

01-80-001 Volume 6 (4/16/79 - 4/29/79)
General Communications Record
TMI-2 Transient of 3/28/79

The Wilson Jones Steno Notebook

VOLUME 6 01-80-001
(FROM 1945 4/16/79 TO 0945 4/29/79)
GENERAL COMMUNICATIONS RECORD
TMI-2 TRANSIENT
OF 3/28/79

Book Number

From

To

4/16/79

1945 - START OF VOL. 6

2015 - CRAWFORD

LT-2 IS STILL GOOD - PRZ. LEVEL X-MITTER
(REQUEST # 181)

2045 - CRAWFORD

DISCUSSED SHIFT RELIEFS WITH HIM -
HE HAS BEEN INSTRUCTED BY ROGERS
THAT HE WILL NOT HAVE A RELIEF
THAT HE IS TO "CLOSE UP SHOP."
PER SPANGLER - THERE WILL BE ONE
MAN WHO WILL DO ALL - DATA TAKER,
TELECOPY OPERATOR, ETC.

2055. CRAWFORD:

SOURCE	RANGE	COUNT RATE CH1/CH2
@ 1600	4/13/79	42/27
@ 1600	4/14/79	39.8/26.4
@ 1600	4/15/79	38.6/24.3
@ 2000	4/16/79	36.3/23.5

PREVIOUS INFO THAT CH. 1 WAS 22 CPS AT
1600 ON 4/13/79 WAS ERRONEOUS.

2130 ENGEL

RECD PLANT STATUS DATA.

2200 SPANGLER TO CRAWFORD

DECISION WAS MADE TO HAVE A TRUCK
SENT TO SITE TO PICK UP THE LIQUID
RCS SAMPLE AS SOON AS ARRANGEMENTS
CAN BE MADE.

2230 - EP-32 (REQUEST # 67) COMMENTS
RETURNED TO SITE - XMITAL # 893

2235 - EXPECTED RCS H/U RATES ON LOSS OF
COOLING (VIA OTSS) XMITED TO SITE
XMITAL # 895.

2245 - REC'D PLANT STATUS FROM EAGLE.

2249 - CRAWFORD

NRC (TELFORD, Ton)
WILL NOT ALLOW B;W TO SHIP
THE LIQUID RCS SAMPLE. HOWEVER,
THEY WILL HAVE A DOE AIRCRAFT
HAVE IT FLOWN TO L'BURG. EARLIEST
TIME FOR AIRCRAFT READINESS IS
~ MIDNIGHT. THEY^(NRC) WANT TO KNOW
IF WE (B;W) WANT THIS DONE.

SPANGLER TO ANSWER

2306 - SPANGLER TO CRAWFORD

SEPARATE DISCUSSIONS (B;W TO NRC)
DECISION MADE TO ALLOW THE LRC
TRUCK TO PICK UP THE LIQUID RCS
SAMPLE. TRUCK ON THE WAY - EXPECTED

2306 - COND

ON SITE ~ 0700 4/17/79. CRAWFORD
TO ENSURE PREPARATIONS ARE MADE & SAMPLE
IS READY FOR SHIPMENT (INCLUDING PAPERWORK)

2318 - CRAWFORD - INFO ON TRUCK

NEED: OCCUPANTS - 1 DRIVER FOR COMMERCIAL TRANSPORT

SITE
CONTACTS
FOR
SHIPMENT

CASK INFO - NONE

{ Tom MULEAVY (MIDNIGHT TO 7⁰⁰) } HP FOREMAN
{ Jim PUCKETT > 7⁰⁰ }

TO BE HANDLED SAME WAY AS LAST

TIME. MET ED TO PUT SAMPLE IN

LEAD PIG & PIG IN 55 GAL. DRUM.

CRAWFORD TO NOTIFY MET ED OF THIS &

WILL LET US KNOW OF ANY PROBLEMS.

2338 - CRAWFORD

THINKS MET ED IS TAKING ALL ACTIONS
NECESSARY TO MAKE READY FOR SHIPMENT

OF THE RCS SAMPLE. IF THERE ARE
(WITH SHIPPING PAPERS, ETC.)

ANY PROBLEMS, THEY CAN CALL LRC:

GENE CHULICK 237-3744 (HOME)

OR

384-5111 EXT. 5783

PHIL GRANT 237-3389 (HOME)

384-5111 EXT 5148

4/17/79

0000 - Culberson Relieved Wandling

0045 - Secured telecopy operator for midshift only. There is only one (1) person on duty this shift at the site (B&W - Walt Abbott) - therefore no one to run telecopy.

Any x-mittals will be handled by myself and Abbott

0045 - Updated plant status.

0135 - Abbott

Questions concerning shipment of RCS sample

- ① Shipping container "meet DOT requirements" - what requirements should be looked for? Site is manifesting the shipping container now.
- ② Who is responsible for transportation paperwork? (Met Ed or B&W or NRC) - Name of individual?
- ③ Will driver be an LRC man or commercial driver?
- ④ How is x-fer of sample being handled?
- ⑤ Who responsible for ensuring shipping container meets DOT requirements?
- ⑥ LRC truck (?) or commercial transport?
- ⑦ Any action required by B&W @ site? (Walt Abbott only person on-shift.)

0200-

Called Gene Chulich to get info. on shipping RCS

sample from Met Ed. Responses:

- Met Ed responsible for ensuring that shipping container meets DOT requirements
- Met Ed. or NRC responsible for shipping papers
- Shipment will be transferred by commercial transport truck and driver.
- The only B.S.W. action is to ensure everything gets ready by the time the truck arrives at ~ 0700 at site

0230- Walt Abbott

Procedure status update.

[Outside line to control Room (717)-944-6017]

0435- Plant Status Update

Work proceeding to make RCS sample ready for shipping.
Abbott going to check on it.

0508 - Veenstra gave the Control Room Operators a new procedure (equation) for calculating letdown flow yesterday.
A copy of this was x-mitted (transmitted #890) to us

@ 2110 on 4/16. After review of this equation and discussion w/ Brent Brooks, I think we ought

0530 - Abbott

Sample holder x-ferred from machine shop to Unit I HP lab. Awaiting truck. Unit I HP Department is taking care of transfer and other necessary work.

0615 - Abbott

Asked: how much of the 25 ml sample ^{do} we want Met Ed. to send us?

Per Stanek, they should send as much of it as they can based on shipping regulations, but no less than 5 ml.

The 25 ml sample is reading 5 R on contact with the sample bottle. Must be < 200 mR on contact with shipping drum to be shipped. The site will try to send it all, and \downarrow radiation levels with lead shielding.

Voltage printouts read < 10 mvolts \Rightarrow neg. press.

(10 mvolts is ≈ 0 psig)

Couldnt take voltage measurements off contacts - these are Foxborough instruments - operator says he can't get local readings. The voltage readings corresponds to what the press. indication is.

Appears that it might be transmitter problem or that x-mitter is downstream in steam line somewhere.

0655 Abbott

Computer Points 473 and 474, SP-6A and 6B.

X-mitters for these points are down in the Rx building - so it's possible they may not be reading OTSG press. but steam line pressure downstream of OTSG. No way to check operation of these transmitters to see if they are working properly.

0700 - "Makeup Flow" meter in control room OOC. When working the indication is not very accurate ($\frac{1}{4}$ " meter deflection ≈ 10 gpm). This info. Bient Brooks - letdown flow calc.

0745- Yocheim

Gave him results of 4/16 RCS pressurized sample
via phone. Info will be x-mitted via telecopy to site.

Yocheim Q:

was gas analysis done on gas space sample or
was it a stripped gas sample?

Get this info. prior to x-mittal.

Hallman to Yocheim

A. why does poron 4 when records show we are
adding Damin. water to the system?

Yocheim to check on it.

0800 Twilley relieved Culberson

0820 Asked Doug Beckner to send
B+W Procedures 47, ~~51~~, 55, 60 & 61 to
site per request #65 (incoming)

Have Walt Abbott take all
backlog telecopying to Bobbi on
his way out so we can catch up

0830 From Veenstra

EP 21 Rev 2 } signed off 4/15
Z 95 Rev 1 }

In face in the Control Room

Amt. of makeup ^{BA} added to RCS
on 4/11 is indeterminable but
operator thinks ratio was ~ 50 gal
BA : 350 DI water

0845 Updated RCS makeup data from
Veenstra. Totally revised data
from 4/11

0900 ~~Only diff~~ Asked Veenstra to
send copy of Letdown flow calc.
used prior to his revision per
outgoing request #189
Rec'd

1005 Rec'd 0900 Plant Status Data
noticed increase in CFT A pressure
asked site to check on this

Met Ed who pressurized CFT A1 to ~ 565 psi

1025 Z50 Rev 7 in effect 4/16
Z93 Rev 0 issued 4/16
RB pump level measurement

1040 Procedure status updated with
Procedure group at OFR.

1100 Veenstra has Rec'd Chemistry
(pressurized sample) results for
Joe Logan in Control Room

Veenstra sending title procedure
for special re-ask of TH RTP
for low temp operation for Comment
Given to T.G. Walcott. Reply by 1200-4/16
water

1110 C-23 now Z103 (Water top cooling
of B0756) Veenstra will review.
Does OFR want to review
Op K. Mitchell #776 commented on C-23
Veenstra review will be based on that

1130 Question from Greg Schell from (W).
What is limiting component in
DHS from a radiation standpoint

(incoming request #71). This was asked informally by @ people. Along w/ the technical answer - how should we handle this type of thing?

