

58-354
GE Nuclear EnergyOG91-862-09
October 9, 1991General Electric Company
175 Curtner Avenue, San Jose, CA 95125U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: E. Trottier

Subject: BWR OWNERS' GROUP MSIV LEAKAGE CLOSURE COMMITTEE
SCHEDULE UPDATE AND TRANSMITTAL OF REVISED HOPE CREEK
CONTROL ROOM DOSE CALCULATIONSSchedule Update

The revised Hope Creek license change request is nearly complete and will be transmitted to the NRC prior to November 1, 1991.

Revised Hope Creek Control Room Calculations

In reviewing the revised Hope Creek radiological dose results, an error was found in the control room subroutine. The error was related to the way control room occupancy factors were employed (prior to July 1991 these occupancy factors were assumed to be equal to 1.0):

<u>Parameter</u>	<u>7/26/91 Value</u>	<u>Revised Value</u>
CR WB (100 scfh)	0.03	0.04
CR IOD (100 scfh)	0.94	1.05
CR Beta (100 scfh)	0.47	0.59
CR WB (200 scfh)	0.08	0.10
CR IOD (200 scfh)	2.27	2.71
CR Beta (200 scfh)	1.25	1.64

The revised Hope Creek summary sheet is attached along with the applicable revised "MSIVLEAK" computer code output.

If you have any questions regarding information presented in this transmittal, or have any other questions related to the MSIV Leakage Closure Committee, please contact the undersigned or the Committee Chairman, R. D. Binz (PSE&G), at (609) 339-1753.

Very truly yours,

T. A. Green
Technical Program Manager
MSIV Leakage Closure Committee
(408) 925-1308
M/C 382

TAG28/TAG/rt

cc: NRC Document Control Branch
RD Binz IV, BWROG Chairman
CL Tully, BWROG Vice Chairperson
SJ Stark, GE9110270360 911009
PDR ADDCK 05000354
P PDR

230001

DFOI 1/1

Hope Creek Dose Calculation Summary

100 scfh/line	Code Output	<u>CONTROL ROOM</u>			Code Output	<u>OFF SITE</u>	
		WB(5)	IOD(30)	Beta (30-75)		WB(25)	IOD(300)
1. NG (DL)	CRNG1A	0.04	0.00	0.59	OSNG1A	0.10	0.00
2. Inorg I (DL)	CREL1A	0.00	0.04	0.00	OSEL1A	0.00	0.81
3. Org I (DL)	CROR1A	0.00	0.60	0.00	OSOR1A	0.01	12.73
4. NG (HPT)	CRNG1B	0.00	0.00	0.00	OSNG1B	0.00	0.00
5. Inorg I (HPT)	CREL1B	0.00	0.00	0.00	OSEL1B	0.00	0.00
6. Org I (HPT)	CROR1B	0.00	0.00	0.00	OSOR1B	0.00	0.01
7. Org I via Resusp./Conv. (DL)		0.00	0.41	0.00		0.00	8.60
		-----	-----	-----		-----	-----
TOTALS (100 scfh)		0.04	1.05	0.59		0.11	22.12

200 scfh/line	Code Output	WB(5)	IOD(30)	Beta (30-75)	Code Output	WB(25)	IOD(300)
1. NG (DL)	CRNG2A	0.10	0.00	1.64	OSNG2A	0.31	0.00
2. Inorg I (DL)	CREL2A	0.00	0.36	0.00	OSEL2A	0.01	7.58
3. Org I (DL)	CROR2A	0.00	1.53	0.00	OSOR2A	0.02	32.48
4. NG (HPT)	CRNG2B	0.00	0.00	0.00	OSNG2B	0.00	0.00
5. Inorg I (HPT)	CREL2B	0.00	0.00	0.00	OSEL2B	0.00	0.00
6. Org I (HPT)	CROR2B	0.00	0.00	0.00	OSOR2B	0.00	0.03
7. Org I via Resusp./Conv. (DL)		0.00	0.82	0.00		0.00	17.38
		-----	-----	-----		-----	-----
TOTALS (200 scfh)		0.10	2.71	1.64		0.34	57.47

DL = Drain Line = A

OS = Off Site

HPT = HP Turbine = B

CR = Control Room

EL = Elemental

OR = Organic

NG = Noble Gases

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:29:09.24
HOPE CREEK MSIV BASE CASE CNTRL RM 12 VIA DRAIN LINES LEAK RATE @ 100CFH

Input file= crella.hck

CONTROL

power = 3.293E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00
 leak rate 1.18 leak filtr .000
 purge rate .500 purge filtr 100.
 recirc rate .000 recirc filtr .000
 pressure 3.23 temperature 212.
 volume 9.061E+03

Pipe compartment # 2
 inside radius 30.4 outside radius 33.0
 insul thickness 10.2 pipe length 94.1
 number of lines 4.00 initial temp 550.
 mass/unit length 329. heat capacity .117
 insul conductivity 2.250E-02 split factor .991

Pipe compartment # 3
 inside radius 4.60 outside radius 5.72
 insul thickness 2.54 pipe length 353.
 number of lines 1.00 initial temp 550.
 mass/unit length 19.0 heat capacity .117
 insul conductivity 2.250E-02 split factor 1.00

comp 4 at 0:00:00.00
 leak rate 26.3 leak filtr 98.4
 purge rate .000 purge filtr .000
 recirc rate .000 recirc filtr .000
 pressure 1.00 temperature 100.
 volume 985.

