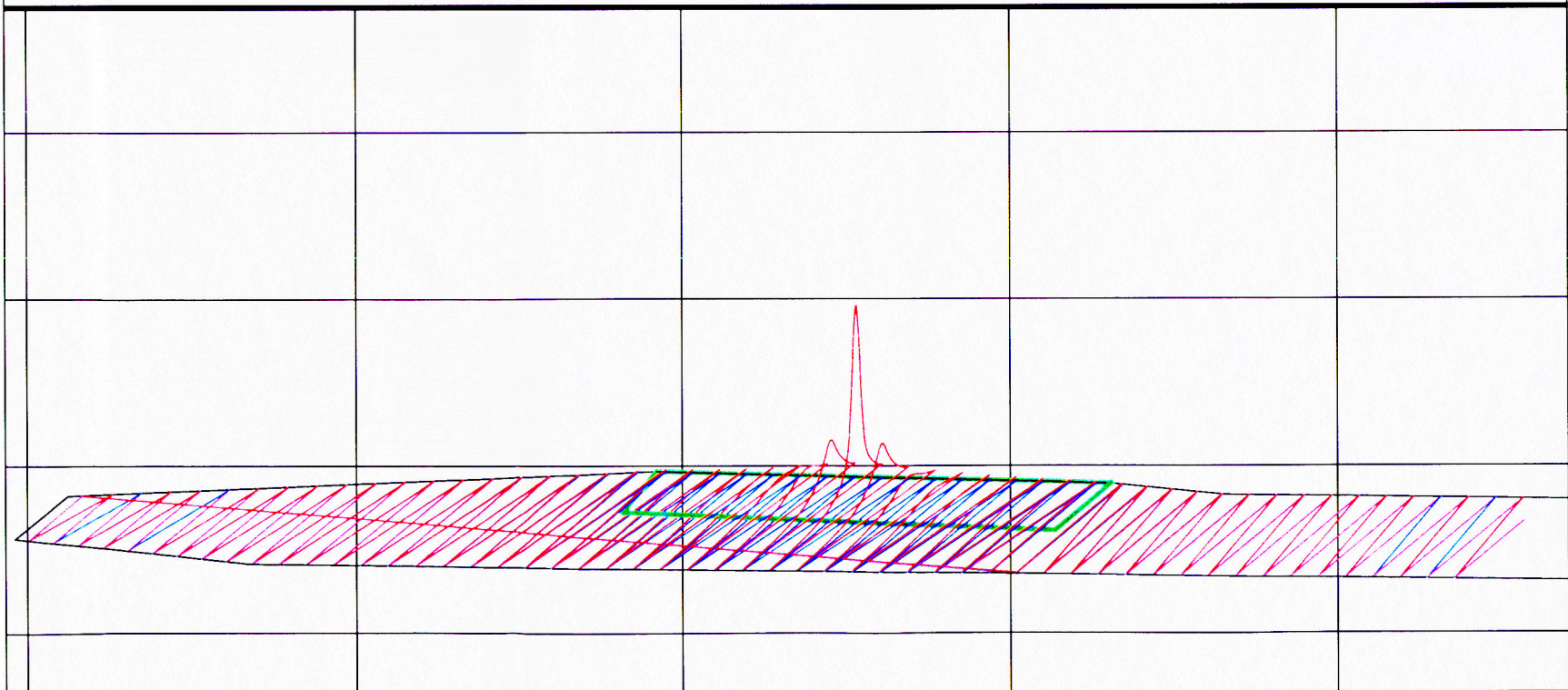


blue = drifts  
green = subarea 1  
black = repository outline  
red = temperature contributions

SL-3



peak contribution (x, y, z)  
(547694, 4.07853E+06, 0.231927)

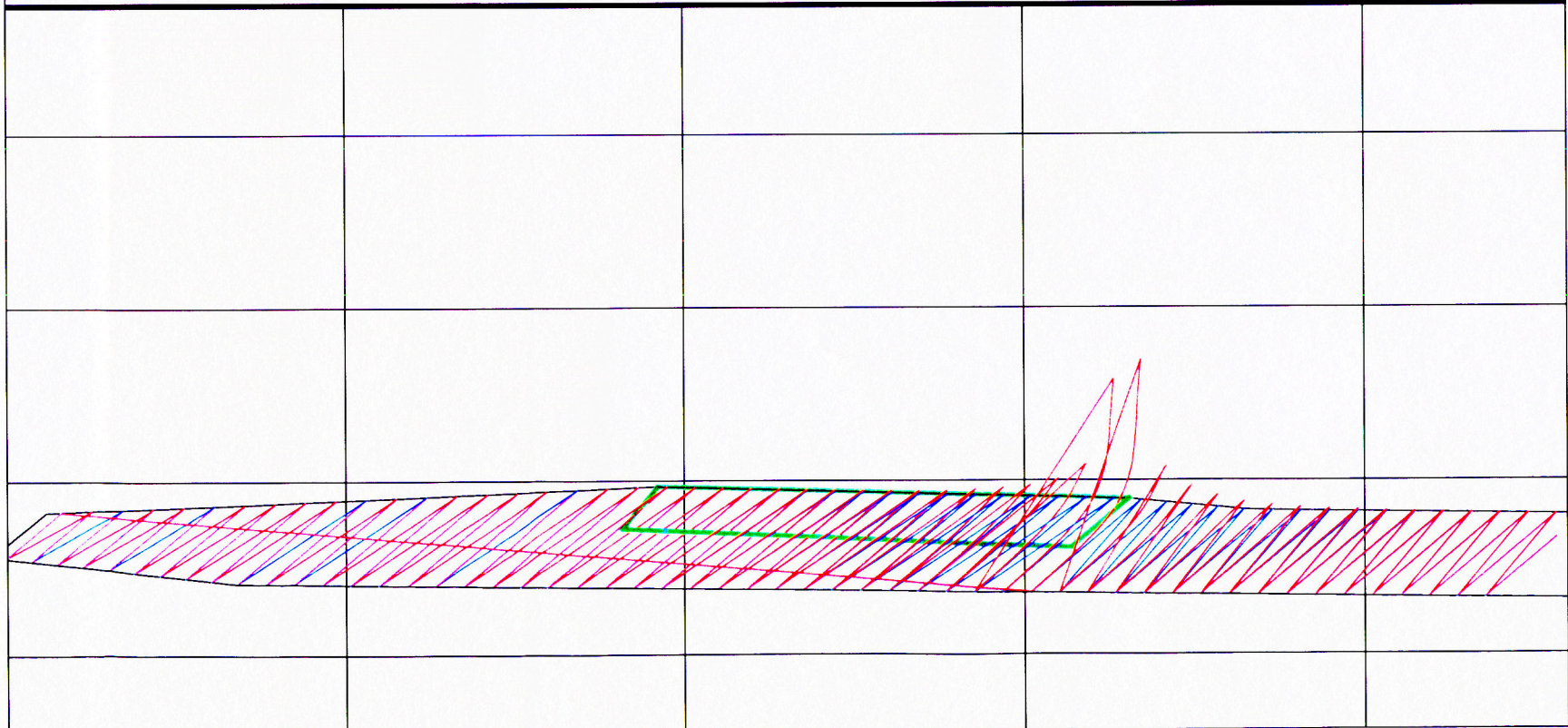
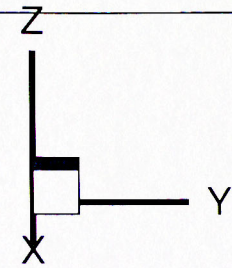




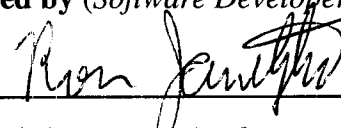
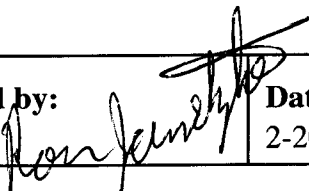
blue = drifts  
green = subarea 1  
black = repository outline  
red = temperature contribution

peak contribution (x, y, z)  
(547532, 4.07934E+06, 0.162016)

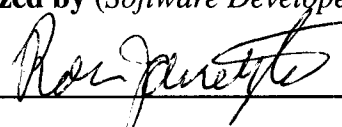
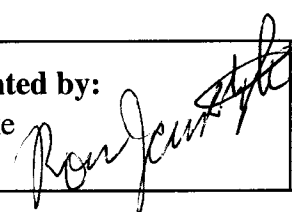
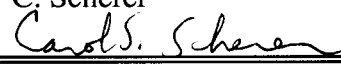
SL-4



## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-439	<b>Software Title and Version:</b> TPA 5.0betaU	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> invent.f  <p>The <i>invent</i> module incorrectly reprocess the colloids as single chains at the end of subroutine <i>allchains</i> after they have already been processed as chains, thus overwriting their expected values.</p>		
<b>Change Requested by:</b> G. Adams Date: 2-20-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke  Date: 2-20-03	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  <p>The controlling limits for the single member chain loop in subroutine <i>allchains</i> was changed from          do i = 25, maxinvnuc          to          do i = 25, 43</p> <p>Also add the following loop immediately after the loop mentioned above:</p> <pre> DO j = 1, nt   dn(j,57) = dnt1(57) * dmyexp(-dlt(57) * (time(j) - time(1))) ENDDO         </pre>		
<b>Implemented by:</b> Ron Janetzke  <b>Date:</b> 2-20-03		
<b>Description of Acceptance Tests:</b>  <p>Testing for this SCR will be done under SCR368.</p>		
<b>Tested by:</b>	<b>Date:</b>	

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-440	<b>Software Title and Version:</b> TPA 5.0betaY	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> ebsrel.f  An error occurs when the reversible input file is used and the irreversible colloid flag is off. The <i>ebsfilt.inp</i> file is written with no colloid section. <b>Ebsfilt</b> requires a colloid section even if the number of colloids is 0.		
<b>Change Requested by:</b> R. Janetzke Date: 2-23-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 2-23-03 	
<b>Description of Change(s) or Problem Resolution (If change not implemented, please justify):</b>  <i>Ebsrel.f</i> was changed to always write the colloid section of the <i>ebsfilt.inp</i> file even when the irreversible colloid flag is set to 0.		
<b>Implemented by:</b> R. Janetzke 	<b>Date:</b> 2-23-03	
<b>Description of Acceptance Tests:</b>  The software was tested in accordance with the Test Plan for TPA SCR #440.  The software, test directories, and test results are contained on a CD labeled "TPA SCR #440 - Test Directories."		
<b>Tested by:</b> C. Scherer 	<b>Date:</b> 2-26-03	

02/26/3

## Test Plan/Report for TPA SCR #440

**Test Plan Name:** Correct Error w/ IrreversibleColloidModel[0=no,1=yes] Flag

**Tested By:** Carol S. Scherer

**Date:** February 26, 2003

**Host Machine:** SUN Ultra-4 server: Spock

**Host OS:** Sun Solaris 5.8

**Baseline Version:** TPA 5.0betaY  
(4.2 solapps compiler)

**Test Version:** TPA 5.0betaZ  
(4.2 solapps compiler)

### Code Modifications:

The following code modifications were made to TPA for SCR # 440 :

1. Modified ebsrel.f to handle writing ebsfilt.inp when IrreversibleColloidModel[0=no,1=yes] is set to 0.

### Testing Setup:

Directories/paths used for testing:

**\$HOME** = /net/spock/home/cscherer  
Path for run directory: **\$HOME/tpatest/scr440**

Environment variables:

**TPA\_TEST** = **\$HOME/tpatest/scr440**  
**TPA\_DATA** = **\$HOME/tpatest/scr440**

Disposition of documentation of results: All modified/new source code files, all executables used in testing, and all input/output files will be kept in the archive directories. The contents of the archive directories will be written out to a CD titled "TPA SCR # 440 - Test Directories" (attached).

Test preparation instructions:

2. In the directory **\$HOME/tpatest**, create the following subdirectory: **scr440** (run directory).
3. In the run directory, create the following subdirectory: **slt1**.
4. Copy TPA version 5.0betaZ to the run directory. In the run directory, save a copy of **tpa.inp** as **tpa\_orig.inp**.
5. In the run directory, recompile TPA using **Makefile4.2**. Save a copy of **tpa.e** as **tpa\_42comp.e**.

02/26/3

## Functional Level Tests:

None.

## System Level Tests:

These tests are designed to demonstrate that the modified code affects overall **TPA** processing and output as planned with no unwanted side effects.

2. Name: Test Effects of IrreversibleColloidModel flag.

Paths for archives of results: *\$HOME/tpatest/scr440*  
*\$HOME/tpatest/scr440*

Special input files or modifications to input files required: none.

Special diagnostic code modifications required: none.

Program modes to be used: copy tpa\_orig.inp to tpa\_slr.inp, and make the following modification:

```
Set IrreversibleColloidModel[0=no,1=yes] to 0
Set ColloidReleaseFraction_Jc246[] t0.0
Set ColloidReleaseFraction_Jt230[] t0.0
Set ColloidReleaseFraction_Jp239[] t0.0
Set ColloidReleaseFraction_Ja243[] t0.0
Set ColloidReleaseFraction_Jc245[] t0.0
Set ColloidReleaseFraction_Ja241[] t0.0
Set ColloidReleaseFraction_Jp240[] t0.0
Set PermanentLossColloidFilterFactor_Invert_Ja[] t0.0
Set PermanentLossColloidFilterFactor_Invert_Jc[] t0.0
Set PermanentLossColloidFilterFactor_Invert_Jp[] t0.0
Set PermanentLossColloidFilterFactor_Invert_Jt[] t0.0
Set PermanentLossColloidFilterFactor_TSw_[] to 0.0
Set PermanentLossColloidFilterFactor_CHnv[] to 0.0
Set PermanentLossColloidFilterFactor_CHnz[] to 0.0
Set PermanentLossColloidFilterFactor_PPw_[] to 0.0
Set PermanentLossColloidFilterFactor_UCF_[] to 0.0
Set PermanentLossColloidFilterFactor_BFw_[] to 0.0
Set PermanentLossColloidFilterFactor_UFz_[] to 0.0
```



02/26/3

Utility scripts needed to perform the test: none.

Utility codes needed in the analysis of the test data: none.

Test description:

- objective: to show that TPA will not abort when IrreversibleColloidModel[0=no,1=yes] is set to 0 and that colloid filtering will have no effect.
- assumptions: none.
- constraints: the file *scr440\_slt1.out* does not exist in the run directory.
- output files to compare or examine: *tpa\_slt1.out*
- step by step test procedure to be used:
  1. —> change directory to run directory
  2. copy *tpa\_orig.e* to *tpa.e*
  3. copy *tpa\_slt1.inp* to *tpa.inp*
  4. run *tpa.e* using command “*tpa.e > scr440\_slt1.out*”
  5. copy *scr440\_slt1b.out* and files generated by the run to the archive directory
  6. look at file *scr440\_slt1.out*
- pass/fail criteria: the test passes if:
  1. **TPA** ran to successful completion: there is a non-zero value for calculated dose (see **Peak Mean Dose** in *scr440\_slt1.out*).
  2. No colloids appear on the release lists in *scr440\_slt1.out*.

Results of running test:

**PASSED.** (This test was run previously for SCR #419 and failed.)

**NOTES:**

scr440:

total 14726

drwxr-xr-x	7	cscherer	sunuser	7680	Feb	26	13:29	.
drwxr-xr-x	36	cscherer	sunuser	4608	Feb	26	14:25	..
-rwxr-xr-x	1	cscherer	sunuser	2001	Sep	18	16:52	CLEANUP
-rw-r--r--	1	cscherer	sunuser	965	Feb	26	13:17	FILENAME.DAT
-rw-r--r--	1	cscherer	sunuser	869	Nov	27	14:22	Makefile
-rw-rw-rw-	1	cscherer	sunuser	961	Nov	27	14:24	Makefile4.2
-rw-r--r--	1	cscherer	sunuser	450	Feb	26	13:17	NEFII.VEL
-rw-r--r--	1	cscherer	sunuser	2746	Feb	26	13:17	airpkdos.res
-rw-r--r--	1	cscherer	sunuser	2746	Feb	26	13:17	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	29502	Nov	15	17:28	array.f
-rw-r--r--	1	cscherer	sunuser	914	Feb	26	13:17	ashout.res
-rw-r--r--	1	cscherer	sunuser	20601	Sep	11	13:41	ashplumo.f
-rw-r--r--	1	cscherer	sunuser	37630	Nov	27	13:27	ashrmovo.f
-rw-r--r--	1	cscherer	sunuser	1025	Feb	26	13:14	burnup.dat
drwxr-xr-x	2	cscherer	sunuser	512	Feb	24	09:52	ccdf
-rwxrwxrwx	1	cscherer	sunuser	142	Feb	24	09:51	ch_env
-rw-r--r--	1	cscherer	sunuser	5047	Feb	26	13:17	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Feb	26	13:14	climatol.dat
-rw-r--r--	1	cscherer	sunuser	2200	Feb	26	13:14	climato2.dat
drwxr-xr-x	4	cscherer	sunuser	1024	Feb	24	10:02	codes
-rw-r--r--	1	cscherer	sunuser	6219	Feb	26	13:14	coefkdeq.dat
-rw-r--r--	1	cscherer	sunuser	735	Feb	18	18:46	coefkdeq.i
-rw-r--r--	1	cscherer	sunuser	10207	Feb	15	2002	condxyzt.f
-rw-r--r--	1	cscherer	sunuser	14506	Feb	26	13:17	corrode.out
-rw-r--r--	1	cscherer	sunuser	78797	Feb	26	13:17	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2252	Feb	26	13:17	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2252	Feb	26	13:17	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb	26	13:17	cumrelse.out
drwxr-xr-x	2	cscherer	sunuser	1536	Feb	24	09:52	data
-rw-r--r--	1	cscherer	sunuser	122748	Feb	18	18:49	dcags.f
-rw-r--r--	1	cscherer	sunuser	157577	Dec	19	14:34	dcagw.f
-rw-r--r--	1	cscherer	sunuser	6693	Feb	26	13:17	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb	26	13:17	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2200	Feb	26	13:17	dilution.dat
drwxr-xr-x	2	cscherer	sunuser	512	Feb	26	13:26	docs
-rw-r--r--	1	cscherer	sunuser	3870	Feb	26	13:14	drifts.dat
-rw-r--r--	1	cscherer	sunuser	190	Sep	20	09:32	driftsa.i
-rw-r--r--	1	cscherer	sunuser	519	Feb	26	13:14	drythick.dat
-rw-r--r--	1	cscherer	sunuser	25470	Dec	17	17:53	dsfail.f
-rw-r--r--	1	cscherer	sunuser	1915	Feb	26	13:17	dsfail.res
-rw-r--r--	1	cscherer	sunuser	708	Feb	26	13:17	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Feb	26	13:14	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	43144	Feb	26	13:14	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Feb	26	13:17	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	26	13:14	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb	24	16:15	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5973	Feb	26	13:14	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	48867	Feb	14	19:59	ebsfail.f
-rw-r--r--	1	cscherer	sunuser	5734	Feb	26	13:17	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	790	Feb	26	13:14	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	46564	Feb	26	13:14	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	2337	Feb	26	13:17	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	304	Feb	26	13:17	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Feb	26	13:17	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	124203	Feb	26	13:17	ebsnef.dat

-rw-r--r--	1	cscherer	sunuser	124252	Feb 24	16:15	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	124232	Feb 26	13:17	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb 26	13:17	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5459	Feb 26	13:14	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	87035	Feb 23	18:16	ebsrel.f
-rw-r--r--	1	cscherer	sunuser	11110	Feb 26	13:17	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	149	Sep 25	12:15	ebsrel1.i
-rw-r--r--	1	cscherer	sunuser	124203	Feb 26	13:17	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Feb 26	13:17	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Feb 26	13:17	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2647	Feb 26	13:17	echofail.dat
-rw-r--r--	1	cscherer	sunuser	270119	Feb 26	13:17	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	191076	Feb 26	13:17	env.e
-rwxr-xr-x	1	cscherer	sunuser	282692	Feb 26	13:17	envin.e
-rw-r--r--	1	cscherer	sunuser	39354	Feb 26	13:17	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1707	Feb 26	13:17	epapktim.out
-rw-r--r--	1	cscherer	sunuser	389512	Feb 23	18:17	exec.f
-rw-r--r--	1	cscherer	sunuser	2385	Sep 21	10:07	execa.i
-rw-r--r--	1	cscherer	sunuser	486	Sep 3	1997	execb.i
-rw-r--r--	1	cscherer	sunuser	269	May 29	2002	execc.i
-rw-r--r--	1	cscherer	sunuser	104	Feb 6	14:32	execd.i
-rwxr-xr-x	1	cscherer	sunuser	136632	Feb 26	13:14	failt.e
-rw-r--r--	1	cscherer	sunuser	17384	Feb 26	13:17	failt.out
-rw-r--r--	1	cscherer	sunuser	8503	Feb 15	2002	faulto.f
-rw-r--r--	1	cscherer	sunuser	6599	May 29	2002	fileunit.f
-rw-r--r--	1	cscherer	sunuser	5784	Feb 15	2002	findelev.f
-rw-r--r--	1	cscherer	sunuser	6281	Feb 26	13:17	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Feb 26	13:17	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	60	Aug 16	1997	ful.i
-rw-r--r--	1	cscherer	sunuser	609	Sep 4	19:29	fu2.i
-rw-r--r--	1	cscherer	sunuser	6513	Feb 26	13:17	gbioacl.dat
-rw-r--r--	1	cscherer	sunuser	3383	Feb 26	13:17	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Feb 26	13:17	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Feb 26	13:17	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Feb 26	13:17	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 26	13:17	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 26	13:17	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Feb 26	13:17	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Feb 26	13:17	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Feb 26	13:17	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	13855	Feb 26	13:17	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Feb 26	13:17	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 26	13:17	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Feb 26	13:17	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Feb 26	13:17	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Feb 26	13:17	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Feb 26	13:17	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	572	Feb 26	13:17	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 26	13:17	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Feb 26	13:17	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Feb 26	13:17	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Feb 26	13:17	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Feb 26	13:17	gw_pb_ci.dat
-rw-r--r--	1	cscherer	sunuser	572	Feb 26	13:17	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	572	Feb 26	13:17	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 26	13:17	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1738	Feb 26	13:17	gwpkdos.res

-rw-r--r--	1	cscherer	sunuser	1738	Feb	26	13:17	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2170	Feb	26	13:17	gwtutuzsz.res
-rw-r--r--	1	cscherer	sunuser	1229	Jul	22	1999	ia.i
-rw-r--r--	1	cscherer	sunuser	956	Sep	26	2000	ial.i
-rw-r--r--	1	cscherer	sunuser	21238	Dec	19	14:34	iareader.f
-rw-r--r--	1	cscherer	sunuser	2330	Feb	26	13:17	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb	26	13:17	inv1000.out
-rw-r--r--	1	cscherer	sunuser	69374	Feb	20	11:12	invent.f
-rw-r--r--	1	cscherer	sunuser	33	Sep	25	12:15	invent_.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	inventa.i
-rw-r--r--	1	cscherer	sunuser	182	Sep	25	12:14	inventb.i
-rw-r--r--	1	cscherer	sunuser	344	Sep	25	12:14	inventc.i
-rw-r--r--	1	cscherer	sunuser	124	Sep	25	12:14	inventd.i
-rw-r--r--	1	cscherer	sunuser	131	Sep	25	12:14	invente.i
-rw-r--r--	1	cscherer	sunuser	130	Sep	25	12:14	inventf.i
-rw-r--r--	1	cscherer	sunuser	128	Sep	25	12:14	inventg.i
-rw-r--r--	1	cscherer	sunuser	127	Sep	25	12:14	inventh.i
-rw-r--r--	1	cscherer	sunuser	75	Aug	16	1997	inventi.i
-rw-r--r--	1	cscherer	sunuser	288	Sep	25	12:14	inventj.i
-rw-r--r--	1	cscherer	sunuser	332	Sep	25	12:14	inventk.i
-rw-r--r--	1	cscherer	sunuser	150	Dec	6	14:29	inventl.i
-rw-r--r--	1	cscherer	sunuser	315	Dec	11	09:33	inventm.i
-rw-r--r--	1	cscherer	sunuser	175	Sep	25	12:15	inventn.i
-rw-r--r--	1	cscherer	sunuser	249	Jan	29	2000	invento.i
-rw-r--r--	1	cscherer	sunuser	267	Sep	25	12:15	inventp.i
-rw-r--r--	1	cscherer	sunuser	0	Feb	24	10:05	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb	26	13:14	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb	26	13:14	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb	26	13:14	lhse.out
-rw-r--r--	1	cscherer	sunuser	78	Aug	16	1997	max500yr.i
-rw-r--r--	1	cscherer	sunuser	99	Sep	25	12:10	maxchain.i
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:50	maxclchn.i
-rw-r--r--	1	cscherer	sunuser	144	Sep	25	12:50	maxclnuc.i
-rw-r--r--	1	cscherer	sunuser	508	Sep	25	12:11	maxnnucl.i
-rw-r--r--	1	cscherer	sunuser	299	Jul	10	1998	maxnsuba.i
-rw-r--r--	1	cscherer	sunuser	206	May	28	1999	maxntime.i
-rw-r--r--	1	cscherer	sunuser	1095	Feb	26	13:17	maxrel.dat
-rw-r--r--	1	cscherer	sunuser	943775	Feb	26	13:14	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31768	Feb	26	13:17	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Feb	26	13:14	mechfail.def
-rw-r--r--	1	cscherer	sunuser	79824	Feb	26	13:14	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9575	Feb	26	13:17	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	26	13:17	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1251	Feb	26	13:14	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1252	Feb	26	13:14	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	11850	Feb	15	2002	mv.f
-rw-r--r--	1	cscherer	sunuser	61241	Feb	26	13:17	mv.tpa
-rw-r--r--	1	cscherer	sunuser	111	Sep	4	1997	mva.i
-rw-r--r--	1	cscherer	sunuser	56	Aug	16	1997	mvb.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	mvc.i
-rw-r--r--	1	cscherer	sunuser	101	Aug	16	1997	mvd.i
-rw-r--r--	1	cscherer	sunuser	72	Aug	16	1997	mve.i
-rw-r--r--	1	cscherer	sunuser	72	Aug	16	1997	mvf.i
-rw-r--r--	1	cscherer	sunuser	2330	Feb	26	13:17	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28139	Feb	26	13:17	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb	26	13:17	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb	26	13:17	nefii.out

-rw-r--r--	1	cscherer	sunuser	603	Feb	26	13:17	nefi. rel
-rw-r--r--	1	cscherer	sunuser	28139	Feb	26	13:17	nefiisz. dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb	26	13:17	nefiisz. inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb	26	13:17	nefiisz. out
-rw-r--r--	1	cscherer	sunuser	149942	Feb	26	13:17	nefiisz. src
-rw-r--r--	1	cscherer	sunuser	450	Feb	26	13:17	nefiisz. vel
-rw-r--r--	1	cscherer	sunuser	815410	Feb	26	13:17	nefiuiz. dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb	26	13:17	nefiuiz. inp
-rw-r--r--	1	cscherer	sunuser	858614	Feb	26	13:17	nefiuiz. out
-rw-r--r--	1	cscherer	sunuser	151120	Feb	26	13:17	nefiuiz. src
-rw-r--r--	1	cscherer	sunuser	171	Feb	26	13:17	nefiuiz. vel
-rwxr-xr-x	1	cscherer	sunuser	408036	Feb	26	13:14	nefmks. e
-rw-r--r--	1	cscherer	sunuser	285	Feb	26	13:17	nefmks. log
-rw-r--r--	1	cscherer	sunuser	112638	Feb	19	11:01	nfenv. f
-rw-r--r--	1	cscherer	sunuser	326	Nov	17	18:24	nfenvadj. i
-rw-r--r--	1	cscherer	sunuser	94	Aug	16	1997	nintv. i
-rw-r--r--	1	cscherer	sunuser	1502	Jun	11	1997	notice. i
-rw-r--r--	1	cscherer	sunuser	2506	Feb	26	13:17	npkdoset. res
-rw-r--r--	1	cscherer	sunuser	2506	Feb	26	13:17	npkdst_c. res
-rw-r--r--	1	cscherer	sunuser	7152	Feb	26	13:14	nuclides. dat
-rw-r--r--	1	cscherer	sunuser	6579	Feb	15	2002	numrecip. f
-rw-r--r--	1	cscherer	sunuser	7111	Feb	26	13:17	organdf. dat
-rw-r--r--	1	cscherer	sunuser	259	Aug	16	1997	path. i
-rw-r--r--	1	cscherer	sunuser	6584	Feb	15	2002	peakfind. f
-rw-r--r--	1	cscherer	sunuser	698	Feb	26	13:17	pkmndose. out
-rw-r--r--	1	cscherer	sunuser	8244	Feb	26	13:17	pkreltim. res
-rw-r--r--	1	cscherer	sunuser	8244	Feb	26	13:17	pkrltm_c. res
-rw-r--r--	1	cscherer	sunuser	46322	Feb	15	2002	ran. f
-rw-r--r--	1	cscherer	sunuser	148482	Dec	19	14:32	reader. f
-rw-r--r--	1	cscherer	sunuser	185	May	21	1998	reader. i
-rw-r--r--	1	cscherer	sunuser	106	Aug	27	1999	reader1. i
-rw-r--r--	1	cscherer	sunuser	58	Aug	27	1999	reader2. i
-rw-r--r--	1	cscherer	sunuser	102	Aug	27	1999	reader3. i
-rw-r--r--	1	cscherer	sunuser	89	Aug	27	1999	reader4. i
-rw-r--r--	1	cscherer	sunuser	58	Aug	16	1997	reflux2. i
-rw-r--r--	1	cscherer	sunuser	682	Feb	26	13:17	rel_flow. out
-rw-r--r--	1	cscherer	sunuser	572	Feb	26	13:17	relccdf. res
-rw-r--r--	1	cscherer	sunuser	2883	Feb	26	13:17	relcum. out
-rwxr-xr-x	1	cscherer	sunuser	122636	Feb	26	13:14	reaset. e
-rw-r--r--	1	cscherer	sunuser	414	Feb	26	13:17	reaset. out
-rw-r--r--	1	cscherer	sunuser	773	Feb	26	13:17	relfrac. out
-rw-r--r--	1	cscherer	sunuser	722	Feb	26	13:17	relgwgs. res
-rw-r--r--	1	cscherer	sunuser	548	Feb	26	13:14	repdes. dat
-rw-r--r--	1	cscherer	sunuser	47561	Feb	26	13:17	rgwna. tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	26	13:17	rgwnapani. tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	26	13:17	rgwnapdw. tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	26	13:17	rgwnapext. tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	26	13:17	rgwnapinh. tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	26	13:17	rgwnapmlk. tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	26	13:17	rgwnappla. tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb	26	13:17	rgwnr. tpa
-rw-r--r--	1	cscherer	sunuser	5137	Feb	26	13:17	rgwsa. tpa
-rw-r--r--	1	cscherer	sunuser	16137	Feb	26	13:17	rgwsap. tpa
-rw-r--r--	1	cscherer	sunuser	5183	Feb	26	13:17	rgwsr. tpa
-rw-r--r--	1	cscherer	sunuser	572	Feb	26	13:17	rlccdf_c. res
-rw-r--r--	1	cscherer	sunuser	722	Feb	26	13:17	rlgwgs_c. res
-rw-r--r--	1	cscherer	sunuser	95694	May	29	2002	sampler. f