JV 4/17/79

Procedure 103 - Water/Water heat exch. on OTSG's. Maybe

Transmitted #412⁰⁴⁵⁸ (4/7) from Lgn.
"Design Basis & Proc. for Solid Water System) References Proc. #51.

B+W Proc #51: FW in Aux, out Main FW, Conceptual

1405 Unit is cooled down to ~236 F.
They opened the steam lines to the MSR's. Cooldown rate $\approx 2.5^\circ\text{F/hr}$

1430 Plant Status Data

1450 Truck driver for depressurized shutdown sample just admitted on the island

1520 Still having trouble getting a good correlation between Heise gauge readings and Proxi level

appears to
NI Count Rate have dropped slightly w/ cooldown

NI-1 35.68 cps

NI-2 23.10 cps @ ~235 F

1530 Trying to get B+W input to Procedure preparation at site (per Jim Lemon) so our first look at them and chance to comment isn't thru the control room coordinator

1610 - WARDLING RELIEVED TWILLEY

CRAWFORD C/D STARTED ~ 1200 → 1400

REQUESTED I/C T/C READINGS SINCE RECENT COOLDOWN STARTED

1615 - CRAWFORD

REQUESTED HIM TO OBTAIN BETTER COPY OF EP-7 REV. 1-A & TRANSMIT TO L'BURG

1650 - MAINGI

TRUCK WITH RCS SAMPLE WILL BE LOADED
AND ON THE WAY WITHIN ~ 1/2 HR. IT'S
EXPECTED AT LRC @ ~ 0200 4/15/79.
NOTIFIED M. BELL.

1655 - CRAWFORD

EP-7 IS NOW AT REV. 1-B. HAROLD DYE
(L'BURG) WANTS CLARIFICATIONS TO
REV. 1A + TELECOPY TO L'BURG^{REV} 1B

1715 - ROGERS:

TO BE IN L'BURG TOMORROW AFTERNOON. (AIRPORT 1303)
HE REQUESTED SPANGLER TO TAKE APPROPRIATE
ACTION FOR RELIEFS FOR SOME PERSONNEL
ON SITE.

1724 - RCS SAMPLE JUST LEFT THE SITE. (THIS
PER SCHAEDER). TRUCKER SAYS HE WILL
STOP TO SLEEP IF HE GETS TIRED (HE
HAS BEEN UP ~ 20 HRS AT LEAST WITH
LITTLE SLEEP DURING THIS PERIOD).

1750 - CRAWFORD

DISCUSSED EP-7 REV. 01-A AND OBTAINED
CLARIFICATIONS FOR HAROLD DYE.

1805 - ENGEL

REC'D PLANT STATUS

1815 - CRAWFORD

0350 4/17/79

76" LATEST, RB WATER LEVEL ESTIMATE

1852 - CRAWFORD

RAD LEVELS AT AREA WHERE RB WATER
LEVELS ARE BEING OBTAINED ARE:

3-5 R/HR (PICKING UP 30-50 MR
PER TRIP)

1950 - PER J.R. WOODHAM (FUELS REP. THIS SHIFT)

ONLY NEED INCORE T/C DATA EVERY 4 HOURS
FROM NOW ON. HOWEVER, PICK UP SOURCE
RANGE COUNT RATE ONCE EVERY HOUR
WHILE COOLDOWN & APPARENT RCS
DEGRADATION IS IN PROCESS. WHEN T/C
DATA IS TRANSMITTED, RECORD RCS
PRES., TH A & B, AND Tc A & B ON THE
SHEET.

SAME FOR
CORE PERF. DATA
(SPND output)
SOURCE OR
VERBATIM

2033 - CRAWFORD

Z-106 "SERVICE AIR USE FOR AIR

BREATHING" SIGNED OFF BY

CRAWFORD - NO NEED FOR BFW

REVIEW - SPANGLER & I AGREED

GAVE CRAWFORD INFO ON REQUEST # 65:

PROCEDURES SENT TO SITE AS FOLLOWS:

(NEXT SHEET)

2033 COND

<u>Proc.</u>	<u>TRANS. #</u>	<u>TIME/DATE SENT</u>
47	418	1120 4/7/79
51	412	0458 4/7/79
55	414	0815 4/7/79
60	519	4/9 } BY PLANE
61	519	4/9 } TO SITE.

2040- ELMIGER

WANTS TO KNOW NAMES OF CHEMISTS
GOING TO THE SITE ON FRIDAY 4/20/79.
CHULICK (LRC) TO CALL WITH THIS
INFO WITHIN A COUPLE OF HOURS.

2200

RON FISHER }
RON HOFFMAN }

GAVE THIS INFO TO CRAWFORD TO PASS TO
ELMIGER & ROGERS.

2240- CRAWFORD

✓ SITE IS TACKLING OUT THE 1B RCP
THIS WAS DONE. DUE TO A PROBLEM WHICH OCCURRED AT
SMUD 6/6/74 (THEY THINK IT
JUST HAPPENED AT SMUD - OPERATORS
NOTIFIED OTHERWISE). (CORE MOVEMENT
NOISE WAS HEARD DURING OPPOSITE
LOOP PUMP SHIFT @ SMUD IN '74.

2250 - CRAWFORD / ENGEL

REQUESTED CURRENT EQUIPMENT STATUS

SHEETS FROM CRAWFORD,

REC'D PLANT STATUS FROM ENGER

4/18/79

0050 - CALBERSON RELIEVED HANDLING.

0040 - Plant Status Update received from Abbott

0055 - Asked Walt Abbott to check on status of Source Range Counts. We understood they (metals) have a "gain" in the signal to make counts appear higher than actual counts, is this true?

0115 - Source Range Counts is actual counts. Can't increase "counts" (per technician) can only increase the magnitude of the individual ^{count} signal. Count signal is on digital readout, and therefore one ^{actual} count appears as 1 count on readout. The "gain" that was referred to may have been applied to the intermediate range instr. to provide visible count rate on Intermediate range readout.

0115 - LIT Sample results - (unclear) (unclear) (unclear)

0225 - Plant Status Update data

"QWIP" - ought to check into getting one of these to replace telecopy machine we are now using -

Save manhours - (we now monitor telecopy extensively both in L'by and @ site)

This is a machine which xmits a whole page at a time in a fraction of a second. Would be much more cost effective than what we have now.

Late Entry

All other personnel involved in TMI-2 support have left the P.C.C. for the 0000-0800 shift (except a few who are involved in responding to NRC questions from ARCS committee meeting today). Various individuals are "on call", but only one person (myself) is actually on duty tonight. Plant conditions have stabilized to the point that consideration has been given to securing the midnight shift coverage in the "war room" completely. This may be in effect in the very near future.

0050 - Plant Status Update

Late Entry 0215

Phil Grant of CRC called with following information:

30cc RES sample taken at 0600 4/16/79,
received & boron analysis completed.

Titration #1	=	3528 ppm boron	} Average =
#2	=	3541 ppm "	

pH = 8.2

remainder of sample is ready for shipment or pick up
from CRC - CRC awaiting direction on what to do
with remainder of sample.

0745 - Plant Status Update

Site attempted to run PZR level test using Hi-e
gage readings during the night

0800 Twilley relieved Culberson

0830 Q. from Veenstra - When raising
OTSG level to try & establish natural
arc. is it B+W position to use
Aux nozzles? YES per Red Carlton

0845 - Rec'd 0800 Plant Status data
from Venetia

0910 1) Is there a curve of dissolved
gas concentration vs. min.
allowable RC Pressure?
Is $T_{sat} - P_{sat}$ less limiting or
is this the limit

2) What do we do on loss of
OTSG level indication? Reduce
feed flow by ~10% per
X-mittal 495?

0935 Pump & Motor Data

1045 - Plant Status data from 1000
Q- why are we heating back
up slightly? Change in
MS lineup?

1240 What will computer print out if a
T/C fails: - ???

Late Entry : the 0-3000 psi transmitters from Bailey that were supposed to arrive Sunday evening via Allegheny Air Freight at H'burg Intl. never got there and according to Allegheny were never sent.
(per Stan Maingi) Steve Ensbach is looking into this.

1415 Answers to questions from 0910

1) New min pressure for dissolved gas (per sample of 0600-4/16/79) is being generated (BY ENG.)

2) have S/O feed reg. valve in manual and don't change position. This should be documented by Carlton.

Informed Maingi his injectors have been at H'burg since Sunday evening. He didn't pick them up and they were shipped "Hold for Pickup".

1505 Xmittal 939 -- Review of IAG
comments on RHR options
White this is the Venetia
Anc.

Review of Industry Advisory Group
comments on Residual Heat Removal
Options

Is there a correlation between
primary ΔT and OTSG ΔL ?

