



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

July 3, 1979

Note to D. Crutchfield

Subject: TMI-2 LOGS

Attached is a listing and a copy of all  
TMI-2 related logs of which we are aware.

*D. Eisenhut*  
D. G. Eisenhut

7910290331

INDIVIDUAL OR GROUP  
RESPONSIBLE FOR LOG

BRIEF DESCRIPTION OF PURPOSE  
AND CONTENT OF LOG

(1) Miscellaneous notes taken by  
D. Davis, B. Grimes, and  
D. Eisenhut at the Incident  
Center

To document various work request  
and information items for continuity  
of NRR staff at the Incident Center.

In case core melts

Evacuate

lavine - with 1 pump -

- Steam explosion - 10<sup>3</sup> pressure
- Check Fan Coolers Sprays

**NRC TRAILER**  
 717-944-0301  
 5583

Taylor -

Hydrotest Egt

Try to blow out something  
 Try to go to 3000 psi  
 & either

Emergency

Levin 28177

- Cont. Spray
- Cont. Coolers - 3 Fan Coolers - charcoal filters
- Set up building vent.

9422  
 27730

White House Situation Room  
 Dick Mattson - Nite  
 Cunningham - Day

Taylor, etc -

Les R  
 28038

2 cist / in

Dr. Paul Weisz  
 VP - Mobil Corp  
 offered assistance  
 609-737-3000  
 X2301

EPA

- 1. JERRY SWIFT
- 2 DANIEL EGAN

HEW

- 1. TASHNER, JOHN
- 2 BOB PHILLIPS

Lead Birds To: at TMT  
 Dick Dubiel  
 Tom Mulcahy

Tom Cukerson: W

HOME  
 NOTE 412-327-8289

Rubinskin  
 28037

DeYoung - 27207  
 Denise - 27258

Gidinsky - 634-1461  
 Kennedy - 634-1463  
 Bradford - 634-3308  
 Cheame - 634-3323

Central Laboratory Telephone Sources - 24 Hour Availability

<u>LAB</u>	<u>FTS</u>	<u>Commercial</u>
BNL	666-2238	516-345-2238
SANDIA	475-3155	505-264-3155
INEL	583-1515	208-526-1515
SRL	239-2117	803-725-2117
LLL	532-7222	415-422-7222
	Backup	415-828-7475
LASL	(1) 843-2125	505-672-1547
	(2) 843-2020	505-672-9019
	(3) 843-5037	505-672-1302
		505-672-9102



1-3/28

Bellingham at IF 27246  
IF Wadence (St. 28111) ①

3/28 8:45 pm

Mosley called VS/DS

TMI incident

3 AM incident

7:09? site emergency

7:45? General emergency

May have emptied pressurizer & pulled bubble  
in the vessel -

Incident Response Center Activated.

Quinn - Stallo - Case - Bellingham to Incident Center

9:30. SE called J. Taylor

Problem at Unit 2

\*

at 8 AM PV - 1500 psi  
300°F

Unit 2 <sup>was</sup> passing steam for startup of Unit 1  
Unit 2 at 98% power

Think (Keep speculating)

- Loss of FW caused transient
- Turbine Trip
- Reactor Trip on hi-pressure
- Indications system went solid
  - Pressurizer level eventually went up
  - Quench Tank Rupture Disc blew
  - Don't know BWS level
  - " " if 1-2-013 Safety Injection

7:50 a.m. c.c.

p.2 - 3/28

(2)

- Have declared a State of Emergency
- Don't know if a general Emergency has been declared

- Speculation re: Offsite release
  - Some indication of offsite boundary dose
  - High radiation in building

- 4 psi in Containment -  
Fans/Sprays on? - don't know

10:00 Quin

Containment dome monitor

- earlier peak - 200R
- later peak 600R
- 1000R
- 6000R

- 10HR at air lock -
- Nothing at boundary  
 $6 \times 10^{-7} \mu\text{Ci/cc I-131}$   
from grab sample.

Q: vs precip -  
· decay heat energy  
· heat energy from cooling  
· Boron precipitation

3 - 3/28

30

10:15am info to Bealing: fr. Marsh/Davis

500 gpm 1500 psi input 38,000 BTU/sec  
vaporization  
after 5 hours  
3700 BTU/sec decay heat  
37000

Unit 2  
res -  
assume  
U1 & 2 similar } Per pump - empty vessel -  
2 1/2 hours to fill vessel. (4000 cu ft)  
For 2 pumps 1 1/4 hours

10:30am fr. Guinness

Scaler 200 R/hr at dome of containment  
6000 R/hr est from BG at 10:30

at operating floor 10 R/hr  
Hi-rad in Control Room - operators have  
masked up.  $10^{-8}$   $\frac{\mu\text{Ci}}{\text{cc}}$   
4 psi in Containment  
at one time  $10^{-7}$   $\frac{\mu\text{Ci}}{\text{cc}}$

Offsite I-131 GE-8  $5.2 \times 10^9$   $\mu\text{Ci}/\text{ml}$   
WNW  $1.4 \times 10^{-8}$

Primary System grab Sample -  
 $140 \frac{\mu\text{Ci}}{\text{ml}}$  gross  $\beta$ - $\gamma$

10:35 Gene info to H.D.