-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler0.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	sampler1.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler2.i
-rw-r--r--	1	cscherer	sunuser	178	Apr	3	1998	sampler3.i
-rw-r--r--	1	cscherer	sunuser	145	Sep	19	2000	sampler4.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.a.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	samplerb.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	samplerc.i
-rw-r--r--	1	cscherer	sunuser	68	Aug	16	1997	samplerd.i
-rw-r--r--	1	cscherer	sunuser	133	Aug	16	1997	samlpere.i
-rw-r--r--	1	cscherer	sunuser	111	Aug	16	1997	samplerf.i
-rw-r--r--	1	cscherer	sunuser	84	Aug	16	1997	samplerg.i
-rw-r--r--	1	cscherer	sunuser	68	Aug	16	1997	samplerh.i
-rw-r--r--	1	cscherer	sunuser	83	Aug	16	1997	sampleri.i
-rw-r--r--	1	cscherer	sunuser	61	Aug	16	1997	samplerj.i
-rw-r--r--	1	cscherer	sunuser	208	Aug	16	1997	samplerk.i
-rw-r--r--	1	cscherer	sunuser	104	Aug	16	1997	samplerl.i
-rw-r--r--	1	cscherer	sunuser	63	Aug	16	1997	samplerm.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	samplern.i
-rw-r--r--	1	cscherer	sunuser	63	Aug	16	1997	sampler.o.i
-rw-r--r--	1	cscherer	sunuser	260	Mar	14	2002	samplerp.i
-rw-r--r--	1	cscherer	sunuser	103	Aug	16	1997	samplerq.i
-rw-r--r--	1	cscherer	sunuser	176	Aug	16	1997	sampler.r.i
-rw-r--r--	1	cscherer	sunuser	336	Apr	3	1998	samplers.i
-rw-r--r--	1	cscherer	sunuser	70	Aug	16	1997	samlpert.i
-rw-r--r--	1	cscherer	sunuser	69	Aug	16	1997	sampleru.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	samlperv.i
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	samplerw.i
-rw-r--r--	1	cscherer	sunuser	406	Feb	22	16:36	samplerx.i
-rw-r--r--	1	cscherer	sunuser	299	Apr	30	2001	samlpery.i
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	samplerz.i
-rw-r--r--	1	cscherer	sunuser	3867	Feb	26	13:14	samlpar.abb
-rw-r--r--	1	cscherer	sunuser	29767	Feb	26	13:14	samlpar.hdr
-rw-r--r--	1	cscherer	sunuser	6376	Feb	26	13:17	samlpar.res
-rw-r--r--	1	cscherer	sunuser	22846	Feb	26	13:17	scr440_slt1.out
-rw-r--r--	1	cscherer	sunuser	322	Nov	17	18:24	seisadj.i
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb	26	13:14	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb	26	13:14	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	74226	Dec	17	17:52	seismo2.f
-rwxrwxrwx	1	cscherer	sunuser	30	Sep	12	16:53	show_env
drwxr-xr-x	2	cscherer	sunuser	512	Feb	26	13:29	slt1
-rwxr-xr-x	1	cscherer	sunuser	943788	Feb	26	13:14	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	243532	Feb	26	13:14	snllhs.e
-rw-r--r--	1	cscherer	sunuser	149942	Feb	26	13:17	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	30919	Feb	26	13:17	sp.tpa
-rw-r--r--	1	cscherer	sunuser	144	Sep	3	1997	stop.i
-rw-r--r--	1	cscherer	sunuser	4506	Feb	26	13:14	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	38273	Sep	3	10:13	subarea.f
-rw-r--r--	1	cscherer	sunuser	255	Feb	4	2000	subarea.a.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	subarea.b.i
-rw-r--r--	1	cscherer	sunuser	82	Aug	16	1997	subarea.c.i
-rw-r--r--	1	cscherer	sunuser	81	Aug	16	1997	subarea.d.i
-rw-r--r--	1	cscherer	sunuser	77	Aug	16	1997	subarea.e.i
-rw-r--r--	1	cscherer	sunuser	60	Feb	3	2000	subarea.f.i
-rw-r--r--	1	cscherer	sunuser	64	Feb	2	2000	subarea.g.i
-rw-r--r--	1	cscherer	sunuser	115415	Feb	10	11:35	szft.f
-rw-r--r--	1	cscherer	sunuser	264	Nov	17	18:23	szft.i

```

-rw-r--r-- 1 cscherer sunuser 13122 Feb 26 13:17 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13122 Feb 26 13:17 totdose.res
-rwxr-xr-x 1 cscherer sunuser 2525364 Feb 24 09:59 tpa.e
-rw-r--r-- 1 cscherer sunuser 91445 Feb 26 13:13 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91445 Feb 19 19:59 tpa_orig.inp
-rw-r--r-- 1 cscherer sunuser 91445 Feb 26 13:13 tpa_slt1.inp
-rw-r--r-- 1 cscherer sunuser 92347 Feb 26 13:14 tpameans.out
-rw-r--r-- 1 cscherer sunuser 101499 Feb 26 13:14 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser 180151 Feb 26 13:17 trelease.out
-rw-r--r-- 1 cscherer sunuser 314 Aug 16 1997 uz_climi.i
-rw-r--r-- 1 cscherer sunuser 1219 Sep 6 20:05 uz_climr.i
-rw-r--r-- 1 cscherer sunuser 341 Aug 16 1997 uz_climz.i
-rw-r--r-- 1 cscherer sunuser 1323 Sep 26 14:28 uz_flowi.i
-rw-r--r-- 1 cscherer sunuser 1170 Sep 26 14:29 uz_flowr.i
-rw-r--r-- 1 cscherer sunuser 176 Aug 16 1997 uz_flowz.i
-rw-r--r-- 1 cscherer sunuser 3225 Sep 26 14:30 uz_parms.i
-rw-r--r-- 1 cscherer sunuser 72309 Feb 19 20:01 uzflow.f
-rw-r--r-- 1 cscherer sunuser 127287 Feb 16 19:42 uzft.f
-rw-r--r-- 1 cscherer sunuser 755 Nov 17 18:23 uzszft.i
-rw-r--r-- 1 cscherer sunuser 14215 Feb 15 2002 volcano.f
-rw-r--r-- 1 cscherer sunuser 14132 Feb 26 13:17 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 26 13:17 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 8805 Feb 26 13:14 wpflow.dat
-rw-r--r-- 1 cscherer sunuser 17410 Feb 26 13:14 wpflow.def
-rw-r--r-- 1 cscherer sunuser 818 Feb 26 13:17 wpsfail.res
-rw-r--r-- 1 cscherer sunuser 11721 Feb 15 2002 zportunx.f

```

## scr440/ccdf:

total 35

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 24 09:52 .
drwxr-xr-x 7 cscherer sunuser 7680 Feb 26 13:29 ..
-rw-r--r-- 1 cscherer sunuser 267 Mar 14 2000 Makefile
-rw-r--r-- 1 cscherer sunuser 23390 Jul 22 1999 tccdf.f
-rw-r--r-- 1 cscherer sunuser 66 Aug 1 1997 tccdf.i
-rw-r--r-- 1 cscherer sunuser 640 Jan 29 2001 tccdf.inp

```

## scr440/codes:

total 3005

```

drwxr-xr-x 4 cscherer sunuser 1024 Feb 24 10:02 .
drwxr-xr-x 7 cscherer sunuser 7680 Feb 26 13:29 ..
-rw-r--r-- 1 cscherer sunuser 1299 Feb 21 21:10 Makefile
-rw-r--r-- 1 cscherer sunuser 1673 Feb 21 21:12 Makefile4.2
-rw-r--r-- 1 cscherer sunuser 499 Jun 2 1997 README
-rw-r--r-- 1 cscherer sunuser 2320 May 28 1998 SIZES.INC
-rw-r--r-- 1 cscherer sunuser 164 Feb 17 1998 SIZES2.INC
-rwxr-xr-x 1 cscherer sunuser 165120 Feb 24 10:01 ashplume.e
-rw-r--r-- 1 cscherer sunuser 95611 Sep 26 2000 ashplume.f
-rw-r--r-- 1 cscherer sunuser 25361 Jul 17 2002 corrosn.f
-rw-r--r-- 1 cscherer sunuser 22384 Feb 24 10:00 corrosn.o
-rwxr-xr-x 1 cscherer sunuser 43144 Feb 24 10:01 dsfailt.e
-rw-r--r-- 1 cscherer sunuser 23303 Dec 17 17:21 dsfailt.f
-rwxr-xr-x 1 cscherer sunuser 46564 Feb 24 10:01 ebsfilt.e
-rw-r--r-- 1 cscherer sunuser 17737 Feb 16 19:36 ebsfilt.f
-rwxr-xr-x 1 cscherer sunuser 191076 Feb 24 10:02 env.e
-rwxr-xr-x 1 cscherer sunuser 282692 Feb 24 10:02 envin.e
-rwxr-xr-x 1 cscherer sunuser 136632 Feb 24 10:00 failt.e

```

```

-rw-r--r-- 1 cscherer sunuser 103168 Feb 18 18:44 fault.f
-r--r--r-- 1 cscherer sunuser 450 Nov 17 18:03 faultadj.i
drwxr-xr-x 2 cscherer sunuser 3072 Feb 24 10:02 gentpa
-rwxr-xr-x 1 cscherer sunuser 4633 Nov 17 18:01 integrt.f
-rw-r--r-- 1 cscherer sunuser 2076 Feb 24 10:00 integrt.o
drwxr-xr-x 3 cscherer sunuser 512 Feb 24 09:52 itym
-r--r--r-- 1 cscherer sunuser 868 Dec 17 16:59 lhs1.i
-r--r--r-- 1 cscherer sunuser 1308 Mar 14 2002 lhs2.i
-r--r--r-- 1 cscherer sunuser 438 Mar 14 2002 lhs3.i
-r--r--r-- 1 cscherer sunuser 437 Mar 14 2002 lhs4.i
-r--r--r-- 1 cscherer sunuser 374 Mar 14 2002 lhs5.i
-r--r--r-- 1 cscherer sunuser 450 Mar 14 2002 lhs6.i
-r--r--r-- 1 cscherer sunuser 464 Mar 14 2002 lhs7.i
-r--r--r-- 1 cscherer sunuser 431 Mar 14 2002 lhs8.i
-rwxr-xr-x 1 cscherer sunuser 5229 May 29 2002 linintrp.f
-rw-r--r-- 1 cscherer sunuser 3272 Feb 24 10:00 linintrp.o
-r--r--r-- 1 cscherer sunuser 331 Nov 17 18:03 mechadj.i
-rwxr-xr-x 1 cscherer sunuser 79824 Feb 24 09:59 mechfail.e
-rw-r--r-- 1 cscherer sunuser 126625 Dec 17 17:57 mechfail.f
-rwxr-xr-x 1 cscherer sunuser 408036 Feb 24 10:00 nefmks.e
-rw-r--r-- 1 cscherer sunuser 308005 Sep 26 2000 nefmks.f
-rwxr-xr-x 1 cscherer sunuser 122636 Feb 24 10:01 releaset.e
-rw-r--r-- 1 cscherer sunuser 177497 Feb 21 21:07 releaset.f
-rwxr-xr-x 1 cscherer sunuser 243532 Feb 24 10:01 snllhs.e
-rw-r--r-- 1 cscherer sunuser 224558 Sep 6 10:21 snllhs.f
-rwxr-xr-x 1 cscherer sunuser 4303 May 29 2002 srchpos.f
-rw-r--r-- 1 cscherer sunuser 1300 Feb 24 10:00 srchpos.o
-rwxr-xr-x 1 cscherer sunuser 19890 Nov 17 18:01 weldfail.f
-rw-r--r-- 1 cscherer sunuser 9348 Feb 24 10:00 weldfail.o

```

## scr440/codes/gentpa:

total 1063

```

drwxr-xr-x 2 cscherer sunuser 3072 Feb 24 10:02 .
drwxr-xr-x 4 cscherer sunuser 1024 Feb 24 10:02 ..
-rw-r--r-- 1 cscherer sunuser 543 Feb 11 2000 AFPPAR.CMN
-rw-r--r-- 1 cscherer sunuser 1044 Feb 11 2000 AIRPAR.CMN
-rw-r--r-- 1 cscherer sunuser 872 Feb 11 2000 ANMPAR.CMN
-rw-r--r-- 1 cscherer sunuser 615 Feb 11 2000 AQUPAR.CMN
-rw-r--r-- 1 cscherer sunuser 1089 Feb 11 2000 CONC.CMN
-rw-r--r-- 1 cscherer sunuser 461 Feb 11 2000 DAYPC.CMN
-rw-r--r-- 1 cscherer sunuser 400 Feb 11 2000 DECAY.CMN
-rw-r--r-- 1 cscherer sunuser 571 Feb 11 2000 DFPAR.CMN
-rw-r--r-- 1 cscherer sunuser 1359 Feb 11 2000 DOSALL.CMN
-rw-r--r-- 1 cscherer sunuser 574 Feb 11 2000 ENVPAR.CMN
-rw-r--r-- 1 cscherer sunuser 310 Feb 11 2000 EXPALL.CMN
-rw-r--r-- 1 cscherer sunuser 637 Feb 11 2000 EXTPAR.CMN
-rw-r--r-- 1 cscherer sunuser 327 Feb 11 2000 FILES.CMN
-rw-r--r-- 1 cscherer sunuser 814 Feb 11 2000 FODPAR.CMN
-rw-r--r-- 1 cscherer sunuser 438 Feb 11 2000 INVIN.CMN
-rw-r--r-- 1 cscherer sunuser 569 Feb 11 2000 LABELS.CMN
-rw-r--r-- 1 cscherer sunuser 1161 Feb 11 2000 MTBPAR.CMN
-rw-r--r-- 1 cscherer sunuser 1688 Feb 28 2000 Make.bat
-rw-r--r-- 1 cscherer sunuser 1849 Feb 24 2000 Makefile
-rw-rw-rw- 1 cscherer sunuser 1938 Nov 27 14:12 Makefile4.2
-rw-r--r-- 1 cscherer sunuser 1746 Feb 11 2000 Mkenv.fig
-rw-r--r-- 1 cscherer sunuser 1548 Feb 11 2000 Mkenvin.fig
-rw-r--r-- 1 cscherer sunuser 2762 Feb 11 2000 OPT.CMN

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-rw-r--r--	1	cscherer	sunuser	444	Feb 11	2000	ORGMAS.CMN
-rw-r--r--	1	cscherer	sunuser	728	Feb 11	2000	ORGPARG.CMN
-rw-r--r--	1	cscherer	sunuser	589	Feb 11	2000	RAD.CMN
-rw-r--r--	1	cscherer	sunuser	788	Feb 11	2000	RADIN.CMN
-rw-r--r--	1	cscherer	sunuser	722	Feb 11	2000	RMD.CMN
-rw-r--r--	1	cscherer	sunuser	489	Feb 11	2000	RMD2.CMN
-rw-r--r--	1	cscherer	sunuser	891	Feb 11	2000	SOLPAR.CMN
-rw-r--r--	1	cscherer	sunuser	489	Feb 11	2000	SWPAR.CMN
-rw-r--r--	1	cscherer	sunuser	586	Feb 11	2000	TIMES.CMN
-rw-r--r--	1	cscherer	sunuser	316	Feb 11	2000	TITL.CMN
-rw-r--r--	1	cscherer	sunuser	12777	Feb 11	2000	accmod.f
-rw-r--r--	1	cscherer	sunuser	24096	Feb 24	10:01	accmod.o
-rw-r--r--	1	cscherer	sunuser	10094	Feb 11	2000	acutel.f
-rw-r--r--	1	cscherer	sunuser	16196	Feb 24	10:02	acutel.o
-rw-r--r--	1	cscherer	sunuser	9579	Feb 11	2000	acutea.f
-rw-r--r--	1	cscherer	sunuser	11188	Feb 24	10:02	acutea.o
-rw-r--r--	1	cscherer	sunuser	7118	Feb 11	2000	acutec.f
-rw-r--r--	1	cscherer	sunuser	8488	Feb 24	10:02	acutec.o
-rw-r--r--	1	cscherer	sunuser	8669	Feb 11	2000	aircal.f
-rw-r--r--	1	cscherer	sunuser	11232	Feb 24	10:02	aircal.o
-rw-r--r--	1	cscherer	sunuser	8383	Feb 11	2000	anmcal.f
-rw-r--r--	1	cscherer	sunuser	12716	Feb 24	10:02	anmcal.o
-rw-r--r--	1	cscherer	sunuser	2043	Feb 11	2000	aqucal.f
-rw-r--r--	1	cscherer	sunuser	3984	Feb 24	10:02	aqucal.o
-rw-r--r--	1	cscherer	sunuser	1217	Feb 11	2000	biocal.f
-rw-r--r--	1	cscherer	sunuser	1944	Feb 24	10:02	biocal.o
-rw-r--r--	1	cscherer	sunuser	4174	Feb 11	2000	blockd.f
-rw-r--r--	1	cscherer	sunuser	6664	Feb 24	10:01	blockd.o
-rw-r--r--	1	cscherer	sunuser	1405	Feb 11	2000	bsort.f
-rw-r--r--	1	cscherer	sunuser	1200	Feb 24	10:02	bsort.o
-rw-r--r--	1	cscherer	sunuser	13008	Feb 11	2000	candh.f
-rw-r--r--	1	cscherer	sunuser	10420	Feb 24	10:02	candh.o
-rw-r--r--	1	cscherer	sunuser	6653	Feb 11	2000	chain.f
-rw-r--r--	1	cscherer	sunuser	5368	Feb 24	10:02	chain.o
-rw-r--r--	1	cscherer	sunuser	23921	Feb 11	2000	check.f
-rw-r--r--	1	cscherer	sunuser	48600	Feb 24	10:02	check.o
-rw-r--r--	1	cscherer	sunuser	10189	Feb 11	2000	cronmod.f
-rw-r--r--	1	cscherer	sunuser	22452	Feb 24	10:01	cronmod.o
-rw-r--r--	1	cscherer	sunuser	5153	Feb 11	2000	crpcal.f
-rw-r--r--	1	cscherer	sunuser	8556	Feb 24	10:02	crpcal.o
-rw-r--r--	1	cscherer	sunuser	3842	Feb 11	2000	dkharv.f
-rw-r--r--	1	cscherer	sunuser	6120	Feb 24	10:02	dkharv.o
-rw-r--r--	1	cscherer	sunuser	5426	Feb 11	2000	dose.f
-rw-r--r--	1	cscherer	sunuser	2398	Feb 11	2000	drfbiv.f
-rw-r--r--	1	cscherer	sunuser	2628	Feb 24	10:02	drfbiv.o
-rw-r--r--	1	cscherer	sunuser	6728	Feb 11	2000	drfsec.f
-rw-r--r--	1	cscherer	sunuser	5248	Feb 24	10:02	drfsec.o
-rw-r--r--	1	cscherer	sunuser	1877	Feb 11	2000	drkcal.f
-rw-r--r--	1	cscherer	sunuser	2276	Feb 24	10:02	drkcal.o
-rw-r--r--	1	cscherer	sunuser	1325	Feb 11	2000	dumred.f
-rw-r--r--	1	cscherer	sunuser	3600	Feb 24	10:02	dumred.o
-rw-r--r--	1	cscherer	sunuser	3958	Feb 11	2000	edranm.f
-rw-r--r--	1	cscherer	sunuser	7244	Feb 24	10:02	edranm.o
-rw-r--r--	1	cscherer	sunuser	3567	Feb 11	2000	edrcrp.f
-rw-r--r--	1	cscherer	sunuser	7652	Feb 24	10:02	edrcrp.o
-rw-r--r--	1	cscherer	sunuser	2525	Feb 11	2000	edrnnon.f
-rw-r--r--	1	cscherer	sunuser	4696	Feb 24	10:02	edrnnon.o

-rw-r--r--	1	cscherer	sunuser	2853	Feb 11	2000	edrres.f
-rw-r--r--	1	cscherer	sunuser	4136	Feb 24	10:02	edrres.o
-rw-r--r--	1	cscherer	sunuser	10581	Feb 11	2000	env.f
-rw-r--r--	1	cscherer	sunuser	4885	Feb 11	2000	envin.f
-rw-r--r--	1	cscherer	sunuser	4561	Feb 11	2000	envlib.f
-rw-r--r--	1	cscherer	sunuser	8708	Feb 24	10:01	envlib.o
-rw-r--r--	1	cscherer	sunuser	1912	Feb 11	2000	exposr.f
-rw-r--r--	1	cscherer	sunuser	2236	Feb 24	10:02	exposr.o
-rw-r--r--	1	cscherer	sunuser	6774	Feb 11	2000	extcal.f
-rw-r--r--	1	cscherer	sunuser	7572	Feb 24	10:02	extcal.o
-rw-r--r--	1	cscherer	sunuser	1489	Feb 11	2000	filerr.f
-rw-r--r--	1	cscherer	sunuser	3860	Feb 24	10:01	filerr.o
-rw-r--r--	1	cscherer	sunuser	1986	Feb 11	2000	fntdrf.f
-rw-r--r--	1	cscherer	sunuser	2000	Feb 24	10:02	fntdrf.o
-rw-r--r--	1	cscherer	sunuser	3003	Feb 11	2000	headng.f
-rw-r--r--	1	cscherer	sunuser	5740	Feb 24	10:02	headng.o
-rw-r--r--	1	cscherer	sunuser	2203	Feb 11	2000	idnuc.f
-rw-r--r--	1	cscherer	sunuser	3000	Feb 24	10:02	idnuc.o
-rw-r--r--	1	cscherer	sunuser	2842	Feb 11	2000	inhcal.f
-rw-r--r--	1	cscherer	sunuser	5704	Feb 24	10:02	inhcal.o
-rw-r--r--	1	cscherer	sunuser	2392	Feb 11	2000	initnv.f
-rw-r--r--	1	cscherer	sunuser	2756	Feb 24	10:02	initnv.o
-rw-r--r--	1	cscherer	sunuser	1841	Feb 11	2000	intpol.f
-rw-r--r--	1	cscherer	sunuser	3724	Feb 24	10:02	intpol.o
-rw-r--r--	1	cscherer	sunuser	1348	Feb 11	2000	invmol.f
-rw-r--r--	1	cscherer	sunuser	1160	Feb 24	10:02	invmol.o
-rw-r--r--	1	cscherer	sunuser	677	Feb 11	2000	makda2.f
-rw-r--r--	1	cscherer	sunuser	1048	Feb 24	10:01	makda2.o
-rw-r--r--	1	cscherer	sunuser	5870	Feb 11	2000	opnfil.f
-rw-r--r--	1	cscherer	sunuser	11748	Feb 24	10:02	opnfil.o
-rw-r--r--	1	cscherer	sunuser	4217	Feb 11	2000	order.f
-rw-r--r--	1	cscherer	sunuser	5732	Feb 24	10:02	order.o
-rw-r--r--	1	cscherer	sunuser	2325	Feb 11	2000	packag.f
-rw-r--r--	1	cscherer	sunuser	3480	Feb 24	10:02	packag.o
-rw-r--r--	1	cscherer	sunuser	3366	Feb 11	2000	plmriz.f
-rw-r--r--	1	cscherer	sunuser	2184	Feb 24	10:02	plmriz.o
-rw-r--r--	1	cscherer	sunuser	1861	Feb 11	2000	prior.f
-rw-r--r--	1	cscherer	sunuser	2236	Feb 24	10:02	prior.o
-rw-r--r--	1	cscherer	sunuser	4080	Feb 11	2000	prob.f
-rw-r--r--	1	cscherer	sunuser	2108	Feb 24	10:02	prob.o
-rw-r--r--	1	cscherer	sunuser	2079	Feb 11	2000	profile.f
-rw-r--r--	1	cscherer	sunuser	1612	Feb 24	10:02	profile.o
-rw-r--r--	1	cscherer	sunuser	11351	Feb 11	2000	readin.f
-rw-r--r--	1	cscherer	sunuser	47520	Feb 24	10:02	readin.o
-rw-r--r--	1	cscherer	sunuser	6174	Feb 11	2000	redcas.f
-rw-r--r--	1	cscherer	sunuser	24420	Feb 24	10:02	redcas.o
-rw-r--r--	1	cscherer	sunuser	3867	Feb 11	2000	redcha.f
-rw-r--r--	1	cscherer	sunuser	9248	Feb 24	10:02	redcha.o
-rw-r--r--	1	cscherer	sunuser	8483	Feb 11	2000	redflt.f
-rw-r--r--	1	cscherer	sunuser	35388	Feb 24	10:02	redflt.o
-rw-r--r--	1	cscherer	sunuser	1694	Feb 11	2000	redist.f
-rw-r--r--	1	cscherer	sunuser	1792	Feb 24	10:02	redist.o
-rw-r--r--	1	cscherer	sunuser	8548	Feb 11	2000	ritenv.f
-rw-r--r--	1	cscherer	sunuser	37152	Feb 24	10:02	ritenv.o
-rw-r--r--	1	cscherer	sunuser	4371	Feb 11	2000	ritexp.f
-rw-r--r--	1	cscherer	sunuser	10940	Feb 24	10:02	ritexp.o
-rw-r--r--	1	cscherer	sunuser	2584	Feb 11	2000	ritmed.f

```

-rw-r--r-- 1 cscherer sunuser 7300 Feb 24 10:02 ritmed.o
-rw-r--r-- 1 cscherer sunuser 27222 Feb 11 2000 ritqa.f
-rw-r--r-- 1 cscherer sunuser 93708 Feb 24 10:02 ritqa.o
-rw-r--r-- 1 cscherer sunuser 4346 Feb 11 2000 rlibin.f
-rw-r--r-- 1 cscherer sunuser 10192 Feb 24 10:02 rlibin.o
-rw-r--r-- 1 cscherer sunuser 4399 Feb 11 2000 rwake.f
-rw-r--r-- 1 cscherer sunuser 3392 Feb 24 10:02 rwake.o
-rw-r--r-- 1 cscherer sunuser 2396 Feb 11 2000 sigma.f
-rw-r--r-- 1 cscherer sunuser 1832 Feb 24 10:02 sigma.o
-rw-r--r-- 1 cscherer sunuser 8387 Feb 11 2000 swcal.f
-rw-r--r-- 1 cscherer sunuser 5868 Feb 24 10:02 swcal.o
-rw-r--r-- 1 cscherer sunuser 1894 Feb 11 2000 trnspt.f
-rw-r--r-- 1 cscherer sunuser 2048 Feb 24 10:02 trnspt.o
-rw-r--r-- 1 cscherer sunuser 1771 Feb 11 2000 ustar.f
-rw-r--r-- 1 cscherer sunuser 1500 Feb 24 10:02 ustar.o
-rw-r--r-- 1 cscherer sunuser 9276 Feb 11 2000 xqcal.f
-rw-r--r-- 1 cscherer sunuser 17128 Feb 24 10:02 xqcal.o
-rw-r--r-- 1 cscherer sunuser 5277 Feb 11 2000 xqin.f
-rw-r--r-- 1 cscherer sunuser 12472 Feb 24 10:02 xqin.o

```

## scr440/codes/itym:

total 4

```

drwxr-xr-x 3 cscherer sunuser 512 Feb 24 09:52 .
drwxr-xr-x 4 cscherer sunuser 1024 Feb 24 10:02 ..
-rw-r--r-- 1 cscherer sunuser 596 Oct 1 10:06 makefile
drwxr-xr-x 2 cscherer sunuser 512 Feb 24 09:52 src

```

## scr440/codes/itym/src:

total 328

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 24 09:52 .
drwxr-xr-x 3 cscherer sunuser 512 Feb 24 09:52 ..
-rw-r--r-- 1 cscherer sunuser 29776 Mar 22 2000 array.f
-rw-r--r-- 1 cscherer sunuser 15856 Mar 22 2000 check_valid.f
-rw-r--r-- 1 cscherer sunuser 60931 Dec 30 19:29 estimator.f
-rw-r--r-- 1 cscherer sunuser 5384 Dec 30 19:31 init_itym.f
-rw-r--r-- 1 cscherer sunuser 9420 Sep 25 18:55 itym.f
-rw-r--r-- 1 cscherer sunuser 11640 Dec 30 19:31 itym.i
-rw-r--r-- 1 cscherer sunuser 26752 Sep 26 14:19 itymutils.f
-rw-r--r-- 1 cscherer sunuser 261 Mar 22 2000 path.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 preuzf.i
-rw-r--r-- 1 cscherer sunuser 42671 Mar 22 2000 ran.f
-rw-r--r-- 1 cscherer sunuser 38406 Sep 26 14:20 strtokfunc.f
-rw-r--r-- 1 cscherer sunuser 60346 Sep 26 14:22 uncertain.f
-rw-r--r-- 1 cscherer sunuser 12265 Mar 22 2000 uncertain.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 unctab.i
-rw-r--r-- 1 cscherer sunuser 10904 Mar 22 2000 zportunx.f

```

## scr440/data:

total 7344

```

drwxr-xr-x 2 cscherer sunuser 1536 Feb 24 09:52 .
drwxr-xr-x 7 cscherer sunuser 7680 Feb 26 13:29 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 11 2000 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 121789 Mar 22 2000 bunitdem.dat
-rw-r--r-- 1 cscherer sunuser 1025 Mar 29 2000 burnup.dat
-rwxr-xr-x 1 cscherer sunuser 468925 Sep 25 19:00 careadem.dat
-rwxr-xr-x 1 cscherer sunuser 515693 Sep 25 19:01 cdepdem.dat
-rw-r--r-- 1 cscherer sunuser 850000 Aug 15 1997 climato1.dat

```