1600 Twilley relieved by Wandling

1645- NRC PUSHING TO GET A PRESSURIZED RCS

THEY WANT TO
ADD HYDROGEN OR
HYDROXINE TO
SCAVENGE O₂, BUT
FIRST WANT TO
CONFIRM O₂ LEVEL.

SAMPLE ANALYZED FOR TOTAL GAS (O₂ & H₂)
(CONCERN), CAN'T GET THIS DONE AT

BETTIS FOR SOME REASON (NO CONTRACTS); THEY

WANT TO KNOW IF LRC CAN RECEIVE
AND ANALYZE THE SAMPLE TONIGHT.

JACK HICKS INFORMED I WILL GET ANSWER.

1700 - CRAWFORD (ROUGH ESTIMATE)

ESTIMATED, RCS LEAKAGE RATE ~ 3 GPH

REQUESTED CRAWFORD TO CHECK OUT THE

SOURCE RANGE (CPS) READINGS - ARE

THEY CORRECT AS IS OR GAINS APPLIED?

1730 - CRAWFORD

RB Sump LEVELS

	DATE	TIME	RB INCHES	PRES. (PSI)
1	4/17/79	0045	41	1.45
2	4/17/79	0130	55	1.98
3	4/17/79	0350	76	2.4
4	4/17/79	1400	— *	1.7
5	4/17/79	2130	— *	1.82
6	4/18/79	1600	32	1.18

* NOT CALCULATED YET

FORMULA:

CALCULATION
DEPENDENT
UPON LEAKAGE
THAT VALVES
WONT OPEN -
AFRAID THEY
WONT BE ABLE
TO CLOSE IT.

$$(272 + C_L + P_H - P_{RB}) / 144 \times 0.0161 = RB \text{ LEVEL}$$

$$272 = E_2 \text{ OF DH PUMP SUCTION}$$

$$C_L = 1.41 \text{ FT. (HEISE LEVEL ABOVE FLOOR)}$$

$$0.0161 = \text{SPECIFIC GRAVITY OF WATER} = N_9$$

$$P_H = \text{PRES. OF HEISE}$$

$$P_{RB} = \text{PRES. OF RX BLDG.}$$

(JOHN BRUMMER)

CONFIRMED WITH SITE, THAT SOURCE RANGE
(CPS)

COUNT RATE, REPORTED IS ACTUAL

~ 34 NI-1

~ 22 NI-2

1740 - REC'D PLANT STATUS FROM ENGEL.

1755- ELMIGER: NRC REQUESTED DEADLINE FOR
RECIRC. BY 1900 ← SAMPLE
SAMPLE ^{DRAWN} BY 2000
ANALYSIS ^{STARTED} BY 2300

THEY WANT A 3HR TURNAROUND TIME
FROM SAMPLING TO ANALYSIS TO
MINIMIZE FALSE RESULTS. NEED
ANSWER FROM B:W ASAP! HAS
BAKER: JACK HICKS PURSUING.

~2030 - SAMPLE WILL BE BE AT
H'BURG AIRPORT - TO GO TO WHOEVER
CAN RESPOND (BETTIS OR LRC, OR ET AL)

1830 - ARRANGEMENTS MADE IN L'BURG TO
RECEIVE AND ANALYZE THE SAMPLE. I
INSTRUCTED CRAWFORD TO INFORM SITE
TO CALL OFF BETTIS, ET AL - I DO
NOT WANT TO TURN-OFF B:W ON
THIS AFTER THE HASSLE OF MAKING
ARRANGEMENTS.

1850 - NEED INFO FROM SITE ON SAMPLE:
X WHEN SAMPLE LEAVES AIRPORT? ~2330^{4/18/77}
X IS SAMPLE BOMB IDENTICAL TO THE PREVIOUS
ONE SENT TO LRC? IF NOT, NEED

Dummy Bomb, Mating Fittings, etc.

~~PER~~ PER ELMIGER IT IS IDENTICAL.

~~X~~ HOW IS SAMPLE PACKAGED ^{SAME AS} LAST TIME

~~X~~ DOSE RATES OF SAMPLE & PACKAGING.

SEE 2255 4/18/79 ENTRY.

1903 - ^{CRAWFORD} OTSG "B" FULL RANGE LEVEL

INSTRUMENT IS OOC (READING ~ 30"

WHICH IS INCORRECT - GET A "TILT"

ON COMPUTER UPON REQUEST FOR THIS.)

1945 - ENGEL - GAVE PLANT STATUS.

2000 - ^{CRAWFORD} STARTED REQIRC TO DRAW SAMPLE. ESTIMATE

SAMPLE TO BE DRAWN ~ 2100 - SCHEDULE

SLIP ~ 1 HR. INFORMED JACK HICKS.

2010 - ^{CRAWFORD} SAMPLE PACKAGE TO BE SAME AS

LAST TIME - OK PER HICKS.

HICKS TO CONFIRM THAT ARRANGEMENTS ARE

ALL SET IN L'BURG TO RECEIVE ANALYZER

SAMPLE.

2100 - ^{CRAWFORD} NEED TO KNOW NAME OF PERSON RECEIVING

SAMPLE AT AIRPORT & AT LRC, ^{STEVE CROSLIN} OR JOHN CURR

DOES BFW (LRC) INTEND TO CLEANUP & RETURN

^{PRESSURIZED} THE SAMPLE CONTAINERS TO THE SITE? REQUESTED
HICKS TO ANSWER.

2100 - COND

FOR THE PAST SEVERAL HOURS THE SITE HAS BEEN PERFORMING PRZ LEVEL / HEISE LEVEL CORRELATION TESTS. SITE WILL SEND INFO TO L'BURG WHEN AVAILABLE

2200 - ^{CRAWFORD} 2150 = SAMPLE TIME - EXPECT IT TO LEAVE THE SITE IN ~ 1/2 HOUR. HYDRAZINE ADDITION TO BE POSTPONED UNTIL ANALYSIS RESULTS HAVE BEEN SENT TO THE SITE.

30 ML SAMPLE

JOHN CURE © 2022 (CARD.)

2250 - READ PLANT DATA FROM ENGEL.

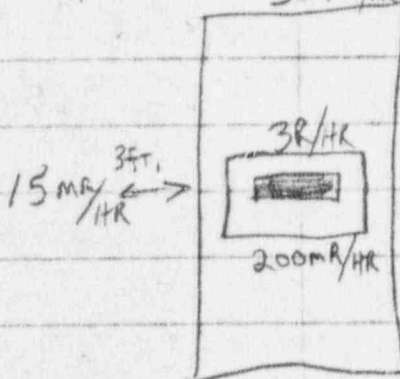
2255 - SAMPLE LEFT BLDG. (TO LEAVE SITE IMMEDIATELY)

RAD. LEVELS:

55 GAL DRUM - SAMPLE IN HORIZ.

POSITION IN LEAD CASE WITH ARGON

ATMOS. 30 mR/HR



ALL CONTACT READINGS EXCEPT AS NOTED.

131.95

2310 - CRAWFORD

GROUND TIME FOR AIRCRAFT IN L'BURG
WILL BE 10 MINUTES.

PLANE WILL BE ABLE TO LAND AT L'BURG
EVEN THOUGH THE TOWER WILL BE CLOSED.

JOHN CURE IS AT L'BURG AIRPORT @
CARD. AIR OFFICE (2202).


2340 ~~CRAWFORD~~ PLANE IS ON THE WAY WITH THE SAMPLE.

JOHN CURE TO PICK UP SAMPLE AT AIRPORT &
TAKE TO LRC. PHIL GRANT TO ANALYZE
SAMPLE AND TELEPHONE RESULTS TO JACK
HICKS WHO WILL QUICKLY REVIEW AND
TELEPHONE RESULTS TO WAR ROOM

TELE. # 384-6624. RESULTS EXPECTED
BY ~ 0430 AT THE EARLIEST.

2352 - ENGEL - REED PLANT STARTS

TAG REMOVED FROM THE 1B RCP - PROCEDURE
CALLS FOR STARTING THE 1B RCP AS THE
LAST PUMP TO BE STARTED.