4-3/28

4

10:45 Bulinger

- got est. of RWST level - (Rough est.)
- appear to be able to tell pressure in primary system
- Pressure going up and down - goes up - open relief valve <sup>2000 psi</sup> - drops to about

Staff balance eval  
 steam = 2" { H<sub>2</sub>O = 3/4" }  
 low

Region - arrived on site 15-20 minutes  
 a/c

10:50 B.G. -

C. Room 10<sup>-7</sup> µCi/cc gross β-δ  
 Q - less than 0.1 m/s/hr

Stf Calc  
 0.1% failed fuel-ox - big iodine spike.

11:00 C.B. Bulinger -  
 Info. from Site Team  
 Cold leg ~ 200°F

R.V.  
 demand ~ 1/10 MPC I-131

11:10 DE judgement to C.B. (FRV.S.)  
 2000 psi at 200°F not a safety concern.  
 P-T Study - new vessel - 1/2" flaw - OK at 100°F to 6000 psi.  
 If RT<sub>627</sub> ≥ 150; app G says can take  
 Higher - SRP 5.3.2 - 2000 psi - factor 2 conservatism

5-3/28

5

11:20 Carl B.

- One S/G running
- Natural Circulation
- Pressurizer Solid - drawing bubble
- Using atm dump valves & aux FW pump.
- Borated WST have 37' water
- Cont. pressure < 2 psi
- at least 6' of H<sub>2</sub>O in sump.
  - Earlier had NPSH problems on RPumps -
  - ∴ Shut them down.

\* Check: ways to confirm ways to know removing heat.

check 37' in BOST & get gpm =  $\frac{300,000}{500}$ ,  
 was 450,000 - used 150,000 at 500 gpm  
 using w/2 pumps  
 ∴ 300 minutes - ~ 6 hrs. OK

11:35 C. Prehinger  
Primary System

- 1900 psi
- 220° F Cold leg
- Cont. atm < 2 psi
- Cooling thru one S/G.
- IE at Site / info. coming slow

12:00 350° F Press 2000 psi - press. heater failed

620° F TH > Δ ~ 400° F  
2° F T<sub>c</sub>

off-site Press level

305 psi SG-B let line isolated

50 psi SG-A 374

350 psi 125 gpm



6-3/28

6

12:50 Carl B.

- Isothermal 565°
- Bubbles in System
- Blowing down with <sup>atmos dump valves</sup> PORV (partially open)
- ~~Pressure~~ down to 1100 psi
- HPCI - 400 gpm
- Going to RHR (~4000 psi)
- Dumping heat into Quench Tank (blowout patch gone)
- No cont. heat removal is on.
- 3 psi cont. rising slightly.

01:00 pm

- Now ~600 psi RV
- Cont. ~3 psi (previously 1 1/2 - 2 psi)

500 yds - 3 m (crosswind)  
appears to be direct

base of } - 50 m  
containment

01:10 To. BG

S. Adams - on to sample with hydrogen  
sample system.

01:30 from - CB

- Core flooding tanks came on - wanted water to cool core
- Holding at about <sup>575 to</sup> 600 psi  
temp. hung up ~ 560°F
- Based on 400 gpm in -  
Losses: 70 gpm - let down line  
100 gpm to top of core  
Rest somewhere else

8-3/28

8

2:15 pm Ch. Buildings

From } 250 psi } RHR  
FSAR { 255 F }

Plant now at ~~250 psi~~ - still over Temp limit.  
Emergency 3:30.

2:15 Brian G.

Wind due North @ 10 mi/hr

LOCATION

→ GE-2 (North Gate) 3 mr/hr @ 2 o'clock  
I or from BY  
 $5.9 \times 10^{-9}$

→ 400 ft above Ut. 1 Cooling tower 10 mr/hr @ 130°

→ GE-4 (warehouse) → 3 mr/hr

Eastern pt. of island 1 mr/hr  
I  $1.71 \times 10^{-9}$   $\mu\text{Ci/cc}$

→ GE-5 SE

2 mr/hr  
I  $7.8 \times 10^{-8}$   $\mu\text{Ci/cc}$

→ North parking lot

now 15 mr/hr at 2:00  
[this was ~ 3 mr/hr]



7-3/28

7

2:00 pm B. Gernies

Harisburg - State Readings

- 10-20 mR
- Helicopter - 1 mile - 1 mR Shire
- 500 mR outside eqpt hatch
- Operating Deck - 10 R/hr
- Dome - 6000 R/hr

Primary Cooling Sample

$I^{131}$  - 10-20  $\mu\text{Ci/gm}$

Still system problem - Need to

Unit 1 CR -  
 about 9 x MPC earlier  
 11 x MPC - I      34 x MPC unidentified

Exact No.  $\left. \begin{array}{l} 5.10 \times 10^{-7} \text{ I} \\ 5.4 \times 10^{-8} \text{ part} \end{array} \right\}$  May have combined intake.