```

-rw-r--r-- 1 cscherer sunuser 2200 Feb 1 1999 climato2.dat
-rw-r--r-- 1 cscherer sunuser 6219 Feb 19 10:46 coefkdeg.dat
-rw-r--r-- 1 cscherer sunuser 6219 Feb 22 16:33 coefkdegr.dat
-rw-r--r-- 1 cscherer sunuser 2200 Dec 19 13:50 dilution.dat
-rw-r--r-- 1 cscherer sunuser 519 Oct 19 2000 drythick.dat
-rw-r--r-- 1 cscherer sunuser 791 Jul 23 2002 dsfailt.def
-rw-r--r-- 1 cscherer sunuser 5973 Feb 14 19:57 ebsfail.def
-rw-r--r-- 1 cscherer sunuser 790 May 28 1998 ebsfilt.def
-rw-r--r-- 1 cscherer sunuser 5459 Jan 7 11:17 ebsrel.def
-rw-r--r-- 1 cscherer sunuser 298679 Mar 22 2000 elevdem.dat
-rw-r--r-- 1 cscherer sunuser 9381 May 29 2002 fluoride.dat
-rw-r--r-- 1 cscherer sunuser 6513 Feb 11 2000 gbioacl.dat
-rw-r--r-- 1 cscherer sunuser 3383 Sep 4 19:18 gdefaults.def
-rw-r--r-- 1 cscherer sunuser 3383 Feb 11 2000 gdefault.def
-rw-r--r-- 1 cscherer sunuser 64 Feb 11 2000 gdosinc2.dat
-rw-r--r-- 1 cscherer sunuser 7011 Feb 11 2000 gftrans.def
-rw-r--r-- 1 cscherer sunuser 7011 Sep 4 19:18 gftranss.def
-rw-r--r-- 1 cscherer sunuser 15214 Feb 11 2000 ggamen.dat
-rw-r--r-- 1 cscherer sunuser 13855 Feb 11 2000 ggenii.def
-rw-r--r-- 1 cscherer sunuser 13173 Sep 4 19:18 ggeniis.def
-rw-r--r-- 1 cscherer sunuser 5351 Feb 11 2000 ggrdf.dat
-rw-r--r-- 1 cscherer sunuser 9897 Mar 29 2000 gnewdf.dat
-rw-r--r-- 1 cscherer sunuser 13200 Mar 20 2000 grmdlib.dat
-rw-r--r-- 1 cscherer sunuser 3048 Sep 15 2000 gs_cb_ad.dat
-rw-r--r-- 1 cscherer sunuser 2487 Jun 4 1998 gs_cb_ci.dat
-rw-r--r-- 1 cscherer sunuser 3045 Sep 15 2000 gs_pb_ad.dat
-rw-r--r-- 1 cscherer sunuser 2487 Jun 4 1998 gs_pb_ci.dat
-rw-r--r-- 1 cscherer sunuser 8247 Feb 22 16:39 ia.dat
-rw-r--r-- 1 cscherer sunuser 20698 Dec 30 19:26 itym.dat
-rw-r--r-- 1 cscherer sunuser 943774 Mar 29 2000 maidtbl.dat
-rw-r--r-- 1 cscherer sunuser 10978 Mar 22 2000 maswtbl.dat
-rwxr-xr-x 1 cscherer sunuser 943775 Dec 30 19:18 maydtbl.dat
-rw-r--r-- 1 cscherer sunuser 9729 Dec 17 17:31 mechfail.def
-rw-r--r-- 1 cscherer sunuser 1251 Feb 6 14:39 multifaf.dat
-rw-r--r-- 1 cscherer sunuser 1252 Feb 6 14:39 multifbe.dat
-rw-r--r-- 1 cscherer sunuser 116965 Jul 17 2002 multiflo.dat
-rw-r--r-- 1 cscherer sunuser 7152 Feb 21 21:14 nuclides.dat
-rw-r--r-- 1 cscherer sunuser 7111 Sep 24 2000 organdf.dat
-rw-r--r-- 1 cscherer sunuser 548 Sep 21 2000 repdes.dat
-rw-r--r-- 1 cscherer sunuser 242353 Feb 23 18:09 reversibles.inp
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs2.dis
-rwxr-xr-x 1 cscherer sunuser 943788 Dec 30 19:18 smaydtbl.dat
-rw-r--r-- 1 cscherer sunuser 489858 Mar 22 2000 soildem.dat
-rw-r--r-- 1 cscherer sunuser 4506 Feb 7 2000 strmtube.dat
-rw-r--r-- 1 cscherer sunuser 119673 Mar 22 2000 sunitdem.dat
-rw-r--r-- 1 cscherer sunuser 162404 May 8 2000 tefkti.inp
-rw-r--r-- 1 cscherer sunuser 101499 Feb 19 10:43 tpanames.dbf
-rw-r--r-- 1 cscherer sunuser 471041 Mar 22 2000 winddem.dat
-rw-r--r-- 1 cscherer sunuser 17410 Feb 2 2000 wpflow.def

```

scr440/docs:

total 65

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 26 13:26 .
drwxr-xr-x 7 cscherer sunuser 7680 Feb 26 13:29 ..
-rwxr--r-- 1 cscherer sunuser 15495 Feb 26 08:57 scr440.wpd
-rwxr--r-- 1 cscherer sunuser 40285 Feb 26 13:29 tp_scr440.wpd

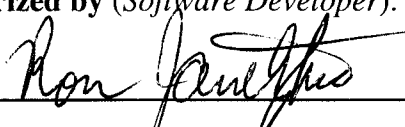
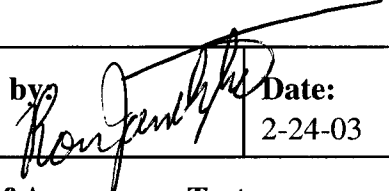

```

scr440/slt1:

total 122

drwxr-xr-x	2	cscherer	sunuser	512	Feb 26 13:29	.
drwxr-xr-x	7	cscherer	sunuser	7680	Feb 26 13:29	..
-rw-r--r--	1	cscherer	sunuser	22846	Feb 26 13:17	scr440_slt1.out
-rw-r--r--	1	cscherer	sunuser	91445	Feb 26 13:13	tpa_slt1.inp

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-441	<b>Software Title and Version:</b> TPA 5.0betaZ	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> szft.f, and tpa.inp  Importance analysis flag set produces a parameter not found error in szft.f.		
<b>Change Requested by:</b> R.. Janetzke Date: 2-24-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 2-24-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  See attachment.		
<b>Implemented by:</b> R. Janetzke 	<b>Date:</b> 2-24-03	
<b>Description of Acceptance Tests:</b>  The Test Plan for TPA SCR #441 consisted of one system level test designed to verify that the SZFT module will no longer generate a parameter not found error message when Importance Analysis is selected. Previously, a parameter not found error message (name = FractureRD_STFF_Jc) was generated.  The software successfully passed the system level test in accordance with the Test Plan for TPA SCR #441. The test plan and test results are included on a CD labeled, "Test Plan and Test Results for TPA SCR #441."		
<b>Tested by:</b> G. Adams 	<b>Date:</b> 2-26-03	

## Description of Change(s) or Problem Resolution

The comments in the code fragment indicate the changes made to szft.f.

```

      if (czone .eq. 'UZ') then
        spname='FractureRD_'//mixsalayernam(1:4)//elemnam
cc rwj 2-24-03; SCR441; Each spname section must get it own rd value.
        ireflag=0
        do ire=1,nradioelements
          if (elemnam.eq.radelems(ire)) ireflag=ire
        enddo
        if (ireflag.eq.0) then
          rdmix(idelm(nelm)) = valuesp(ispquery( spname ))
        endif

      else
cc rwj 2-24-03; SCR441; If SZ then check for colloids and use Log10 version of RD name.
        if (elemnam .eq. 'Ja' .or.
&      elemnam .eq. 'Jc' .or.
&      elemnam .eq. 'Jp' .or.
&      elemnam .eq. 'Jt' ) then
          if (mixsalayernam(1:4) .eq. 'SAV ' ) then
            spname = 'AlluviumMatrixRDLog10_' // mixsalayernam(1:3) //
&          '_' // elemnam
          else if (mixsalayernam(1:4) .eq. 'STFF' ) then
            spname='FractureRDLog10_'//mixsalayernam(1:4)//'_'//elemnam
          else
            print *, ' ***>>> Error in szft:prenefmksa <<<*** '
            print *, ' A layer other than STFF & SAV has been '
&            ' attempted to be used in the creation of'
&            ' an RD parameter name for the colloids.'
            print *, ' layer name = ', mixsalayernam
            print *, ' '
            STOP
          end if
          rdmix(idelm(nelm)) = valuesp(ispquery( spname ))
          rdmix(idelm(nelm)) = 10.d0*rdmix(idelm(nelm))
        else

          if (mixsalayernam(4:4) .eq. ' ' ) then
            spname='FractureRD_'//mixsalayernam(1:3)//'_'//elemnam
          else
            spname='FractureRD_'//mixsalayernam(1:4)//'_'//elemnam
          endif
cc rwj 2-24-03 scr441
          rdmix(idelm(nelm)) = valuesp(ispquery( spname ))
        endif

      endif

c mam 08/29/02 SCR 371. use mv on Am,Np,Pu,Th, and U (radelems).
cc      rdmix(idelm(nelm)) = valuesp(ispquery( spname ))
      ireflag=0
      do ire=1,nradioelements
        if (elemnam.eq.radelems(ire)) ireflag=ire
      enddo
      if (ireflag.ne.0) then
        rdmix(idelm(nelm)) = valueconsmv(imvquery( spname ))
c rwj 11-18-02 SCR 392; Remove code fragment when new input values are supplied.
c      if (rdmix(idelm(nelm)) .gt. 1000.d0) then
c        rdmix(idelm(nelm)) = 1000.d0
c        print *, 'Large Rd value has been encountered for'
c        print *, 'ire =', ire

```

```
c          print *, 'in prenefmksa and Rd is being reset to 1000.'
```

```
c          end if
```

```
cc rwj 2-24-03 scr441
```

```
cc      else
```

```
cc          rdmix(idelm(nelm)) = valuesp(ispquery( spname ))
```

```
endif
```



# Test Plan for TPA SCR# 441

**Test Plan Name:** Correct Parameter Not Found Error in SZFT

**Tested By:** GADAMS

**Date:** February 26, 2003

**Host Machine:** SUN Ultra-4 Server: spock

**Host OS:** Solaris 5.8

**Baseline Version:** 5.0BetaZ

**Test Version:** 5.0BetaZa

## System Level Tests

The system level test is designed to verify that the SZFT module will not generate the parameter not found error message (name = FractureRD\_STFF\_Jc) when importance analysis is selected.

### SL-1 Parameter Not Found No Longer Occurs

#### 1.0 Path for Run Directory

Test Case A:

<<Run Directory>> = \$HOME/PA-SCR-441/test/sltest/sl-1/testA

Test Case B:

<<Run Directory>> = \$HOME/PA-SCR-441/test/sltest/sl-1/testB

#### 2.0 Path for Archived Results

<<Run Directory>>

#### 3.0 Environment Variables

For Test Case A:

TPA\_TEST = \$HOME/PA-SCR-441/code50betaZa

TPA\_DATA = \$HOME/PA-SCR-441/code50betaZa

For Test Case B:

TPA\_TEST = \$HOME/PA-SCR-441/code50betaZ

TPA\_DATA = \$HOME/PA-SCR-441/code50betaZ

#### 4.0 Special Input Files or Modifications to Input Files Required

4.1 For both test cases, make the following modifications to the tpa.inp file:

Modify the Following Parameters	
Parameter	Value
OutputMode	1
ImportanceAnalysisFlag(yes=1,no=0)	1
SubsystemNaturalStudy	1
SubsystemEngineeredStudy	1

5.0 Special Diagnostic Code Modifications Required: None

6.0 Program Modes to be Used

None

7.0 Utility Program Needed to Perform the Test

None

#### 8.0 Test Description

8.1 Objective: This test verifies that the TPA code will execute to completion and will not generate a parameter not found error message (name = FractureRD\_STFF\_Jc).

8.2 Assumptions: none

8.3 Constraints: none

8.4 Output Files: OutputMode is set to 1 to generate all output files.

8.5 Procedure:

1. For Test Case A, at the command prompt from the <<Run Directory>>, type the following: tpa.e > PA-SCR-441\_SL1-A.out.
2. For Test Case B, at the command prompt from the <<Run Directory>>, type the following: tpa.e > PA-SCR-441\_SL1-B.out.
3. Compare the screen output files and verify that for Test Case A (new code), the TPA code executes to completion without aborting and that for Test Case B (original code), the TPA code aborts with a parameter not found error message.

8.6 Pass/Fail Criteria: Output screen values are generated in accordance with Section 8.5, Step 3.

#### 9.0 Test Results

9.1 Output and Supporting Files: Files will be placed on a CD labeled, "Test Plan and Test Results for TPA SCR #441."

9.2 Criterion 1: Verify the screen output information in accordance with Section 8.5, Step 3.

### 9.3 Overall Test Status:

This test successfully **PASSED** the criterion above for System Level Test SL-1.

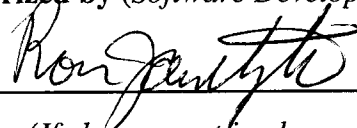
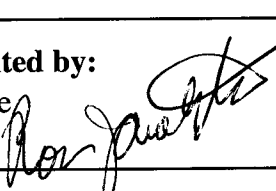
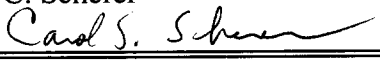
The output files, PA-SCR-441\_SL1-A.out and PA-SCR-441\_SL1-B.out, show that for Test Case A (new code), the code executes to completion and displays the message, “ exec: Run Successfully Completed.” However, for Test Case B (original code), the code aborts with the following message:

```
exec: calling szft
```

```
***>>> Error in ispquery <<<***
can not find name of parameter
dump of first 15 PDFs defined
ipdf, description
1  GenerateRestartFiles (yes=1,no=0)
2  ImportanceAnalysisFlag (yes=1,no=0)
3  SubsystemNaturalStudy
4  BarrierBiosphereStudy
5  ComponentPrecipitationStudy
6  BarrierUpperUnsaturatedZoneStudy
7  ComponentTivaCanyonStudy
8  BarrierLowerUnsaturatedZoneStudy
9  ComponentTSwStudy
10 ComponentCHnvStudy
11 ComponentCHnzStudy
12 ComponentPPwStudy
13 ComponentUCFStudy
14 ComponentBFwStudy
15 BarrierSaturatedZoneStudy
```

```
***>>> Error in ispquery <<<***
can not find name of parameter
in above list of all PDF names
name =FractureRD_STFF_Jc
```

## SOFTWARE CHANGE REPORT (SCR)

<b>SCR No. (Software Developer Assigns):</b> PA-SCR-443	<b>Software Title and Version:</b> TPA 5.0betaZ	<b>/Project No:</b> 20-1402-762
<b>Affected Software Module(s), Description of Problem(s):</b> szft.f, and tpa.inp  The code produces incorrect behavior for nuclide transport based on the filter efficiency factors supplied in the <i>tpa.inp</i> file.		
<b>Change Requested by:</b> R.. Janetzke Date: 2-24-03	<b>Change Authorized by (Software Developer):</b> R. Janetzke Date: 2-24-03 	
<b>Description of Change(s) or Problem Resolution (If changes not implemented, please justify):</b>  See attachment.		
<b>Implemented by:</b> R. Janetzke 	<b>Date:</b> 2-24-03	
<b>Description of Acceptance Tests:</b>  The software was tested in accordance with the Test Plan for TPA SCR #443.  The software, test directories, and test results are contained on a CD labeled "TPA SCR #443 - Test Directories."		
<b>Tested by:</b> C. Scherer 	<b>Date:</b> 2-26-03	

## Description of Change(s) or Problem Resolution

The comments in the code fragment indicate the changes made to uzft.f at line 1808:

```
toteffcompflfc = 1.0
do ilayer = 1, NLYERU
cc rwj 2-24-03 SCR443; Change meaning and name of toteffplflfc to toteffcompflfc.
    if (lmedia(ilayer).eq. 1) then
        toteffcompflfc = toteffcompflfc * (1.0d0 - flfc(ilayer))
    end if
end do
```

The comments in the code fragment indicate the changes made to uzft.f at line 1880:

```
do inuc = nnuc1+1, nnuc1+numc1nuc
    ciperyrinsaintouzfracture(itime, inuc) = fracturefraction
    & * ciperyrinsaintoloweruz(itime, inuc)
ccccccc scr419
cc Multiply ciperyrinsaintoloweruz by colloid matrix loss factor for each layer here.
cc loop over layers to compute aggregate filter factor based on lowestmatfrac and flfc..
cc this is the loop where a fraction of the colloids are permanently removed from the
cc repository system.
ccccccc
cc rwj 2-24-03 SCR443; Bug fix.
cc totremain = 1.0-toteffcompflfc
cc totremain = totremain - toteffcompflfc
cc ciperyrinsaintouzmatrix(itime, inuc) = lowestmatfraction*
cc & totremain*
cc & ciperyrinsaintoloweruz(itime, inuc)
cc end do
cc end 419

end do
```

The comments in the code fragment indicate the changes made to ebsfilt.f at line 423:

```
cc rwj 2-24-03 SCR443; Change meaning of filter factor to filter efficiency factor.
cc r = win(m)*flfc(k-nnuc)
cc r = win(m)*(1.d0 - flfc(k-nnuc) )
```

## Test Plan/Report for TPA SCR #443

**Test Plan Name:** Add Colloid Filter Factors

**Tested By:** Carol S. Scherer

**Date:** February 26, 2003

**Host Machine:** SUN Ultra-4 server: Spock

**Host OS:** Sun Solaris 5.8

**Baseline Version:** TPA 5.0betaZ  
(4.2 solapps compiler)

**Test Version:** TPA 5.0betaZa  
(4.2 solapps compiler)

### Code Modifications:

The following code modifications were made to TPA for SCR # 443 :

1. In *ebsfilt.f*, change equation from " $r = win(m) * flfc(k - nnuc)$ " to " $r = win(m) * (1.d0 - flfc(k - nnuc))$ ".
2. In *uzft.f*, change variable name from **toteffplflfc** to **toteffcompflfc**. When **toteffcompflfc** used in formula, do not subtract it from 1.0.

### Testing Setup:

Directories/paths used for testing:

**\$HOME** = /net/spock/home/cscherer

Path for run directory: **\$HOME/tpatest/scr443**

Environment variables:

**TPA\_TEST** = **\$HOME/tpatest/scr443**

**TPA\_DATA** = **\$HOME/tpatest/scr443**

Disposition of documentation of results: All modified/new source code files, all executables used in testing, and all input/output files will be kept in the archive directories. The contents of the archive directories will be written out to a CD titled "TPA SCR # 443 - Test Directories" (attached).

Test preparation instructions:

1. In the directory **\$HOME/tpatest**, create the following subdirectory: **scr443** (run directory).
2. In the run directory, create the following subdirectories: **flt1**, and **slt1**.
3. Copy TPA version 5.0betaZa to the run directory. In the run directory, save a copy of *tpa.inp* as *tpa\_orig.inp*.

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4. In the run directory, recompile **TPA** using *Makefile4.2*. Save a copy of *tpa.e* as *tpa\_42comp.e*.

### Functional Level Tests:

These tests are designed to demonstrate that the modified code performs correctly.

1. Name: Modified Code Functionality Test

Path for archive of results: **\$HOME/tpatest/scr443/flt1**

Special input files or modifications to input files required:

1. copy *ebsfilt.inp* from SLT #1d to *ebsfilt\_orig.inp*
2. copy *ebsfilt.inp* to *ebsfilt\_flt1.inp*
3. in *ebsfilt\_flt1.inp*, modify the value for **flux** so that it is larger than the value for **ksat**

Special diagnostic code modifications required:

Program modes to be used: none.

Utility scripts needed to perform the test: none.

Utility codes needed in the analysis of the test data: none.

Test description:

- objective: to test the functionality of the modified code in the standalone module *ebsfilt.f* regarding colloid filter factors. In *ebsfilt.inp*, values are listed for flux (1<sup>st</sup> value) and ksat (3<sup>rd</sup> value). If flux is greater than ksat, then the new filter factors will be bypassed. If ksat is larger than flux, then the filter factors will be utilized.
- assumptions: SLT #1 has already been run.
- constraints: the file *scr443\_flt1.out* does not exist in the run directory.
- output files to compare or examine: *scr443\_flt1.out*, *ebsnef2\_orig.dat*, *ebsnef2\_flt1.dat*
- step by step test procedure to be used:
  1. —> change directory to the run directory

2. using an existing *ebsfilt.inp*, run *ebsfilt.e* standalone using the command "*ebsfilt.e > ebsfilt\_orig.out*"
  3. cp *echofilt.dat* to *echofilt\_orig.dat* and *ebsnef2.dat* to *ebsnef\_orig.dat* in the archive directory
  4. make the changes listed above to *ebsfiltflt1.inp*
  5. cp *ebsfiltflt1.inp* to *ebsfilt.inp*
  6. run *ebsfilt.e* standalone using the command "*ebsfilt.e > ebsfilt\_orig.out*"
  7. cp *echofilt.dat* to *echofiltflt1.dat* and *ebsnef2.dat* to *ebsnefflt1.dat* in the archive directory
  8. cp executable and input files to archive directory
  9. look at the files *ebsfiltflt1.out*, *ebsfilt\_orig.out*, *ebsnef2\_orig.dat*, and *ebsnef2flt1.dat*
- pass/fail criteria: the test passes if:
1. The code runs to completion with no error messages.
  2. In *ebsfiltflt1.out*, the **flux** value listed is greater than the **ksat** value listed.
  3. In *ebsfilt\_orig.out*, the **ksat** value listed is greater than the **flux** value listed.
  4. In *ebsnef2flt1.dat*, for colloids (Ja, Jc, Jp, and Jt), some release values are greater than 0.0. (The test in *ebsfilt* passed so colloid filter factors were bypassed and no values calculated. *Ebsnef.dat* was copied to *ebsnef2.dat* directly.) So, even though the filter factors were set to remove all colloids from the system, they were never used.
  5. In *ebsnef2\_orig.dat*, for colloids (Ja, Jc, Jp, and Jt), all release values are equal to 0.0. (The test in *ebsfilt* failed so colloid filter factors were used and values calculated.) Filter factors were set to 1.0 so all colloids were lost from the system.

Results of running test:

**PASSED.**



## System Level Tests:

These tests are designed to demonstrate that the modified code affects overall **TPA** processing and output as planned with no unwanted side effects.

1. Name: Compare Permanent Loss Colloid Filter Factors Sset To 0 Against Permanent Loss Colloid Filter Factors Set To 1.

Paths for archives of results: *\$HOME/tpatest/scr443*  
*\$HOME/tpatest/scr443*

Special input files or modifications to input files required: none.

Special diagnostic code modifications required: none.

Program modes to be used: copy *tpa\_origR.inp* to *tpa\_sl1a.inp*, *tpa\_sl1b.inp*, *tpa\_sl1c.inp*, and *tpa\_sl1d.inp* and make the following modifications:

Test Case A(*tpa\_sl1a.inp*):

```
Set ColloidReleaseFraction_Jc246[] t0.0
Set ColloidReleaseFraction_Jt230[] t0.0
Set ColloidReleaseFraction_Jp239[] t0.0
Set ColloidReleaseFraction_Ja243[] t0.0
Set ColloidReleaseFraction_Jc245[] t0.0
Set ColloidReleaseFraction_Ja241[] t0.0
Set ColloidReleaseFraction_Jp240[] t0.0
Set PermanentLossColloidFilterFactor_Invert_Ja[] t0.0
Set PermanentLossColloidFilterFactor_Invert_Jc[] t0.0
Set PermanentLossColloidFilterFactor_Invert_Jp[] t0.0
Set PermanentLossColloidFilterFactor_Invert_Jt[] t0.0
Set PermanentLossColloidFilterFactor_TSw_[] to 0.0
Set PermanentLossColloidFilterFactor_CHnv[] to 0.0
Set PermanentLossColloidFilterFactor_CHnz[] to 0.0
Set PermanentLossColloidFilterFactor_PPw_[] to 0.0
Set PermanentLossColloidFilterFactor_UCF_[] to 0.0
Set PermanentLossColloidFilterFactor_BFw_[] to 0.0
Set PermanentLossColloidFilterFactor_UFz_[] to 0.0
```

Test Case B(*tpa\_sl1b.inp*):

Set ColloidReleaseFraction\_Jc246[] t0.0  
 Set ColloidReleaseFraction\_Jt230[] t0.0  
 Set ColloidReleaseFraction\_Jp239[] t0.0  
 Set ColloidReleaseFraction\_Ja243[] t0.0  
 Set ColloidReleaseFraction\_Jc245[] t0.0  
 Set ColloidReleaseFraction\_Ja241[] t0.0  
 Set ColloidReleaseFraction\_Jp240[] t0.0  
 Set PermanentLossColloidFilterFactor\_Invert\_Ja[] t0.0  
 Set PermanentLossColloidFilterFactor\_Invert\_Jc[] t0.0  
 Set PermanentLossColloidFilterFactor\_Invert\_Jp[] t0.0  
 Set PermanentLossColloidFilterFactor\_Invert\_Jt[] t0.0  
 Set PermanentLossColloidFilterFactor\_TSw\_[] to 0.0  
 Set PermanentLossColloidFilterFactor\_CHnv[] to 0.0  
 Set PermanentLossColloidFilterFactor\_CHnz[] to 0.0  
 Set PermanentLossColloidFilterFactor\_PPw\_[] to 0.0  
 Set PermanentLossColloidFilterFactor\_UCF\_[] to 0.0  
 Set PermanentLossColloidFilterFactor\_BFw\_[] to 0.0  
 Set PermanentLossColloidFilterFactor\_UFz\_[] to 0.0

Test Case C(*tpa\_sl1c.inp*):

Set ColloidReleaseFraction\_Jc246[] t0.0  
 Set ColloidReleaseFraction\_Jt230[] t0.0  
 Set ColloidReleaseFraction\_Jp239[] t0.0  
 Set ColloidReleaseFraction\_Ja243[] t0.0  
 Set ColloidReleaseFraction\_Jc245[] t0.0  
 Set ColloidReleaseFraction\_Ja241[] t0.0  
 Set ColloidReleaseFraction\_Jp240[] t0.0  
 Set PermanentLossColloidFilterFactor\_Invert\_Ja[] t0.0  
 Set PermanentLossColloidFilterFactor\_Invert\_Jc[] t0.0  
 Set PermanentLossColloidFilterFactor\_Invert\_Jp[] t0.0  
 Set PermanentLossColloidFilterFactor\_Invert\_Jt[] t0.0  
 Set PermanentLossColloidFilterFactor\_TSw\_[] to 1.0  
 Set PermanentLossColloidFilterFactor\_CHnv[] to 1.0  
 Set PermanentLossColloidFilterFactor\_CHnz[] to 1.0  
 Set PermanentLossColloidFilterFactor\_PPw\_[] to 1.0  
 Set PermanentLossColloidFilterFactor\_UCF\_[] to 1.0  
 Set PermanentLossColloidFilterFactor\_BFw\_[] to 1.0  
 Set PermanentLossColloidFilterFactor\_UFz\_[] to 1.0

Test Case D(*tpa\_slt1d.inp*):

Set ColloidReleaseFraction\_Jc246[] *tb*.0  
Set ColloidReleaseFraction\_Jt230[] *tb*.0  
Set ColloidReleaseFraction\_Jp239[] *tb*.0  
Set ColloidReleaseFraction\_Ja243[] *tb*.0  
Set ColloidReleaseFraction\_Jc245[] *tb*.0  
Set ColloidReleaseFraction\_Ja241[] *tb*.0  
Set ColloidReleaseFraction\_Jp240[] *tb*.0  
Set PermanentLossColloidFilterFactor\_Invert\_Ja[] *td*.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jc[] *td*.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jp[] *td*.0  
Set PermanentLossColloidFilterFactor\_Invert\_Jt[] *td*.0  
Set PermanentLossColloidFilterFactor\_TSw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_CHnv[] to 1.0  
Set PermanentLossColloidFilterFactor\_CHnz[] to 1.0  
Set PermanentLossColloidFilterFactor\_PPw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_UCF\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_BFw\_[] to 1.0  
Set PermanentLossColloidFilterFactor\_UFz\_[] to 1.0

Utility scripts needed to perform the test: none.

Utility codes needed in the analysis of the test data: none.

Test description:

- objective: to demonstrate the interaction among Colloid Release Fractions and Permanent Loss Colloid Filter Factors
- assumptions: none.
- constraints: the files *scr443\_slt1a.out*, *scr443\_slt13b.out*, *scr443\_slt1c.out*, and *scr443\_slt1d.out* do not exist in the run directory.
- output files to compare or examine: *scr443\_slt1a.out*, *scr443\_slt1b.out*, *scr443\_slt1c.out*, and *scr443\_slt1d.out*
- step by step test procedure to be used:
  1. —> change directory to run directory
  2. copy *tpa\_42orig.e* to *tpa.e*

Test Case A:

3. copy *tpa\_slt1a.inp* to *tpa.inp*
4. run *tpa.e* using command "*tpa.e > scr443\_slt1a.out*"
5. copy *scr443\_slt1a.out* to the slt1/testa archive directory

Test Case B:

6. copy *tpa\_slt1b.inp* to *tpa.inp*
7. run *tpa.e* using command "*tpa.e > scr443\_slt1b.out*"
8. copy *scr443\_slt1b.out* to the slt1/testb archive directory

Test Case C:

9. copy *tpa\_slt1c.inp* to *tpa.inp*
10. run *tpa.e* using command "*tpa.e > scr443\_slt1c.out*"
11. copy *scr443\_slt1c.out* to the slt1/testc archive directory

Test Case D:

12. copy *tpa\_slt1d.inp* to *tpa.inp*
13. run *tpa.e* using command "*tpa.e > scr443\_slt1d.out*"
14. copy *scr443\_slt1d.out* to the slt1/testd archive directory
15. look at files *scr443\_slt1a.out*, *scr443\_slt1b.out*, *scr443\_slt1c.out*,  
and *scr443\_slt1d.out*
16. compare release values listed for each case

- pass/fail criteria: the test passes if:

1. **TPA** ran to successful completion: there is a non-zero value for calculated dose (see **Peak Mean Dose** in all cases.
2. Colloids appear in release lists when Colloid ReleaseFractions are set to 1 and Permanent Loss Colloid Filters are set to 0.
3. Colloids do not appear in release lists when Colloid Release Fractions are set to 0.
4. Colloids do not appear in release lists when Permanent Loss Colloid Filters are set to 1 unless they can be accounted for by decay growth.
5. When Colloid Release Fractions are set to 1, the associated colloid for a listed element appears in the next list with all the release attributed to it instead of the original element.