comp 5 at 0:00:00.00
 leak rate .000 leak filtr .000
 purge rate 1.000E+06 purge filtr .000
 recirc rate .000 recirc filtr .000
 pressure 1.00 temperature 68.0
 volume 1.700E+05

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
 0:04:00.00
 1:00:00.00
 30:00:00.00

CONTROL ROOM

0:00:00.00

Vent Filtr Intake	8.72	Intake Filtr Eff	99.0
Recirc Rate	8.25	Recirc Filtr Eff	99.0
Vent Unfiltr Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	5.580E-10	6.087E-05	4.808E-09
I-132	2.988E-09	3.354E-07	1.220E-08
I-133	1.856E-09	2.026E-05	2.478E-08
I-134	2.620E-09	4.271E-08	1.346E-08
I-135	3.230E-09	2.978E-06	2.569E-08
total =	1.125E-08	8.449E-05	8.094E-08

0:04:00.00	Whole Body	Thyroid	Beta
I-131	4.338E-09	4.732E-04	3.738E-08
I-132	1.550E-08	1.740E-06	6.329E-08
I-133	1.383E-08	1.510E-04	1.847E-07
I-134	7.821E-09	1.275E-07	4.017E-08
I-135	2.178E-08	2.008E-05	1.733E-07
total =	6.327E-08	6.462E-04	4.988E-07

1:00:00.00	Whole Body	Thyroid	Beta
I-131	1.381E-07	1.506E-02	1.190E-06
I-132	5.891E-08	6.613E-05	2.406E-07
I-133	3.162E-07	3.452E-03	4.223E-06
I-134	1.137E-08	1.853E-07	5.839E-08
I-135	2.535E-07	2.337E-04	2.016E-06
total =	7.780E-07	1.875E-02	7.727E-06

30:00:00.00	Whole Body	Thyroid	Beta
I-131	3.132E-07	3.416E-02	2.698E-06
I-132	5.897E-08	5.620E-06	2.408E-07
I-133	4.368E-07	4.769E-03	5.834E-06
I-134	1.137E-08	1.853E-07	5.839E-08
I-135	2.694E-07	2.484E-04	2.143E-06
total =	1.090E-06	3.919E-02	1.097E-05

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:29:20.17
 GHOPE CREEK MSIV BASE CASE CNTRL RM 12 VIA TURBINE LEAK RATE @ 100CFH

Input file= crellb.hck

CONTROL

power = 3.293E+03
 mode = Control Room
 tbvol = 16.1
 tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00
 leak rate 1.18 leak filtr .000
 purge rate .500 purge filtr 100.
 recirc rate .000 recirc filtr .000
 pressure 3.23 temperature 212.
 volume 9.061E+03

Pipe compartment # 2

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	94.1
number of lines	4.00	initail temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	9.000E-03

Pipe compartment # 3

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	416.
number of lines	4.00	initail temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	1.00

Turbine compartment # 4

split factor 1.00

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	1.700E+05		

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
 0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	8.72	Intake Filt Eff	99.0
Recirc Rate	8.25	Recirc Filt Eff	99.0
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.211E-20	1.321E-15	1.043E-19
I-132	1.208E-35	1.356E-33	4.934E-35
I-133	2.810E-21	3.058E-17	3.753E-20
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	7.034E-24	6.485E-21	5.594E-23
total =	1.493E-20	1.352E-15	1.419E-19

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:29:26.49
HOPE CREEK MSIV BASE CASE CNTRL RM 12 VIA DRAIN LINES LEAK RATE @ 200CFH

Input file= crel2a.hck

CONTROL

power = 3.293E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00
 leak rate 2.36 leak filtr .000
 purge rate .500 purge filtr 100.
 recirc rate .000 recirc filtr .000
 pressure 3.23 temperature 212.
 volume 9.061E+03

Pipe compartment # 2
 inside radius 30.4 outside radius 33.0
 insul thickness 10.2 pipe length 94.1
 number of lines 4.00 initial temp 550.
 mass/unit length 329. heat capacity .117
 insul conductivity 2.250E-02 split factor .991

Pipe compartment # 3
 inside radius 4.60 outside radius 5.72
 insul thickness 2.54 pipe length 353.
 number of lines 1.00 initial temp 550.
 mass/unit length 19.0 heat capacity .117
 insul conductivity 2.250E-02 split factor 1.00

comp 4 at 0:00:00.00
 leak rate 52.6 leak filtr 96.9
 purge rate .000 purge filtr .000
 recirc rate .000 recirc filtr .000
 pressure 1.00 temperature 100.
 volume 985.

comp 5 at 0:00:00.00
 leak rate .000 leak filtr .000
 purge rate 1.000E+06 purge filtr .000
 recirc rate .000 recirc filtr .000
 pressure 1.00 temperature 68.0
 volume 1.700E+05

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
 0:04:00.00
 1:00:00.00
 30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	8.72	Intake Filt Eff	99.0
Recirc Rate	8.25	Recirc Filt Eff	99.0
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	8.477E-09	9.248E-04	7.304E-08
I-132	4.622E-08	5.188E-06	1.887E-07
I-133	2.824E-08	3.084E-04	3.772E-07
I-134	4.193E-08	6.834E-07	2.154E-07
I-135	4.936E-03	4.551E-05	3.926E-07
total =	1.742E-07	1.285E-03	1.247E-06

0:04:00.00	Whole Body	Thyroid	Beta
I-131	5.087E-08	5.549E-03	4.383E-07
I-132	1.880E-07	2.110E-05	7.676E-07
I-133	1.627E-07	1.776E-03	2.173E-06
I-134	1.019E-07	1.661E-06	5.234E-07
I-135	2.581E-07	2.380E-04	2.053E-06
total =	7.615E-07	7.586E-03	5.955E-06