4/19/79

0017 - BECKNER REVIEWED HANDLING

0100 - SAMPLE ARRIVED L, BERG AIRPORT

0145 - SAMPLE ARRIVED LRC - PHIL GANT ANAL

0500 - RELAYED RESULTS OF 2150 4-18-79 (30ml)

PRESSURIZED SAMPLE TO WALT ABBOTT

TOTAL DISSOLVED GAS 41.8 CC/KG WATER

HYDROGEN 31.9 CC/KG

NITROGEN 18.1 CC/KG

OXYGEN 1.8 CC/KG

KRYPTON NON-DETECTABLE

XENON NON-DETECTABLE

JACK HICKS
REVIEWED

Xe-133 17.9 μ ci/cc

Xe-131m 10.12 μ ci/cc

I-131 0.032 μ ci/cc

PH 8.3

BORON 3568 PPM \pm 30 PPM

0630 Q. SITE WANTS TO KNOW IF WE ARE
GOING TO RUN GAMMA SPECTRUM ON
LAST NIGHTS SAMPLE, AND WHEN CAN
THEY EXPECT RESULTS

A. YES TO FIRST PART FROM J. HICKS
AND SITE TOLD. HAD NO TIME TO
GIVE THEM FOR RESULTS

0815 TURNED WATCH OVER TO DALE BATES
DA Beckner

1025 S. MAINGI - LT3 IS RUNNING WILD - READS
FROM 200 - REMOTE SHUTDOWN IS ALSO SHOWING -
MAY NOT LAST VERY LONG.

1030 RE PLANT STATUS FROM ENG. FOR 1000

1050 LT3 S. MAINGI - at remote
shutdown panel had trouble
with volt meter - also had
some wiring problem - was
corrected and now has gone
down at RDS location

1125 - REC PLANT STATUS FOR 1100

1300 - REC'D HEISE GAGE SUMP LEVELS

<u>DATE</u>	<u>TIME</u>	<u>LEVEL</u>
4-18	200	1.52 PSI 43"
4-19	010	1.5 42
4-19	0450	1.58 43.5
4-19	1145	1.95 54

1325 - TURBINE BEING ROTATED - TEMP DOWN 1°

1330 - REC 1300 PLANT STATUS

1400 - TURBINE ROTATING ~60 RPM - T 224°

1535 - TURBINE ROTATING ~170 RPM - T 218°

1545 - REC 1500 PLANT STATUS

1600 HYDRAZINE ADDITION COMPLETED

1600 TURNED WATCHES OVER TO M. DICKEN

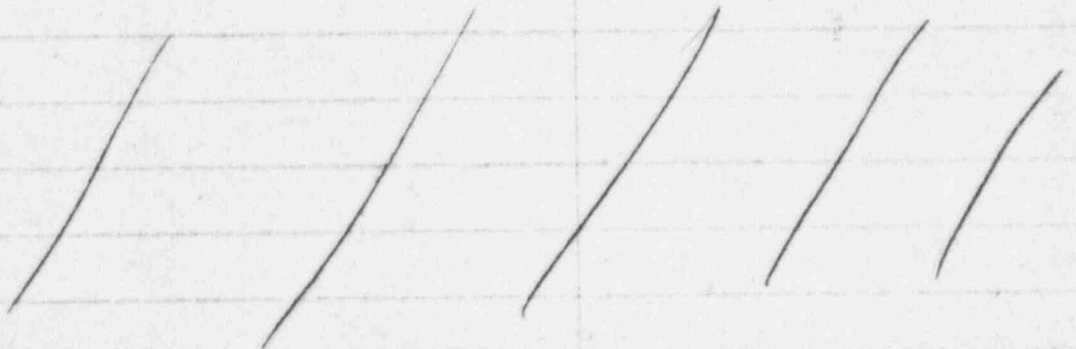
1610 - ① Request location of SR pre-amps in containment. ② NMRPS setting on PR linear amps, 8 readings. ③ Telescopy SR detector strip chart recording for period of RCP shift from 1A to 2A.
To CFI group (Gilbertson)

Answers:

- ① 305 ft. level south outside sec. shield wall
- ②
- | | | | | |
|---|-------|------------------------|-------|------------------------|
| A | upper | 5.874×10^{-5} | lower | 6.435×10^{-5} |
| B | " | 5.705×10^{-5} | " | 6.142×10^{-5} |
| C | " | 6.141×10^{-5} | " | 6.431×10^{-5} |
| D | " | 5.525×10^{-5} | " | 5.576×10^{-5} |
- ③ will be tele-vised

2220 Cooldown rate excellent 2°F/hr. at 202°F expecting to get to $\sim 170^{\circ}\text{F}$ before turbine generator fails to operate.

2345 D. BECKNER ASSUMED THE WATCH



4/20/79

0131 REQUESTED INFORMATION FROM WALT ABBOTT, WHAT ARE THE PLANS WHEN COOLDOWN IS AS LOW AS THEY CAN GO WITH TURBINE ROLL.

NO 2300 4-19-79 DATA TAKEN AT SITE DUE TO SHIFT TURNOVER

0320 ANSWER TO ABOVE QUESTION VIA WALT ABBOTT "ON SHIFT PERSONNEL HAD NOT BEEN INSTRUCTED AS TO WHAT NEXT STEP WAS. THEY DID NOT EXPECT COOLDOWN TO STOP UNTIL SOMETIME LATER ON DAY SHIFT."

0800 D BATES ASSUMED THE WATCH

0810 VEENSTRA - CAN TURBINE BE SHUT DOWN ALLOWING HEAT UP & GO INTO NATURAL CIRCULATION MODE?

1500 VEENSTRA - NEED COPY OF "B" OTSG SAMPLE ANALYSIS

1 DEL SENT TO SAMPLE COORDINATOR & CONTROL ROOM.

1500

DATA

OTSG "A" SAMPLE @ 0300

pH 9.72

CAT. COUNT 34.1

CHLORIDE .02

HYDRAZINE .29

SODIUM 7.54

OTSG "B"

I 131 $9.27E^{-1}$

FEEDWATER @ 1000

I 131 $1.27E^{-7}$

Xe 133 $1.03E^{-5}$

1600 TURNED WATCH OVER TO M. DICKEN

1705 ^{CURRENT} COPIES OF ALL ^A Z & EP PROCEDURES WILL BE
TRANSMITTED TO LYNCHBURG 4/21/79 BY
SHUTTLE.

1900 Lotdown sample to be performed 0700 4/21/79
won't be done until 0700 4/22/79. If taken
prior to 0800 4/22/79, call Don Harris at
384-0957; if after 0800, see Tech. Staff
rep on duty.

2235

Results of pressure samples

Time: 0300

Date: 4/20/79

Location: SS-6

ph 9.72

cation cond. 0.75

Na 0.006

Cl 0.07

hydroxide 0.83

Fe 0.3

Time 0900

Date 4/20/79

Location: polisher #2

ph 9.53

(on service)

cation cond. 0.74

Na 0.23

~~2330 ASSUMED WATER DOUGLAS A. SCHNEIDER~~

0151 PRESSURIZER WERE IS OTHER RTD

LOCATED DOB ON NEXT PAGE

4-21-79

0151 Q REQUEST FROM G. FUNKHOUSER
WHERE ARE RTDS LOCATED ON
PRESSURIZER

A. THERE IS ONE THERMOWELL WITH
TWO TCS - $\approx 10-12"$ ABOVE HTR BUNDLES
DATA OUT OF PRESSURIZER INSTRUCTION
MANUAL

0800 SHIFT ASSUMED BY DALE BATES

0930 VEENSTRA

Q. WHAT ARE NDT INSTR ERROR CURVES

A. SENT 4-20 16:55 W315

Q WHAT IS PRE RTD INSTR ERROR

A. OLC $\pm 5.1^{\circ}\text{F}$ INDICATOR $\pm 18.76^{\circ}\text{F}$

Q. WHAT ARE RCP OP CURVES $< 200^{\circ}$

WILL BE XMITTED ASAP

1030 EP 5, 13, 14, 29, 30, 15^{*}, 7^{*}, 32-1^{*}, 28, 27 5'Z 107^{*}

NEED RESPONSE

^{*} TO BE XMITTED - WILL TAKE 1ST PRIORITY
FOR REVIEW

1200 Q. WHAT IS DESIRED PRESSURE RANGE
FOR SOLID PLANT OPERATION w/ & w/o ROP'S

BRANT
BRADKS

A. SEE NEXT PAGE.

1630 Q. WHICH ROP OPERATING LIMITS SHOULD BE
USED FOR $< 200^{\circ}\text{F}$? THE OPERATING
CURVE IS MORE CONSERVATIVE THAN THE
TECH. SPEC. REQUIREMENTS DUE TO THE
100 PSI INSTRUMENT ERROR REQUIRED WHEN
USING THE CURVE.

A. UNTIL FURTHER NOTICE, USE THE MORE
CONSERVATIVE OPERATING CURVE LIMITS.

1650 May USE TECH SPEC. LIMIT IF NECESSARY. IF
USED, MUST MONITOR & REPORT ROP SHAFT
& MOTOR FRAME VIBRATIONS EVERY $\frac{1}{2}$ HOUR.
LIMITS FOR EACH ARE IN TECH. SPEC. PROCEDURE.
ACCURACY OF NARROW RANGE PRESS. INST. IS ± 30
PSI FOR $< 200^{\circ}\text{F}$.