Results of running test:

**PASSED.**

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**NOTES:**

scr443:

total 23416

drwxr-xr-x	12	cscherer	sunuser	8192	Feb	26	14:25	.
drwxr-xr-x	36	cscherer	sunuser	4608	Feb	26	14:26	..
-rwxr-xr-x	1	cscherer	sunuser	2001	Sep	18	16:52	CLEANUP
drwxr-xr-x	2	cscherer	sunuser	7680	Feb	25	17:46	CRFhalfdir
-rw-r--r--	1	cscherer	sunuser	965	Feb	25	18:02	FILENAME.DAT
-rw-r--r--	1	cscherer	sunuser	869	Nov	27	14:22	Makefile
-rw-rw-rw-	1	cscherer	sunuser	961	Nov	27	14:24	Makefile4.2
-rw-r--r--	1	cscherer	sunuser	450	Feb	25	18:02	NEFII.VEL
-rw-r--r--	1	cscherer	sunuser	2747	Feb	25	18:02	airpkdos.res
-rw-r--r--	1	cscherer	sunuser	2747	Feb	25	18:02	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	29502	Nov	15	17:28	array.f
-rw-r--r--	1	cscherer	sunuser	915	Feb	25	18:02	ashout.res
-rw-r--r--	1	cscherer	sunuser	20601	Sep	11	13:41	ashplumo.f
-rw-r--r--	1	cscherer	sunuser	37630	Nov	27	13:27	ashrmovo.f
-rw-r--r--	1	cscherer	sunuser	1025	Feb	25	17:59	burnup.dat
drwxr-xr-x	2	cscherer	sunuser	512	Feb	25	13:03	ccdf
-rwxrwxrwx	1	cscherer	sunuser	142	Feb	25	13:23	ch_env
-rwxrwxrwx	1	cscherer	sunuser	164	Feb	23	19:09	ch_envQ
-rw-r--r--	1	cscherer	sunuser	5047	Feb	25	18:02	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Feb	25	17:59	climato1.dat
-rw-r--r--	1	cscherer	sunuser	2200	Feb	25	17:59	climato2.dat
drwxr-xr-x	4	cscherer	sunuser	1024	Feb	26	13:41	codes
-rw-r--r--	1	cscherer	sunuser	6219	Feb	25	17:59	coefkdeq.dat
-rw-r--r--	1	cscherer	sunuser	735	Feb	18	18:46	coefkdeq.i
-rw-r--r--	1	cscherer	sunuser	10207	Feb	15	2002	condxyzt.f
-rw-r--r--	1	cscherer	sunuser	14506	Feb	25	18:02	corrode.out
-rw-r--r--	1	cscherer	sunuser	79314	Feb	25	18:02	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2253	Feb	25	18:02	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2253	Feb	25	18:02	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb	25	18:02	cumrelse.out
drwxr-xr-x	2	cscherer	sunuser	1536	Feb	25	13:03	data
-rw-r--r--	1	cscherer	sunuser	122748	Feb	18	18:49	dcags.f
-rw-r--r--	1	cscherer	sunuser	157577	Dec	19	14:34	dcagw.f
-rw-r--r--	1	cscherer	sunuser	7196	Feb	25	17:28	dcfgw.cum
-rw-r--r--	1	cscherer	sunuser	6693	Feb	25	18:02	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb	25	18:02	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2200	Feb	25	18:02	dilution.dat
drwxr-xr-x	2	cscherer	sunuser	512	Feb	26	14:23	docs
-rw-r--r--	1	cscherer	sunuser	3870	Feb	25	17:59	drifts.dat
-rw-r--r--	1	cscherer	sunuser	190	Sep	20	09:32	driftsa.i
-rw-r--r--	1	cscherer	sunuser	519	Feb	25	17:59	drythick.dat
-rw-r--r--	1	cscherer	sunuser	25470	Dec	17	17:53	dsfail.f
-rw-r--r--	1	cscherer	sunuser	2483	Feb	25	18:02	dsfail.res
-rw-r--r--	1	cscherer	sunuser	2572	Feb	25	18:02	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Feb	25	17:59	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	43144	Feb	25	17:59	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Feb	25	18:02	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	17:59	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb	25	18:02	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5973	Feb	25	17:59	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	48867	Feb	14	19:59	ebsfail.f
-rw-r--r--	1	cscherer	sunuser	5734	Feb	25	18:02	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	790	Feb	25	17:59	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	46588	Feb	25	17:59	ebsfilt.e
-rw-r--r--	1	cscherer	sunuser	2554	Feb	25	18:02	ebsfilt.inp

-rw-r--r--	1	cscherer	sunuser	304	Feb	25	18:02	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Feb	25	18:02	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	167701	Feb	25	18:02	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb	25	18:02	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	167681	Feb	25	18:02	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb	25	18:02	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5459	Feb	25	17:59	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	87035	Feb	23	18:16	ebsrel.f
-rw-r--r--	1	cscherer	sunuser	11110	Feb	25	18:02	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:15	ebsrell.i
-rw-r--r--	1	cscherer	sunuser	124203	Feb	25	18:02	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Feb	25	18:02	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Feb	25	18:02	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2647	Feb	25	18:02	echofail.dat
-rw-r--r--	1	cscherer	sunuser	322343	Feb	25	18:02	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	191076	Feb	25	18:02	env.e
-rwxr-xr-x	1	cscherer	sunuser	282692	Feb	25	18:02	envin.e
-rw-r--r--	1	cscherer	sunuser	39355	Feb	25	18:02	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1708	Feb	25	18:02	epapktim.out
-rw-r--r--	1	cscherer	sunuser	389660	Feb	24	19:26	exec.f
-rw-r--r--	1	cscherer	sunuser	2385	Sep	21	10:07	execa.i
-rw-r--r--	1	cscherer	sunuser	486	Sep	3	1997	execb.i
-rw-r--r--	1	cscherer	sunuser	269	May	29	2002	execc.i
-rw-r--r--	1	cscherer	sunuser	104	Feb	6	14:32	execd.i
-rwxr-xr-x	1	cscherer	sunuser	136632	Feb	25	17:59	failt.e
-rw-r--r--	1	cscherer	sunuser	17384	Feb	25	18:02	failt.out
-rw-r--r--	1	cscherer	sunuser	8503	Feb	15	2002	faulto.f
-rw-r--r--	1	cscherer	sunuser	6599	May	29	2002	fileunit.f
-rw-r--r--	1	cscherer	sunuser	5784	Feb	15	2002	findelev.f
drwxr-xr-x	2	cscherer	sunuser	512	Feb	26	14:04	flt1
-rw-r--r--	1	cscherer	sunuser	6281	Feb	25	18:02	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Feb	25	18:02	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	ful.i
-rw-r--r--	1	cscherer	sunuser	609	Sep	4	19:29	fu2.i
-rw-r--r--	1	cscherer	sunuser	6513	Feb	25	18:02	gbioac1.dat
-rw-r--r--	1	cscherer	sunuser	3383	Feb	25	18:02	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Feb	25	18:02	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Feb	25	18:02	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	18:02	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb	25	18:02	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb	25	18:02	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Feb	25	18:02	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Feb	25	18:02	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Feb	25	18:02	ggamen.dat
-rw-r--r--	1	cscherer	sunuser	13855	Feb	25	18:02	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Feb	25	18:02	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb	25	18:02	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Feb	25	18:02	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Feb	25	18:02	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Feb	25	18:02	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Feb	25	18:02	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	18:02	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	18:02	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	3561	Feb	25	18:02	gw_cb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1264	Feb	25	18:02	gw_cb_ci.dat
-rw-r--r--	1	cscherer	sunuser	3557	Feb	25	18:02	gw_pb_ad.dat
-rw-r--r--	1	cscherer	sunuser	1261	Feb	25	18:02	gw_pb_ci.dat

-rw-r--r--	1	cscherer	sunuser	573	Feb	25	18:02	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	18:02	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb	25	18:02	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb	25	18:02	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb	25	18:02	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb	25	18:02	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	1229	Jul	22	1999	ia.i
-rw-r--r--	1	cscherer	sunuser	956	Sep	26	2000	ial.i
-rw-r--r--	1	cscherer	sunuser	21238	Dec	19	14:34	iareader.f
-rw-r--r--	1	cscherer	sunuser	2331	Feb	25	18:02	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb	25	18:02	inv1000.out
-rw-r--r--	1	cscherer	sunuser	69374	Feb	20	11:12	invent.f
-rw-r--r--	1	cscherer	sunuser	33	Sep	25	12:15	invent_.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	invent.a.i
-rw-r--r--	1	cscherer	sunuser	182	Sep	25	12:14	inventb.i
-rw-r--r--	1	cscherer	sunuser	344	Sep	25	12:14	inventc.i
-rw-r--r--	1	cscherer	sunuser	124	Sep	25	12:14	inventd.i
-rw-r--r--	1	cscherer	sunuser	131	Sep	25	12:14	invente.i
-rw-r--r--	1	cscherer	sunuser	130	Sep	25	12:14	inventf.i
-rw-r--r--	1	cscherer	sunuser	128	Sep	25	12:14	inventg.i
-rw-r--r--	1	cscherer	sunuser	127	Sep	25	12:14	inventh.i
-rw-r--r--	1	cscherer	sunuser	75	Aug	16	1997	inventi.i
-rw-r--r--	1	cscherer	sunuser	288	Sep	25	12:14	inventj.i
-rw-r--r--	1	cscherer	sunuser	332	Sep	25	12:14	inventk.i
-rw-r--r--	1	cscherer	sunuser	150	Dec	6	14:29	inventl.i
-rw-r--r--	1	cscherer	sunuser	315	Dec	11	09:33	inventm.i
-rw-r--r--	1	cscherer	sunuser	175	Sep	25	12:15	inventn.i
-rw-r--r--	1	cscherer	sunuser	249	Jan	29	2000	invento.i
-rw-r--r--	1	cscherer	sunuser	267	Sep	25	12:15	inventp.i
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	46905	Feb	25	17:59	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5715	Feb	25	17:59	lhs.out
-rw-r--r--	1	cscherer	sunuser	78953	Feb	25	17:59	lhse.out
-rw-r--r--	1	cscherer	sunuser	78	Aug	16	1997	max500yr.i
-rw-r--r--	1	cscherer	sunuser	99	Sep	25	12:10	maxchain.i
-rw-r--r--	1	cscherer	sunuser	149	Sep	25	12:50	maxclchn.i
-rw-r--r--	1	cscherer	sunuser	144	Sep	25	12:50	maxclnuc.i
-rw-r--r--	1	cscherer	sunuser	508	Sep	25	12:11	maxnnucl.i
-rw-r--r--	1	cscherer	sunuser	299	Jul	10	1998	maxnsuba.i
-rw-r--r--	1	cscherer	sunuser	206	May	28	1999	maxntime.i
-rw-r--r--	1	cscherer	sunuser	1095	Feb	25	18:02	maxrel.dat
-rwxr-xr-x	1	cscherer	sunuser	943775	Feb	25	17:59	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31768	Feb	25	18:02	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Feb	25	17:59	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	79824	Feb	25	17:59	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9575	Feb	25	18:02	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	18:02	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1251	Feb	25	17:59	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1252	Feb	25	17:59	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	11850	Feb	15	2002	mv.f
-rw-r--r--	1	cscherer	sunuser	61242	Feb	25	18:02	mv.tpa
-rw-r--r--	1	cscherer	sunuser	111	Sep	4	1997	mva.i
-rw-r--r--	1	cscherer	sunuser	56	Aug	16	1997	mvb.i
-rw-r--r--	1	cscherer	sunuser	57	Aug	16	1997	mvc.i
-rw-r--r--	1	cscherer	sunuser	101	Aug	16	1997	mvd.i
-rw-r--r--	1	cscherer	sunuser	72	Aug	16	1997	mve.i
-rw-r--r--	1	cscherer	sunuser	72	Aug	16	1997	mvf.i



-rw-r--r--	1	cscherer	sunuser	2331	Feb 25	18:02	nearfld.res
-rw-r--r--	1	cscherer	sunuser	31821	Feb 25	18:02	nefiid.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25	18:02	nefiid.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb 25	18:02	nefiid.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25	18:02	nefiid.rel
-rw-r--r--	1	cscherer	sunuser	31821	Feb 25	18:02	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25	18:02	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb 25	18:02	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	158340	Feb 25	18:02	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25	18:02	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	998603	Feb 25	18:02	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25	18:02	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	1072318	Feb 25	18:02	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	159613	Feb 25	18:02	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	264	Feb 25	18:02	nefiuiz.vel
-rwxr-xr-x	1	cscherer	sunuser	408036	Feb 25	17:59	nefmks.e
-rw-r--r--	1	cscherer	sunuser	1470	Feb 25	18:02	nefmks.log
-rw-r--r--	1	cscherer	sunuser	112638	Feb 19	11:01	nfenv.f
-rw-r--r--	1	cscherer	sunuser	326	Nov 17	18:24	nfenvadj.i
-rw-r--r--	1	cscherer	sunuser	94	Aug 16	1997	nintv.i
-rw-r--r--	1	cscherer	sunuser	1502	Jun 11	1997	notice.i
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25	18:02	npkdozet.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25	18:02	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	7152	Feb 25	17:59	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	6579	Feb 15	2002	numrecip.f
-rw-r--r--	1	cscherer	sunuser	7111	Feb 25	18:02	organdf.dat
-rw-r--r--	1	cscherer	sunuser	259	Aug 16	1997	path.i
-rw-r--r--	1	cscherer	sunuser	6584	Feb 15	2002	peakfind.f
-rw-r--r--	1	cscherer	sunuser	698	Feb 25	18:02	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25	18:02	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25	18:02	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	46322	Feb 15	2002	ran.f
-rw-r--r--	1	cscherer	sunuser	148482	Dec 19	14:32	reader.f
-rw-r--r--	1	cscherer	sunuser	185	May 21	1998	reader.i
-rw-r--r--	1	cscherer	sunuser	106	Aug 27	1999	reader1.i
-rw-r--r--	1	cscherer	sunuser	58	Aug 27	1999	reader2.i
-rw-r--r--	1	cscherer	sunuser	102	Aug 27	1999	reader3.i
-rw-r--r--	1	cscherer	sunuser	89	Aug 27	1999	reader4.i
-rw-r--r--	1	cscherer	sunuser	58	Aug 16	1997	reflux2.i
-rw-r--r--	1	cscherer	sunuser	682	Feb 25	18:02	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	18:02	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25	18:02	relcum.out
-rwxr-xr-x	1	cscherer	sunuser	122636	Feb 25	17:59	releaset.e
-rw-r--r--	1	cscherer	sunuser	414	Feb 25	18:02	releaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25	18:02	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25	18:02	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Feb 25	17:59	repdes.dat
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	18:02	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	18:02	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	18:02	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	18:02	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	18:02	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	18:02	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	18:02	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	18:02	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5138	Feb 25	18:02	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16138	Feb 25	18:02	rgwsap.tpa

-rw-r--r--	1	cscherer	sunuser	5184	Feb	25	18:02	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	18:02	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	723	Feb	25	18:02	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	95694	May	29	2002	sampler.f
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler0.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	sampler1.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler2.i
-rw-r--r--	1	cscherer	sunuser	178	Apr	3	1998	sampler3.i
-rw-r--r--	1	cscherer	sunuser	145	Sep	19	2000	sampler4.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.a.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.b.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.c.i
-rw-r--r--	1	cscherer	sunuser	68	Aug	16	1997	sampler.d.i
-rw-r--r--	1	cscherer	sunuser	133	Aug	16	1997	sampler.e.i
-rw-r--r--	1	cscherer	sunuser	111	Aug	16	1997	sampler.f.i
-rw-r--r--	1	cscherer	sunuser	84	Aug	16	1997	sampler.g.i
-rw-r--r--	1	cscherer	sunuser	68	Aug	16	1997	sampler.h.i
-rw-r--r--	1	cscherer	sunuser	83	Aug	16	1997	sampler.i.i
-rw-r--r--	1	cscherer	sunuser	61	Aug	16	1997	sampler.j.i
-rw-r--r--	1	cscherer	sunuser	208	Aug	16	1997	sampler.k.i
-rw-r--r--	1	cscherer	sunuser	104	Aug	16	1997	sampler.l.i
-rw-r--r--	1	cscherer	sunuser	63	Aug	16	1997	sampler.m.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	sampler.n.i
-rw-r--r--	1	cscherer	sunuser	63	Aug	16	1997	sampler.o.i
-rw-r--r--	1	cscherer	sunuser	260	Mar	14	2002	sampler.p.i
-rw-r--r--	1	cscherer	sunuser	103	Aug	16	1997	sampler.q.i
-rw-r--r--	1	cscherer	sunuser	176	Aug	16	1997	sampler.r.i
-rw-r--r--	1	cscherer	sunuser	336	Apr	3	1998	sampler.s.i
-rw-r--r--	1	cscherer	sunuser	70	Aug	16	1997	sampler.t.i
-rw-r--r--	1	cscherer	sunuser	69	Aug	16	1997	sampler.u.i
-rw-r--r--	1	cscherer	sunuser	62	Aug	16	1997	sampler.v.i
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	sampler.w.i
-rw-r--r--	1	cscherer	sunuser	406	Feb	22	16:36	sampler.x.i
-rw-r--r--	1	cscherer	sunuser	299	Apr	30	2001	sampler.y.i
-rw-r--r--	1	cscherer	sunuser	60	Aug	16	1997	sampler.z.i
-rw-r--r--	1	cscherer	sunuser	3859	Feb	25	17:59	samplpar.abb
-rw-r--r--	1	cscherer	sunuser	29689	Feb	25	17:59	samplpar.hdr
-rw-r--r--	1	cscherer	sunuser	6362	Feb	25	18:02	samplpar.res
drwxr-xr-x	9	cscherer	sunuser	1024	Feb	25	16:50	scr419_sl3_test
-rw-r--r--	1	cscherer	sunuser	322	Nov	17	18:24	seisadj.i
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb	25	17:59	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb	25	17:59	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	74226	Dec	17	17:52	seismo2.f
-rwxrwxrwx	1	cscherer	sunuser	30	Sep	12	16:53	show_env
drwxr-xr-x	8	cscherer	sunuser	512	Feb	25	18:03	slt1
-rwxr-xr-x	1	cscherer	sunuser	943788	Feb	25	17:59	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	243532	Feb	25	17:59	snllhs.e
-rw-r--r--	1	cscherer	sunuser	158340	Feb	25	18:02	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	30838	Feb	25	18:02	sp.tpa
-rw-r--r--	1	cscherer	sunuser	144	Sep	3	1997	stop.i
-rw-r--r--	1	cscherer	sunuser	4506	Feb	25	17:59	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	38273	Sep	3	10:13	subarea.f
-rw-r--r--	1	cscherer	sunuser	255	Feb	4	2000	subarea.a.i
-rw-r--r--	1	cscherer	sunuser	79	Aug	16	1997	subarea.b.i
-rw-r--r--	1	cscherer	sunuser	82	Aug	16	1997	subarea.c.i
-rw-r--r--	1	cscherer	sunuser	81	Aug	16	1997	subarea.d.i
-rw-r--r--	1	cscherer	sunuser	77	Aug	16	1997	subarea.e.i

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-rw-r--r-- 1 cscherer sunuser      60 Feb  3  2000 subareaf.i
-rw-r--r-- 1 cscherer sunuser      64 Feb  2  2000 subareag.i
-rw-r--r-- 1 cscherer sunuser 116680 Feb 24 19:19 szft.f
-rw-r--r-- 1 cscherer sunuser    264 Nov 17 18:23 szft.i
drwxr-xr-x 2 cscherer sunuser    7168 Feb 25 18:06 testCRFhalf
-rw-r--r-- 1 cscherer sunuser   13123 Feb 25 18:02 totdos_c.res
-rw-r--r-- 1 cscherer sunuser   13123 Feb 25 18:02 totdose.res
-rwxr--r-- 1 cscherer sunuser   82452 Feb 26 11:23 tp_scr443.wpd
-rwxr-xr-x 1 cscherer sunuser 2527160 Feb 25 16:40 tpa.e
-rw-r--r-- 1 cscherer sunuser   91425 Feb 25 17:57 tpa.inp
drwxr-xr-x 2 cscherer sunuser    4096 Feb 25 17:04 tpa50betaQ
-r--r--r-- 1 cscherer sunuser    9325 Mar  4  2002 tpa_.out
-rwxr-xr-x 1 cscherer sunuser 2527152 Feb 25 13:09 tpa_42comp.e
-rw-r--r-- 1 cscherer sunuser   91430 Feb 24 19:23 tpa_orig.e
-rwxr-xr-x 1 cscherer sunuser 2527160 Feb 25 16:40 tpa_slt1.e
-rw-r--r-- 1 cscherer sunuser   91425 Feb 25 16:34 tpa_slt1a.inp
-rw-r--r-- 1 cscherer sunuser   91425 Feb 25 16:35 tpa_slt1b.inp
-rw-r--r-- 1 cscherer sunuser   91425 Feb 25 16:35 tpa_slt1c.inp
-rw-r--r-- 1 cscherer sunuser   91425 Feb 25 16:36 tpa_slt1d.inp
-rw-r--r-- 1 cscherer sunuser   91425 Feb 25 16:36 tpa_slt1e.inp
-rw-r--r-- 1 cscherer sunuser   91425 Feb 25 16:36 tpa_slt1f.inp
-rw-r--r-- 1 cscherer sunuser   91425 Feb 25 17:57 tpa_slt2_compare.inp
-rwxr-xr-x 1 cscherer sunuser 2529148 Feb 25 15:29 tpa_testing.e
-rw-r--r-- 1 cscherer sunuser   91355 Feb 25 15:52 tpa_testing.inp
-rw-r--r-- 1 cscherer sunuser   92315 Feb 25 17:59 tpameans.out
-rw-r--r-- 1 cscherer sunuser 101499 Feb 25 17:59 tpanames.db
-rw-r--r-- 1 cscherer sunuser 150931 Feb 25 18:02 trelease.out
-rw-r--r-- 1 cscherer sunuser    314 Aug 16 1997 uz_climi.i
-rw-r--r-- 1 cscherer sunuser   1219 Sep  6 20:05 uz_climr.i
-rw-r--r-- 1 cscherer sunuser    341 Aug 16 1997 uz_climz.i
-rw-r--r-- 1 cscherer sunuser   1323 Sep 26 14:28 uz_flowi.i
-rw-r--r-- 1 cscherer sunuser   1170 Sep 26 14:29 uz_flowr.i
-rw-r--r-- 1 cscherer sunuser    176 Aug 16 1997 uz_flowz.i
-rw-r--r-- 1 cscherer sunuser   3225 Sep 26 14:30 uz_parms.i
-rw-r--r-- 1 cscherer sunuser   72309 Feb 19 20:01 uzflow.f
-rw-r--r-- 1 cscherer sunuser 127707 Feb 24 19:16 uzft.f
-rw-r--r-- 1 cscherer sunuser    755 Nov 17 18:23 uzszft.i
-rw-r--r-- 1 cscherer sunuser   14215 Feb 15 2002 volcano.f
-rw-r--r-- 1 cscherer sunuser   14132 Feb 25 18:02 weldfail.out
-rw-r--r-- 1 cscherer sunuser    1191 Feb 25 18:02 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser   8805 Feb 25 17:59 wpflow.dat
-rw-r--r-- 1 cscherer sunuser   17410 Feb 25 17:59 wpflow.def
-rw-r--r-- 1 cscherer sunuser    819 Feb 25 18:02 wpsfail.res
-rw-r--r-- 1 cscherer sunuser   11721 Feb 15 2002 zportunx.f

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## scr443/CRFhalfdir:

total 8118

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drwxr-xr-x 2 cscherer sunuser    7680 Feb 25 17:46 .
drwxr-xr-x 12 cscherer sunuser   8192 Feb 26 14:25 ..
-rw-r--r-- 1 cscherer sunuser    965 Feb 25 17:28 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser   1752 Feb 25 17:28 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser   2747 Feb 25 17:28 airpkdos.res
-rw-r--r-- 1 cscherer sunuser   2747 Feb 25 17:28 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser    915 Feb 25 17:28 ashout.res
-rw-r--r-- 1 cscherer sunuser  19192 Feb 25 17:28 corrode.out
-rw-r--r-- 1 cscherer sunuser  79314 Feb 25 17:28 cp.tpa
-rw-r--r-- 1 cscherer sunuser   2253 Feb 25 17:28 cumrel.res

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-rw-r--r--	1	cscherer	sunuser	2253	Feb 25 17:28	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	69680	Feb 25 17:28	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	7196	Feb 25 17:28	dcfgw.cum
-rw-r--r--	1	cscherer	sunuser	9993	Feb 25 17:28	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	14700	Feb 25 17:28	diagnose.out
-rw-r--r--	1	cscherer	sunuser	1025	Feb 25 17:28	dsfail.res
-rw-r--r--	1	cscherer	sunuser	791	Feb 25 17:28	dsfailt.def
-rw-r--r--	1	cscherer	sunuser	610	Feb 25 17:28	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 17:28	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	65260	Feb 25 17:28	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5973	Feb 25 17:28	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	5734	Feb 25 17:28	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	790	Feb 25 17:28	ebsfilt.def
-rw-r--r--	1	cscherer	sunuser	2554	Feb 25 17:28	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	239	Feb 25 17:28	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	251401	Feb 25 17:28	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	186252	Feb 25 17:28	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	658449	Feb 25 17:28	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb 25 17:28	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5459	Feb 25 17:28	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	11110	Feb 25 17:28	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	18435	Feb 25 17:28	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	39355	Feb 25 17:28	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1708	Feb 25 17:28	epapktim.out
-rw-r--r--	1	cscherer	sunuser	22929	Feb 25 17:28	failt.out
-rw-r--r--	1	cscherer	sunuser	69680	Feb 25 17:28	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	3383	Feb 25 17:28	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Feb 25 17:28	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 17:28	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 25 17:28	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 25 17:28	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Feb 25 17:28	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Feb 25 17:28	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13855	Feb 25 17:28	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Feb 25 17:28	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 25 17:28	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25 17:28	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:28	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:28	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:28	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:28	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25 17:28	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 17:28	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 17:28	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25 17:28	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	3111	Feb 25 17:28	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25 17:28	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	46905	Feb 25 17:27	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5715	Feb 25 17:27	lhs.out
-rw-r--r--	1	cscherer	sunuser	78953	Feb 25 17:27	lhse.out
-rw-r--r--	1	cscherer	sunuser	9729	Feb 25 17:28	mechfail.def
-rw-r--r--	1	cscherer	sunuser	27359	Feb 25 17:28	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 17:28	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25 17:28	mv.tpa
-rw-r--r--	1	cscherer	sunuser	3111	Feb 25 17:28	nearfld.res
-rw-r--r--	1	cscherer	sunuser	347762	Feb 25 17:28	nefii.dis

-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 17:28	nefii.inp
-rw-r--r--	1	cscherer	sunuser	915499	Feb 25 17:28	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 17:28	nefii.rel
-rw-r--r--	1	cscherer	sunuser	347762	Feb 25 17:28	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 17:28	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	915499	Feb 25 17:28	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	268833	Feb 25 17:28	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	1752	Feb 25 17:28	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	358161	Feb 25 17:28	nefiuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25 17:28	nefiuz.inp
-rw-r--r--	1	cscherer	sunuser	681062	Feb 25 17:28	nefiuz.out
-rw-r--r--	1	cscherer	sunuser	310291	Feb 25 17:28	nefiuz.src
-rw-r--r--	1	cscherer	sunuser	1016	Feb 25 17:28	nefiuz.vel
-rw-r--r--	1	cscherer	sunuser	1185	Feb 25 17:28	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 17:28	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 17:28	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 25 17:28	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 17:28	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 17:28	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	899	Feb 25 17:28	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:28	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25 17:28	relcum.out
-rw-r--r--	1	cscherer	sunuser	415	Feb 25 17:28	reaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25 17:28	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25 17:28	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	70762	Feb 25 17:28	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	70762	Feb 25 17:28	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	70762	Feb 25 17:28	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	70762	Feb 25 17:28	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	70762	Feb 25 17:28	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	70762	Feb 25 17:28	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	70762	Feb 25 17:28	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	70762	Feb 25 17:28	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	7438	Feb 25 17:28	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	23938	Feb 25 17:28	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	7484	Feb 25 17:28	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:28	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	723	Feb 25 17:28	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	3859	Feb 25 17:27	samplpar.abb
-rw-r--r--	1	cscherer	sunuser	29689	Feb 25 17:27	samplpar.hdr
-rw-r--r--	1	cscherer	sunuser	6362	Feb 25 17:28	samplpar.res
-rw-r--r--	1	cscherer	sunuser	5357	Feb 25 17:28	scr443_CRFhalf.out
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb 25 17:28	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb 25 17:28	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	30838	Feb 25 17:28	sp.tpa
-rw-r--r--	1	cscherer	sunuser	85383	Feb 25 17:28	spquery.tpa
-rw-r--r--	1	cscherer	sunuser	130002	Feb 25 17:28	szft.ech
-rw-r--r--	1	cscherer	sunuser	93686	Feb 25 17:28	szft.rlt
-rw-r--r--	1	cscherer	sunuser	13123	Feb 25 17:28	totdos_c.res
-rw-r--r--	1	cscherer	sunuser	19323	Feb 25 17:28	totdose.res
-rw-r--r--	1	cscherer	sunuser	91425	Feb 25 17:27	tpa.inp
-r--r--r--	1	cscherer	sunuser	9325	Mar 4 2002	tpa_.out
-rw-r--r--	1	cscherer	sunuser	91425	Feb 25 17:27	tpa_CRFhalf.inp
-rw-r--r--	1	cscherer	sunuser	91355	Feb 25 15:52	tpa_testing.inp
-rw-r--r--	1	cscherer	sunuser	92315	Feb 25 17:27	tpameans.out
-rw-r--r--	1	cscherer	sunuser	242355	Feb 25 17:28	trelease.out
-rw-r--r--	1	cscherer	sunuser	21032	Feb 25 17:28	weldfail.out

```

-rw-r--r-- 1 cscherer sunuser      291 Feb 25 17:28 wpsfillstats.out
-rw-r--r-- 1 cscherer sunuser    17410 Feb 25 17:28 wpsflow.def
-rw-r--r-- 1 cscherer sunuser      819 Feb 25 17:28 wpsfail.res

```

## scr443/ccdf:

total 35

```

drwxr-xr-x  2 cscherer sunuser      512 Feb 25 13:03 .
drwxr-xr-x 12 cscherer sunuser     8192 Feb 26 14:25 ..
-rw-r--r--  1 cscherer sunuser      267 Mar 14 2000 Makefile
-rw-r--r--  1 cscherer sunuser    23390 Jul 22 1999 tccdf.f
-rw-r--r--  1 cscherer sunuser       66 Aug  1 1997 tccdf.i
-rw-r--r--  1 cscherer sunuser      640 Jan 29 2001 tccdf.inp

```

## scr443/codes:

total 2964

```

drwxr-xr-x  4 cscherer sunuser     1024 Feb 26 13:41 .
drwxr-xr-x 12 cscherer sunuser     8192 Feb 26 14:25 ..
-rw-r--r--  1 cscherer sunuser     1299 Feb 21 21:10 Makefile
-rw-r--r--  1 cscherer sunuser     1673 Feb 21 21:12 Makefile4.2
-rw-r--r--  1 cscherer sunuser      499 Jun  2 1997 README
-rw-r--r--  1 cscherer sunuser     2320 May 28 1998 SIZES.INC
-rw-r--r--  1 cscherer sunuser      164 Feb 17 1998 SIZES2.INC
-rwxr-xr-x  1 cscherer sunuser    165120 Feb 25 13:10 ashplume.e
-rw-r--r--  1 cscherer sunuser     95611 Sep 26 2000 ashplume.f
-rw-r--r--  1 cscherer sunuser    25361 Jul 17 2002 corrosn.f
-rwxr-xr-x  1 cscherer sunuser     43144 Feb 25 13:11 dsfailt.e
-rw-r--r--  1 cscherer sunuser     23303 Dec 17 17:21 dsfailt.f
-rwxr-xr-x  1 cscherer sunuser     46588 Feb 25 13:11 ebsfilt.e
-rw-r--r--  1 cscherer sunuser     17872 Feb 24 19:14 ebsfilt.f
-rwxr-xr-x  1 cscherer sunuser    191076 Feb 25 13:12 env.e
-rwxr-xr-x  1 cscherer sunuser    282692 Feb 25 13:11 envin.e
-rwxr-xr-x  1 cscherer sunuser    136632 Feb 25 13:10 failt.e
-rw-r--r--  1 cscherer sunuser    103168 Feb 18 18:44 failt.f
-r--r--r--  1 cscherer sunuser      450 Nov 17 18:03 failtadj.i
drwxr-xr-x  2 cscherer sunuser     3072 Feb 26 13:42 gentpa
-rwxr-xr-x  1 cscherer sunuser     4633 Nov 17 18:01 integrt.f
drwxr-xr-x  3 cscherer sunuser      512 Feb 25 13:03 itym
-r--r--r--  1 cscherer sunuser      868 Dec 17 16:59 lhs1.i
-r--r--r--  1 cscherer sunuser     1308 Mar 14 2002 lhs2.i
-r--r--r--  1 cscherer sunuser      438 Mar 14 2002 lhs3.i
-r--r--r--  1 cscherer sunuser      437 Mar 14 2002 lhs4.i
-r--r--r--  1 cscherer sunuser      374 Mar 14 2002 lhs5.i
-r--r--r--  1 cscherer sunuser      450 Mar 14 2002 lhs6.i
-r--r--r--  1 cscherer sunuser      464 Mar 14 2002 lhs7.i
-r--r--r--  1 cscherer sunuser      431 Mar 14 2002 lhs8.i
-rwxr-xr-x  1 cscherer sunuser     5229 May 29 2002 linintrp.f
-r--r--r--  1 cscherer sunuser      331 Nov 17 18:03 mechadj.i
-rwxr-xr-x  1 cscherer sunuser     79824 Feb 25 13:09 mechfail.e
-rw-r--r--  1 cscherer sunuser    126625 Dec 17 17:57 mechfail.f
-rwxr-xr-x  1 cscherer sunuser    408036 Feb 25 13:09 nefmks.e
-rw-r--r--  1 cscherer sunuser    308005 Sep 26 2000 nefmks.f
-rwxr-xr-x  1 cscherer sunuser    122636 Feb 25 13:10 releaset.e
-rw-r--r--  1 cscherer sunuser    177497 Feb 21 21:07 releaset.f
-rwxr-xr-x  1 cscherer sunuser    243532 Feb 25 13:10 snllhs.e
-rw-r--r--  1 cscherer sunuser    224558 Sep  6 10:21 snllhs.f
-rwxr-xr-x  1 cscherer sunuser      4303 May 29 2002 srchpos.f
-rwxr-xr-x  1 cscherer sunuser    19890 Nov 17 18:01 weldfail.f