1:00:00.00	Whole Body	Thyroid	Beta
I-131	1.234E-06	1.346E-01	1.063E-05
I-132	5.857E-07	6.575E-05	2.392E-06
I-133	2.840E-06	3.101E-02	3.793E-05
I-134	1.359E-07	2.215E-06	6.981E-07
I-135	2.322E-06	2.141E-03	1.847E-05
total =	7.118E-06	1.678E-01	7.012E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.895E-06	3.158E-01	2.494E-05
I-132	5.863E-07	6.581E-05	2.394E-06
I-133	3.944E-06	4.306E-02	5.267E-05
I-134	1.359E-07	2.215E-06	6.981E-07
I-135	2.468E-06	2.276E-03	1.963E-05
total =	1.003E-05	3.612E-01	1.003E-04

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:29:37.47
HOPE CREEK MSIV BASE CASE CNTRL RM 12 VIA TURBINE LEAK RATE @ 200CFH

Input file= crel2b.hck

CONTROL

power = 3.293E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-132	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-133	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-134	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1
I-135	cmp 1 at 0:00:00.00	inst 24.0	drbl .000	ff 1 dfctr 1

PLANT

comp 1 at 0:00:00.00
leak rate 2.36 leak filtr .000
purge rate .500 purge filtr 100.
recirc rate .000 recirc filtr .000
pressure 3.23 temperature 212.
volume 9.061E+03

Pipe compartment # 2
inside radius 30.4 outside radius 33.0
insul thickness 10.2 pipe length 94.1
number of lines 4.00 initial temp 550.
mass/unit length 329. heat capacity .117
insul conductivity 2.250E-02 split factor 9.000E-03

Pipe compartment # 3
inside radius 30.4 outside radius 33.0
insul thickness 10.2 pipe length 416.
number of lines 4.00 initial temp 550.
mass/unit length 329. heat capacity .117
insul conductivity 2.250E-02 split factor 1.00

Turbine compartment # 4
split factor 1.00

comp 5 at 0:00:00.00
leak rate .000 leak filtr .000
purge rate 1.000E+06 purge filtr .000
recirc rate .000 recirc filtr .000
pressure 1.00 temperature 68.0
volume 1.700E+05

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.670E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00

1:00:00.00

30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	8.72	Intake Filt Eff	99.0
Recirc Rate	8.25	Recirc Filt Eff	99.0
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	7.150E-15	7.800E-10	6.160E-14
I-132	2.042E-20	2.292E-18	8.338E-20
I-133	5.560E-15	6.071E-11	7.426E-14
I-134	4.764E-35	7.765E-34	2.447E-34
I-135	2.926E-16	2.597E-13	2.327E-15
total =	1.300E-14	8.409E-10	1.382E-13

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:29:43.90
HOPE CRK MSIV BASE CASE CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 100CFH

Input file= crngla.hck

CONTROL

power = 3.293E+03
mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-85	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-85M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-87	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-88	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-89	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-131M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-133	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-133M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-135	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-135M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-137	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-138	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	1.18	leak filtr	.000
purge rate	.500	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	3.23	temperature	212.
volume	9.061E+03		

Pipe compartment # 2

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	94.1
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	.991

Pipe compartment # 3

inside radius	4.60	outside radius	5.72
insul thickness	2.54	pipe length	353.
number of lines	1.00	inital temp	550.
mass/unit length	19.0	heat capacity	.117
insul conductivity	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	26.3	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```

      pressure      1.00      temperature  100.
      volume        985.
comp 5 at 0:00:00.00
      leak rate     .000      leak filtr   .000
      purge rate    1.000E+06  purge filtr  .000
      recirc rate    .000      recirc filtr .000
      pressure      1.00      temperature  68.0
      volume        1.700E+05

```

METEOROLOGY

```

0:00:00.00 Chiqu= 4.290E-05 brthr= 3.470E-04 occup= 1.
0:02:00.00 Chiqu= 2.590E-05 brthr= 3.470E-04 occup= 1.
1:00:00.00 Chiqu= 1.650E-05 brthr= 3.470E-04 occup= .6
4:00:00.00 Chiqu= 7.240E-06 brthr= 3.470E-04 occup= .4

```

OUTPUT TIMES

```

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

```

CONTROL ROOM

```

0:00:00.00
      Vent filt intake 8.72      Intake Filt Eff .000
      Recirc Rate      8.25      Recirc Filt Eff .000
      Vent Unfilt Intk .000      Cont Room Volum 1.534E+03
      CR Gamma Volum   1.534E+03

```

```

0:02:00.00      Whole Body      Thyroid      Beta
KR-83M          4.002E-07      0.000E+00      1.718E-09
KR-85           1.901E-09      0.000E+00      3.127E-06
KR-85M          2.397E-06      0.000E+00      1.182E-04
KR-87           1.248E-05      0.000E+00      3.900E-04
KR-88           5.912E-05      0.000E+00      2.051E-04
KR-89           1.784E-09      0.000E+00      1.944E-08
XE-131M         4.114E-08      0.000E+00      6.577E-07
XE-133          1.188E-05      0.000E+00      1.851E-04
XE-133M         2.402E-07      0.000E+00      2.985E-05
XE-135          4.362E-06      0.000E+00      1.001E-04
XE-135M         3.388E-07      0.000E+00      1.534E-06
XE-137          1.199E-09      0.000E+00      2.119E-07
XE-138          2.198E-06      0.000E+00      3.133E-05
total =         9.346E-05      0.000E+00      1.065E-03

```