~~2-107 "Test Method # for Alt. Per. Level"~~

1740 What is the min. RCS operating pressure based
on TG? — Maintain > 300 psig.

WMT
239-5876

Preliminary Response to 4/21 Site Questions

1. Desired Pressure Range for "S.I.P." Plant Operation

Answer: Same as existing limits—

#1037 (NS Center)

Maximum Pressure— See Transmittal W-315
but recommended Pressure is 1000 PSI

Minimum Pressure a) Maintain NPSH for
1 RC pump with 1/3
head loss + instrument
error

b) Acceptable pressure for
non-cond with gas
consideration > 200 psi

2. See response to #1

3. Minimum RCS Temperature

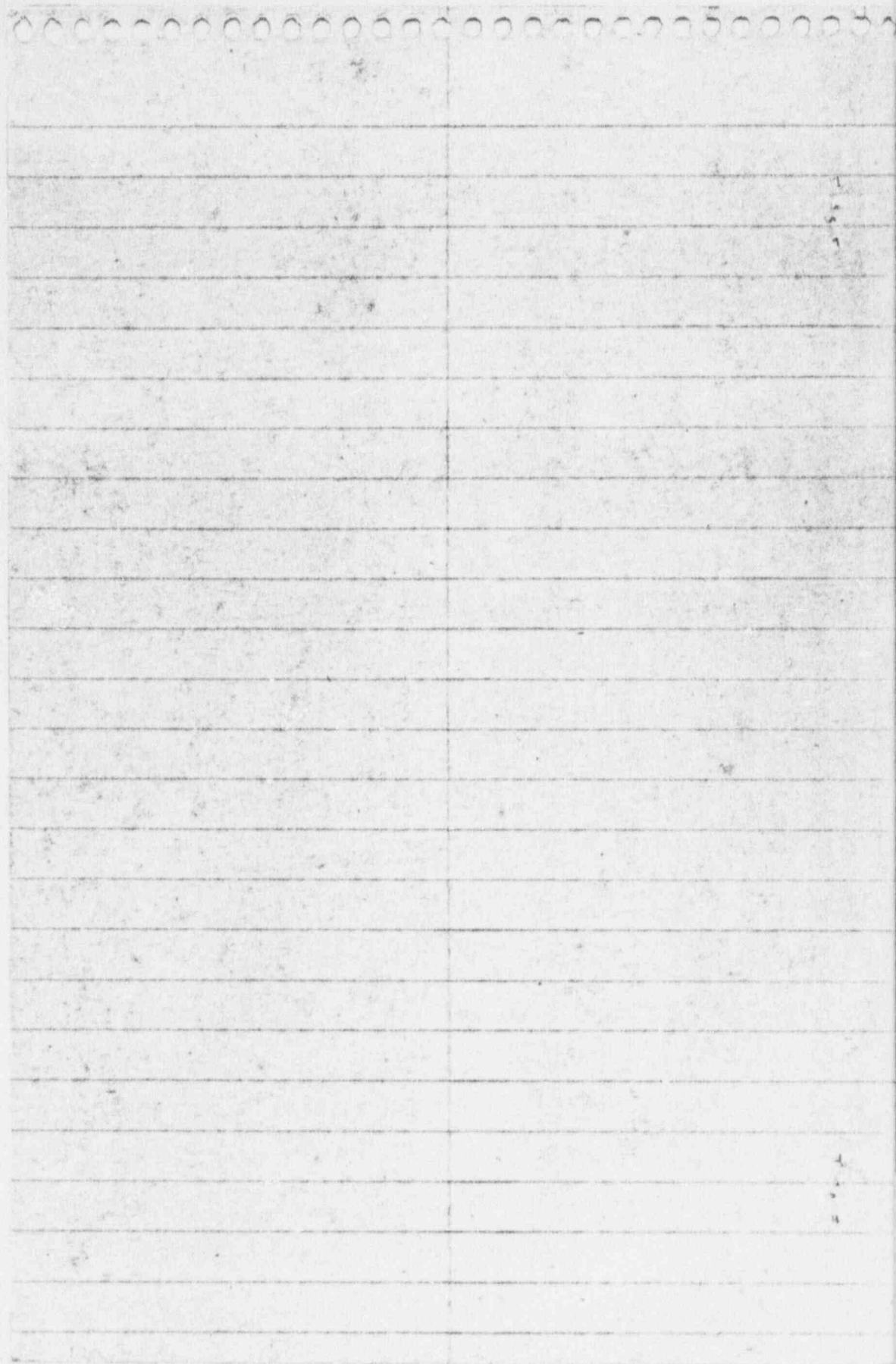
a) Minimum $> 160^{\circ}\text{F}$

b) Number based on NDT Considerations

More response is considered Preliminary — details
will be provided during week of 4/22

Arthur M. Bick 4/21/79 9:50 PM

[Signature]



2220 Who at site was B&W proc. #85

" Procedures to implement loss of operating
RCP alarms in Bailey 855" sent to site
received it but no one wants it!

2245 Call John Cyr. AT 384-5060 when
THE PRIMARY SAMPLE HAS BEEN TAKEN.
HE IS TO MEET THE PLANE AT LYNCHBURG.

A/22/79
0000

Shift assumed by Latorre

0715 Sample to be taken about 0900.
Ure gauge tested again - no results yet.

0800 Shift assumed by Conner

0825 Status of B&W review of
procedures sent from site to
Lynchburg (4/20-21) - Venetia

~~Sorted in 4 categories priorities~~
~~Under review today: No. 1 - new or~~
~~prev review or reviewed before~~
~~Review of prior 142 on plan 4/23~~

0850 Sorted into 4 priorities: Priority 1 and 2
items will be on plane to site 4/23

0900 Where is the R&W Trailer test. No.
Veenstra will let us know

0902 Send to Veenstra: Send 2 pads
of planning sheets + 2 hardbound
notebooks on 4/23 if possible

1050 ETA Cardinal 12:15-12:30
for RC Sample, Plane No.
N-54416. Sample taken
between 0900-1000 Today
(Veenstra to Roy)

1130 Which procedures have
which priority - EP 7, 13, 14, 29
What is Status (Veenstra)
He will be asked to sign-off
in about 1 Hr.

Response: Procedures under review. Will
advise ASAP

1225 Veenstra on EP-7. Need to
know if comments are incorporated etc.
Stan Menge also pressing

1310 Stan Menge was asked to obtain the
Serial Number of the TMI-1

1310 Cont. Electromatic Relief Valve and
the Serial Number for the On-Site
Spare Electromatic Relief. Not
available today, probably 4/23.

1315 Veenstra - Procedure Status
Update Sheet, please send by
A.M. 4/23 or on shuttle

1412 Does TMI-2 want RCS sample
results 4/22. No great sense
of urgency apparent per Veenstra.
B&W Trailer phones not connected
as yet.

Is data frequency excessive
(Veenstra) on telemetry? Should
we go to Transmittal by shuttle?

1505 Recommendations previously
requested on EP-15 (Twilley).
Preliminary info was acknowledge
Transmitted 136 on 4/9.
Will Veenstra get acknowledgment
that recommendations are still
valid. Loss of OTSG Level
Indication

1530 Shift assumed by FROST

1721 Need a clear copy of EP-7 or
someone to discuss it with a the
site. (Jerry Brown) Who can we call
4/23 AM. to discuss (To Crawford)

1730 Crawford needs BW Position on CP-32
and Natural Circulation ASAP, he is
being pressed to sign it off in 2 Hrs.
(Sent x 1845)

2200 EP-32 was signal @ 2145

(per J. Crawford)

4/23/79

Shift assumed by Latorre

0300

Borated water being added instead of D.W. this shift.

0400

- Dead weight for common reading on Haise installed.

- Shift personnel reviewed EP-37.

0800 Shift Assumed by Conner

0810 Harold Dye (OFR) requested retransmission
of EP-7 Rev 1C - rec'd

- 0845 Procedures comments will be sent
on shuttle or telemetry
Allowable pressure band / solid generator
w/w-o pump
- 0940 Requested copy of RLS Sample Results
Verbally Transmitted. Had copy
to follow
- 1010 Serial # FOR ELECTROMATIC RELIEF
given yesterday was from Unit 1
a TMI man went in the containment
and got the # right off of the valve.
Ston Manzi said that he would
get someone to give us the serial
of the valve in the warehouse
as soon as they find it.
- 1043 Request from GPM for
Procedure Review
EP-29, 7, 13, 14, 5 (Comments
Today) Start @ 1:00
- 1100 Sample Results for Bravo OTSG
Specific Chemistry Results. Samples
in Lynch (4/19 and one earlier).

1145 Stan Maize provided the serial no
an PO numbers for the Electrometric
Relief Valve Spare: BS-03989
P.O. No. (Dresser) 26-14147-0

Met Ed, 12587. Delivered 8/28/78.
Red Carlton requested all Th/Tc
RTD Readings, Stan Maize to supply
A/Layan requested radiation level
readings at dome and base plus
any other locations. Maize to
obtain.

1206 4 monitors have failed low; one has
failed high 2×10^5 R/hr (dome)
+800, 6000
None are to be believed.

1230 Person at TMS-2 who was to
receive B&W Procedure #85 was
R. Wilson. Venstra will identify
data on Procedure Status Update
Sheet he needs.