If get sudden p. drop, might get  $N_2$  bubble due to height of system stuff.

Cutoff atm dump short time ago.

Analysis fr. Hospital

Ventilated  
 Initially was  $1 \times 10^{-8}$  reading.

$10^{-8}$  gross on cartridge  
 $< 10^{-10} \mu\text{Ci/cc I}$

$1 \times 10^{-10} = \text{MPC for } \mu\text{m}$   
 $= 1500 \text{ mR / year}$   
 inhalation  
 for all year  
 $= 4 \text{ mR / day}$

~~3 mR/hr~~  
~~at 1355 hrs~~

~~$5.9 \times 10^{-9}$~~  = at Northgate

~~400 ft at B~~

~~at B~~

Erin Kent



$\int$  (p.10. 3/28)

Recovery Team

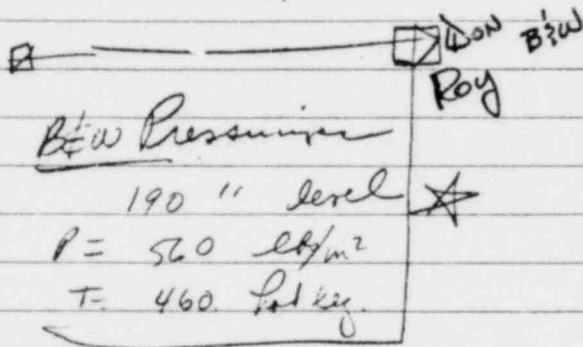
Pressure 450

T 460

Tc = 200

— 400 gpm

DON JAVIS' NOTES



4:30 C. Berlinger

W-cores at top of the core are printing "?" on computer. — Aus — filter officals up, down or inoperable

4:35 Jim Dedderic (Don Roy) \*

DE gave Stallo's values —

Pressure level at Sat.	457° F
Pressure in Prim System	450 psi
Hot leg T	550° F
Cold Inlet	200° F

12-3/28

12

Values are open  
- breakers racked out

NRR TEAM being  
sent to TMI

- Vollmer -
- Berlinger
- Mayhew
- 
- Chimal
- Ashe
- Aderson
- Schubing

IE Tsan Leader  
# on NRR  
Rick KEMIG

Nationwide Inn  
717-233-1611  
Hawkins

8:55

Letdown 60 gpm  
chg 30 gpm

$T_c = 320$   
 $P_p = 1180$   
 $T_p = 520$

(12. 3/28)

(12)

Valves are open  
- bleachers ratched out

NRR TEAM being  
sent to THIS

- Vollmer -
- Berlinger
- Mayhew
- 
- Chimal
- Ashe
- Adanson
- Schelling

IE Tsan Leader  
~~and Nancy~~  
Rick KEMIG

Nationwide Inn  
717-233-1611  
Harrisburg

8:55

Letdown 60 gpm  
chg 30 gpm

$T_c = 320$   
 $P_p = 1180$   
 $T_p = 520$

14-3/28

14

Sequence : - Tentative from  
Site

Polishing demineralizing problem caused  
~~feedwater trip~~  
~~Reactor trip~~, auto.

← Reactor trip on <sup>high</sup> pressure  
→ <sup>Thermal</sup> Trip  
Emergency FW on.

Steam generator valve lifted

Cooldown

2 min ECCS on low pressure

Coincident

NO

Electromatics lifted on Pressures

Ruptured pressurizer relief tank disk  
8 minutes down to 1300 lb.

Why  
rupture

2255 mat pressure in primary

14-3/26

14

Sequence: - Tentative from site

Polishing desmineralizing problem caused  
~~feedwater trip~~  
~~Reactor trip~~, auto.

Reactor trip on <sup>Thermal Trip</sup> ~~Li~~ pressure  
Emerg. FW on.

Steam generator valve lifted

Cooldown

2 min ECCS on low pressings / Coincident

NO<sub>2</sub>

Electromatics lifted on Pressings

Ruptured pressurizer relief tank disk / <sup>like</sup> <sub>neg. tank</sub>  
8 minutes - down to 1300 lb.