```

0:04:00.00      Whole Body      Thyroid      Beta
KR-83M          1.950E-06      0.000E+00      8.372E-09
KR-85           1.525E-08      0.000E+00      2.509E-05
KR-85M          1.461E-05      0.000E+00      7.206E-04
KR-87           4.942E-05      0.000E+00      1.545E-03
KR-88           3.378E-04      0.000E+00      1.172E-03
KR-89           1.784E-09      0.000E+00      1.944E-08
XE-131M         3.290E-07      0.000E+00      5.259E-06
XE-133          9.456E-05      0.000E+00      1.473E-03
XE-133M         1.295E-06      0.000E+00      1.610E-04
XE-135          3.146E-05      0.000E+00      7.217E-04
XE-135M         3.942E-07      0.000E+00      1.784E-06
XE-137          1.199E-09      0.000E+00      2.119E-07
XE-138          2.448E-06      0.000E+00      3.489E-05

```


total =	5.343E-04	0.000E+00	5.860E-03
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1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	6.122E-06	0.000E+00	2.628E-08
KR-85	6.687E-07	0.000E+00	1.100E-03
KR-85M	1.297E-04	0.000E+00	6.393E-03
KR-87	1.017E-04	0.000E+00	3.180E-03
KR-88	1.746E-03	0.000E+00	6.055E-03
KR-89	1.784E-09	0.000E+00	1.944E-08
XE-131M	1.399E-05	0.000E+00	2.236E-04
XE-133	3.667E-03	0.000E+00	5.024E-02
XE-133M	4.520E-05	0.000E+00	5.618E-03
XE-135	5.776E-04	0.000E+00	1.325E-02
XE-135M	3.949E-07	0.000E+00	1.788E-06
XE-137	1.199E-09	0.000E+00	2.119E-07
XE-138	2.450E-06	0.000E+00	3.492E-05
total =	6.491E-03	0.000E+00	9.611E-02

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	6.125E-06	0.000E+00	2.630E-08
KR-85	1.730E-05	0.000E+00	2.846E-02
KR-85M	1.353E-04	0.000E+00	6.671E-03
KR-87	1.017E-04	0.000E+00	3.180E-03
KR-88	1.757E-03	0.000E+00	6.096E-03
KR-89	1.784E-09	0.000E+00	1.944E-08
XE-131M	1.945E-04	0.000E+00	3.109E-03
XE-133	3.221E-02	0.000E+00	5.017E-01
XE-133M	2.007E-04	0.000E+00	2.495E-02
XE-135	7.444E-04	0.000E+00	1.708E-02
XE-135M	3.949E-07	0.000E+00	1.788E-06
XE-137	1.199E-09	0.000E+00	2.119E-07
XE-138	2.450E-06	0.000E+00	3.492E-05
total =	3.537E-02	0.000E+00	5.913E-01

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:30:11.25
 HOPE CRK MSIV CASE CNTRL RM NG VIA TURBINE LEAK RATE @ 100CFH

Input file= crnglb.hck
 CONTROL

power = 3.293E+03
 mode = Control Rocm
 tbvol = 16.1
 tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at	0:00:00.00	inst 100.	drbl .000	f	ctr 0
KR-85	cmp 1 at	0:00:00.00	inst 100.	drbl .000		ctr 0
KR-85M	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
KR-87	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
KR-88	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
KR-89	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
XE-131M	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
XE-133	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
XE-133M	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
XE-135	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
XE-135M	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
XE-137	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0
XE-138	cmp 1 at	0:00:00.00	inst 100.	drbl .000	ff 1	dfctr 0

PLANT

comp 1 at 0:00:00.00
 leak rate 1.18 leak filtr .000
 purge rate .500 purge filtr 100
 recirc rate .000 recirc filtr .000
 pressure 3.23 temperature 212.
 volume 9.061E+03

Pipe compartment # 2

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	94.1
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	9.000E-03

Pipe compartment # 3

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	416.
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	1.00

Turbine compartment # 4

split factor 1.00

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	1.700E+05		

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPJT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM

0:00:00.00			
Vent filt intake	8.72	Intake Filt Eff	.000
Recirc Rate	8.25	Recirc Filt Eff	.000
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

	Whole Body	Thyroid	Beta
1:00:00.00			
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

	Whole Body	Thyroid	Beta
30:00:00.00			
KR-83M	2.016E-24	0.000E+00	8.656E-27
KR-85	1.795E-08	0.000E+00	2.954E-05
KR-85M	3.024E-10	0.000E+00	1.491E-03
KR-87	4.484E-34	0.000E+00	1.402E-32
KR-88	1.803E-17	0.000E+00	6.256E-17
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	1.149E-07	0.000E+00	1.837E-06
XE-133	8.268E-06	0.000E+00	1.288E-04
XE-133M	8.029E-09	0.000E+00	9.979E-07
XE-135	9.434E-12	0.000E+00	2.164E-10
XE-135M	3.965E-32	0.000E+00	1.795E-31
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	8.409E-06	0.000E+00	1.612E-04

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:30:26.52
HOPE CRK MSIV BASE CASE CNTRL RM NG VIA DRAIN LINES LEAK RATE @ 200CFH

Input file= crng2a.hck

CONTROL

power = 3.29E+03

mode = Control Room

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.103E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	5.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.123	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-85	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-85M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-87	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-88	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-89	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-131M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-133	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-133M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-135	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-135M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-137	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-138	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00

leak rate	2.36	leak filtr	.000
purge rate	.500	purge filtr	100.
recirc rate	.000	recirc filtr	.000
pressure	3.23	temperature	212.
volume	9.061E+03		

Pipe compartment # 2

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	94.1
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	.991

Pipe compartment # 3

inside radius	4.60	outside dius	5.72
insul thickness	2.54	pipe length	353.
number of lines	1.00	inital temp	550.
mass/unit length	19.0	heat capacity	.117
insul conductivity	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	52.6	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000