```

scr443/codes/gentpa:

total 413

drwxr-xr-x	2	cscherer	sunuser	3072	Feb 26	13:42	.
drwxr-xr-x	4	cscherer	sunuser	1024	Feb 26	13:41	..
-rw-r--r--	1	cscherer	sunuser	543	Feb 11	2000	AFPPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1044	Feb 11	2000	AIRPAR.CMN
-rw-r--r--	1	cscherer	sunuser	872	Feb 11	2000	ANMPAR.CMN
-rw-r--r--	1	cscherer	sunuser	615	Feb 11	2000	AQUPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1089	Feb 11	2000	CONC.CMN
-rw-r--r--	1	cscherer	sunuser	461	Feb 11	2000	DAYPC.CMN
-rw-r--r--	1	cscherer	sunuser	400	Feb 11	2000	DECAY.CMN
-rw-r--r--	1	cscherer	sunuser	571	Feb 11	2000	DFPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1359	Feb 11	2000	DOSALL.CMN
-rw-r--r--	1	cscherer	sunuser	574	Feb 11	2000	ENVPAR.CMN
-rw-r--r--	1	cscherer	sunuser	310	Feb 11	2000	EXPALL.CMN
-rw-r--r--	1	cscherer	sunuser	637	Feb 11	2000	EXTPAR.CMN
-rw-r--r--	1	cscherer	sunuser	327	Feb 11	2000	FILES.CMN
-rw-r--r--	1	cscherer	sunuser	814	Feb 11	2000	FODPAR.CMN
-rw-r--r--	1	cscherer	sunuser	438	Feb 11	2000	INVIN.CMN
-rw-r--r--	1	cscherer	sunuser	569	Feb 11	2000	LABELS.CMN
-rw-r--r--	1	cscherer	sunuser	1161	Feb 11	2000	MTBPAR.CMN
-rw-r--r--	1	cscherer	sunuser	1688	Feb 28	2000	Make.bat
-rw-r--r--	1	cscherer	sunuser	1849	Feb 24	2000	Makefile
-rw-rw-rw-	1	cscherer	sunuser	1938	Nov 27	14:12	Makefile4.2
-rw-r--r--	1	cscherer	sunuser	1746	Feb 11	2000	Mkenv.fig
-rw-r--r--	1	cscherer	sunuser	1548	Feb 11	2000	Mkenvin.fig
-rw-r--r--	1	cscherer	sunuser	2762	Feb 11	2000	OPT.CMN
-rw-r--r--	1	cscherer	sunuser	444	Feb 11	2000	ORGMAS.CMN
-rw-r--r--	1	cscherer	sunuser	728	Feb 11	2000	ORGPARG.CMN
-rw-r--r--	1	cscherer	sunuser	589	Feb 11	2000	RAD.CMN
-rw-r--r--	1	cscherer	sunuser	788	Feb 11	2000	RADIN.CMN
-rw-r--r--	1	cscherer	sunuser	722	Feb 11	2000	RMD.CMN
-rw-r--r--	1	cscherer	sunuser	489	Feb 11	2000	RMD2.CMN
-rw-r--r--	1	cscherer	sunuser	891	Feb 11	2000	SOLPAR.CMN
-rw-r--r--	1	cscherer	sunuser	489	Feb 11	2000	SWPAR.CMN
-rw-r--r--	1	cscherer	sunuser	586	Feb 11	2000	TIMES.CMN
-rw-r--r--	1	cscherer	sunuser	316	Feb 11	2000	TITL.CMN
-rw-r--r--	1	cscherer	sunuser	12777	Feb 11	2000	accmod.f
-rw-r--r--	1	cscherer	sunuser	10094	Feb 11	2000	acutel.f
-rw-r--r--	1	cscherer	sunuser	9579	Feb 11	2000	acutea.f
-rw-r--r--	1	cscherer	sunuser	7118	Feb 11	2000	acutec.f
-rw-r--r--	1	cscherer	sunuser	8669	Feb 11	2000	aircal.f
-rw-r--r--	1	cscherer	sunuser	8383	Feb 11	2000	anmcal.f
-rw-r--r--	1	cscherer	sunuser	2043	Feb 11	2000	aqucal.f
-rw-r--r--	1	cscherer	sunuser	1217	Feb 11	2000	biocal.f
-rw-r--r--	1	cscherer	sunuser	4174	Feb 11	2000	blockd.f
-rw-r--r--	1	cscherer	sunuser	1405	Feb 11	2000	bsort.f
-rw-r--r--	1	cscherer	sunuser	13008	Feb 11	2000	candh.f
-rw-r--r--	1	cscherer	sunuser	6653	Feb 11	2000	chain.f
-rw-r--r--	1	cscherer	sunuser	23921	Feb 11	2000	check.f
-rw-r--r--	1	cscherer	sunuser	10189	Feb 11	2000	cronmod.f
-rw-r--r--	1	cscherer	sunuser	5153	Feb 11	2000	crpcal.f
-rw-r--r--	1	cscherer	sunuser	3842	Feb 11	2000	dkharv.f
-rw-r--r--	1	cscherer	sunuser	5426	Feb 11	2000	dose.f
-rw-r--r--	1	cscherer	sunuser	2398	Feb 11	2000	drfbiv.f
-rw-r--r--	1	cscherer	sunuser	6728	Feb 11	2000	drfsec.f

```

-rw-r--r-- 1 cscherer sunuser 1877 Feb 11 2000 drkcal.f
-rw-r--r-- 1 cscherer sunuser 1325 Feb 11 2000 dumred.f
-rw-r--r-- 1 cscherer sunuser 3958 Feb 11 2000 edranm.f
-rw-r--r-- 1 cscherer sunuser 3567 Feb 11 2000 edrcrp.f
-rw-r--r-- 1 cscherer sunuser 2525 Feb 11 2000 edrnnon.f
-rw-r--r-- 1 cscherer sunuser 2853 Feb 11 2000 edrres.f
-rw-r--r-- 1 cscherer sunuser 10581 Feb 11 2000 env.f
-rw-r--r-- 1 cscherer sunuser 4885 Feb 11 2000 envin.f
-rw-r--r-- 1 cscherer sunuser 4561 Feb 11 2000 envlib.f
-rw-r--r-- 1 cscherer sunuser 1912 Feb 11 2000 exposr.f
-rw-r--r-- 1 cscherer sunuser 6774 Feb 11 2000 extcal.f
-rw-r--r-- 1 cscherer sunuser 1489 Feb 11 2000 filerr.f
-rw-r--r-- 1 cscherer sunuser 1986 Feb 11 2000 fntdrf.f
-rw-r--r-- 1 cscherer sunuser 3003 Feb 11 2000 headng.f
-rw-r--r-- 1 cscherer sunuser 2203 Feb 11 2000 idnuc.f
-rw-r--r-- 1 cscherer sunuser 2842 Feb 11 2000 inhcal.f
-rw-r--r-- 1 cscherer sunuser 2392 Feb 11 2000 initnv.f
-rw-r--r-- 1 cscherer sunuser 1841 Feb 11 2000 intpol.f
-rw-r--r-- 1 cscherer sunuser 1348 Feb 11 2000 invmol.f
-rw-r--r-- 1 cscherer sunuser 677 Feb 11 2000 makda2.f
-rw-r--r-- 1 cscherer sunuser 5870 Feb 11 2000 opnfil.f
-rw-r--r-- 1 cscherer sunuser 4217 Feb 11 2000 order.f
-rw-r--r-- 1 cscherer sunuser 2325 Feb 11 2000 packag.f
-rw-r--r-- 1 cscherer sunuser 3366 Feb 11 2000 plmriz.f
-rw-r--r-- 1 cscherer sunuser 1861 Feb 11 2000 prior.f
-rw-r--r-- 1 cscherer sunuser 4080 Feb 11 2000 prob.f
-rw-r--r-- 1 cscherer sunuser 2079 Feb 11 2000 profile.f
-rw-r--r-- 1 cscherer sunuser 11351 Feb 11 2000 readin.f
-rw-r--r-- 1 cscherer sunuser 6174 Feb 11 2000 redcas.f
-rw-r--r-- 1 cscherer sunuser 3867 Feb 11 2000 redcha.f
-rw-r--r-- 1 cscherer sunuser 8483 Feb 11 2000 redflt.f
-rw-r--r-- 1 cscherer sunuser 1694 Feb 11 2000 redist.f
-rw-r--r-- 1 cscherer sunuser 8548 Feb 11 2000 ritenv.f
-rw-r--r-- 1 cscherer sunuser 4371 Feb 11 2000 ritexp.f
-rw-r--r-- 1 cscherer sunuser 2584 Feb 11 2000 ritmed.f
-rw-r--r-- 1 cscherer sunuser 27222 Feb 11 2000 ritqa.f
-rw-r--r-- 1 cscherer sunuser 4346 Feb 11 2000 rlibin.f
-rw-r--r-- 1 cscherer sunuser 4399 Feb 11 2000 rwake.f
-rw-r--r-- 1 cscherer sunuser 2396 Feb 11 2000 sigma.f
-rw-r--r-- 1 cscherer sunuser 8387 Feb 11 2000 swcal.f
-rw-r--r-- 1 cscherer sunuser 1894 Feb 11 2000 trnspt.f
-rw-r--r-- 1 cscherer sunuser 1771 Feb 11 2000 ustar.f
-rw-r--r-- 1 cscherer sunuser 9276 Feb 11 2000 xqcal.f
-rw-r--r-- 1 cscherer sunuser 5277 Feb 11 2000 xqin.f

```

## scr443/codes/itym:

total 4

```

drwxr-xr-x 3 cscherer sunuser 512 Feb 25 13:03 .
drwxr-xr-x 4 cscherer sunuser 1024 Feb 26 13:41 ..
-rw-r--r-- 1 cscherer sunuser 596 Oct 1 10:06 makefile
drwxr-xr-x 2 cscherer sunuser 512 Feb 25 13:03 src

```

## scr443/codes/itym/src:

total 328

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 25 13:03 .
drwxr-xr-x 3 cscherer sunuser 512 Feb 25 13:03 ..
-rw-r--r-- 1 cscherer sunuser 29776 Mar 22 2000 array.f

```



```

-rw-r--r-- 1 cscherer sunuser 15856 Mar 22 2000 check_valid.f
-rw-r--r-- 1 cscherer sunuser 60931 Dec 30 19:29 estimator.f
-rw-r--r-- 1 cscherer sunuser 5384 Dec 30 19:31 init_itym.f
-rw-r--r-- 1 cscherer sunuser 9420 Sep 25 18:55 itym.f
-rw-r--r-- 1 cscherer sunuser 11640 Dec 30 19:31 itym.i
-rw-r--r-- 1 cscherer sunuser 26752 Sep 26 14:19 itymutils.f
-rw-r--r-- 1 cscherer sunuser 261 Mar 22 2000 path.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 preuzf.i
-rw-r--r-- 1 cscherer sunuser 42671 Mar 22 2000 ran.f
-rw-r--r-- 1 cscherer sunuser 38406 Sep 26 14:20 strtokfunc.f
-rw-r--r-- 1 cscherer sunuser 60346 Sep 26 14:22 uncertain.f
-rw-r--r-- 1 cscherer sunuser 12265 Mar 22 2000 uncertain.i
-rw-r--r-- 1 cscherer sunuser 55 Mar 22 2000 unctab.i
-rw-r--r-- 1 cscherer sunuser 10904 Mar 22 2000 zportunx.f

```

scr443/data:

total 7344

```

drwxr-xr-x 2 cscherer sunuser 1536 Feb 25 13:03 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 14:25 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 11 2000 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 121789 Mar 22 2000 bunitdem.dat
-rw-r--r-- 1 cscherer sunuser 1025 Mar 29 2000 burnup.dat
-rwxr-xr-x 1 cscherer sunuser 468925 Sep 25 19:00 careadem.dat
-rwxr-xr-x 1 cscherer sunuser 515693 Sep 25 19:01 cdepdem.dat
-rw-r--r-- 1 cscherer sunuser 850000 Aug 15 1997 climato1.dat
-rw-r--r-- 1 cscherer sunuser 2200 Feb 1 1999 climato2.dat
-rw-r--r-- 1 cscherer sunuser 6219 Feb 19 10:46 coefkdeg.dat
-rw-r--r-- 1 cscherer sunuser 6219 Feb 22 16:33 coefkdegr.dat
-rw-r--r-- 1 cscherer sunuser 2200 Dec 19 13:50 dilution.dat
-rw-r--r-- 1 cscherer sunuser 519 Oct 19 2000 drythick.dat
-rw-r--r-- 1 cscherer sunuser 791 Jul 23 2002 dsfailt.def
-rw-r--r-- 1 cscherer sunuser 5973 Feb 14 19:57 ebsfail.def
-rw-r--r-- 1 cscherer sunuser 790 May 28 1998 ebsfilt.def
-rw-r--r-- 1 cscherer sunuser 5459 Jan 7 11:17 ebsrel.def
-rw-r--r-- 1 cscherer sunuser 298679 Mar 22 2000 elevdem.dat
-rw-r--r-- 1 cscherer sunuser 9381 May 29 2002 fluoride.dat
-rw-r--r-- 1 cscherer sunuser 6513 Feb 11 2000 gbioacl.dat
-rw-r--r-- 1 cscherer sunuser 3383 Sep 4 19:18 gdefaults.def
-rw-r--r-- 1 cscherer sunuser 3383 Feb 11 2000 gdefault.def
-rw-r--r-- 1 cscherer sunuser 64 Feb 11 2000 gdosinc2.dat
-rw-r--r-- 1 cscherer sunuser 7011 Feb 11 2000 gftrans.def
-rw-r--r-- 1 cscherer sunuser 7011 Sep 4 19:18 gftranss.def
-rw-r--r-- 1 cscherer sunuser 15214 Feb 11 2000 ggamen.dat
-rw-r--r-- 1 cscherer sunuser 13855 Feb 11 2000 ggenii.def
-rw-r--r-- 1 cscherer sunuser 13173 Sep 4 19:18 ggeniis.def
-rw-r--r-- 1 cscherer sunuser 5351 Feb 11 2000 ggrdf.dat
-rw-r--r-- 1 cscherer sunuser 9897 Mar 29 2000 gnewdf.dat
-rw-r--r-- 1 cscherer sunuser 13200 Mar 20 2000 grmdlib.dat
-rw-r--r-- 1 cscherer sunuser 3048 Sep 15 2000 gs_cb_ad.dat
-rw-r--r-- 1 cscherer sunuser 2487 Jun 4 1998 gs_cb_ci.dat
-rw-r--r-- 1 cscherer sunuser 3045 Sep 15 2000 gs_pb_ad.dat
-rw-r--r-- 1 cscherer sunuser 2487 Jun 4 1998 gs_pb_ci.dat
-rw-r--r-- 1 cscherer sunuser 8247 Feb 22 16:39 ia.dat
-rw-r--r-- 1 cscherer sunuser 20698 Dec 30 19:26 itym.dat
-rw-r--r-- 1 cscherer sunuser 943774 Mar 29 2000 maidtbl.dat
-rw-r--r-- 1 cscherer sunuser 10978 Mar 22 2000 maswtbl.dat
-rwxr-xr-x 1 cscherer sunuser 943775 Dec 30 19:18 maydtbl.dat

```

```

-rw-r--r-- 1 cscherer sunuser 9729 Dec 17 17:31 mechfail.def
-rw-r--r-- 1 cscherer sunuser 1251 Feb 6 14:39 multifaf.dat
-rw-r--r-- 1 cscherer sunuser 1252 Feb 6 14:39 multifbe.dat
-rw-r--r-- 1 cscherer sunuser 116965 Jul 17 2002 multiflo.dat
-rw-r--r-- 1 cscherer sunuser 7152 Feb 21 21:14 nuclides.dat
-rw-r--r-- 1 cscherer sunuser 7111 Sep 24 2000 organdf.dat
-rw-r--r-- 1 cscherer sunuser 548 Sep 21 2000 repdes.dat
-rw-r--r-- 1 cscherer sunuser 242353 Feb 23 18:09 reversibles.inp
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Dec 17 17:31 seisbs2.dis
-rwxr-xr-x 1 cscherer sunuser 943788 Dec 30 19:18 smaydtbl.dat
-rw-r--r-- 1 cscherer sunuser 489858 Mar 22 2000 soildem.dat
-rw-r--r-- 1 cscherer sunuser 4506 Feb 7 2000 strmtube.dat
-rw-r--r-- 1 cscherer sunuser 119673 Mar 22 2000 sunitdem.dat
-rw-r--r-- 1 cscherer sunuser 162404 May 8 2000 tefkti.inp
-rw-r--r-- 1 cscherer sunuser 101499 Feb 19 10:43 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser 471041 Mar 22 2000 winddem.dat
-rw-r--r-- 1 cscherer sunuser 17410 Feb 2 2000 wpflow.def

```

## scr443/docs:

total 89

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 26 14:23 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 14:25 ..
-rwxr--r-- 1 cscherer sunuser 21478 Feb 26 08:56 scr_443.wpd
-rwxr--r-- 1 cscherer sunuser 60092 Feb 26 14:26 tp_scr443.wpd

```

## scr443/flt1:

total 1618

```

drwxr-xr-x 2 cscherer sunuser 512 Feb 26 14:04 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 14:25 ..
-rwxr-xr-x 1 cscherer sunuser 46588 Feb 25 13:11 ebsfilt.e
-rw-r--r-- 1 cscherer sunuser 2554 Feb 26 14:01 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 26 14:01 ebsfiltflt1.inp
-rw-r--r-- 1 cscherer sunuser 239 Feb 26 14:03 ebsfiltflt1.out
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 17:07 ebsfilt_orig.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 26 13:59 ebsfilt_orig.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 17:07 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 439749 Feb 26 14:03 ebsnef2flt1.dat
-rw-r--r-- 1 cscherer sunuser 167681 Feb 26 13:59 ebsnef2_orig.dat
-rw-r--r-- 1 cscherer sunuser 445601 Feb 26 14:03 echofiltflt1.dat
-rw-r--r-- 1 cscherer sunuser 308882 Feb 26 13:59 echofilt_orig.dat

```

## scr443/scr419\_slt3\_test:

total 2354

```

drwxr-xr-x 9 cscherer sunuser 1024 Feb 25 16:50 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 14:25 ..
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:31 scr443_slt3a.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:43 scr443_slt3b.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:49 scr443_slt3c.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 14:00 scr443_slt3e.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 14:06 scr443_slt3f.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 16:04 scr443_slt3fB.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:54 scr449_slt3d.out
-rw-r--r-- 1 cscherer sunuser 68249 Feb 25 14:58 test.out
-rw-r--r-- 1 cscherer sunuser 173564 Feb 25 15:47 test10.out
-rw-r--r-- 1 cscherer sunuser 173964 Feb 25 15:53 test11.out
-rw-r--r-- 1 cscherer sunuser 173503 Feb 25 15:56 test12.out

```

```

-rw-r--r-- 1 cscherer sunuser 68248 Feb 25 15:02 test2.out
-rw-r--r-- 1 cscherer sunuser 68990 Feb 25 15:09 test3.out
-rw-r--r-- 1 cscherer sunuser 69245 Feb 25 15:14 test4.out
-rw-r--r-- 1 cscherer sunuser 69266 Feb 25 15:20 test5.out
-rw-r--r-- 1 cscherer sunuser 184439 Feb 25 15:30 test6.out
-rw-r--r-- 1 cscherer sunuser 183631 Feb 25 15:34 test7.out
-rw-r--r-- 1 cscherer sunuser 173503 Feb 25 15:39 test9.out
drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 13:47 testa
drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 13:49 testb
drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 13:52 testc
drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 14:37 testd
drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 14:04 teste
drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 14:09 testf
drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 16:21 testfB
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:17 tpa_sl3a.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:18 tpa_sl3b.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:19 tpa_sl3c.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:20 tpa_sl3d.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:54 tpa_sl3e.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 15:59 tpa_sl3f.inp
-rw-r--r-- 1 cscherer sunuser 128125 Feb 25 15:28 uzft_testing.f

```

scr443/scr419\_sl3\_test/testa:

total 4986

```

drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 13:47 .
drwxr-xr-x 9 cscherer sunuser 1024 Feb 25 16:50 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 13:31 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 13:30 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 13:31 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 13:31 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 13:31 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 13:30 corrode.out
-rw-r--r-- 1 cscherer sunuser 79228 Feb 25 13:31 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 13:31 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 13:31 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 13:30 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 13:30 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 13:30 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1916 Feb 25 13:31 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 13:30 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 13:27 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 13:30 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 13:30 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 13:30 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 13:30 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 13:30 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 13:30 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 13:30 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 13:30 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 13:30 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 13:30 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 13:31 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 13:31 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 13:30 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 13:30 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 13:31 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 13:31 gentoo.out

```

-rw-r--r--	1	cscherer	sunuser	35173	Feb 25 13:31	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 25 13:31	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb 25 13:31	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb 25 13:31	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 25 13:31	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25 13:31	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:31	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:31	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:31	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:31	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25 13:31	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 13:31	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 13:31	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25 13:31	gwttuksz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 13:31	infilter.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25 13:30	invl000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb 25 13:27	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb 25 13:27	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb 25 13:27	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25 13:30	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:30	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25 13:31	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 13:31	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28139	Feb 25 13:31	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 13:30	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25 13:31	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 13:31	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28139	Feb 25 13:31	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 13:31	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25 13:31	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	149942	Feb 25 13:31	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25 13:31	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	815410	Feb 25 13:30	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25 13:30	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	858614	Feb 25 13:30	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	151120	Feb 25 13:30	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb 25 13:30	nefiuiz.vel
-rw-r--r--	1	cscherer	sunuser	95	Feb 25 13:30	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 13:31	npkdozet.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 13:31	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 25 13:31	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 13:31	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 13:31	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 25 13:30	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:31	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25 13:30	relcum.out
-rw-r--r--	1	cscherer	sunuser	414	Feb 25 13:30	reaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25 13:30	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25 13:31	relgws.res
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:31	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:31	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:31	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:31	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:31	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:31	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:31	rgwnappla.tpa

```

-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:31 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5138 Feb 25 13:31 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16138 Feb 25 13:31 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5184 Feb 25 13:31 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 13:31 rlcdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 13:31 rlgws_c.res
-rw-r--r-- 1 cscherer sunuser 3868 Feb 25 13:27 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29768 Feb 25 13:27 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6377 Feb 25 13:31 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:31 scr443_sl3a.out
-rw-r--r-- 1 cscherer sunuser 30920 Feb 25 13:31 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 13:31 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 13:31 totdose.res
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:17 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa.out
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:17 tpa_sl3a.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:18 tpa_sl3b.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:19 tpa_sl3c.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:20 tpa_sl3d.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:27 tpa_sl3e.inp
-rw-r--r-- 1 cscherer sunuser 92332 Feb 25 13:27 tpameans.out
-rw-r--r-- 1 cscherer sunuser 180151 Feb 25 13:30 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 13:30 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 13:31 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 13:31 wpsfail.res

```

scr443/scr419\_sl3\_test/testb:

total 5153

```

drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 13:49 .
drwxr-xr-x 9 cscherer sunuser 1024 Feb 25 16:50 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 13:43 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 13:42 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 13:43 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 13:43 arpks_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 13:43 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 13:42 corrode.out
-rw-r--r-- 1 cscherer sunuser 79228 Feb 25 13:43 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 13:43 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 13:43 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 13:42 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 13:42 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 13:42 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1916 Feb 25 13:43 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 13:42 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 13:39 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 13:42 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 13:42 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 13:42 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 13:42 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 13:42 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 13:42 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 13:42 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 13:42 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 13:42 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 13:43 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 13:43 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 13:42 failt.out

```

-rw-r--r--	1	cscherer	sunuser	46580	Feb 25 13:42	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	3387	Feb 25 13:43	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:43	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 25 13:43	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 25 13:43	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb 25 13:43	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb 25 13:43	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 25 13:43	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25 13:43	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:43	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:43	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:43	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:43	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25 13:43	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 13:43	gwpkds.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 13:43	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25 13:43	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 13:43	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25 13:42	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb 25 13:39	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb 25 13:39	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb 25 13:39	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25 13:42	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:42	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25 13:43	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 13:43	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28253	Feb 25 13:43	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 13:42	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25 13:43	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 13:43	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28253	Feb 25 13:43	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 13:43	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25 13:43	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	174414	Feb 25 13:43	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25 13:43	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	815543	Feb 25 13:42	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25 13:42	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	858614	Feb 25 13:42	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	175592	Feb 25 13:42	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb 25 13:42	nefiuiz.vel
-rw-r--r--	1	cscherer	sunuser	190	Feb 25 13:42	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 13:43	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 13:43	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 25 13:43	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 13:43	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 13:43	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 25 13:42	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:43	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25 13:42	relcum.out
-rw-r--r--	1	cscherer	sunuser	414	Feb 25 13:42	releaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25 13:42	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25 13:43	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:43	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:43	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:43	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 13:43	rgwnapext.tpa

```

-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:43 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:43 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:43 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:43 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5138 Feb 25 13:43 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16138 Feb 25 13:43 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5184 Feb 25 13:43 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 13:43 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 13:43 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3868 Feb 25 13:39 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29768 Feb 25 13:39 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6377 Feb 25 13:43 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:31 scr443_sl3a.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:43 scr443_sl3b.out
-rwxr-xr-x 1 cscherer sunuser 130758 Feb 25 13:39 seisbs1.dis
-rwxr-xr-x 1 cscherer sunuser 130758 Feb 25 13:39 seisbs2.dis
-rw-r--r-- 1 cscherer sunuser 30920 Feb 25 13:43 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 13:43 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 13:43 totdose.res
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:18 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:17 tpa_sl3a.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:18 tpa_sl3b.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:19 tpa_sl3c.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:20 tpa_sl3d.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:27 tpa_sl3e.inp
-rw-r--r-- 1 cscherer sunuser 92332 Feb 25 13:39 tpameans.out
-rw-r--r-- 1 cscherer sunuser 180151 Feb 25 13:42 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 13:42 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 13:43 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 13:43 wpsfail.res

```

## scr443/scr419\_sl3\_test/testc:

total 5145

```

drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 13:52 .
drwxr-xr-x 9 cscherer sunuser 1024 Feb 25 16:50 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 13:49 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 13:49 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 13:49 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 13:49 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 13:49 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 13:49 corrode.out
-rw-r--r-- 1 cscherer sunuser 79228 Feb 25 13:49 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 13:49 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 13:49 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 13:49 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 13:49 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 13:49 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1916 Feb 25 13:49 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 13:49 dsfai1t.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 13:46 dsfai1t.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 13:49 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 13:49 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 13:49 ebsfai1t.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 13:49 ebsfai1t.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 13:49 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 13:49 ebsnef.out

```

-rw-r--r--	1	cscherer	sunuser	167681	Feb 25 13:49	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb 25 13:49	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	11110	Feb 25 13:49	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	12335	Feb 25 13:49	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	39355	Feb 25 13:49	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1708	Feb 25 13:49	epapktim.out
-rw-r--r--	1	cscherer	sunuser	17384	Feb 25 13:49	failt.out
-rw-r--r--	1	cscherer	sunuser	46580	Feb 25 13:49	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	3387	Feb 25 13:49	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:49	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 25 13:49	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 25 13:49	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb 25 13:49	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb 25 13:49	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 25 13:49	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25 13:49	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:49	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:49	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:49	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:49	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25 13:49	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 13:49	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 13:49	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25 13:49	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 13:49	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25 13:49	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb 25 13:46	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb 25 13:46	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb 25 13:46	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25 13:49	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:49	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25 13:49	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 13:49	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28139	Feb 25 13:49	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 13:49	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25 13:49	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 13:49	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28139	Feb 25 13:49	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 13:49	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25 13:49	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	149942	Feb 25 13:49	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25 13:49	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	815410	Feb 25 13:49	nefiiuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25 13:49	nefiiuz.inp
-rw-r--r--	1	cscherer	sunuser	858614	Feb 25 13:49	nefiiuz.out
-rw-r--r--	1	cscherer	sunuser	151120	Feb 25 13:49	nefiiuz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb 25 13:49	nefiiuz.vel
-rw-r--r--	1	cscherer	sunuser	285	Feb 25 13:49	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 13:49	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 13:49	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 25 13:49	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 13:49	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 13:49	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 25 13:49	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 13:49	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25 13:49	relcum.out



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-rw-r--r-- 1 cscherer sunuser 414 Feb 25 13:49 releaset.out
-rw-r--r-- 1 cscherer sunuser 773 Feb 25 13:49 relfrac.out
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 13:49 relgwgs.res
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:49 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:49 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:49 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:49 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:49 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:49 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:49 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:49 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5138 Feb 25 13:49 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16138 Feb 25 13:49 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5184 Feb 25 13:49 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 13:49 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 13:49 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3868 Feb 25 13:46 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29768 Feb 25 13:46 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6377 Feb 25 13:49 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:31 scr443_slt3a.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:43 scr443_slt3b.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:49 scr443_slt3c.out
-rw-r--r-- 1 cscherer sunuser 30920 Feb 25 13:49 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 13:49 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 13:49 totdose.res
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:19 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:17 tpa_slt3a.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:18 tpa_slt3b.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:19 tpa_slt3c.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:20 tpa_slt3d.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:27 tpa_slt3e.inp
-rw-r--r-- 1 cscherer sunuser 92332 Feb 25 13:46 tpameans.out
-rw-r--r-- 1 cscherer sunuser 101499 Feb 25 13:46 tpanames.dbs
-rw-r--r-- 1 cscherer sunuser 180151 Feb 25 13:49 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 13:49 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 13:49 wpsfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 13:49 wpsfail.res
-rwxr--r-- 1 cscherer sunuser 54 Feb 25 13:52 ~$r443_slt3c.out

```

scr443/scr419\_slt3\_test/testd:

total 5056

```

drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 14:37 .
drwxr-xr-x 9 cscherer sunuser 1024 Feb 25 16:50 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 13:54 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 13:54 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 13:54 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 13:54 arpks_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 13:54 shout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 13:54 corrode.out
-rw-r--r-- 1 cscherer sunuser 79228 Feb 25 13:54 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 13:54 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 13:54 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 13:54 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 13:54 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 13:54 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1916 Feb 25 13:54 dsfail.res