1258 RTD Readings for Red Carlton
Th Channel A, Resistance Reading 131.3-
RPS (174°F)

Conjunct Point 390, 175.4 (T_n)
394, 175.4 (T_c-A, WR)
397, 174.5 (T_c-B, WR)

1503 Venstra identified latest makeup quantity as 400 gal @ 2000 ppm added @ 0726

1520 Venstra told data on solid operation already on site. Also no OTSG-B samples in Lynchburg. Data provided by Met Ed.

1550 Shift Assumed By FROST

Tuesday - 4/24/79
0000 Shift assumed by Latorre

0800 Shift assumed by Corvise

0830 Venstra reported that the EFW routing was tested last night and worked.

1120 Indication that VI-2 failed low.
Met Ed is checking (Venetia)
Passed on to operations for
recommendations.

1145 Venetia called, Mtg set for VI
problem at 1400.

1500 Seem to heading for Boron
concentration of 2000. (McAndrew)
Word passed to Gindorf, Bell & Schuler

1505 Venetia needs to talk to
IFC folks. Take resistance
readings on cabling. Inner
conductors to outer shield 800K Ω
Inner conductors to inner shield $>$
10 M Ω . Inner shield to
outer shield $>$ 10 M Ω . If not
shorted together it may be possible
to run it backward by supplying
a neg voltage to inner shield
A. Powder
B. Power Supply in Cabinet Change
Not Grounded System
C. Portable Power Supply

1505 Cont.

Are these feasible

1511
1535 Turbine deliberately tripped. Altered
FW lineup ¹⁴²⁶ to EFW Lineup. Apparently
enough water in steam lines to cause
vibration. Turbine tripped for protection.
Heating up @ 12-13°/hr. Everything
under control. Plans not known.

Relative to NI-2

1. Are earlier items for operating
NI-2 backward feasible?
2. Is there any way IR detectors
can be made to supply useful
information at this point in time

1600 Shift assumed by Frost

1610 EFWs underway to restore turbine on
line. Feeding with a normal Feedwater
lineup.

1647 Russ Ball is being deployed to site with a pico-pico ammeter to take reading on the IR instruments to obtain backup indication for SR instruments.

1800 Site needs Pressurized Sample Bomb. Flown to site ASAP for a 0500 pressurized sample. Sample bomb on site is a letdown sample bomb.

2240 Plane Schedule for sample bomb shipment is as follows.

Depart Lynch at 12:00 AM with 2 sample bombs.

Arrive Harrisburg \approx 2:AM - Need HP to clear plane.

Depart Harrisburg \approx 3:AM

Arrive Lynch \approx 5:AM

Depart Lynch at 8 AM with passengers.

Arrive Harrisburg at 10:AM pick up samples

Depart Harrisburg \approx 11 AM

Arrive Lynch \approx 1:00 PM Need HP to clear plane
Depart Lynch \approx 2:00 PM
Arrive Housley \approx 4:00 PM Pick up Passengers
Depart Housley \approx 4:30 PM
Arrive Lynch \approx 6:30 PM

Plane is Falwell Aviation - NAVATO
Tail # 4FA, Departures + Arrivals
at Gate 12 Lynch (Holding between
Cardinal and Main Terminal)

Need to Call LRC AM 4/25 to
arrange for HP to meet shipment
to clear the plane and transport sample
to LRC. Also need to Contact
Gene Chulick to arrange for chemists
to analyze sample.

2311 Per Jack Crawford, Met Ed is also
making arrangements for a plane to
transport sample to Lynchburg - Site
will advise which plane they are using.
If Met Ed uses their plane out

plane will remain in Harrisburg for
return trip at 4:30 PM.

2325 — Plans are to H/U to ~
230°F blow out stem lines
and put turbine back on
line.

~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~
4/25/79

0000 • shift assumed by Latorre
• NAFA departed LYH ~ 0000
ETA Harrisburg (International
Refuelers terminal) ~ 0130.
Need 3 to 4 people to unload
casks, plus HP to clear plane.

0015 • Eric Lockman reported "Jelly detector"
inoperable and cannot find person
responsible for its operation + status
If he cannot find said person,
he requests we contact Gene
Chuliz (237-3744) to get info.
• Sample will probably be taken at
~ 0500 4/25/79 and MET-ED

chartered plane is to bring to Lynchburg.
~~for~~ Site apparently does not want to
wait till ~1000 for our chartered
plane to bring sample. - ACTION
needed if sample is brought back
by MET-ED's plane

① Inform LRC to pick-up sample and
have HP person clear plane upon
arrival at Lynchburg

② Have LRC personnel available to run
analysis.

③ Alter ^(CANCEL) mid-day plane charter trip
between Harrisburg & Lynchburg.

0315 . Plane reported to have arrived O.K. and
Bill Pitka called in @ 0215 to
start sampling procedure.

• Spare analyzer located in MET-ED's system
to replace failed unit reported by
Eric Volkman.

0615 Sample not taken yet. Notify Gene
Chick ⁵⁻⁵⁷⁸³ (237-3744) or Phil ⁵⁻⁵¹⁴⁸ ^{Grant} (237-3384)
when sample taken and ETA Lynchburg.
(need a HP man to clear the plane from taxi @ here)

0730

- Recirc. on sample continuing.
- Notified J. Yates - re. no need for plane to make extra trip to Lynx at ≈ 1130 .

0745

- No sample yet.

0825

- Completed ^{sample} at 0820, allowing H₂O to allow us time to clear water. - Josh Staff informed

1006

- Present plans are to maintain temp. until secondary is solid and forced clo is conducted.

1600

Shift Assumed by Frost

1658

Results of 0820 RCS Sample.

pH 8.15 ± 0.1

Barium 2869 ± 10 ppm

Sodium 738 ± 20 ppm

TG. $2/6.2$ cc/kg

N₂ $4/1.6$ cc/kg

N₂ $4/6$ cc/kg

O₂ Non Det.

K₂ & Xe Non Det.

per Phil Graft ≈ 5119 or 5148

4/26/79

0730 FUNKHOFFER SAID @ 2352 started to steam the B OTSG and got high IODINE @ discharge of condenser vacuum pump - secured from steaming @ 2355 4/25/79

1600 Twilley relieved Decker

1640 Crawford in CR: called in - no news. McAndrew will return to CR after a training session and Nitthi can clarify questions on radiation levels.

1720 Nitthi Clarified list of radiation level vs time requests for McAndrew

1750 Rec'd 1600 & 1700 Plant Status data

1840 Rec'd 1800 Plant Status Data

1915 Rec'd 1900 Plant Status Data

1945 Items 2, 3, & 4 of Don Nitthi's request are available but must be gotten by

day shift (the guy who has the data
is on days

~2000 Telecopying W S Lee
(Duke Power) letter to NRC on
commitments to assure safety
to

FPC, AP&L, TEC., SMUD

2020 Problem w/ "A" OTSG level
Wide range to ~100" step
increase - operate range level
pegged @ 100%

Operate range back on scale
@ ~95% after stopping feed flow
temporarily. Wide range still
reading ~495". Controlling
on operate range instrument.

2120 Problems w/ operate range levels
when 1A goes up 2A goes down
and vice versa. Wide range
still reading high. Site asked
if we have a procedure for loss
of OTSG level indication.
TMI Procedure Z 73 "Alternate
OTSG Level Indication" is all
I was able to find.

Maintaining Tave

2330 EP-15 (not yet approved) but
upon loss of OTSG level indication (wide ^{fall} range)
sup. to lower level to SU range.
This needs to be reviewed first
thing in AM on 4/27

EP-15 sent to Spangler 4/22/79 1130 hrs
4/27/79

0107 losing the last of the 3
PER level indicators. Indication
is erratic and thereby suspect.
Using Make Up tank level and leak
rate to estimate PER level

Don STEVENS LRC is monitoring
reading from cable spreading room
said lost for ~ 25 min then
returned, looks OK now.

NOTIFIED DAVE BERGER OF SITUATION
HE WANTED TO KNOW WHAT PROCEDURE
WAS BEING USED, IF ANY, AND WHY OR
WHY NOT? GUY FUNKHOUSER CALLED
BERGER DIRECT.

NOTIFIED PHINNEY, SUHRKE; PHINNEY
NOTIFIED SCHAEDEL and he is going to
site.

MISC. DISCUSSIONS found out that site
was using EP-21 REV 2B

0630 Shift supervisor has graph for
use w/ Heissie gage. This was
to be used in conjunction
with EP-21. Confidence in the
Heissie gage is not high enough
to use it as sole indication

Dick Skillman wanted to know why
Computer point (389) Per Temp
has been used in lieu of point
1739 as prescribed in procedure.
T_{SAT} is on point 1739 and not
Per Temp. Skillman to change procedure.

0940 Going into ep-21 procedure to determine per. fuel.
Plan is to go into natural circ at 1100.

1005 ~ 30 more thermocouple locations
4/27/79 on board by late afternoon for
R. McAndrews operator viewing.

Thermocouple readings every 15 min.