```

      pressure      1.00      temperature    100.
      volume        985.
comp 5 at 0:00:00.00
      leak rate     .000      leak filtr    .000
      purge rate    1.000E+06  purge filtr  .000
      recirc rate    .000      recirc filtr .000
      pressure      1.00      temperature    68.0
      volume        1.700E+05

```

METEOROLOGY

```

0:00:00.00 Chiqu= 4.390E-05 brthr= 3.470E-04 occup= 1.
0:08:00.00 Chiqu= 2.590E-05 brthr= 3.470E-04 occup= 1.
1:00:00.00 Chiqu= 1.650E-05 brthr= 3.470E-04 occup= .6
4:00:00.00 Chiqu= 7.240E-06 brthr= 3.470E-04 occup= .4

```

OUTPUT TIMES

```

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

```

CONTROL ROOM

```

0:00:00.00
Vent filt intake 8.72      Intake Filt Eff .000
Recirc Rate      8.25      Recirc Filt Eff .000
Vent Unfilt Intk .000      Cont Room Volum 1.534E+03
CR Gamma Volum   1.534E+03

```

```

0:02:00.00 Whole Body Thyroid Beta
KR-83M      3.196E-06 0.000E+00 1.372E-08
KR-85       1.484E-08 0.000E+00 2.442E-05
KR-85M      1.791E-05 0.000E+00 8.830E-04
KR-87       1.008E-04 0.000E+00 3.151E-03
KR-88       4.684E-04 0.000E+00 1.625E-03
KR-89       7.168E-08 0.000E+00 7.808E-07
XE-131M     3.214E-07 0.000E+00 5.137E-06
XE-133      9.279E-05 0.000E+00 1.445E-03
XE-133M     1.320E-06 0.000E+00 1.640E-04
XE-135      3.422E-05 0.000E+00 7.849E-04
XE-135M     3.371E-06 0.000E+00 1.526E-05
XE-137      3.636E-08 0.000E+00 6.425E-06
XE-138      2.267E-05 0.000E+00 3.231E-04
total =     7.451E-04 0.000E+00 8.429E-03

```