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-rw-r--r--	1	cscherer	sunuser	610	Feb	25	13:54	dsfault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	13:51	dsfault.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb	25	13:54	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5734	Feb	25	13:54	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	2554	Feb	25	13:54	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	304	Feb	25	13:54	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	167701	Feb	25	13:54	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb	25	13:54	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	167681	Feb	25	13:54	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb	25	13:54	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	11110	Feb	25	13:54	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	12335	Feb	25	13:54	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	39355	Feb	25	13:54	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1708	Feb	25	13:54	epapktim.out
-rw-r--r--	1	cscherer	sunuser	17384	Feb	25	13:54	fault.out
-rw-r--r--	1	cscherer	sunuser	46580	Feb	25	13:54	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	3387	Feb	25	13:54	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	13:54	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb	25	13:54	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb	25	13:54	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb	25	13:54	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb	25	13:54	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb	25	13:54	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb	25	13:54	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	13:54	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	13:54	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	13:54	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	13:54	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb	25	13:54	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb	25	13:54	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb	25	13:54	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb	25	13:54	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb	25	13:54	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb	25	13:54	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb	25	13:51	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb	25	13:51	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb	25	13:51	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb	25	13:54	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	13:54	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb	25	13:54	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb	25	13:54	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28139	Feb	25	13:54	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb	25	13:54	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb	25	13:54	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb	25	13:54	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28139	Feb	25	13:54	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb	25	13:54	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb	25	13:54	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	149942	Feb	25	13:54	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb	25	13:54	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	815410	Feb	25	13:54	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb	25	13:54	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	858614	Feb	25	13:54	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	151120	Feb	25	13:54	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb	25	13:54	nefiuiz.vel
-rw-r--r--	1	cscherer	sunuser	380	Feb	25	13:54	nefmks.log

```

-rw-r--r-- 1 cscherer sunuser 2507 Feb 25 13:54 npkdoset.res
-rw-r--r-- 1 cscherer sunuser 2507 Feb 25 13:54 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser 698 Feb 25 13:54 pkmndose.out
-rw-r--r-- 1 cscherer sunuser 8245 Feb 25 13:54 pkreltim.res
-rw-r--r-- 1 cscherer sunuser 8245 Feb 25 13:54 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser 682 Feb 25 13:54 rel_flow.out
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 13:54 relccdf.res
-rw-r--r-- 1 cscherer sunuser 2883 Feb 25 13:54 relcum.out
-rw-r--r-- 1 cscherer sunuser 414 Feb 25 13:54 releaset.out
-rw-r--r-- 1 cscherer sunuser 773 Feb 25 13:54 relfrac.out
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 13:54 relgws.res
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:54 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:54 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:54 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:54 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:54 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:54 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:54 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 13:54 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5138 Feb 25 13:54 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16138 Feb 25 13:54 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5184 Feb 25 13:54 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 13:54 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 13:54 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3868 Feb 25 13:51 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29768 Feb 25 13:51 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6377 Feb 25 13:54 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:31 scr443_sl3a.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:43 scr443_sl3b.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:49 scr443_sl3c.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:54 scr443_sl3d.out
-rw-r--r-- 1 cscherer sunuser 30920 Feb 25 13:54 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 13:54 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 13:54 totdose.res
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:20 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:17 tpa_sl3a.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:18 tpa_sl3b.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:19 tpa_sl3c.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:20 tpa_sl3d.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:54 tpa_sl3e.inp
-rw-r--r-- 1 cscherer sunuser 92332 Feb 25 13:51 tpameans.out
-rw-r--r-- 1 cscherer sunuser 180151 Feb 25 13:54 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 13:54 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 13:54 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 13:54 wpsfail.res
-rwxr--r-- 1 cscherer sunuser 54 Feb 25 13:58 ~$r449_sl3d.out

```

scr443/scr419\_sl3\_test/teste:

total 5079

```

drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 14:04 .
drwxr-xr-x 9 cscherer sunuser 1024 Feb 25 16:50 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 14:00 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 14:00 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 14:00 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 14:00 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 14:00 ashout.res

```

-rw-r--r--	1	cscherer	sunuser	14506	Feb 25 14:00	corrode.out
-rw-r--r--	1	cscherer	sunuser	79228	Feb 25 14:00	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2253	Feb 25 14:00	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2253	Feb 25 14:00	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb 25 14:00	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	6693	Feb 25 14:00	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb 25 14:00	diagnose.out
-rw-r--r--	1	cscherer	sunuser	1916	Feb 25 14:00	dsfail.res
-rw-r--r--	1	cscherer	sunuser	610	Feb 25 14:00	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:57	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb 25 14:00	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5734	Feb 25 14:00	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	2554	Feb 25 14:00	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	304	Feb 25 14:00	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	167701	Feb 25 14:00	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb 25 14:00	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	167681	Feb 25 14:00	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb 25 14:00	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	11110	Feb 25 14:00	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	12335	Feb 25 14:00	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	39355	Feb 25 14:00	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1708	Feb 25 14:00	epapktim.out
-rw-r--r--	1	cscherer	sunuser	17384	Feb 25 14:00	failt.out
-rw-r--r--	1	cscherer	sunuser	46580	Feb 25 14:00	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	3387	Feb 25 14:00	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 14:00	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 25 14:00	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 25 14:00	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb 25 14:00	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb 25 14:00	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 25 14:00	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25 14:00	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 14:00	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 14:00	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 14:00	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 14:00	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25 14:00	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 14:00	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 14:00	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25 14:00	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 14:00	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25 14:00	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb 25 13:56	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb 25 13:57	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb 25 13:57	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25 14:00	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 14:00	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25 14:00	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 14:00	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28139	Feb 25 14:00	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 14:00	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25 14:00	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 14:00	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28139	Feb 25 14:00	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 14:00	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25 14:00	nefiisz.out

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-rw-r--r-- 1 cscherer sunuser 149942 Feb 25 14:00 nefiisz.src
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 14:00 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser 815410 Feb 25 14:00 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser 10100 Feb 25 14:00 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser 858614 Feb 25 14:00 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser 151120 Feb 25 14:00 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser 171 Feb 25 14:00 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser 475 Feb 25 14:00 nefmks.log
-rw-r--r-- 1 cscherer sunuser 2507 Feb 25 14:00 npkdoset.res
-rw-r--r-- 1 cscherer sunuser 2507 Feb 25 14:00 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser 698 Feb 25 14:00 pkmdose.out
-rw-r--r-- 1 cscherer sunuser 8245 Feb 25 14:00 pkreltim.res
-rw-r--r-- 1 cscherer sunuser 8245 Feb 25 14:00 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser 682 Feb 25 14:00 rel_flow.out
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 14:00 relccdf.res
-rw-r--r-- 1 cscherer sunuser 2883 Feb 25 14:00 relcum.out
-rw-r--r-- 1 cscherer sunuser 414 Feb 25 14:00 releaset.out
-rw-r--r-- 1 cscherer sunuser 773 Feb 25 14:00 relfrac.out
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 14:00 relgwgs.res
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 14:00 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 14:00 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 14:00 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 14:00 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 14:00 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 14:00 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 14:00 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 14:00 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5138 Feb 25 14:00 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16138 Feb 25 14:00 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5184 Feb 25 14:00 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 14:00 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 14:00 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3868 Feb 25 13:56 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29768 Feb 25 13:56 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6377 Feb 25 14:00 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:31 scr443_slt3a.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:43 scr443_slt3b.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:49 scr443_slt3c.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 14:00 scr443_slt3e.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:54 scr449_slt3d.out
-rw-r--r-- 1 cscherer sunuser 30920 Feb 25 14:00 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 14:00 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 14:00 totdose.res
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:54 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:17 tpa_slt3a.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:18 tpa_slt3b.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:19 tpa_slt3c.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:20 tpa_slt3d.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:54 tpa_slt3e.inp
-rw-r--r-- 1 cscherer sunuser 92332 Feb 25 13:56 tpameans.out
-rw-r--r-- 1 cscherer sunuser 180151 Feb 25 14:00 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 14:00 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 14:00 wpsfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 14:00 wpsfail.res
-rwxr--r-- 1 cscherer sunuser 54 Feb 25 14:04 ~$r443_slt3e.out

```

scr443/scr419\_sl13\_test/testf:

total 21806

drwxr-xr-x	2	cscherer	sunuser	7168	Feb	25	14:09	.
drwxr-xr-x	9	cscherer	sunuser	1024	Feb	25	16:50	..
-rwxr-xr-x	1	cscherer	sunuser	2001	Sep	18	16:52	CLEANUP
-rw-r--r--	1	cscherer	sunuser	965	Feb	25	14:06	FILENAME.DAT
-rw-r--r--	1	cscherer	sunuser	869	Nov	27	14:22	Makefile
-rw-rw-rw-	1	cscherer	sunuser	961	Nov	27	14:24	Makefile4.2
-rw-r--r--	1	cscherer	sunuser	450	Feb	25	14:05	NEFII.VEL
-rw-r--r--	1	cscherer	sunuser	2747	Feb	25	14:06	airpkdos.res
-rw-r--r--	1	cscherer	sunuser	2747	Feb	25	14:06	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	29502	Nov	15	17:28	array.f
-rw-r--r--	1	cscherer	sunuser	51364	Feb	25	13:05	array.o
-rw-r--r--	1	cscherer	sunuser	915	Feb	25	14:06	ashout.res
-rw-r--r--	1	cscherer	sunuser	20601	Sep	11	13:41	ashplumo.f
-rw-r--r--	1	cscherer	sunuser	45552	Feb	25	13:05	ashplumo.o
-rw-r--r--	1	cscherer	sunuser	37630	Nov	27	13:27	ashrmovo.f
-rw-r--r--	1	cscherer	sunuser	46800	Feb	25	13:05	ashrmovo.o
-rw-r--r--	1	cscherer	sunuser	1025	Feb	25	14:02	burnup.dat
-rwxrwxrwx	1	cscherer	sunuser	142	Feb	25	13:23	ch_env
-rw-r--r--	1	cscherer	sunuser	5047	Feb	25	14:05	chlrdmf.dat
-rw-r--r--	1	cscherer	sunuser	850000	Feb	25	14:03	climatol.dat
-rw-r--r--	1	cscherer	sunuser	2200	Feb	25	14:03	climato2.dat
-rw-r--r--	1	cscherer	sunuser	6219	Feb	25	14:03	coefkdeq.dat
-rw-r--r--	1	cscherer	sunuser	735	Feb	18	18:46	coefkdeq.i
-rw-r--r--	1	cscherer	sunuser	10207	Feb	15	2002	condxyzt.f
-rw-r--r--	1	cscherer	sunuser	3408	Feb	25	13:08	condxyzt.o
-rw-r--r--	1	cscherer	sunuser	14506	Feb	25	14:05	corrode.out
-rw-r--r--	1	cscherer	sunuser	79228	Feb	25	14:06	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2253	Feb	25	14:06	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2253	Feb	25	14:06	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb	25	14:05	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	122748	Feb	18	18:49	dcags.f
-rw-r--r--	1	cscherer	sunuser	255940	Feb	25	13:06	dcags.o
-rw-r--r--	1	cscherer	sunuser	157577	Dec	19	14:34	dcagw.f
-rw-r--r--	1	cscherer	sunuser	335488	Feb	25	13:05	dcagw.o
-rw-r--r--	1	cscherer	sunuser	6693	Feb	25	14:05	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb	25	14:05	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2200	Feb	25	14:06	dilution.dat
-rw-r--r--	1	cscherer	sunuser	3870	Feb	25	14:02	drifts.dat
-rw-r--r--	1	cscherer	sunuser	190	Sep	20	09:32	driftsa.i
-rw-r--r--	1	cscherer	sunuser	519	Feb	25	14:03	drythick.dat
-rw-r--r--	1	cscherer	sunuser	25470	Dec	17	17:53	dsfail.f
-rw-r--r--	1	cscherer	sunuser	28504	Feb	25	13:06	dsfail.o
-rw-r--r--	1	cscherer	sunuser	1916	Feb	25	14:06	dsfail.res
-rw-r--r--	1	cscherer	sunuser	708	Feb	25	14:05	dsfailt.dat
-rw-r--r--	1	cscherer	sunuser	791	Feb	25	14:03	dsfailt.def
-rwxr-xr-x	1	cscherer	sunuser	43144	Feb	25	14:03	dsfailt.e
-rw-r--r--	1	cscherer	sunuser	610	Feb	25	14:05	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	14:03	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb	25	14:05	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5973	Feb	25	14:03	ebsfail.def
-rw-r--r--	1	cscherer	sunuser	48867	Feb	14	19:59	ebsfail.f
-rw-r--r--	1	cscherer	sunuser	5734	Feb	25	14:05	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	117596	Feb	25	13:06	ebsfail.o
-rw-r--r--	1	cscherer	sunuser	790	Feb	25	14:03	ebsfilt.def
-rwxr-xr-x	1	cscherer	sunuser	46588	Feb	25	14:03	ebsfilt.e

-rw-r--r--	1	cscherer	sunuser	2554	Feb 25	14:05	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	304	Feb 25	14:05	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	14029	Feb 25	14:05	ebsflo.dat
-rw-r--r--	1	cscherer	sunuser	167701	Feb 25	14:05	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb 25	14:05	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	167681	Feb 25	14:05	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb 25	14:05	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	5459	Feb 25	14:03	ebsrel.def
-rw-r--r--	1	cscherer	sunuser	87035	Feb 23	18:16	ebsrel.f
-rw-r--r--	1	cscherer	sunuser	11110	Feb 25	14:05	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	214988	Feb 25	13:06	ebsrel.o
-rw-r--r--	1	cscherer	sunuser	149	Sep 25	12:15	ebsrell.i
-rw-r--r--	1	cscherer	sunuser	124203	Feb 25	14:05	ebssf.dat
-rw-r--r--	1	cscherer	sunuser	17315	Feb 25	14:05	ebstrh.dat
-rw-r--r--	1	cscherer	sunuser	12335	Feb 25	14:05	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	2647	Feb 25	14:05	echofail.dat
-rw-r--r--	1	cscherer	sunuser	339937	Feb 25	14:05	echofilt.dat
-rwxr-xr-x	1	cscherer	sunuser	191076	Feb 25	14:06	env.e
-rwxr-xr-x	1	cscherer	sunuser	282692	Feb 25	14:06	envin.e
-rw-r--r--	1	cscherer	sunuser	39355	Feb 25	14:06	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1708	Feb 25	14:06	epapktim.out
-rw-r--r--	1	cscherer	sunuser	389660	Feb 24	19:26	exec.f
-rw-r--r--	1	cscherer	sunuser	1107436	Feb 25	13:09	exec.o
-rw-r--r--	1	cscherer	sunuser	2385	Sep 21	10:07	execa.i
-rw-r--r--	1	cscherer	sunuser	486	Sep 3	1997	execb.i
-rw-r--r--	1	cscherer	sunuser	269	May 29	2002	execc.i
-rw-r--r--	1	cscherer	sunuser	104	Feb 6	14:32	execd.i
-rwxr-xr-x	1	cscherer	sunuser	136632	Feb 25	14:03	failt.e
-rw-r--r--	1	cscherer	sunuser	17384	Feb 25	14:05	failt.out
-rw-r--r--	1	cscherer	sunuser	8503	Feb 15	2002	faulto.f
-rw-r--r--	1	cscherer	sunuser	10828	Feb 25	13:06	faulto.o
-rw-r--r--	1	cscherer	sunuser	6599	May 29	2002	fileunit.f
-rw-r--r--	1	cscherer	sunuser	8588	Feb 25	13:08	fileunit.o
-rw-r--r--	1	cscherer	sunuser	5784	Feb 15	2002	findelev.f
-rw-r--r--	1	cscherer	sunuser	9708	Feb 25	13:08	findelev.o
-rw-r--r--	1	cscherer	sunuser	6281	Feb 25	14:05	fluoride.dat
-rw-r--r--	1	cscherer	sunuser	46580	Feb 25	14:05	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	60	Aug 16	1997	ful.i
-rw-r--r--	1	cscherer	sunuser	609	Sep 4	19:29	fu2.i
-rw-r--r--	1	cscherer	sunuser	6513	Feb 25	14:06	gbioac1.dat
-rw-r--r--	1	cscherer	sunuser	3383	Feb 25	14:06	gdefault.def
-rw-r--r--	1	cscherer	sunuser	3387	Feb 25	14:06	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	64	Feb 25	14:06	gdosinc2.dat
-rw-r--r--	1	cscherer	sunuser	0	Feb 25	14:06	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 25	14:06	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 25	14:06	genv.out
-rw-r--r--	1	cscherer	sunuser	7011	Feb 25	14:06	gftrans.def
-rw-r--r--	1	cscherer	sunuser	7142	Feb 25	14:06	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	15214	Feb 25	14:06	ggame.dat
-rw-r--r--	1	cscherer	sunuser	13855	Feb 25	14:06	ggenii.def
-rw-r--r--	1	cscherer	sunuser	13164	Feb 25	14:06	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 25	14:06	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5351	Feb 25	14:06	ggrdf.dat
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25	14:06	gmedia.out
-rw-r--r--	1	cscherer	sunuser	9897	Feb 25	14:06	gnewdf.dat
-rw-r--r--	1	cscherer	sunuser	13200	Feb 25	14:06	grmdlib.dat
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	14:06	gsccdf.res

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-rw-r--r-- 1 cscherer sunuser      573 Feb 25 14:06 gsccdf_c.res
-rw-r--r-- 1 cscherer sunuser    3561 Feb 25 14:06 gw_cb_ad.dat
-rw-r--r-- 1 cscherer sunuser    1264 Feb 25 14:06 gw_cb_ci.dat
-rw-r--r-- 1 cscherer sunuser    3557 Feb 25 14:06 gw_pb_ad.dat
-rw-r--r-- 1 cscherer sunuser    1261 Feb 25 14:06 gw_pb_ci.dat
-rw-r--r-- 1 cscherer sunuser      573 Feb 25 14:06 gwccdf.res
-rw-r--r-- 1 cscherer sunuser      573 Feb 25 14:06 gwccdf_c.res
-rw-r--r-- 1 cscherer sunuser        9 Feb 25 14:06 gwork.buf
-rw-r--r-- 1 cscherer sunuser    1739 Feb 25 14:06 gwpkdos.res
-rw-r--r-- 1 cscherer sunuser    1739 Feb 25 14:06 gwpkds_c.res
-rw-r--r-- 1 cscherer sunuser    2171 Feb 25 14:06 gwttuksz.res
-rw-r--r-- 1 cscherer sunuser    1229 Jul 22 1999 ia.i
-rw-r--r-- 1 cscherer sunuser     956 Sep 26 2000 ial.i
-rw-r--r-- 1 cscherer sunuser   21238 Dec 19 14:34 iareader.f
-rw-r--r-- 1 cscherer sunuser   37264 Feb 25 13:06 iareader.o
-rw-r--r-- 1 cscherer sunuser    2331 Feb 25 14:06 infilper.res
-rw-r--r-- 1 cscherer sunuser    1102 Feb 25 14:05 inv1000.out
-rw-r--r-- 1 cscherer sunuser   69374 Feb 20 11:12 invent.f
-rw-r--r-- 1 cscherer sunuser   86696 Feb 25 13:07 invent.o
-rw-r--r-- 1 cscherer sunuser       33 Sep 25 12:15 invent_.i
-rw-r--r-- 1 cscherer sunuser       57 Aug 16 1997 inventa.i
-rw-r--r-- 1 cscherer sunuser     182 Sep 25 12:14 inventb.i
-rw-r--r-- 1 cscherer sunuser     344 Sep 25 12:14 inventc.i
-rw-r--r-- 1 cscherer sunuser     124 Sep 25 12:14 inventd.i
-rw-r--r-- 1 cscherer sunuser     131 Sep 25 12:14 invente.i
-rw-r--r-- 1 cscherer sunuser     130 Sep 25 12:14 inventf.i
-rw-r--r-- 1 cscherer sunuser     128 Sep 25 12:14 inventg.i
-rw-r--r-- 1 cscherer sunuser     127 Sep 25 12:14 inventh.i
-rw-r--r-- 1 cscherer sunuser      75 Aug 16 1997 inventi.i
-rw-r--r-- 1 cscherer sunuser     288 Sep 25 12:14 inventj.i
-rw-r--r-- 1 cscherer sunuser     332 Sep 25 12:14 inventk.i
-rw-r--r-- 1 cscherer sunuser     150 Dec  6 14:29 inventl.i
-rw-r--r-- 1 cscherer sunuser     315 Dec 11 09:33 inventm.i
-rw-r--r-- 1 cscherer sunuser     175 Sep 25 12:15 inventn.i
-rw-r--r-- 1 cscherer sunuser     249 Jan 29 2000 invento.i
-rw-r--r-- 1 cscherer sunuser     267 Sep 25 12:15 inventp.i
-rw-r--r-- 1 cscherer sunuser        0 Feb 25 13:27 lhs.csv
-rw-r--r-- 1 cscherer sunuser   47014 Feb 25 14:02 lhs.inp
-rw-r--r-- 1 cscherer sunuser    5730 Feb 25 14:03 lhs.out
-rw-r--r-- 1 cscherer sunuser   79104 Feb 25 14:03 lhse.out
-rw-r--r-- 1 cscherer sunuser    5348 Feb 25 13:09 linintrp.o
-rw-r--r-- 1 cscherer sunuser      78 Aug 16 1997 max500yr.i
-rw-r--r-- 1 cscherer sunuser      99 Sep 25 12:10 maxchain.i
-rw-r--r-- 1 cscherer sunuser    149 Sep 25 12:50 maxclchn.i
-rw-r--r-- 1 cscherer sunuser    144 Sep 25 12:50 maxclnuc.i
-rw-r--r-- 1 cscherer sunuser    508 Sep 25 12:11 maxnnucl.i
-rw-r--r-- 1 cscherer sunuser    299 Jul 10 1998 maxnsuba.i
-rw-r--r-- 1 cscherer sunuser    206 May 28 1999 maxntime.i
-rw-r--r-- 1 cscherer sunuser    1095 Feb 25 14:05 maxrel.dat
-rwxr-xr-x 1 cscherer sunuser   943775 Feb 25 14:03 maydtbl.dat
-rw-r--r-- 1 cscherer sunuser    31768 Feb 25 14:05 mechfail.dat
-rw-r--r-- 1 cscherer sunuser    9729 Feb 25 14:03 mechfail.def
-rwxr-xr-x 1 cscherer sunuser   79824 Feb 25 14:03 mechfail.e
-rw-r--r-- 1 cscherer sunuser    9575 Feb 25 14:05 mechfail.inp
-rw-r--r-- 1 cscherer sunuser        0 Feb 25 14:05 mechfail.out
-rw-r--r-- 1 cscherer sunuser    1251 Feb 25 14:03 multifaf.dat
-rw-r--r-- 1 cscherer sunuser    1252 Feb 25 14:03 multifbe.dat

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-rw-r--r--	1	cscherer	sunuser	11850	Feb 15	2002	mv.f
-rw-r--r--	1	cscherer	sunuser	19424	Feb 25	13:07	mv.o
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25	14:06	mv.tpa
-rw-r--r--	1	cscherer	sunuser	111	Sep 4	1997	mva.i
-rw-r--r--	1	cscherer	sunuser	56	Aug 16	1997	mvb.i
-rw-r--r--	1	cscherer	sunuser	57	Aug 16	1997	mvc.i
-rw-r--r--	1	cscherer	sunuser	101	Aug 16	1997	mvd.i
-rw-r--r--	1	cscherer	sunuser	72	Aug 16	1997	mve.i
-rw-r--r--	1	cscherer	sunuser	72	Aug 16	1997	mvf.i
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25	14:06	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28253	Feb 25	14:06	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25	14:05	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25	14:06	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25	14:06	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28253	Feb 25	14:06	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25	14:06	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25	14:06	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	174414	Feb 25	14:06	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25	14:06	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	815543	Feb 25	14:05	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25	14:05	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	858614	Feb 25	14:05	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	175592	Feb 25	14:05	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb 25	14:05	nefiuiz.vel
-rwxr-xr-x	1	cscherer	sunuser	408036	Feb 25	14:03	nefmks.e
-rw-r--r--	1	cscherer	sunuser	570	Feb 25	14:05	nefmks.log
-rw-r--r--	1	cscherer	sunuser	112638	Feb 19	11:01	nfenv.f
-rw-r--r--	1	cscherer	sunuser	97276	Feb 25	13:07	nfenv.o
-rw-r--r--	1	cscherer	sunuser	326	Nov 17	18:24	nfenvadj.i
-rw-r--r--	1	cscherer	sunuser	94	Aug 16	1997	nintv.i
-rw-r--r--	1	cscherer	sunuser	1502	Jun 11	1997	notice.i
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25	14:06	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25	14:06	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	7152	Feb 25	14:02	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	6579	Feb 15	2002	numrecip.f
-rw-r--r--	1	cscherer	sunuser	4748	Feb 25	13:08	numrecip.o
-rw-r--r--	1	cscherer	sunuser	7111	Feb 25	14:06	organdf.dat
-rw-r--r--	1	cscherer	sunuser	259	Aug 16	1997	path.i
-rw-r--r--	1	cscherer	sunuser	6584	Feb 15	2002	peakfind.f
-rw-r--r--	1	cscherer	sunuser	6336	Feb 25	13:08	peakfind.o
-rw-r--r--	1	cscherer	sunuser	698	Feb 25	14:06	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25	14:06	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25	14:06	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	46322	Feb 15	2002	ran.f
-rw-r--r--	1	cscherer	sunuser	87592	Feb 25	13:08	ran.o
-rw-r--r--	1	cscherer	sunuser	148482	Dec 19	14:32	reader.f
-rw-r--r--	1	cscherer	sunuser	185	May 21	1998	reader.i
-rw-r--r--	1	cscherer	sunuser	432384	Feb 25	13:08	reader.o
-rw-r--r--	1	cscherer	sunuser	106	Aug 27	1999	reader1.i
-rw-r--r--	1	cscherer	sunuser	58	Aug 27	1999	reader2.i
-rw-r--r--	1	cscherer	sunuser	102	Aug 27	1999	reader3.i
-rw-r--r--	1	cscherer	sunuser	89	Aug 27	1999	reader4.i
-rw-r--r--	1	cscherer	sunuser	58	Aug 16	1997	reflux2.i
-rw-r--r--	1	cscherer	sunuser	682	Feb 25	14:05	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	14:06	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25	14:05	relcum.out
-rwxr-xr-x	1	cscherer	sunuser	122636	Feb 25	14:03	releaset.e

-rw-r--r--	1	cscherer	sunuser	414	Feb 25	14:05	releaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25	14:05	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25	14:06	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Feb 25	14:02	repdes.dat
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	14:06	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	14:06	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	14:06	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	14:06	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	14:06	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	14:06	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	14:06	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	14:06	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5138	Feb 25	14:06	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16138	Feb 25	14:06	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5184	Feb 25	14:06	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	14:06	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	723	Feb 25	14:06	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	95694	May 29	2002	sampler.f
-rw-r--r--	1	cscherer	sunuser	165652	Feb 25	13:08	sampler.o
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	sampler0.i
-rw-r--r--	1	cscherer	sunuser	79	Aug 16	1997	sampler1.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	sampler2.i
-rw-r--r--	1	cscherer	sunuser	178	Apr 3	1998	sampler3.i
-rw-r--r--	1	cscherer	sunuser	145	Sep 19	2000	sampler4.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	sampler.a.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	sampler.b.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	sampler.c.i
-rw-r--r--	1	cscherer	sunuser	68	Aug 16	1997	sampler.d.i
-rw-r--r--	1	cscherer	sunuser	133	Aug 16	1997	sampler.e.i
-rw-r--r--	1	cscherer	sunuser	111	Aug 16	1997	sampler.f.i
-rw-r--r--	1	cscherer	sunuser	84	Aug 16	1997	sampler.g.i
-rw-r--r--	1	cscherer	sunuser	68	Aug 16	1997	sampler.h.i
-rw-r--r--	1	cscherer	sunuser	83	Aug 16	1997	sampler.i.i
-rw-r--r--	1	cscherer	sunuser	61	Aug 16	1997	sampler.j.i
-rw-r--r--	1	cscherer	sunuser	208	Aug 16	1997	sampler.k.i
-rw-r--r--	1	cscherer	sunuser	104	Aug 16	1997	sampler.l.i
-rw-r--r--	1	cscherer	sunuser	63	Aug 16	1997	sampler.m.i
-rw-r--r--	1	cscherer	sunuser	79	Aug 16	1997	sampler.n.i
-rw-r--r--	1	cscherer	sunuser	63	Aug 16	1997	sampler.o.i
-rw-r--r--	1	cscherer	sunuser	260	Mar 14	2002	sampler.p.i
-rw-r--r--	1	cscherer	sunuser	103	Aug 16	1997	sampler.q.i
-rw-r--r--	1	cscherer	sunuser	176	Aug 16	1997	sampler.r.i
-rw-r--r--	1	cscherer	sunuser	336	Apr 3	1998	sampler.s.i
-rw-r--r--	1	cscherer	sunuser	70	Aug 16	1997	sampler.t.i
-rw-r--r--	1	cscherer	sunuser	69	Aug 16	1997	sampler.u.i
-rw-r--r--	1	cscherer	sunuser	62	Aug 16	1997	sampler.v.i
-rw-r--r--	1	cscherer	sunuser	60	Aug 16	1997	sampler.w.i
-rw-r--r--	1	cscherer	sunuser	406	Feb 22	16:36	sampler.x.i
-rw-r--r--	1	cscherer	sunuser	299	Apr 30	2001	sampler.y.i
-rw-r--r--	1	cscherer	sunuser	60	Aug 16	1997	sampler.z.i
-rw-r--r--	1	cscherer	sunuser	3868	Feb 25	14:02	samplpar.abb
-rw-r--r--	1	cscherer	sunuser	29768	Feb 25	14:02	samplpar.hdr
-rw-r--r--	1	cscherer	sunuser	6377	Feb 25	14:06	samplpar.res
-rw-r--r--	1	cscherer	sunuser	22847	Feb 25	13:31	scr443_sl3a.out
-rw-r--r--	1	cscherer	sunuser	22847	Feb 25	13:43	scr443_sl3b.out
-rw-r--r--	1	cscherer	sunuser	22847	Feb 25	13:49	scr443_sl3c.out
-rw-r--r--	1	cscherer	sunuser	22847	Feb 25	14:00	scr443_sl3e.out

-rw-r--r--	1	cscherer	sunuser	22847	Feb 25	14:06	scr443_slt3f.out
-rw-r--r--	1	cscherer	sunuser	22847	Feb 25	13:54	scr449_slt3d.out
-rw-r--r--	1	cscherer	sunuser	322	Nov 17	18:24	seisadj.i
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb 25	14:03	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb 25	14:03	seisbs2.dis
-rw-r--r--	1	cscherer	sunuser	74226	Dec 17	17:52	seismo2.f
-rw-r--r--	1	cscherer	sunuser	73900	Feb 25	13:08	seismo2.o
-rwxrwxrwx	1	cscherer	sunuser	30	Sep 12	16:53	show_env
-rwxr-xr-x	1	cscherer	sunuser	943788	Feb 25	14:03	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	243532	Feb 25	14:02	snllhs.e
-rw-r--r--	1	cscherer	sunuser	174414	Feb 25	14:05	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	30920	Feb 25	14:06	sp.tpa
-rw-r--r--	1	cscherer	sunuser	1948	Feb 25	13:09	srchpos.o
-rw-r--r--	1	cscherer	sunuser	144	Sep 3	1997	stop.i
-rw-r--r--	1	cscherer	sunuser	4506	Feb 25	14:03	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	38273	Sep 3	10:13	subarea.f
-rw-r--r--	1	cscherer	sunuser	59656	Feb 25	13:08	subarea.o
-rw-r--r--	1	cscherer	sunuser	255	Feb 4	2000	subareaa.i
-rw-r--r--	1	cscherer	sunuser	79	Aug 16	1997	subareab.i
-rw-r--r--	1	cscherer	sunuser	82	Aug 16	1997	subareac.i
-rw-r--r--	1	cscherer	sunuser	81	Aug 16	1997	subaread.i
-rw-r--r--	1	cscherer	sunuser	77	Aug 16	1997	subareae.i
-rw-r--r--	1	cscherer	sunuser	60	Feb 3	2000	subareaf.i
-rw-r--r--	1	cscherer	sunuser	64	Feb 2	2000	subareag.i
-rw-r--r--	1	cscherer	sunuser	116680	Feb 24	19:19	szft.f
-rw-r--r--	1	cscherer	sunuser	264	Nov 17	18:23	szft.i
-rw-r--r--	1	cscherer	sunuser	190632	Feb 25	13:07	szft.o
-rw-r--r--	1	cscherer	sunuser	13123	Feb 25	14:06	totdos_c.res
-rw-r--r--	1	cscherer	sunuser	13123	Feb 25	14:06	totdose.res
-rwxr-xr-x	1	cscherer	sunuser	2527152	Feb 25	13:09	tpa.e
-rw-r--r--	1	cscherer	sunuser	91430	Feb 25	14:02	tpa.inp
-r--r--r--	1	cscherer	sunuser	9325	Mar 4	2002	tpa_.out
-rwxr-xr-x	1	cscherer	sunuser	2527152	Feb 25	13:09	tpa_42comp.e
-rw-r--r--	1	cscherer	sunuser	91430	Feb 24	19:23	tpa_orig.e
-rw-r--r--	1	cscherer	sunuser	91430	Feb 25	13:17	tpa_slt3a.inp
-rw-r--r--	1	cscherer	sunuser	91430	Feb 25	13:18	tpa_slt3b.inp
-rw-r--r--	1	cscherer	sunuser	91430	Feb 25	13:19	tpa_slt3c.inp
-rw-r--r--	1	cscherer	sunuser	91430	Feb 25	13:20	tpa_slt3d.inp
-rw-r--r--	1	cscherer	sunuser	91430	Feb 25	13:54	tpa_slt3e.inp
-rw-r--r--	1	cscherer	sunuser	91430	Feb 25	14:02	tpa_slt3f.inp
-rw-r--r--	1	cscherer	sunuser	92332	Feb 25	14:02	tpameans.out
-rw-r--r--	1	cscherer	sunuser	101499	Feb 25	14:02	tpanames.dbs
-rw-r--r--	1	cscherer	sunuser	180151	Feb 25	14:05	trelease.out
-rw-r--r--	1	cscherer	sunuser	314	Aug 16	1997	uz_climi.i
-rw-r--r--	1	cscherer	sunuser	1219	Sep 6	20:05	uz_climr.i
-rw-r--r--	1	cscherer	sunuser	341	Aug 16	1997	uz_climz.i
-rw-r--r--	1	cscherer	sunuser	1323	Sep 26	14:28	uz_flowi.i
-rw-r--r--	1	cscherer	sunuser	1170	Sep 26	14:29	uz_flowr.i
-rw-r--r--	1	cscherer	sunuser	176	Aug 16	1997	uz_flowz.i
-rw-r--r--	1	cscherer	sunuser	3225	Sep 26	14:30	uz_parms.i
-rw-r--r--	1	cscherer	sunuser	72309	Feb 19	20:01	uzflow.f
-rw-r--r--	1	cscherer	sunuser	59812	Feb 25	13:08	uzflow.o
-rw-r--r--	1	cscherer	sunuser	127707	Feb 24	19:16	uzft.f
-rw-r--r--	1	cscherer	sunuser	203844	Feb 25	13:08	uzft.o
-rw-r--r--	1	cscherer	sunuser	755	Nov 17	18:23	uzszft.i
-rw-r--r--	1	cscherer	sunuser	14215	Feb 15	2002	volcano.f
-rw-r--r--	1	cscherer	sunuser	17468	Feb 25	13:08	volcano.o