1305 Next RCS pressurized sample to be morning of
5/1/79. What Bell informed

1408 TRIPPER 2'A' RCP
STEAMING FROM A&B

IN	T _{HA}	224	/	225
	T _{CA}	222	/	221
1445	T _{HA}	225	/	225
	T _{CA}	212.9	/	218.8

<u>TIME</u>	T_{H_A}	T_{H_B}	T_{A_A}	T_{C_B}	T_{SUM}
1505	222	219	204.7	207.7	204.1/210.7
10	221	219	204	204.2	213.5/216.1
15	221	218	203.4	201.5	212.9/215.7
20	220	218	202.7	200.8	212.1/215.2
25	220	215	202.1	200.4	211.4/214.7
30	219	212	201.5	199.7	210.8/214.3

1600 Twilley relieved Bicker

1615 Plans at site are to draw
pressurized sample Tue May 1
Can LRC handle it?
Ask Nitte

1550	216	210	198.7	195.5	208.3/212.3
1600	213	209	197.3	193.4	207.3/211.2
1610	212	209	196.1	195.2	206.2/210.2
1620	212	209	195.7	194.0	205.3/208.9
1635	210	209	194.1	192.8	203.8/207.6
1715	205	205	190.4	188.1	200.5/203.3
1830	Rec'd 1800 Plant status and ITC data				

1855- I-131 $1.83 \times 10^{-8} \mu\text{Ci/cc}$
at RB vent (@ 1730)

I-131 $8.83 \times 10^{-9} \mu\text{Ci/cc}$
at RB vent (@ 1830)

2025 Current form of level indication (≈ 78)
in A OTSG highly erratic.
They stopped feeding to try
and establish decreasing level
trend.

LATE ENTRY

2220 Loop B T_{HOT} not decreasing.
 T_{CB} decreasing therefore B ΔT
increasing Loop A $T_H \& T_c \downarrow$
and A $\Delta T \approx \text{Constant}$.

B Turb. Bypass valve only 7% open
and not feeding ^(working on remote feed system) B. Little or no
no NC determined by Red Carlton.
Carlton/Karasch handling this.

Called Phinney - Karasch will
stay over and arrange for his

relief. If Ray Mason needs
extra help on Mid Shift he's
to call Duty Service Mgr.
(Weatherford)

LATE ENTRY

	TCA	TCB
1835	195	193
1845	192	185
1900	190	184
1915	190	182

Been feeding A since 2050
as little as possible. Level
isn't steadyed out (≈ 78) but
they don't trust reading ($\approx 415''$)

2230 - stopped steaming thru A HSRH's
and opened B Turb Bypass valves
to $\sim 20\%$ ^{@ 2205} (and fed B a little
(78-81% op range) to try and
equalize NC between loops.

2235

@ 2210 I-131 8.3×10^{-9} $\mu\text{Ci/cc}$

@ 2220 I-131 1.38×10^{-8} $\mu\text{Ci/cc}$

This reflects increased steaming
on B @ 2205

@ 2041 increased B Bypass valves
from 7% to 10%

@ 2132 began feeding B

4/28/79 R.C. Mason, Jr.

0200 TH "B" read 196°F while the
same computer point read 205°F @
0157 and 0203. No explanation at
this time by site personnel. I
suggested that Frankhouser attempt
to look at other RTD's for TH to
see if temp. change is real or
if it is just a spurious
reading. (Computer scan is
on a 3 minute basis)

0230 Bill Wilson called to get telephone
numbers of Phinney Kasiba & Perone some
possible political problem w/ SAI people using
our noise gear

0340 for John Costannes

RPS Voltage readings

CHA cab A1 Row 10 Slot 4
between PIN 3 & 4 $+0.091$ VDC

CHC cab C1 Row 10 Slot 4
between Pin 3 & 4 -0.003 VDC

0530 Frankhouser found out that the T_H RTD's were being used for bath loops. The RTD's don't have the bridge capacity to read the low temperatures. TMI has utilized a feedwater bridge ($0-500^\circ\text{F}$) on one RTD in each hot loop. Therefore there is no way to read the other RTD's in the hot legs. This completes action noted @ 0200 4/28/79.

0800 Dickes releases Wilson Jr.

Contacted site, per Rob McAndrews 'B' OTSG was isolated at 0035 4/28/79 due to an abnormally high ΔT of $\sim 50^\circ\text{F}$ ('A' OTSG $\Delta T \sim 15^\circ\text{F}$)

1555 Per. level was raised because of the lower to two level indicators indicated a need to raise level. Level increase was stopped shortly thereafter.

1600 Twilley relieved Decker

1630 Bohart needs all 5 shell thermocouple readings on each OTSG

	A OTSG		B OTSG	
Elev.	Pt ID	Temp	Pt	Temp
302	459	163.6	464	144.2
311	460	165.6	465	144.5
320	461	163.5	466	143.3
329	462	160.9	467	156.3
341	463	171.9	468	176.8

1655 A MSRHS Open or Closed? Carter
Turb. Bypass valve position?
A - 80% B - closed

1840 Increase & maintain A OTSG level to 400-430" and open bypass valves 90% is new directive at

site Unclear where this
directive came from

1935 Reports of Pyz level since
Noon today were in error due
to error in reading ^{a pressure} gage

1945 Two Shift Supervisors on duty
and origin of direction still
unclear

2025 Letting down to lower Pyz level
to ~250"

2130 OTSG Shell Temp

A		B	
Comp. Pt	Temp	Comp. Pt	Temp
459	163.9	469	143.1
460	166.3	465	143.3
461	164.4	466	142.2
462	161.2	467	152.8
463	171.4	468	172.9

2215 Closed down makeup cooler
to increase MV Tank Temp
and hopefully seal in temp
to maintain or raise TCB.

2330 Twilley relieved by Rice

4/29/79

6:30 (4-29-79) Talk to Guy Faulkner

the Hiose PZR level indication \Rightarrow 110"

DUM \Rightarrow 132"

LP3 \Rightarrow 352"

@ 0615 the shift sup recommended
an addition of 20" to PZR

added
0625 \Rightarrow 360 gals in MUT #1

0806 Rice relieved by Culberson

0900 - Maingi - Dick Skillman - Culberson

Q - what is present NDTT curve?

Skillman relayed (verbally) info on new curve. Maingi's
particular question was concerning acceptable pressure if

Temp 60°F? Per NDT curve - maintain >100°F.

Q - what is B&W game plan concerning loss of PER level? Site isn't sure what PER level they have.

(EP-21 - B&W position) Being reviewed now. Comments not complete.

Site has plans to use an RTD element in PER for level indication. Site plans to put small current through lower RTD element and monitor. If level ↓ to this level or lower, current will change and operators will know level is at that point.

Skullman again referred to EP-21. Further comments to come in a little while.

0917- Mc Andrews "Site Evacuation Procedure"

Q - EP-27 (site procedure) - Is there a concern for all the debris in the sump affecting operation of the HPI pump when running in this mode. Site wants to know if there is a concern for how long they can run like this from a viewpoint of pump operability.

The following statement was dictated to W. J. (Bubba) Marshall by
ED FREDERICK & CRAIG FAUST (CRO) at approximately 0900, March 29, 1979.
A copy of the handwritten transcript is attached.

FW-V16B in hand and closed, 97% power, ICS in full auto, pressurizer heaters and spray in manual - to equalize boron, 6/7 at 95%, 8 at 27%. Pressurizer pressure stable at approximately 2155, slight negative imbalance. 0400 Craig - first to notice something wrong - noticed ICS alarm and electrical alarm started from panel from S&T desk. Ed noticed 1st cond. pump trip, turbine trip and he was looking for runback at ICS when Rx tripped. Ed action: (1) pressurizer heater and spray to AUTO, and (2) verified trip by looking at rods and source range graph. Craig shut 376 and started MU-P-1A, pump did not start. At this time Ed noticed 2nd pump was not running and started MU-P-1A, this time it started, Ed opened MU-V16. Craig went to feed water panel and noticed that OTSG levels were rapidly decreasing, both both feed pumps were tripped and all 3 emergency feed pumps were running. After he verified emergency feed pumps on, he tripped generator breakers and turbine manually as part of emergency procedure. Returned to FDW and both OTSG levels indicated 10 in. Put EFV-11 in hand and went full open because he thought he wasn't feeding. While you were opening the EF-11's (which ind open) he noticed that the EF-V12's were shut. Then he opened the EF-V12's. SG levels began to increase, B S/G reached 30" first and A trailed by about 5 minutes, had trouble controlling levels, returned EF-11's to auto both generators level increased above 30". Return EF-11's to manual and ended up controlling 30" by cycling EF-12 open and shut. Reactor coolant pressure started to drop, secured 1B and 1C reactor coolant pumps. At this time 11B level

was pegged high. Prior to securing the RCP's had pegged high hotwell level - no decrease in vacuum at this time. Prior to tripping the RCP's and most likely prior to opening the EF-V12's, H.P. injection occurred. When this happened, MU-P-1B tripped and MU-P-1C started. PER level had been turned and was increasing when the H.P. injection occurred. Shortly after ES actuation PER level started to increase rapidly and ES was bypassed at approximately 385". All RCP's were operating. Started letdown at max rate but secured shortly thereafter because of HI TAVG, LOW PRESSURE AND HI PRESSURIZER LEVEL. This is when things began to look screwy. As HP injection flow was sustained pressure continued to come down, TAV hung up, PER level stayed high. As letdown flow was established, PER level stayed high. This occurred around 10 to 15 minutes into casualty. All during this time, "A" S/G pressure select and "B" S/G level was leading "A". When "B" RCP's were secured operator started feeding both S/G's up to 50% flow natural circulation cooldown. Prior to establishing 50% level - "A" loop RCP were secured. At 50% in the S/G's determined no flow across core because T_h was not decreasing. Placed turbine bypass valves to manual and opened because pressure in S/G's was increasing and valves were not responding; T_h was not decreasing either. At this time B S/G pressure started to decrease and "A" stayed the same. B S/G level was increasing. A level was constant. Primary pressure indicated 1100 to 1200 pounds. Operations determined B S/G tube leak and secured feed and steam on B S/G. We're investigating PER high level, T_h being pegged high, with PER valve pressure increases were not significant. HP injection was secured at this time. Trying to establish natural circulation cooldown; by now water in feed from hot and cold were using EF-V12's. During this time period, radiation levels in the max building were beginning to increase. Operators determined

that without flow they could not determine if they were cooling down. Decided to start RCP's. Picked 1A & 2A because of P&R spray, but pumps would not start. Tried 2B, amps increased flow changed, 2 minutes later there were no amps on meter, no flow indication but Th has changed some. Decided that pump wasn't pumping or running and secured it. Noticed source range counts changed. This occurred prior to isolating B S/G, leak appeared to start when pump was started.