```

0:04:00.00 Whole Body Thyroid Beta
KR-83M      1.220E-05 0.000E+00 5.237E-08
KR-85       9.137E-08 0.000E+00 1.503E-04
KR-85M      8.831E-05 0.000E+00 4.355E-03
KR-87       3.168E-04 0.000E+00 9.903E-03
KR-88       2.080E-03 0.000E+00 7.215E-03
KR-89       7.168E-08 0.000E+00 7.808E-07
XE-131M     1.971E-06 0.000E+00 3.151E-05
XE-133      5.668E-04 0.000E+00 8.829E-03
XE-133M     7.371E-06 0.000E+00 9.161E-04
XE-135      1.899E-04 0.000E+00 4.357E-03
XE-135M     3.717E-06 0.000E+00 1.683E-05
XE-137      3.636E-08 0.000E+00 6.425E-06
XE-138      2.424E-05 0.000E+00 3.454E-04

```

total =	3.291E-03	0.000E+00	3.613E-02
---------	-----------	-----------	-----------

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	3.142E-05	0.000E+00	1.349E-07
KR-85	2.700E-06	0.000E+00	4.442E-03
KR-85M	5.826E-04	0.000E+00	2.873E-02
KR-87	5.647E-04	0.000E+00	1.765E-02
KR-88	8.347E-03	0.000E+00	2.896E-02
KR-89	7.168E-08	0.000E+00	7.808E-07
XE-131M	5.657E-05	0.000E+00	9.042E-04
XE-133	1.566E-02	0.000E+00	2.440E-01
XE-133M	1.836E-04	0.000E+00	2.282E-02
XE-135	2.445E-03	0.000E+00	5.609E-02
XE-135M	3.721E-06	0.000E+00	1.684E-05
XE-137	3.636E-08	0.000E+00	6.425E-06
XE-138	2.425E-05	0.000E+00	3.456E-04
total =	2.790E-02	0.000E+00	4.039E-01

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	3.143E-05	0.000E+00	1.350E-07
KR-85	3.560E-05	0.000E+00	5.856E-02
KR-85M	6.021E-04	0.000E+00	2.969E-02
KR-87	5.647E-04	0.000E+00	1.765E-02
KR-88	8.388E-03	0.000E+00	2.910E-02
KR-89	7.168E-08	0.000E+00	7.808E-07
XE-131M	4.590E-04	0.000E+00	7.337E-03
XE-133	8.648E-02	0.000E+00	1.347E+00
XE-133M	6.257E-04	0.000E+00	7.776E-02
XE-135	3.006E-03	0.000E+00	6.895E-02
XE-135M	3.721E-06	0.000E+00	1.684E-05
XE-137	3.636E-08	0.000E+00	6.425E-06
XE-138	2.425E-05	0.000E+00	3.456E-04
total =	1.002E-01	0.000E+00	1.637E+00

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:20:53.82
HOPE CRK MSIV CASE CNTRL RM NG VIA TURBINE LEAK RATE @ 200CFH

Input file= crng2b.hck

CONTROL

power = 3.293E+03
mode = Control Room
tbvol = 16.1
tbarea = 409.

ISOTOPE

KR-83M	1.036E-04	3.137E+03	9.100E-03	.320	3.160E-06	.000
KR-85	2.039E-09	302.	.514	4.400E-03	3.380E-02	.000
KR-85M	4.389E-05	6.734E+03	.162	.958	6.840E-02	.000
KR-87	1.519E-04	1.292E+04	.917	.933	.226	.000
KR-88	6.889E-05	1.830E+04	1.36	1.47	5.350E-02	.000
KR-89	3.639E-03	2.276E+04	1.13	1.96	.195	.000
XE-131M	6.694E-07	158.	3.240E-02	.673	1.360E-02	.000
XE-133	1.522E-06	5.528E+04	5.370E-02	.845	1.100E-02	.000
XE-133M	3.556E-06	2.305E+03	9.400E-02	.253	2.750E-02	.000
XE-135	2.103E-05	7.149E+03	.248	.994	5.130E-02	.000
XE-135M	7.361E-04	1.042E+04	.461	.955	1.820E-02	.000
XE-137	3.028E-03	4.852E+04	.423	.453	.310	.000
XE-138	8.140E-04	4.610E+04	.773	1.21	.116	.000

RELEASE

KR-83M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-85	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-85M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-87	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-88	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
KR-89	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-131M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-133	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-133M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-135	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-135M	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-137	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0
XE-138	cmp 1 at 0:00:00.00	inst 100.	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00
leak rate 2.36 leak filtr .000
purge rate .500 purge filtr 100.
recirc rate .000 recirc filtr .000
pressure 3.23 temperature 212.
volume 9.061E+03

Pipe compartment # 2

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	94.1
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	9.000E-03

Pipe compartment # 3

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	416.
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	1.00

Turbine compartment # 4

split factor 1.00

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	1.700E+05		

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
0:04:00.00
1:00:00.00
30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	8.72	Intake Filt Eff	.000
Recirc Rate	8.25	Recirc Filt Eff	.000
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
KR-83M	0.000E+00	0.000E+00	0.000E+00
KR-85	0.000E+00	0.000E+00	0.000E+00
KR-85M	0.000E+00	0.000E+00	0.000E+00
KR-87	0.000E+00	0.000E+00	0.000E+00
KR-88	0.000E+00	0.000E+00	0.000E+00
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	0.000E+00	0.000E+00	0.000E+00
XE-133	0.000E+00	0.000E+00	0.000E+00
XE-133M	0.000E+00	0.000E+00	0.000E+00
XE-135	0.000E+00	0.000E+00	0.000E+00
XE-135M	0.000E+00	0.000E+00	0.000E+00
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
KR-83M	7.504E-17	0.000E+00	3.222E-19
KR-85	8.294E-08	0.000E+00	1.364E-04
KR-85M	1.006E-09	0.000E+00	4.960E-08
KR-87	7.246E-19	0.000E+00	2.265E-17
KR-88	4.449E-12	0.000E+00	1.543E-11
KR-89	0.000E+00	0.000E+00	0.000E+00
XE-131M	6.128E-07	0.000E+00	9.796E-06
XE-133	5.596E-05	0.000E+00	8.718E-04
XE-133M	1.049E-07	0.000E+00	1.304E-05