```

-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 14:05 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 14:06 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 8805 Feb 25 14:03 wpflow.dat
-rw-r--r-- 1 cscherer sunuser 17410 Feb 25 14:03 wpflow.def
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 14:06 wpsfail.res
-rw-r--r-- 1 cscherer sunuser 11721 Feb 15 2002 zportunx.f
-rw-r--r-- 1 cscherer sunuser 1936 Feb 25 13:08 zportunx.o

```

scr443/scr419\_slt3\_test/testfB:

total 6854

```

drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 16:21 .
drwxr-xr-x 9 cscherer sunuser 1024 Feb 25 16:50 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 16:03 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 16:03 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 16:04 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 16:04 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 16:04 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 16:03 corrode.out
-rw-r--r-- 1 cscherer sunuser 79228 Feb 25 16:04 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 16:04 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 16:04 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 16:03 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 16:03 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 16:03 diagnose.out
-rw-r--r-- 1 cscherer sunuser 1916 Feb 25 16:04 dsfail.res
-rw-r--r-- 1 cscherer sunuser 791 Feb 25 16:01 dsfailt.def
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 16:03 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 16:01 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 16:03 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5973 Feb 25 16:01 ebsfail.def
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 16:03 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 790 Feb 25 16:01 ebsfilt.def
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 16:03 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 16:03 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 16:03 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 16:03 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 16:03 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 16:03 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 5459 Feb 25 16:01 ebsrel.def
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 16:03 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 16:03 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 16:04 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 16:04 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 16:03 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 16:03 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3383 Feb 25 16:03 gdefault.def
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 16:03 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 16:03 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 25 16:03 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 25 16:04 genv.out
-rw-r--r-- 1 cscherer sunuser 7011 Feb 25 16:03 gftrans.def
-rw-r--r-- 1 cscherer sunuser 7142 Feb 25 16:03 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13855 Feb 25 16:03 ggenii.def
-rw-r--r-- 1 cscherer sunuser 13164 Feb 25 16:03 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 25 16:03 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 25 16:04 gmedia.out
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:04 gsccdf.res

```

-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:04	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:04	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:04	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25	16:03	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25	16:04	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25	16:04	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25	16:04	gwttuzsz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25	16:03	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25	16:03	invl000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25	13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	47014	Feb 25	16:00	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5730	Feb 25	16:01	lhs.out
-rw-r--r--	1	cscherer	sunuser	79104	Feb 25	16:01	lhse.out
-rw-r--r--	1	cscherer	sunuser	9729	Feb 25	16:01	mechfail.def
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25	16:03	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25	16:03	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25	16:04	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25	16:03	nearfld.res
-rw-r--r--	1	cscherer	sunuser	28253	Feb 25	16:03	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25	16:03	nefii.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25	16:03	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25	16:03	nefii.rel
-rw-r--r--	1	cscherer	sunuser	28253	Feb 25	16:03	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25	16:03	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	164022	Feb 25	16:03	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	174414	Feb 25	16:03	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25	16:03	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	815410	Feb 25	16:03	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25	16:03	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	858614	Feb 25	16:03	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	151120	Feb 25	16:03	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb 25	16:03	nefiuiz.vel
-rw-r--r--	1	cscherer	sunuser	795	Feb 25	16:03	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25	16:04	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25	16:04	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 25	16:04	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25	16:04	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25	16:04	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 25	16:03	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:04	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25	16:03	relcum.out
-rw-r--r--	1	cscherer	sunuser	414	Feb 25	16:03	releaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25	16:03	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25	16:04	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	16:04	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	16:04	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	16:04	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	16:04	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	16:04	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	16:04	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	16:04	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25	16:04	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5138	Feb 25	16:04	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16138	Feb 25	16:04	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5184	Feb 25	16:04	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:04	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	723	Feb 25	16:04	rlgwgs_c.res

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-rw-r--r-- 1 cscherer sunuser 3868 Feb 25 16:00 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29768 Feb 25 16:00 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6377 Feb 25 16:03 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:31 scr443_sl3a.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:43 scr443_sl3b.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:49 scr443_sl3c.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 14:00 scr443_sl3e.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 14:06 scr443_sl3f.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 16:04 scr443_sl3fB.out
-rw-r--r-- 1 cscherer sunuser 22847 Feb 25 13:54 scr449_sl3d.out
-rw-r--r-- 1 cscherer sunuser 30920 Feb 25 16:04 sp.tpa
-rw-r--r-- 1 cscherer sunuser 68249 Feb 25 14:58 test.out
-rw-r--r-- 1 cscherer sunuser 173564 Feb 25 15:47 test10.out
-rw-r--r-- 1 cscherer sunuser 173964 Feb 25 15:53 test11.out
-rw-r--r-- 1 cscherer sunuser 173503 Feb 25 15:56 test12.out
-rw-r--r-- 1 cscherer sunuser 68248 Feb 25 15:02 test2.out
-rw-r--r-- 1 cscherer sunuser 68990 Feb 25 15:09 test3.out
-rw-r--r-- 1 cscherer sunuser 69245 Feb 25 15:14 test4.out
-rw-r--r-- 1 cscherer sunuser 69266 Feb 25 15:20 test5.out
-rw-r--r-- 1 cscherer sunuser 184439 Feb 25 15:30 test6.out
-rw-r--r-- 1 cscherer sunuser 183631 Feb 25 15:34 test7.out
-rw-r--r-- 1 cscherer sunuser 173503 Feb 25 15:39 test9.out
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 16:04 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 16:04 totdose.res
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 15:59 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:17 tpa_sl3a.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:18 tpa_sl3b.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:19 tpa_sl3c.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:20 tpa_sl3d.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 13:54 tpa_sl3e.inp
-rw-r--r-- 1 cscherer sunuser 91430 Feb 25 15:59 tpa_sl3f.inp
-rw-r--r-- 1 cscherer sunuser 91355 Feb 25 15:52 tpa_testing.inp
-rw-r--r-- 1 cscherer sunuser 92332 Feb 25 16:00 tpameans.out
-rw-r--r-- 1 cscherer sunuser 180151 Feb 25 16:03 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 16:03 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 16:04 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 17410 Feb 25 16:01 wpflow.def
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 16:04 wpsfail.res

```

## scr443/sl3t1:

total 183

```

drwxr-xr-x 8 cscherer sunuser 512 Feb 25 18:03 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 14:25 ..
-rw-r--r-- 1 cscherer sunuser 21351 Feb 25 16:45 scr443_sl3t1a.out
-rw-r--r-- 1 cscherer sunuser 22631 Feb 25 16:52 scr443_sl3t1b.out
-rw-r--r-- 1 cscherer sunuser 21351 Feb 25 16:59 scr443_sl3t1c.out
-rw-r--r-- 1 cscherer sunuser 21339 Feb 25 17:07 scr443_sl3t1d.out
-rw-r--r-- 1 cscherer sunuser 21351 Feb 25 17:51 scr443_sl3t1e.out
-rw-r--r-- 1 cscherer sunuser 21339 Feb 25 17:57 scr443_sl3t1f.out
drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 16:49 testa
drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 16:58 testb
drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 17:06 testc
drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 17:51 testd
drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 18:02 teste
drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 18:00 testf

```

scr443/slt1/testa:

total 5627

drwxr-xr-x	2	cscherer	sunuser	7680	Feb 25	16:49	.
drwxr-xr-x	8	cscherer	sunuser	512	Feb 25	18:03	..
-rw-r--r--	1	cscherer	sunuser	965	Feb 25	16:45	FILENAME.DAT
-rw-r--r--	1	cscherer	sunuser	450	Feb 25	16:45	NEFII.VEL
-rw-r--r--	1	cscherer	sunuser	2747	Feb 25	16:45	airpkdos.res
-rw-r--r--	1	cscherer	sunuser	2747	Feb 25	16:45	arpkds_c.res
-rw-r--r--	1	cscherer	sunuser	915	Feb 25	16:45	ashout.res
-rw-r--r--	1	cscherer	sunuser	14506	Feb 25	16:45	corrode.out
-rw-r--r--	1	cscherer	sunuser	79314	Feb 25	16:45	cp.tpa
-rw-r--r--	1	cscherer	sunuser	2253	Feb 25	16:45	cumrel.res
-rw-r--r--	1	cscherer	sunuser	2253	Feb 25	16:45	cumrel_c.res
-rw-r--r--	1	cscherer	sunuser	46580	Feb 25	16:45	cumrelse.out
-rw-r--r--	1	cscherer	sunuser	6693	Feb 25	16:45	deltaec.inp
-rw-r--r--	1	cscherer	sunuser	9800	Feb 25	16:45	diagnose.out
-rw-r--r--	1	cscherer	sunuser	2483	Feb 25	16:45	dsfail.res
-rw-r--r--	1	cscherer	sunuser	610	Feb 25	16:45	dsfailt.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25	16:42	dsfailt.out
-rw-r--r--	1	cscherer	sunuser	43560	Feb 25	16:45	ebscld.out
-rw-r--r--	1	cscherer	sunuser	5734	Feb 25	16:45	ebsfail.inp
-rw-r--r--	1	cscherer	sunuser	2554	Feb 25	16:45	ebsfilt.inp
-rw-r--r--	1	cscherer	sunuser	304	Feb 25	16:45	ebsfilt.out
-rw-r--r--	1	cscherer	sunuser	167701	Feb 25	16:45	ebsnef.dat
-rw-r--r--	1	cscherer	sunuser	124252	Feb 25	16:45	ebsnef.out
-rw-r--r--	1	cscherer	sunuser	167681	Feb 25	16:45	ebsnef2.dat
-rw-r--r--	1	cscherer	sunuser	1883	Feb 25	16:45	ebspac.nuc
-rw-r--r--	1	cscherer	sunuser	11110	Feb 25	16:45	ebsrel.inp
-rw-r--r--	1	cscherer	sunuser	12335	Feb 25	16:45	ebstrhc.inp
-rw-r--r--	1	cscherer	sunuser	39355	Feb 25	16:45	epa_ave.out
-rw-r--r--	1	cscherer	sunuser	1708	Feb 25	16:45	epapktim.out
-rw-r--r--	1	cscherer	sunuser	17384	Feb 25	16:45	failt.out
-rw-r--r--	1	cscherer	sunuser	46580	Feb 25	16:45	frac_rel.out
-rw-r--r--	1	cscherer	sunuser	3387	Feb 25	16:45	gdefault.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25	16:45	gentoo.out
-rw-r--r--	1	cscherer	sunuser	35173	Feb 25	16:45	genv.in
-rw-r--r--	1	cscherer	sunuser	18393	Feb 25	16:45	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb 25	16:45	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb 25	16:45	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 25	16:45	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25	16:45	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:45	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:45	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:45	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25	16:45	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25	16:45	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25	16:45	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25	16:45	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25	16:45	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25	16:45	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25	16:45	invl000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25	13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	46905	Feb 25	16:42	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5715	Feb 25	16:42	lhs.out
-rw-r--r--	1	cscherer	sunuser	78953	Feb 25	16:42	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25	16:45	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25	16:45	mechfail.out

```

-rw-r--r-- 1 cscherer sunuser 61242 Feb 25 16:45 mv.tpa
-rw-r--r-- 1 cscherer sunuser 2331 Feb 25 16:45 nearfld.res
-rw-r--r-- 1 cscherer sunuser 31707 Feb 25 16:45 nefii.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 25 16:45 nefii.inp
-rw-r--r-- 1 cscherer sunuser 167586 Feb 25 16:45 nefii.out
-rw-r--r-- 1 cscherer sunuser 603 Feb 25 16:45 nefii.rel
-rw-r--r-- 1 cscherer sunuser 31707 Feb 25 16:45 nefiisz.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 25 16:45 nefiisz.inp
-rw-r--r-- 1 cscherer sunuser 167586 Feb 25 16:45 nefiisz.out
-rw-r--r-- 1 cscherer sunuser 144774 Feb 25 16:45 nefiisz.src
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 16:45 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser 998470 Feb 25 16:45 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser 10100 Feb 25 16:45 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser 1072318 Feb 25 16:45 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser 146047 Feb 25 16:45 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser 264 Feb 25 16:45 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser 890 Feb 25 16:45 nefmks.log
-rw-r--r-- 1 cscherer sunuser 2507 Feb 25 16:45 npkdoset.res
-rw-r--r-- 1 cscherer sunuser 2507 Feb 25 16:45 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser 698 Feb 25 16:45 pkmdose.out
-rw-r--r-- 1 cscherer sunuser 8245 Feb 25 16:45 pkreltim.res
-rw-r--r-- 1 cscherer sunuser 8245 Feb 25 16:45 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser 682 Feb 25 16:45 rel_flow.out
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:45 relccdf.res
-rw-r--r-- 1 cscherer sunuser 2883 Feb 25 16:45 relcum.out
-rw-r--r-- 1 cscherer sunuser 414 Feb 25 16:45 releaset.out
-rw-r--r-- 1 cscherer sunuser 773 Feb 25 16:45 relfrac.out
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 16:45 relgws.res
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:45 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:45 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:45 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:45 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:45 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:45 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:45 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:45 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5138 Feb 25 16:45 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16138 Feb 25 16:45 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5184 Feb 25 16:45 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:45 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 16:45 rlgws_c.res
-rw-r--r-- 1 cscherer sunuser 3859 Feb 25 16:41 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29689 Feb 25 16:41 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6362 Feb 25 16:45 samplpar.res
-rw-r--r-- 1 cscherer sunuser 21351 Feb 25 16:45 scr443_sl1a.out
-rw-r--r-- 1 cscherer sunuser 30838 Feb 25 16:45 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 16:45 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 16:45 totdose.res
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:34 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:34 tpa_sl1a.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:35 tpa_sl1b.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:35 tpa_sl1c.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_sl1d.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_sl1e.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_sl1f.inp
-rw-r--r-- 1 cscherer sunuser 91355 Feb 25 15:52 tpa_testing.inp

```



```

-rw-r--r-- 1 cscherer sunuser 92315 Feb 25 16:41 tpameans.out
-rw-r--r-- 1 cscherer sunuser 101499 Feb 25 16:41 tpanames.db
-rw-r--r-- 1 cscherer sunuser 150931 Feb 25 16:45 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 16:45 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 16:45 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 16:45 wpsfail.res

```

scr443/slt1/testb:

total 5550

```

drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 16:58 .
drwxr-xr-x 8 cscherer sunuser 512 Feb 25 18:03 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 16:52 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 16:51 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 16:52 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 16:52 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 16:52 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 16:51 corrode.out
-rw-r--r-- 1 cscherer sunuser 79314 Feb 25 16:52 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 16:52 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 16:52 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 16:51 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 16:51 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 16:51 diagnose.out
-rw-r--r-- 1 cscherer sunuser 2483 Feb 25 16:52 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 16:51 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 16:48 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 16:51 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 16:51 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 16:51 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 16:51 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 16:51 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 16:51 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 16:51 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 16:51 ebaspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 16:51 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 16:51 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 16:52 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 16:52 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 16:51 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 16:51 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 16:52 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 16:52 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 25 16:52 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 25 16:52 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 25 16:52 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 25 16:52 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 25 16:52 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 25 16:52 gmedia.out
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:52 gscddf.res
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:52 gscddf_c.res
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:52 gwccdf.res
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:52 gwccdf_c.res
-rw-r--r-- 1 cscherer sunuser 9 Feb 25 16:52 gwork.buf
-rw-r--r-- 1 cscherer sunuser 1739 Feb 25 16:52 gwpkdos.res
-rw-r--r-- 1 cscherer sunuser 1739 Feb 25 16:52 gwpkds_c.res
-rw-r--r-- 1 cscherer sunuser 2171 Feb 25 16:52 gwtuzsz.res
-rw-r--r-- 1 cscherer sunuser 2331 Feb 25 16:52 infilper.res

```

```

-rw-r--r-- 1 cscherer sunuser 1102 Feb 25 16:51 inv1000.out
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 13:27 lhs.csv
-rw-r--r-- 1 cscherer sunuser 46905 Feb 25 16:48 lhs.inp
-rw-r--r-- 1 cscherer sunuser 5715 Feb 25 16:48 lhs.out
-rw-r--r-- 1 cscherer sunuser 78953 Feb 25 16:48 lhse.out
-rw-r--r-- 1 cscherer sunuser 9575 Feb 25 16:51 mechfail.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 16:51 mechfail.out
-rw-r--r-- 1 cscherer sunuser 61242 Feb 25 16:52 mv.tpa
-rw-r--r-- 1 cscherer sunuser 2331 Feb 25 16:52 nearfld.res
-rw-r--r-- 1 cscherer sunuser 31821 Feb 25 16:52 nefii.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 25 16:51 nefii.inp
-rw-r--r-- 1 cscherer sunuser 167586 Feb 25 16:52 nefii.out
-rw-r--r-- 1 cscherer sunuser 603 Feb 25 16:52 nefii.rel
-rw-r--r-- 1 cscherer sunuser 31821 Feb 25 16:52 nefiisz.dis
-rw-r--r-- 1 cscherer sunuser 10104 Feb 25 16:52 nefiisz.inp
-rw-r--r-- 1 cscherer sunuser 167586 Feb 25 16:52 nefiisz.out
-rw-r--r-- 1 cscherer sunuser 158340 Feb 25 16:52 nefiisz.src
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 16:52 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser 998603 Feb 25 16:51 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser 10100 Feb 25 16:51 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser 1072318 Feb 25 16:51 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser 159613 Feb 25 16:51 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser 264 Feb 25 16:51 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser 985 Feb 25 16:51 nefmks.log
-rw-r--r-- 1 cscherer sunuser 2507 Feb 25 16:52 npkdoset.res
-rw-r--r-- 1 cscherer sunuser 2507 Feb 25 16:52 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser 698 Feb 25 16:52 pkmdose.out
-rw-r--r-- 1 cscherer sunuser 8245 Feb 25 16:52 pkreltim.res
-rw-r--r-- 1 cscherer sunuser 8245 Feb 25 16:52 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser 682 Feb 25 16:51 rel_flow.out
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:52 relccdf.res
-rw-r--r-- 1 cscherer sunuser 2883 Feb 25 16:51 relcum.out
-rw-r--r-- 1 cscherer sunuser 414 Feb 25 16:51 releaset.out
-rw-r--r-- 1 cscherer sunuser 773 Feb 25 16:51 relfrac.out
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 16:52 relgwgs.res
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:52 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:52 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:52 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:52 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:52 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:52 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:52 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser 47562 Feb 25 16:52 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser 5138 Feb 25 16:52 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16138 Feb 25 16:52 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5184 Feb 25 16:52 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:52 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 16:52 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3859 Feb 25 16:48 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29689 Feb 25 16:48 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6362 Feb 25 16:52 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22631 Feb 25 16:52 scr443_sl1b.out
-rw-r--r-- 1 cscherer sunuser 30838 Feb 25 16:52 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 16:52 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 16:52 totdose.res
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:35 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out

```

```

-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:34 tpa_sl11a.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:35 tpa_sl11b.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:35 tpa_sl11c.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_sl11d.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_sl11e.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_sl11f.inp
-rw-r--r-- 1 cscherer sunuser 91355 Feb 25 15:52 tpa_testing.inp
-rw-r--r-- 1 cscherer sunuser 92315 Feb 25 16:48 tpameans.out
-rw-r--r-- 1 cscherer sunuser 150931 Feb 25 16:51 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 16:51 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 16:52 wpsfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 16:52 wpsfail.res

```

## scr443/sl11/testc:

total 5065

```

drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 17:06 .
drwxr-xr-x 8 cscherer sunuser 512 Feb 25 18:03 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 16:58 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 16:58 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 16:59 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 16:59 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 16:59 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 16:58 corrode.out
-rw-r--r-- 1 cscherer sunuser 79314 Feb 25 16:59 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 16:59 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 16:59 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 16:58 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 16:58 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 16:58 diagnose.out
-rw-r--r-- 1 cscherer sunuser 2483 Feb 25 16:59 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 16:58 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 16:55 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 16:58 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 16:58 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 16:58 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 16:58 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 16:58 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 16:58 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 16:58 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 16:58 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 16:58 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 16:58 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 16:59 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 16:59 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 16:58 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 16:58 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 16:59 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 16:59 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 25 16:59 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 25 16:59 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 25 16:59 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 25 16:59 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 25 16:59 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 25 16:59 gmedia.out
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:59 gsccdf.res
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:59 gsccdf_c.res
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 16:59 gwccdf.res

```

```

-rw-r--r-- 1 cscherer sunuser      573 Feb 25 16:59 gwccdf_c.res
-rw-r--r-- 1 cscherer sunuser         9 Feb 25 16:59 gwork.buf
-rw-r--r-- 1 cscherer sunuser    1739 Feb 25 16:59 gwpkdos.res
-rw-r--r-- 1 cscherer sunuser    1739 Feb 25 16:59 gwpkds_c.res
-rw-r--r-- 1 cscherer sunuser    2171 Feb 25 16:59 gwtutuzsz.res
-rw-r--r-- 1 cscherer sunuser    2331 Feb 25 16:58 infilper.res
-rw-r--r-- 1 cscherer sunuser    1102 Feb 25 16:58 invl0000.out
-rw-r--r-- 1 cscherer sunuser         0 Feb 25 13:27 lhs.csv
-rw-r--r-- 1 cscherer sunuser   46905 Feb 25 16:55 lhs.inp
-rw-r--r-- 1 cscherer sunuser   5715 Feb 25 16:55 lhs.out
-rw-r--r-- 1 cscherer sunuser   78953 Feb 25 16:55 lhse.out
-rw-r--r-- 1 cscherer sunuser    9575 Feb 25 16:58 mechfail.inp
-rw-r--r-- 1 cscherer sunuser         0 Feb 25 16:58 mechfail.out
-rw-r--r-- 1 cscherer sunuser   61242 Feb 25 16:59 mv.tpa
-rw-r--r-- 1 cscherer sunuser    2331 Feb 25 16:58 nearfld.res
-rw-r--r-- 1 cscherer sunuser   31707 Feb 25 16:58 nefii.dis
-rw-r--r-- 1 cscherer sunuser   10104 Feb 25 16:58 nefii.inp
-rw-r--r-- 1 cscherer sunuser  167586 Feb 25 16:58 nefii.out
-rw-r--r-- 1 cscherer sunuser     603 Feb 25 16:58 nefii.rel
-rw-r--r-- 1 cscherer sunuser   31707 Feb 25 16:58 nefiisz.dis
-rw-r--r-- 1 cscherer sunuser   10104 Feb 25 16:58 nefiisz.inp
-rw-r--r-- 1 cscherer sunuser  167586 Feb 25 16:58 nefiisz.out
-rw-r--r-- 1 cscherer sunuser  144774 Feb 25 16:58 nefiisz.src
-rw-r--r-- 1 cscherer sunuser     450 Feb 25 16:58 nefiisz.vel
-rw-r--r-- 1 cscherer sunuser  998470 Feb 25 16:58 nefiiuz.dis
-rw-r--r-- 1 cscherer sunuser   10100 Feb 25 16:58 nefiiuz.inp
-rw-r--r-- 1 cscherer sunuser 1072318 Feb 25 16:58 nefiiuz.out
-rw-r--r-- 1 cscherer sunuser  146047 Feb 25 16:58 nefiiuz.src
-rw-r--r-- 1 cscherer sunuser     264 Feb 25 16:58 nefiiuz.vel
-rw-r--r-- 1 cscherer sunuser    1080 Feb 25 16:58 nefmks.log
-rw-r--r-- 1 cscherer sunuser    2507 Feb 25 16:59 npkdoset.res
-rw-r--r-- 1 cscherer sunuser    2507 Feb 25 16:59 npkdst_c.res
-rw-r--r-- 1 cscherer sunuser     698 Feb 25 16:59 pkmdndose.out
-rw-r--r-- 1 cscherer sunuser   8245 Feb 25 16:59 pkreltim.res
-rw-r--r-- 1 cscherer sunuser   8245 Feb 25 16:59 pkrltm_c.res
-rw-r--r-- 1 cscherer sunuser     682 Feb 25 16:58 rel_flow.out
-rw-r--r-- 1 cscherer sunuser     573 Feb 25 16:59 relccdf.res
-rw-r--r-- 1 cscherer sunuser   2883 Feb 25 16:58 relcum.out
-rw-r--r-- 1 cscherer sunuser     414 Feb 25 16:58 releaset.out
-rw-r--r-- 1 cscherer sunuser     773 Feb 25 16:58 relfrac.out
-rw-r--r-- 1 cscherer sunuser     723 Feb 25 16:59 relgwgs.res
-rw-r--r-- 1 cscherer sunuser   47562 Feb 25 16:59 rgwna.tpa
-rw-r--r-- 1 cscherer sunuser   47562 Feb 25 16:59 rgwnapani.tpa
-rw-r--r-- 1 cscherer sunuser   47562 Feb 25 16:59 rgwnapdw.tpa
-rw-r--r-- 1 cscherer sunuser   47562 Feb 25 16:59 rgwnapext.tpa
-rw-r--r-- 1 cscherer sunuser   47562 Feb 25 16:59 rgwnapinh.tpa
-rw-r--r-- 1 cscherer sunuser   47562 Feb 25 16:59 rgwnapmlk.tpa
-rw-r--r-- 1 cscherer sunuser   47562 Feb 25 16:59 rgwnappla.tpa
-rw-r--r-- 1 cscherer sunuser   47562 Feb 25 16:59 rgwnr.tpa
-rw-r--r-- 1 cscherer sunuser    5138 Feb 25 16:59 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser  16138 Feb 25 16:59 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser    5184 Feb 25 16:59 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser     573 Feb 25 16:59 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser     723 Feb 25 16:59 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser   3859 Feb 25 16:55 samplpar.abb
-rw-r--r-- 1 cscherer sunuser  29689 Feb 25 16:55 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser    6362 Feb 25 16:58 samplpar.res

```

```

-rw-r--r-- 1 cscherer sunuser 21351 Feb 25 16:59 scr443_slrtlc.out
-rw-r--r-- 1 cscherer sunuser 30838 Feb 25 16:59 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 16:59 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 16:59 totdose.res
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:35 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:35 tpa_slrtlc.inp
-rw-r--r-- 1 cscherer sunuser 91355 Feb 25 15:52 tpa_testing.inp
-rw-r--r-- 1 cscherer sunuser 92315 Feb 25 16:55 tpameans.out
-rw-r--r-- 1 cscherer sunuser 150931 Feb 25 16:58 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 16:58 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 16:59 wpsfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 16:59 wpsfail.res

```

## scr443/slrt1/testd:

total 5066

```

drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 17:51 .
drwxr-xr-x 8 cscherer sunuser 512 Feb 25 18:03 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 17:07 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 17:07 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 17:07 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 17:07 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 17:07 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 17:07 corrode.out
-rw-r--r-- 1 cscherer sunuser 79314 Feb 25 17:07 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 17:07 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 17:07 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 17:07 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 17:07 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 17:07 diagnose.out
-rw-r--r-- 1 cscherer sunuser 2483 Feb 25 17:07 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 17:07 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:04 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 17:07 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 17:07 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 17:07 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 17:07 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 17:07 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 17:07 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 17:07 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 17:07 ebaspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 17:07 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 17:07 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 17:07 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 17:07 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 17:07 fault.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 17:07 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 17:07 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:07 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 25 17:07 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 25 17:07 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 25 17:07 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 25 17:07 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 25 17:07 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 25 17:07 gmedia.out
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 17:07 gsccdf.res
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 17:07 gsccdf_c.res