Ed FREDRICK & RALPH FAUST

CKO-D

FW-V16B in hand & close.

17% power, ICS in full auto, PZR heater & spray in manual - to equalize boron, 6/7 at 95%, 8 at 21' PZR pressure stable at ≈ 2155 , slight negative imbalance. 0400 Craig - first to notice something wrong - notice ICS alarm and electrical alarm started from SC desk.

Ed notice 1st cond. pump trip, turbine trip locked for - runback at ICS when R₁ tripped.

Ed action 1st ~~put~~ PZR heater & spray to AUTO

2. verified trip by looking at rods & source range graph

Craig ① shut 376 & started MU-P-1A, pump did not start. At this time Ed noticed pump ~~did not start~~ ^{was not running} and started MU-P-1A, this time it started. Ed opened MU-VI

Craig went to FO water and noticed that OTSG levels were rapidly decreasing, that both feed pumps were tripped and all 3 emergency feed pumps were running. After he verified emergency feed, he tripped generation breakers and turbine manually as part of EP. Return to FO W and both OTSG levels indicated 10 in. Put EF-11 in hand and went full open because he thought he wasn't feeding. While you were opening the EF-11's (which were open) he noticed that the EF-VIZ's were shut. Then he opened the EF-VIZ's. SG levels began to increase, B & G cooled 30" first & A trailed by about 5 minutes, had trouble controlling levels, returned EF-V's to Auto both generators levels increased above 30'. Return EF-11's to manual

and ended up controlling 30, by cycling C-1-C oper-
shut. Reactor coolant pressure started to drop
secured 1B and 2B reactor coolant pumps. At this PZR
level was pegged high. Prior to securing the RCP's
had pegged high hotwell level - no decrease in vacuum
at this time.

Prior to tripping the RCP's and most likely prior to opening
the ER-VI2's H.P. injection occurred. When this happened
MU-P-1B tripped and MU-P-1C. PZR level had been turned
and was increasing when H.P. injection occurred. Shortly
after ES actuation PZR level started to increase rapidly
and ES was bypassed at ≈ 385 ". All RCP's were
operating. Started let down at max rate but secured
shortly thereafter because of Hi. TRVG, Low PRCs
AND Hi PRESSURIZER LEVEL. This is when things began
to look screwy. As H.P. injection flow was sustained
pressure continued to come down, TRVG hung up,
PZR level stayed Hi. As letdown flow was established
PZR level stayed Hi. ~~Then~~ This occurred around 10 to 15 min
into casualty. All during this time 'A' S/G pressure set
and 'B' S/G level was leading 'A'. When 'B' RCP's
were secured operator started fading both S/G's
up to 50% for natural circulation cooldown.
Prior to establishing 50% level - 'A' loop RCP were secured.
At 50% in the S/G's determined no ~~flow~~ across core
because Th was not decreasing. Placed turbine by-
passes to manual and opened because pressure in
S/G's was increasing and valves were not responding.
Th was not decreasing either.

and 1A stayed the same. B SG level was increasing - A level was constant. Primary press indicated 1100 to 1200 pounds. Operators determined B SG tube leak and secured feed & steam on B SG. Were investigating PZR high level, TH being pegged high, with PZR solid pressure increases were not significant, H.P. injection was secured at this time. Trying to ~~to~~ establish natural circulation cold down by now vacuum had been lost and were using MS-V3's. During this time period radiator levels in the aux building were beginning to increase. Operators determined that with out flow they could not determine if they were cooling down. Decided to start RCP's. Picked 1A & 2A because of PZR spray but pumps would not start. Tried 2B ~~it would not~~ ~~it would not~~ amps increased flow changed, 2 min later there were no amps on meter, no flow indication but TH has changed some. Decided that pump wasn't pumping or running and secured it. Noticed source range counts changed. This occurred prior to ~~isolating~~ B SG, leak appeared to start when pump was started.

Recollections 50-320

- ~ 0705 - Received call from C. Deller, PEMA duty officer indicating that TMI has a site emergency and to call plant to get details
- ~ 0706 - Called Maggie to inform her and verify number to call at plant site - only number we had was thru plant switchboard 944-4041
- ~ 0707 - Called plant site - had difficulty getting through switchboard to Unit 2 control room - finally gave switchboard my home number to have control room directly call me
- ~ 0710 - Shift supervisor called back to my home number. He told me the plant had suffered a transient and RB radiation level was high indicating the site emergency - Things sounded very confused at this point in time - I tried to get a status of important safeguards without very much success - they did tell me that reactor was shutdown and RB pressure was about 1 or 2 psig - SI had been initiated and was cooling core - They informed me that they had sent out monitoring teams and there was no detectable radiation levels outside the plant. I then ~~heard~~ ^{Unit 2} heard in background the announcement to evacuate the fuel handling and auxiliary buildings. At the point a health physics type got on the phone and things sounded extremely confused and finally he

0720 - Called office - talked to Dianne - told her briefly
about what had happened and I was on my way in to the
office - ^{told her} first technical type who arrives in office
should call Unit 2 control room immediately.

I arrived in office about 0750. Tom was there with open line established to plant control unit. Plant had declared a general emergency about 0730 due to high radiation levels in the reactor building. There still were no releases outside plant. Met Ed monitoring teams were out and around. I talked to plant to get a later status. As I recall, they said they were going to cool by feeding with makeup pumps and bleeding out through pressurized chemochemical relief valve. From the information that I was getting it sounded as if plant conditions were stabilized (In reality the core was probably being uncovered at this time and fuel damage was continuing). For the next hour or so we kept getting plant status reports periodically. (The open line was not manned continuously by Met Ed. They would come to the phone when ready to report) Things seemed to remain the same with still no releases occurring.

At about 0900 I was asked by Middendorf or Duncan to go brief the St Gov and attend a press briefing that was scheduled for about 1000. I called back to plant to get more details on what had happened and what the present status was, in order to brief St Gov & Gov.

At this point Gary Miller, plant superintendent, came on the line and briefed me on what had occurred. His briefing was as follows (based partly on notes and partly on recollection):

At 4:00 AM a turbine trip from 98% power occurred - reactor shutdown automatically - isolation of tech spec in that gas feed was valved out temporarily - ^{5/6 may have bled dry} chemochemical relief valve lifted

to valve) indicated that it had seated - block valve
stream is now closed - High pressure safety injection
was initiated - all safeguard systems operated as designed -
pressure may have gone below and low pressure in primary
probably caused flashing and bubble in primary - may have

temporarily lost main coolant circulation - currently
stabilized and cooling normally on A S/G - possible
primary to secondary leak on C S/G - B S/G
has been isolated - 100 ppm Boron in primary - may
have been diluted by secondary to primary feedback
thru tube leakage - there has probably been a slight
amount of failed fuel w/ speculation as to amount -
R.B. dome monitor reading 600 R/hr - RB pressure
~ 1 psig ~~pressure~~ post dose < 1 mm/hr -
wind blowing to west currently sending monitoring team
to Baldobava

Sec 7-54 Q3 | Dornsfeld notes
Governor's office ~ 0900 3/28/79
50-320

100 ppm B

1 lb Rb per

fine port < 1 msc/hr

violation of tech spec

primary

B SG bottled up

evacuate gas then

people going to Goldboro to monitor

shutdown

HP injection

primary to secondary leak

failed fuel - temp lost MC controller /

600 R/hr

may have ^{had} bubble in primary

2030

3/28/79

A RCP running 325°F in both loops

1100 psi in

cooling down A S/B with vacuum
shift bubble to pressure at 785 psi
lost some water pres.

250°F 300 psi into shutdown

cooling mode given

forced circulation shutdown

all recent offsite samples

< 1 mm/hr

1923 latest

behind warehouse Pick 6 6-11
B window open 150

80 Pick 6

if low vacuum

vent to atmosphere with A S/B
which is clean

2030

01-10-10

10-10-10

10-10-10

(215) 488-1362

GPO 541111

1000 psi 350 F°

15°F/hr 3 to 4 hours