XE-135	4.826E-09	0.000E+00	1.107E-07
XE-135M	1.295E-31	0.000E+00	5.861E-31
XE-137	0.000E+00	0.000E+00	0.000E+00
XE-138	0.000E+00	0.000E+00	0.000E+00
total =	5.677E-05	0.000E+00	1.031E-03

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:31:09.20
HOPE CRK MSIV BASE CASE CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 100CFH

Input file= crorla.hck

CONTROL

power = 3.293E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00
leak rate 1.18 leak filtr .000
purge rate .500 purge filtr 100.
recirc rate .000 recirc filtr .000
pressure 3.23 temperature 212.
volume 9.061E+03

Pipe compartment # 2

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	94.1
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	.991

Pipe compartment # 3

inside radius	4.60	outside radius	5.72
insul thickness	2.54	pipe length	353.
number of lines	1.00	inital temp	550.
mass/unit length	19.0	heat capacity	.117
insul conductivity	2.250E-02	split factor	1.00

comp 4 at 0:00:00.00

leak rate	26.3	leak filtr	.000
purge rate	.000	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	100.
volume	985.		

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	1.700E+05		

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
 0:04:00.00
 1:00:00.00
 30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	8.72	Intake Filt Eff	99.0
Recirc Rate	8.25	Recirc Filt Eff	99.0
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.478E-09	1.612E-04	1.273E-08
I-132	8.295E-09	9.312E-07	3.388E-08
I-133	4.914E-09	5.366E-05	6.563E-08
I-134	6.937E-09	1.131E-07	3.563E-08
I-135	8.554E-09	7.886E-06	6.804E-08
total =	3.018E-08	2.238E-04	2.159E-07

0:04:00.00	Whole Body	Thyroid	Beta
I-131	1.155E-08	1.260E-03	9.955E-08
I-132	4.163E-08	4.673E-06	1.700E-07
I-133	3.684E-08	4.022E-04	4.920E-07
I-134	2.079E-08	3.388E-07	1.068E-07
I-135	5.800E-08	5.347E-05	4.613E-07
total =	1.688E-07	1.721E-03	1.330E-06

1:00:00.00	Whole Body	Thyroid	Beta
I-131	4.772E-07	5.205E-02	4.111E-06
I-132	1.645E-07	1.847E-05	6.719E-07
I-133	1.059E-06	1.157E-02	1.415E-05
I-134	3.040E-08	4.955E-07	1.561E-07
I-135	7.903E-07	7.286E-04	6.286E-06
total =	2.522E-06	6.436E-02	2.537E-05

30:00:00.00	Whole Body	Thyroid	Beta
I-131	5.274E-06	5.753E-01	4.544E-05
I-132	1.648E-07	1.851E-05	6.733E-07
I-133	2.285E-06	2.495E-02	3.052E-05
I-134	3.040E-08	4.955E-07	1.551E-07
I-135	8.985E-07	8.283E-04	7.146E-06
total =	8.653E-06	6.011E-01	8.394E-05

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:31:20.08
 HOPE CRK MSIV CASE CNTRL RM ORGI VIA TURBINE LEAK RATE @ 100CFH

Input file= crorlb.hck

CONTROL

power = 3.293E+03
 mode = Control Room
 tbvol = 16.1
 tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0
I-132	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0
I-133	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0
I-134	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0
I-135	cmp 1 at	0:00:00.00	inst	1.00	drbl	.000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00
 leak rate 1.18 leak filtr .000
 purge rate .500 purge filtr 100.
 recirc rate .000 recirc filtr .000
 pressure 3.23 temperature 212.
 volume 9.061E+03

Pipe compartment # 2

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	94.1
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	9.000E-03

Pipe compartment # 3

inside radius	30.4	outside radius	33.0
insul thickness	10.2	pipe length	416.
number of lines	4.00	inital temp	550.
mass/unit length	329.	heat capacity	.117
insul conductivity	2.250E-02	split factor	1.00

Turbine compartment # 4

split factor 1.00

comp 5 at 0:00:00.00

leak rate	.000	leak filtr	.000
purge rate	1.000E+06	purge filtr	.000
recirc rate	.000	recirc filtr	.000
pressure	1.00	temperature	68.0
volume	1.700E+05		

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
 0:04:00.00

1:00:00.00
30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	8.72	Intake Filt Eff	99.0
Recirc Rate	8.25	Recirc Filt Eff	99.0
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	2.278E-09	2.485E-04	1.963E-08
I-132	7.648E-13	8.585E-11	3.123E-12
I-133	2.357E-12	2.573E-08	3.147E-11
I-134	9.124E-22	1.487E-20	4.686E-21
I-135	9.560E-16	8.814E-13	7.604E-15
total =	2.281E-09	2.485E-04	1.966E-08

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:31:26.34
HOPE CRK MSIV BASE CASE CNTRL RM ORGI VIA DRAIN LINES LEAK RATE @ 200CFH

Input file= cror2a.hck

CONTROL

power = 3.293E+03
mode = Control Room

ISOTOPE

I-131	9.977E-07	2.631E+04	.557	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.800E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00
 leak rate 2.36 leak filtr .000
 purge rate .500 purge filtr 100.
 recirc rate .000 recirc filtr .000
 pressure 3.23 temperature 212.
 volume 9.061E+03

Pipe compartment # 2
 inside radius 30.4 outside radius 33.0
 insul thickness 10.2 pipe length 94.1
 number of lines 4.00 initial temp 550.
 mass/unit length 329. heat capacity .117
 insul conductivity 2.250E-02 split factor .991

Pipe compartment # 3
 inside radius 4.60 outside radius 5.72
 insul thickness 2.54 pipe length 353.
 number of lines 1.00 initial temp 550.
 mass/unit length 19.0 heat capacity .117