```

-rw-r--r--	1	cscherer	sunuser	573	Feb	25	17:07	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	17:07	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb	25	17:07	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb	25	17:07	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb	25	17:07	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb	25	17:07	gwttuysz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb	25	17:07	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb	25	17:07	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	46905	Feb	25	17:04	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5715	Feb	25	17:04	lhs.out
-rw-r--r--	1	cscherer	sunuser	78953	Feb	25	17:04	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb	25	17:07	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb	25	17:07	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb	25	17:07	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb	25	17:07	nearfld.res
-rw-r--r--	1	cscherer	sunuser	31707	Feb	25	17:07	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb	25	17:07	nefii.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb	25	17:07	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb	25	17:07	nefii.rel
-rw-r--r--	1	cscherer	sunuser	31707	Feb	25	17:07	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb	25	17:07	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb	25	17:07	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	144774	Feb	25	17:07	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb	25	17:07	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	998470	Feb	25	17:07	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb	25	17:07	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	1072318	Feb	25	17:07	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	146047	Feb	25	17:07	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	264	Feb	25	17:07	nefiuiz.vel
-rw-r--r--	1	cscherer	sunuser	1175	Feb	25	17:07	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb	25	17:07	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb	25	17:07	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb	25	17:07	pkmndose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb	25	17:07	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb	25	17:07	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb	25	17:07	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	17:07	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb	25	17:07	relcum.out
-rw-r--r--	1	cscherer	sunuser	414	Feb	25	17:07	releaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb	25	17:07	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb	25	17:07	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	47562	Feb	25	17:07	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb	25	17:07	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb	25	17:07	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb	25	17:07	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb	25	17:07	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb	25	17:07	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb	25	17:07	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb	25	17:07	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5138	Feb	25	17:07	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16138	Feb	25	17:07	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5184	Feb	25	17:07	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	573	Feb	25	17:07	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	723	Feb	25	17:07	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	3859	Feb	25	17:04	samplpar.abb
-rw-r--r--	1	cscherer	sunuser	29689	Feb	25	17:04	samplpar.hdr

```

-rw-r--r-- 1 cscherer sunuser 6362 Feb 25 17:07 samplpar.res
-rw-r--r-- 1 cscherer sunuser 21339 Feb 25 17:07 scr443_sltd.out
-rw-r--r-- 1 cscherer sunuser 30838 Feb 25 17:07 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 17:07 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 17:07 totdose.res
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_sltd.inp
-rw-r--r-- 1 cscherer sunuser 91355 Feb 25 15:52 tpa_testing.inp
-rw-r--r-- 1 cscherer sunuser 92315 Feb 25 17:04 tpameans.out
-rw-r--r-- 1 cscherer sunuser 150931 Feb 25 17:07 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 17:07 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 17:07 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 17:07 wpsfail.res

```

scr443/sltd/teste:

total 5074

```

drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 18:02 .
drwxr-xr-x 8 cscherer sunuser 512 Feb 25 18:03 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 17:51 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 17:51 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 17:51 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 17:51 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 17:51 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 17:51 corrode.out
-rw-r--r-- 1 cscherer sunuser 79314 Feb 25 17:51 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 17:51 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 17:51 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 17:51 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 7196 Feb 25 17:28 dcfgw.cum
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 17:51 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 17:51 diagnose.out
-rw-r--r-- 1 cscherer sunuser 2483 Feb 25 17:51 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 17:51 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:48 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 17:51 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 17:51 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 17:51 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 17:51 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 17:51 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 17:51 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 17:51 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 17:51 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 17:51 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 17:51 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 17:51 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 17:51 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 17:51 fault.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 17:51 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 17:51 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:51 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 25 17:51 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 25 17:51 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 25 17:51 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 25 17:51 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 25 17:51 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5673 Feb 25 17:51 gmedia.out

```

-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:51	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:51	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:51	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:51	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25 17:51	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 17:51	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 17:51	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25 17:51	gwtuuzsz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 17:51	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25 17:51	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	46905	Feb 25 17:47	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5715	Feb 25 17:47	lhs.out
-rw-r--r--	1	cscherer	sunuser	78953	Feb 25 17:47	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25 17:51	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 17:51	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25 17:51	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 17:51	nearfld.res
-rw-r--r--	1	cscherer	sunuser	31707	Feb 25 17:51	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 17:51	nefii.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb 25 17:51	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 17:51	nefii.rel
-rw-r--r--	1	cscherer	sunuser	31707	Feb 25 17:51	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 17:51	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb 25 17:51	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	144774	Feb 25 17:51	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25 17:51	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	998470	Feb 25 17:51	nefiuuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25 17:51	nefiuuz.inp
-rw-r--r--	1	cscherer	sunuser	1072318	Feb 25 17:51	nefiuuz.out
-rw-r--r--	1	cscherer	sunuser	146047	Feb 25 17:51	nefiuuz.src
-rw-r--r--	1	cscherer	sunuser	264	Feb 25 17:51	nefiuuz.vel
-rw-r--r--	1	cscherer	sunuser	1280	Feb 25 17:51	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 17:51	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 17:51	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 25 17:51	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 17:51	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 17:51	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 25 17:51	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:51	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25 17:51	relcum.out
-rw-r--r--	1	cscherer	sunuser	414	Feb 25 17:51	releaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25 17:51	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25 17:51	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:51	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:51	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:51	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:51	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:51	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:51	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:51	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:51	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5138	Feb 25 17:51	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16138	Feb 25 17:51	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5184	Feb 25 17:51	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:51	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	723	Feb 25 17:51	rlgwgs_c.res



```

-rw-r--r-- 1 cscherer sunuser 3859 Feb 25 17:47 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29689 Feb 25 17:47 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6362 Feb 25 17:51 samplpar.res
-rw-r--r-- 1 cscherer sunuser 21351 Feb 25 17:51 scr443_sltitle.out
-rw-r--r-- 1 cscherer sunuser 30838 Feb 25 17:51 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 17:51 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 17:51 totdose.res
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_sltitle.inp
-rw-r--r-- 1 cscherer sunuser 91355 Feb 25 15:52 tpa_testing.inp
-rw-r--r-- 1 cscherer sunuser 92315 Feb 25 17:47 tpameans.out
-rw-r--r-- 1 cscherer sunuser 150931 Feb 25 17:51 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 17:51 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 17:51 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 17:51 wpsfail.res

```

scr443/slt1/testf:

total 5164

```

drwxr-xr-x 2 cscherer sunuser 7680 Feb 25 18:00 .
drwxr-xr-x 8 cscherer sunuser 512 Feb 25 18:03 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 17:57 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 17:57 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 17:57 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 17:57 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 17:57 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 17:57 corrode.out
-rw-r--r-- 1 cscherer sunuser 79314 Feb 25 17:57 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 17:57 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 17:57 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 17:57 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 7196 Feb 25 17:28 dcfgw.cum
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 17:57 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 17:57 diagnose.out
-rw-r--r-- 1 cscherer sunuser 2483 Feb 25 17:57 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 17:57 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:54 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 17:57 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 17:57 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 17:57 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 17:57 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 17:57 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 17:57 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 17:57 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 17:57 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 17:57 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 17:57 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 17:57 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 17:57 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 17:57 fault.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 17:57 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 17:57 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:57 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 25 17:57 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 25 17:57 genv.out
-rw-r--r-- 1 cscherer sunuser 7142 Feb 25 17:57 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 13164 Feb 25 17:57 ggenii.inp

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-rw-r--r--	1	cscherer	sunuser	10074	Feb 25 17:57	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25 17:57	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:57	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:57	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:57	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:57	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25 17:57	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 17:57	gwpkdos.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 17:57	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25 17:57	gwtuzsz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 17:57	infilter.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25 17:57	inv1000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	46905	Feb 25 17:53	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5715	Feb 25 17:53	lhs.out
-rw-r--r--	1	cscherer	sunuser	78953	Feb 25 17:53	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25 17:57	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 17:57	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25 17:57	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 17:57	nearfld.res
-rw-r--r--	1	cscherer	sunuser	31707	Feb 25 17:57	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 17:57	nefii.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb 25 17:57	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 17:57	nefii.rel
-rw-r--r--	1	cscherer	sunuser	31707	Feb 25 17:57	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 17:57	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb 25 17:57	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	144774	Feb 25 17:57	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25 17:57	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	998470	Feb 25 17:57	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25 17:57	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	1072318	Feb 25 17:57	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	146047	Feb 25 17:57	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	264	Feb 25 17:57	nefiuiz.vel
-rw-r--r--	1	cscherer	sunuser	1375	Feb 25 17:57	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 17:57	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 17:57	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 25 17:57	pkmndose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 17:57	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 17:57	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 25 17:57	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 17:57	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25 17:57	relcum.out
-rw-r--r--	1	cscherer	sunuser	414	Feb 25 17:57	releaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25 17:57	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25 17:57	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:57	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:57	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:57	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:57	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:57	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:57	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:57	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 17:57	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5138	Feb 25 17:57	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16138	Feb 25 17:57	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5184	Feb 25 17:57	rgwsr.tpa

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-rw-r--r-- 1 cscherer sunuser 573 Feb 25 17:57 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 17:57 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3859 Feb 25 17:53 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29689 Feb 25 17:53 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6362 Feb 25 17:57 samplpar.res
-rw-r--r-- 1 cscherer sunuser 21339 Feb 25 17:57 scr443_slrt1f.out
-rw-r--r-- 1 cscherer sunuser 30838 Feb 25 17:57 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 17:57 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 17:57 totdose.res
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 16:36 tpa_slrt1f.inp
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 17:57 tpa_slrt2_compare.inp
-rw-r--r-- 1 cscherer sunuser 91355 Feb 25 15:52 tpa_testing.inp
-rw-r--r-- 1 cscherer sunuser 92315 Feb 25 17:53 tpameans.out
-rw-r--r-- 1 cscherer sunuser 150931 Feb 25 17:57 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 17:57 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 17:57 wpfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 17:57 wpsfail.res

```

## scr443/testCRPhalf:

total 5116

```

drwxr-xr-x 2 cscherer sunuser 7168 Feb 25 18:06 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 14:25 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 18:02 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 18:02 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 18:02 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2747 Feb 25 18:02 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 915 Feb 25 18:02 ashout.res
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 18:02 corrode.out
-rw-r--r-- 1 cscherer sunuser 79314 Feb 25 18:02 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 18:02 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2253 Feb 25 18:02 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 18:02 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 7196 Feb 25 17:28 dcfwg.cum
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 18:02 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 18:02 diagnose.out
-rw-r--r-- 1 cscherer sunuser 2483 Feb 25 18:02 dsfail.res
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 18:02 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:59 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 18:02 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 18:02 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 2554 Feb 25 18:02 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 304 Feb 25 18:02 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 18:02 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 18:02 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 167681 Feb 25 18:02 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 18:02 ebspac.nuc
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 18:02 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 18:02 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 39355 Feb 25 18:02 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1708 Feb 25 18:02 epapktim.out
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 18:02 failt.out
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 18:02 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 18:02 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 18:02 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 25 18:02 genv.in

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-rw-r--r--	1	cscherer	sunuser	18393	Feb 25 18:02	genv.out
-rw-r--r--	1	cscherer	sunuser	7142	Feb 25 18:02	gftrans.inp
-rw-r--r--	1	cscherer	sunuser	13164	Feb 25 18:02	ggenii.inp
-rw-r--r--	1	cscherer	sunuser	10074	Feb 25 18:02	ggenii.out
-rw-r--r--	1	cscherer	sunuser	5673	Feb 25 18:02	gmedia.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 18:02	gsccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 18:02	gsccdf_c.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 18:02	gwccdf.res
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 18:02	gwccdf_c.res
-rw-r--r--	1	cscherer	sunuser	9	Feb 25 18:02	gwork.buf
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 18:02	gwpkds.res
-rw-r--r--	1	cscherer	sunuser	1739	Feb 25 18:02	gwpkds_c.res
-rw-r--r--	1	cscherer	sunuser	2171	Feb 25 18:02	gwtuusz.res
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 18:02	infilper.res
-rw-r--r--	1	cscherer	sunuser	1102	Feb 25 18:02	invl000.out
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 13:27	lhs.csv
-rw-r--r--	1	cscherer	sunuser	46905	Feb 25 17:59	lhs.inp
-rw-r--r--	1	cscherer	sunuser	5715	Feb 25 17:59	lhs.out
-rw-r--r--	1	cscherer	sunuser	78953	Feb 25 17:59	lhse.out
-rw-r--r--	1	cscherer	sunuser	9575	Feb 25 18:02	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 18:02	mechfail.out
-rw-r--r--	1	cscherer	sunuser	61242	Feb 25 18:02	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2331	Feb 25 18:02	nearfld.res
-rw-r--r--	1	cscherer	sunuser	31821	Feb 25 18:02	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 18:02	nefii.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb 25 18:02	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 18:02	nefii.rel
-rw-r--r--	1	cscherer	sunuser	31821	Feb 25 18:02	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 18:02	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	167586	Feb 25 18:02	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	158340	Feb 25 18:02	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25 18:02	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	998603	Feb 25 18:02	nefiuiz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25 18:02	nefiuiz.inp
-rw-r--r--	1	cscherer	sunuser	1072318	Feb 25 18:02	nefiuiz.out
-rw-r--r--	1	cscherer	sunuser	159613	Feb 25 18:02	nefiuiz.src
-rw-r--r--	1	cscherer	sunuser	264	Feb 25 18:02	nefiuiz.vel
-rw-r--r--	1	cscherer	sunuser	1470	Feb 25 18:02	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 18:02	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2507	Feb 25 18:02	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	698	Feb 25 18:02	pkmndose.out
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 18:02	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8245	Feb 25 18:02	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 25 18:02	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	573	Feb 25 18:02	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2883	Feb 25 18:02	relcum.out
-rw-r--r--	1	cscherer	sunuser	414	Feb 25 18:02	reaset.out
-rw-r--r--	1	cscherer	sunuser	773	Feb 25 18:02	relfrac.out
-rw-r--r--	1	cscherer	sunuser	723	Feb 25 18:02	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 18:02	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 18:02	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 18:02	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 18:02	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 18:02	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 18:02	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 18:02	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47562	Feb 25 18:02	rgwnr.tpa

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-rw-r--r-- 1 cscherer sunuser 5138 Feb 25 18:02 rgwsa.tpa
-rw-r--r-- 1 cscherer sunuser 16138 Feb 25 18:02 rgwsap.tpa
-rw-r--r-- 1 cscherer sunuser 5184 Feb 25 18:02 rgwsr.tpa
-rw-r--r-- 1 cscherer sunuser 573 Feb 25 18:02 rlccdf_c.res
-rw-r--r-- 1 cscherer sunuser 723 Feb 25 18:02 rlgwgs_c.res
-rw-r--r-- 1 cscherer sunuser 3859 Feb 25 17:59 samplpar.abb
-rw-r--r-- 1 cscherer sunuser 29689 Feb 25 17:59 samplpar.hdr
-rw-r--r-- 1 cscherer sunuser 6362 Feb 25 18:02 samplpar.res
-rw-r--r-- 1 cscherer sunuser 22631 Feb 25 18:02 scr443_sl2.out
-rw-r--r-- 1 cscherer sunuser 30838 Feb 25 18:02 sp.tpa
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 18:02 totdos_c.res
-rw-r--r-- 1 cscherer sunuser 13123 Feb 25 18:02 totdose.res
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 17:57 tpa.inp
-r--r--r-- 1 cscherer sunuser 9325 Mar 4 2002 tpa_.out
-rw-r--r-- 1 cscherer sunuser 91425 Feb 25 17:57 tpa_sl2_compare.inp
-rw-r--r-- 1 cscherer sunuser 91355 Feb 25 15:52 tpa_testing.inp
-rw-r--r-- 1 cscherer sunuser 92315 Feb 25 17:59 tpameans.out
-rw-r--r-- 1 cscherer sunuser 150931 Feb 25 18:02 trelease.out
-rw-r--r-- 1 cscherer sunuser 14132 Feb 25 18:02 weldfail.out
-rw-r--r-- 1 cscherer sunuser 1191 Feb 25 18:02 wpsfillstats.out
-rw-r--r-- 1 cscherer sunuser 819 Feb 25 18:02 wpsfail.res

```

scr443/tpa50betaQ:

total 16779

```

drwxr-xr-x 2 cscherer sunuser 4096 Feb 25 17:04 .
drwxr-xr-x 12 cscherer sunuser 8192 Feb 26 14:25 ..
-rw-r--r-- 1 cscherer sunuser 965 Feb 25 17:04 FILENAME.DAT
-rw-r--r-- 1 cscherer sunuser 450 Feb 25 17:04 NEFII.VEL
-rw-r--r-- 1 cscherer sunuser 2746 Feb 25 17:04 airpkdos.res
-rw-r--r-- 1 cscherer sunuser 2746 Feb 25 17:04 arpkds_c.res
-rw-r--r-- 1 cscherer sunuser 914 Feb 25 17:04 ashout.res
-rw-r--r-- 1 cscherer sunuser 1025 Feb 25 17:03 burnup.dat
-rw-r--r-- 1 cscherer sunuser 5047 Feb 25 17:04 chlrdmf.dat
-rw-r--r-- 1 cscherer sunuser 850000 Feb 25 17:04 climato1.dat
-rw-r--r-- 1 cscherer sunuser 2200 Feb 25 17:04 climato2.dat
-rw-r--r-- 1 cscherer sunuser 4791 Feb 25 17:04 coefkdeg.dat
-rw-r--r-- 1 cscherer sunuser 14506 Feb 25 17:04 corrode.out
-rw-r--r-- 1 cscherer sunuser 77507 Feb 25 17:04 cp.tpa
-rw-r--r-- 1 cscherer sunuser 2252 Feb 25 17:04 cumrel.res
-rw-r--r-- 1 cscherer sunuser 2252 Feb 25 17:04 cumrel_c.res
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 17:04 cumrelse.out
-rw-r--r-- 1 cscherer sunuser 6693 Feb 25 17:04 deltaec.inp
-rw-r--r-- 1 cscherer sunuser 9800 Feb 25 17:04 diagnose.out
-rw-r--r-- 1 cscherer sunuser 2200 Feb 25 17:04 dilution.dat
-rw-r--r-- 1 cscherer sunuser 3870 Feb 25 17:03 drifts.dat
-rw-r--r-- 1 cscherer sunuser 519 Feb 25 17:04 drythick.dat
-rw-r--r-- 1 cscherer sunuser 1024 Feb 25 17:04 dsfail.res
-rw-r--r-- 1 cscherer sunuser 708 Feb 25 17:04 dsfailt.dat
-rw-r--r-- 1 cscherer sunuser 791 Feb 25 17:04 dsfailt.def
-rwxr-xr-x 1 cscherer sunuser 43192 Feb 25 17:04 dsfailt.e
-rw-r--r-- 1 cscherer sunuser 610 Feb 25 17:04 dsfailt.inp
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:04 dsfailt.out
-rw-r--r-- 1 cscherer sunuser 43560 Feb 25 17:04 ebscld.out
-rw-r--r-- 1 cscherer sunuser 5973 Feb 25 17:04 ebsfail.def
-rw-r--r-- 1 cscherer sunuser 5734 Feb 25 17:04 ebsfail.inp
-rw-r--r-- 1 cscherer sunuser 790 Feb 25 17:04 ebsfilt.def
-rwxr-xr-x 1 cscherer sunuser 42516 Feb 25 17:04 ebsfilt.e

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-rw-r--r-- 1 cscherer sunuser 3030 Feb 25 17:04 ebsfilt.inp
-rw-r--r-- 1 cscherer sunuser 239 Feb 25 17:04 ebsfilt.out
-rw-r--r-- 1 cscherer sunuser 14029 Feb 25 17:04 ebsflo.dat
-rw-r--r-- 1 cscherer sunuser 167701 Feb 25 17:04 ebsnef.dat
-rw-r--r-- 1 cscherer sunuser 124252 Feb 25 17:04 ebsnef.out
-rw-r--r-- 1 cscherer sunuser 439749 Feb 25 17:04 ebsnef2.dat
-rw-r--r-- 1 cscherer sunuser 1883 Feb 25 17:04 ebbspac.nuc
-rw-r--r-- 1 cscherer sunuser 5459 Feb 25 17:04 ebsrel.def
-rw-r--r-- 1 cscherer sunuser 11110 Feb 25 17:04 ebsrel.inp
-rw-r--r-- 1 cscherer sunuser 124203 Feb 25 17:04 ebssf.dat
-rw-r--r-- 1 cscherer sunuser 17315 Feb 25 17:04 ebstrh.dat
-rw-r--r-- 1 cscherer sunuser 12335 Feb 25 17:04 ebstrhc.inp
-rw-r--r-- 1 cscherer sunuser 2647 Feb 25 17:04 echofail.dat
-rw-r--r-- 1 cscherer sunuser 445601 Feb 25 17:04 echofilt.dat
-rwxr-xr-x 1 cscherer sunuser 191532 Feb 25 17:04 env.e
-rwxr-xr-x 1 cscherer sunuser 283052 Feb 25 17:04 envin.e
-rw-r--r-- 1 cscherer sunuser 39354 Feb 25 17:04 epa_ave.out
-rw-r--r-- 1 cscherer sunuser 1707 Feb 25 17:04 epapktim.out
-rwxr-xr-x 1 cscherer sunuser 136716 Feb 25 17:04 failt.e
-rw-r--r-- 1 cscherer sunuser 17384 Feb 25 17:04 failt.out
-rw-r--r-- 1 cscherer sunuser 6281 Feb 25 17:04 fluoride.dat
-rw-r--r-- 1 cscherer sunuser 46580 Feb 25 17:04 frac_rel.out
-rw-r--r-- 1 cscherer sunuser 6513 Feb 25 17:04 gbioacl.dat
-rw-r--r-- 1 cscherer sunuser 3383 Feb 25 17:04 gdefault.def
-rw-r--r-- 1 cscherer sunuser 3387 Feb 25 17:04 gdefault.inp
-rw-r--r-- 1 cscherer sunuser 64 Feb 25 17:04 gdosinc2.dat
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:04 gentoo.out
-rw-r--r-- 1 cscherer sunuser 35173 Feb 25 17:04 genv.in
-rw-r--r-- 1 cscherer sunuser 18393 Feb 25 17:04 genv.out
-rw-r--r-- 1 cscherer sunuser 7011 Feb 25 17:04 gftrans.def
-rw-r--r-- 1 cscherer sunuser 7142 Feb 25 17:04 gftrans.inp
-rw-r--r-- 1 cscherer sunuser 15214 Feb 25 17:04 ggamen.dat
-rw-r--r-- 1 cscherer sunuser 13855 Feb 25 17:04 ggenii.def
-rw-r--r-- 1 cscherer sunuser 13164 Feb 25 17:04 ggenii.inp
-rw-r--r-- 1 cscherer sunuser 10074 Feb 25 17:04 ggenii.out
-rw-r--r-- 1 cscherer sunuser 5351 Feb 25 17:04 ggrdf.dat
-rw-r--r-- 1 cscherer sunuser 5673 Feb 25 17:04 gmedia.out
-rw-r--r-- 1 cscherer sunuser 9897 Feb 25 17:04 gnewdf.dat
-rw-r--r-- 1 cscherer sunuser 13200 Feb 25 17:04 grmdlib.dat
-rw-r--r-- 1 cscherer sunuser 572 Feb 25 17:04 gsccdf.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 25 17:04 gsccdf_c.res
-rw-r--r-- 1 cscherer sunuser 3561 Feb 25 17:04 gw_cb_ad.dat
-rw-r--r-- 1 cscherer sunuser 1264 Feb 25 17:04 gw_cb_ci.dat
-rw-r--r-- 1 cscherer sunuser 3557 Feb 25 17:04 gw_pb_ad.dat
-rw-r--r-- 1 cscherer sunuser 1261 Feb 25 17:04 gw_pb_ci.dat
-rw-r--r-- 1 cscherer sunuser 572 Feb 25 17:04 gwccdf.res
-rw-r--r-- 1 cscherer sunuser 572 Feb 25 17:04 gwccdf_c.res
-rw-r--r-- 1 cscherer sunuser 9 Feb 25 17:04 gwork.buf
-rw-r--r-- 1 cscherer sunuser 1738 Feb 25 17:04 gwpkdos.res
-rw-r--r-- 1 cscherer sunuser 1738 Feb 25 17:04 gwpkds_c.res
-rw-r--r-- 1 cscherer sunuser 2170 Feb 25 17:04 gwttuksz.res
-rw-r--r-- 1 cscherer sunuser 2330 Feb 25 17:04 infilper.res
-rw-r--r-- 1 cscherer sunuser 1102 Feb 25 17:04 inv1000.out
-rw-r--r-- 1 cscherer sunuser 0 Feb 25 17:03 lhs.csv
-rw-r--r-- 1 cscherer sunuser 47014 Feb 25 17:03 lhs.inp
-rw-r--r-- 1 cscherer sunuser 5730 Feb 25 17:04 lhs.out
-rw-r--r-- 1 cscherer sunuser 79104 Feb 25 17:04 lhse.out

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-rw-r--r--	1	cscherer	sunuser	1095	Feb 25 17:04	maxrel.dat
-rwxr-xr-x	1	cscherer	sunuser	943775	Feb 25 17:04	maydtbl.dat
-rw-r--r--	1	cscherer	sunuser	31768	Feb 25 17:04	mechfail.dat
-rw-r--r--	1	cscherer	sunuser	9729	Feb 25 17:04	mechfail.def
-rwxr-xr-x	1	cscherer	sunuser	82088	Feb 25 17:04	mechfail.e
-rw-r--r--	1	cscherer	sunuser	9767	Feb 25 17:04	mechfail.inp
-rw-r--r--	1	cscherer	sunuser	0	Feb 25 17:04	mechfail.out
-rw-r--r--	1	cscherer	sunuser	1251	Feb 25 17:04	multifaf.dat
-rw-r--r--	1	cscherer	sunuser	1252	Feb 25 17:04	multifbe.dat
-rw-r--r--	1	cscherer	sunuser	61241	Feb 25 17:04	mv.tpa
-rw-r--r--	1	cscherer	sunuser	2330	Feb 25 17:04	nearfld.res
-rw-r--r--	1	cscherer	sunuser	36708	Feb 25 17:04	nefii.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 17:04	nefii.inp
-rw-r--r--	1	cscherer	sunuser	172338	Feb 25 17:04	nefii.out
-rw-r--r--	1	cscherer	sunuser	603	Feb 25 17:04	nefii.rel
-rw-r--r--	1	cscherer	sunuser	36708	Feb 25 17:04	nefiisz.dis
-rw-r--r--	1	cscherer	sunuser	10104	Feb 25 17:04	nefiisz.inp
-rw-r--r--	1	cscherer	sunuser	172338	Feb 25 17:04	nefiisz.out
-rw-r--r--	1	cscherer	sunuser	188930	Feb 25 17:04	nefiisz.src
-rw-r--r--	1	cscherer	sunuser	450	Feb 25 17:04	nefiisz.vel
-rw-r--r--	1	cscherer	sunuser	18266	Feb 25 17:04	nefiuz.dis
-rw-r--r--	1	cscherer	sunuser	10100	Feb 25 17:04	nefiuz.inp
-rw-r--r--	1	cscherer	sunuser	61772	Feb 25 17:04	nefiuz.out
-rw-r--r--	1	cscherer	sunuser	205498	Feb 25 17:04	nefiuz.src
-rw-r--r--	1	cscherer	sunuser	171	Feb 25 17:04	nefiuz.vel
-rwxr-xr-x	1	cscherer	sunuser	408060	Feb 25 17:04	nefmks.e
-rw-r--r--	1	cscherer	sunuser	10	Feb 25 17:04	nefmks.log
-rw-r--r--	1	cscherer	sunuser	2506	Feb 25 17:04	npkdoset.res
-rw-r--r--	1	cscherer	sunuser	2506	Feb 25 17:04	npkdst_c.res
-rw-r--r--	1	cscherer	sunuser	6890	Feb 25 17:03	nuclides.dat
-rw-r--r--	1	cscherer	sunuser	7111	Feb 25 17:04	organdf.dat
-rw-r--r--	1	cscherer	sunuser	698	Feb 25 17:04	pkmdose.out
-rw-r--r--	1	cscherer	sunuser	8244	Feb 25 17:04	pkreltim.res
-rw-r--r--	1	cscherer	sunuser	8244	Feb 25 17:04	pkrltm_c.res
-rw-r--r--	1	cscherer	sunuser	682	Feb 25 17:04	rel_flow.out
-rw-r--r--	1	cscherer	sunuser	572	Feb 25 17:04	relccdf.res
-rw-r--r--	1	cscherer	sunuser	2253	Feb 25 17:04	relcum.out
-rwxr-xr-x	1	cscherer	sunuser	120020	Feb 25 17:04	releaset.e
-rw-r--r--	1	cscherer	sunuser	412	Feb 25 17:04	releaset.out
-rw-r--r--	1	cscherer	sunuser	665	Feb 25 17:04	relfrac.out
-rw-r--r--	1	cscherer	sunuser	722	Feb 25 17:04	relgwgs.res
-rw-r--r--	1	cscherer	sunuser	548	Feb 25 17:03	repdes.dat
-rw-r--r--	1	cscherer	sunuser	47561	Feb 25 17:04	rgwna.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 25 17:04	rgwnapani.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 25 17:04	rgwnapdw.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 25 17:04	rgwnapext.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 25 17:04	rgwnapinh.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 25 17:04	rgwnapmlk.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 25 17:04	rgwnappla.tpa
-rw-r--r--	1	cscherer	sunuser	47561	Feb 25 17:04	rgwnr.tpa
-rw-r--r--	1	cscherer	sunuser	5137	Feb 25 17:04	rgwsa.tpa
-rw-r--r--	1	cscherer	sunuser	16137	Feb 25 17:04	rgwsap.tpa
-rw-r--r--	1	cscherer	sunuser	5183	Feb 25 17:04	rgwsr.tpa
-rw-r--r--	1	cscherer	sunuser	572	Feb 25 17:04	rlccdf_c.res
-rw-r--r--	1	cscherer	sunuser	722	Feb 25 17:04	rlgwgs_c.res
-rw-r--r--	1	cscherer	sunuser	3867	Feb 25 17:03	samplpar.abb
-rw-r--r--	1	cscherer	sunuser	29767	Feb 25 17:03	samplpar.hdr

-rw-r--r--	1	cscherer	sunuser	6376	Feb 25 17:04	samplpar.res
-rw-r--r--	1	cscherer	sunuser	4823	Feb 25 17:04	scr443_compare.out
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb 25 17:04	seisbs1.dis
-rwxr-xr-x	1	cscherer	sunuser	130758	Feb 25 17:04	seisbs2.dis
-rwxr-xr-x	1	cscherer	sunuser	943788	Feb 25 17:04	smaydtbl.dat
-rwxr-xr-x	1	cscherer	sunuser	243556	Feb 25 17:03	snllhs.e
-rw-r--r--	1	cscherer	sunuser	188930	Feb 25 17:04	sotnef.dat
-rw-r--r--	1	cscherer	sunuser	30919	Feb 25 17:04	sp.tpa
-rw-r--r--	1	cscherer	sunuser	4506	Feb 25 17:04	strmtube.dat
-rw-r--r--	1	cscherer	sunuser	13122	Feb 25 17:04	totdos_c.res
-rw-r--r--	1	cscherer	sunuser	13122	Feb 25 17:04	totdose.res
-rwxr-xr-x	1	cscherer	sunuser	2520308	Feb 25 17:01	tpa.e
-rw-r--r--	1	cscherer	sunuser	89815	Feb 24 17:10	tpa.inp
-rw-r--r--	1	cscherer	sunuser	89810	Feb 25 16:55	tpa_compare.inp
-rwxr-xr-x	1	cscherer	sunuser	2520304	Feb 22 16:02	tpa_orig.e
-rw-r--r--	1	cscherer	sunuser	89815	Feb 24 17:10	tpa_orig.inp
-rwxr-xr-x	1	cscherer	sunuser	2520308	Feb 25 17:01	tpa_scr443_compare.e
-rw-r--r--	1	cscherer	sunuser	90717	Feb 25 17:03	tpameans.out
-rw-r--r--	1	cscherer	sunuser	100464	Feb 25 17:03	tpanames.db
-rw-r--r--	1	cscherer	sunuser	181127	Feb 25 17:04	trelease.out
-rw-r--r--	1	cscherer	sunuser	126274	Feb 25 17:00	uzft_scr443_compare.f
-rw-r--r--	1	cscherer	sunuser	14132	Feb 25 17:04	weldfail.out
-rw-r--r--	1	cscherer	sunuser	8805	Feb 25 17:04	wpflow.dat
-rw-r--r--	1	cscherer	sunuser	17410	Feb 25 17:04	wpflow.def
-rw-r--r--	1	cscherer	sunuser	818	Feb 25 17:04	wpsfail.res