 insul conductivity 2.250E-02 split factor 1.00

comp 4 at 0:00:00.00
 leak rate 52.6 leak filtr .000
 purge rate .000 purge filtr .000
 recirc rate .000 recirc filtr .000
 pressure 1.00 temperature 100.
 volume 985.

comp 5 at 0:00:00.00
 leak rate .000 leak filtr .000
 purge rate 1.000E+06 purge filtr .000
 recirc rate .000 recirc filtr .000
 pressure 1.00 temperature 68.0
 volume 1.700E+05

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
 0:04:00.00
 1:00:00.00
 30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	8.72	Intake Filt Eff	99.0
Recirc Rate	8.25	Recirc Filt Eff	99.0
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	1.149E-08	1.253E-03	9.899E-08
I-132	6.315E-08	7.089E-06	2.579E-07
I-133	3.827E-08	4.179E-04	5.111E-07
I-134	5.681E-08	9.260E-07	2.918E-07
I-135	6.689E-08	6.167E-05	5.320E-07
total =	2.366E-07	1.741E-03	1.692E-06

0:04:00.00	Whole Body	Thyroid	Beta
I-131	6.911E-08	7.539E-03	5.955E-07
I-132	2.558E-07	2.871E-05	1.045E-03
I-133	2.210E-07	2.413E-03	2.952E-06
I-134	1.383E-07	2.254E-06	7.103E-07
I-135	3.506E-07	3.233E-04	2.789E-06
total =	1.035E-06	1.031E-02	8.091E-06

1:00:00.00	Whole Body	Thyroid	Beta
I-131	1.930E-06	2.106E-01	1.663E-05
I-132	8.120E-07	9.116E-05	3.316E-06
I-133	4.359E-06	4.760E-02	5.822E-05
I-134	1.849E-07	3.013E-06	9.496E-07
I-135	3.417E-06	3.150E-03	2.717E-05
total =	1.070E-05	2.614E-01	1.063E-04

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.317E-05	1.436E+00	1.135E-04
I-132	8.133E-07	9.129E-05	3.321E-06
I-133	8.210E-06	8.965E-02	1.097E-04
I-134	1.849E-07	3.013E-06	9.456E-07
I-135	3.788E-06	3.493E-03	3.013E-05
total =	2.617E-05	1.530E+00	2.575E-04

MSIV Leakage Program Version 1.1 execution on 10-07-1991 at 13:31:37.27
 HOPE CRK MSIV CASE CNTRL RM ORGI VIA TURBINE LEAK RATE @ 2UOCFH

Input file= cror2b.hck

CONTROL

power = 3.293E+03
 mode = Control Room
 tbvol = 16.1
 tbarea = 409.

ISOTOPE

I-131	9.977E-07	2.631E+04	.357	1.05	2.960E-02	1.080E+06
I-132	8.426E-05	3.845E+04	.776	2.95	8.130E-02	6.440E+03
I-133	9.257E-06	5.502E+04	.589	1.08	7.640E-02	1.600E+05
I-134	2.196E-04	6.056E+04	.917	2.94	.117	1.070E+03
I-135	2.924E-05	5.195E+04	1.13	1.29	9.370E-02	3.130E+04

RELEASE

I-131	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-132	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-133	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-134	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0
I-135	cmp 1 at 0:00:00.00	inst 1.00	drbl .000	ff 1 dfctr 0

PLANT

comp 1 at 0:00:00.00
 leak rate 2.36 leak filtr .000
 purge rate .500 purge filtr 100.
 recirc rate .000 recirc filtr .000
 pressure 3.23 temperature 212.
 volume 9.061E+03

Pipe compartment # 2
 inside radius 30.4 outside radius 33.0
 insul thickness 10.2 pipe length 94.1
 number of lines 4.00 initial temp 550.
 mass/unit length 329. heat capacity .117
 insul conductivity 2.250E-02 split factor 9.000E-03

Pipe compartment # 3
 inside radius 30.4 outside radius 33.0
 insul thickness 10.2 pipe length 416.
 number of lines 4.00 initial temp 550.
 mass/unit length 329. heat capacity .117
 insul conductivity 2.250E-02 split factor 1.00

Turbine compartment # 4
 split factor 1.00

comp 5 at 0:00:00.00
 leak rate .000 leak filtr .000
 purge rate 1.000E+06 purge filtr .000
 recirc rate .000 recirc filtr .000
 pressure 1.00 temperature 68.0
 volume 1.700E+05

METEOROLOGY

0:00:00.00	Chiqu= 4.390E-05	brthr= 3.470E-04	occup= 1.
0:08:00.00	Chiqu= 2.590E-05	brthr= 3.470E-04	occup= 1.
1:00:00.00	Chiqu= 1.650E-05	brthr= 3.470E-04	occup= .6
4:00:00.00	Chiqu= 7.240E-06	brthr= 3.470E-04	occup= .4

OUTPUT TIMES

0:02:00.00
 0:04:00.00

1:00:00.00

30:00:00.00

CONTROL ROOM

0:00:00.00

Vent filt intake	8.72	Intake Filt Eff	99.0
Recirc Rate	8.25	Recirc Filt Eff	99.0
Vent Unfilt Intk	.000	Cont Room Volum	1.534E+03
CR Gamma Volum	1.534E+03		

0:02:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

0:04:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

1:00:00.00	Whole Body	Thyroid	Beta
I-131	0.000E+00	0.000E+00	0.000E+00
I-132	0.000E+00	0.000E+00	0.000E+00
I-133	0.000E+00	0.000E+00	0.000E+00
I-134	0.000E+00	0.000E+00	0.000E+00
I-135	0.000E+00	0.000E+00	0.000E+00
total =	0.000E+00	0.000E+00	0.000E+00

30:00:00.00	Whole Body	Thyroid	Beta
I-131	1.323E-08	1.443E-03	1.140E-07
I-132	2.500E-12	2.807E-10	1.021E-11
I-133	1.705E-10	1.862E-06	2.277E-09
I-134	2.981E-21	4.859E-20	1.531E-20
I-135	1.320E-12	1.217E-09	1.050E-11
total =	1.340E-08	1.445E-03	1.163E-07

Date	Time	Size	Attr.	Page	File
10-07-91	13:29	4920	a	1	d:\msivpgm\hopecrk\crella.out
10-07-91	13:29	4731	a	3	d:\msivpgm\hopecrk\crellb.out
10-07-91	13:29	4920	a	5	d:\msivpgm\hopecrk\crel2a.out
10-07-91	13:29	4731	a	7	d:\msivpgm\hopecrk\crel2b.out
10-07-91	13:30	7904	a	9	d:\msivpgm\hopecrk\crngla.out
10-07-91	13:30	7715	a	12	d:\msivpgm\hopecrk\crnglb.out
10-07-91	13:30	7904	a	15	d:\msivpgm\hopecrk\crng2a.out
10-07-91	13:31	7715	a	18	d:\msivpgm\hopecrk\crng2b.out
10-07-91	13:31	4920	a	21	d:\msivpgm\hopecrk\crorla.out
10-07-91	13:31	4731	a	23	d:\msivpgm\hopecrk\crorlb.out
10-07-91	13:31	4920	a	25	d:\msivpgm\hopecrk\cror2a.out
10-07-91	13:31	4731	a	27	d:\msivpgm\hopecrk\cror2b.out