2255 max pressure in primary



15-3/28  
3/29

11:10 Re: Any Bldg waste in Bldg -

All waste tanks in Unit 1 and 2 are full.  
= (No available space)

Talking about 225,000 gal of waste.

11:12 Q: How about putting in RWST  
or in Containment.

LV: Minutes - Come in 5:30 am - prepare for Commission Am Bldg.

7:25 AM

3-29-79

Pres-P. 892

$T_{Ain} = 283$

$P_L = 357'' \downarrow$

$P_T = 533''$

$T_{Bin} = 283$

← Tried to Spray

S.G. A. 32

B. 37

3/29 - Commission presentation

Congress presentation - School, etc



16-3/30

3/30 Stello

357 PM N - 1-3 m/yr - Edge of Island

400 E - 0.3 m/yr near observation  
0.5 m/yr  
0.1 just north

S - 1.5 m/yr

550 W - ~~10 m/yr~~  
40 m/yr at river

9 10 m/yr  $\delta$  (GE-9)  
2 90 m/yr  $\beta$ - $\delta$

Upstream GE-10 - 1 m/yr  $\delta$   
6 m/yr  $\beta$ - $\delta$

$\beta$ - $\delta$   $\approx$  5/10 times

West

-0.6°F AT

Essentially same mode

7 gpm letdown - plumbed - H<sub>2</sub>O goes in for  
heated cooling & NOT to tank  
- gases go to vent header that  
is leaking in aux bldg.



17-3/30

- Gas from this goes to stack.
- These levels prob. continue until get other line.
- Other line will be in tonite
- One line (gas) in now - another in tonite.

Have Robot at 4-12

VS - Best to Send

630

Saul

If do this; need to add HPCI flow.

- o ~~ROP off~~
- o 900 lb → 200 lb with Pres. Relief valve.
  - 1/2 loss if solid water (if gas - faster).
  - NO ECS
- o Core heatup - adiabatically
  - 0.1°C/sec - No heat trf to water.
  - up to 2000°F in 2 hours.

o 30 mins vs. 2 hours.  
LOTS OF TIME!

Hot Bundle (RM)  
 60 hour  
 5 BTU/ft<sup>2</sup>-hr  
 Equivalates 1450

820

No - Answer as to whether there's anything you can do to get water to absorb more H<sub>2</sub> -

18 - 3/30

3/30 10:30 Saul -

Left work - do it perturb core with 2<sup>ND</sup> pump

Semiscala -

Trying to crank up an experiment -

10:40 Ross -

RM Gauntins

- Samples from cont. air? - licensee says NO.

- Evolution Rate?

- what will they do with H<sub>2</sub>?

Taylor quick calc - Dump pressure twice - No problem

Ross - says - licensee doing things without NRC ok.

Jo Hulman -

- Very impressed with licensee control of Schottis.
- Well disciplined - well prepared oper. procedure

→ Containment Atmosphere -

- will check
- red level - meters jugged.

→ Ⓢ Ross -

Semiscala doesn't have B?W intervals.

19-3/30

Bennaya -

Noah - will call in a little with systems analysis.

3/30

Tom Anderson, W.

Sent people to GPU

Understand Aux. bldg is almost uninhabitable and there not cleaning up mess. - Couldn't get in there to clean up the mess. - Motors are not designed for Red environment.

W offering decon. teams. -

Recommend we get them to clean up Red mess.

J. Kudie

check detonation pressure - -

} → 1000 lb start in RV.

20-3/31

3/31/79

Stello.

2:15 AM

0015 hrs

List of all problems / concerns we have.

IE: - H<sub>2</sub> Explosion  
- Cav Bldg

- Vent rate - 6 gpm  
Dissolution process  
Absorption process

- H<sub>2</sub> / O<sub>2</sub> in dome - Concentrations -  
- also re: reduced pressure  
- can't jiggle pressures.

Talk to Dr. Zittel ORNL

. Existing as imp. to Gov. people in NAA  
. on Perkins leg.

- Loose part monitoring System

- Cont. atm. Sample -  
Watch contact dose earlier today 40R/m.

Stello -

RCP -  
- what's rad. effect. on pump -  
- lube oil, etc.

How long can it go. - days, weeks, pumps

How to maint Effects -



21-3/31

3/31 J. Hendrie

o Containment Samples -

o Crank recombined - Check T -

Putting in Solinetics  
because it will  
be HOI.

o Does Met Ed need help -

o Is  $H_2$  all stripping out in dome -  
- or at 1000 lb is it going around  
in loop.

B.G. -

Assume most F.P. are in dome of RV  
≠ dome of cont. reading is OK.

Check concrete thickness -  
If pumps shielded by 5-6'

∴ Pumps average ~ 5000 R / Total Integrated

∴ 60 hr

Oil starts to break down about  $5 \times 10^7$  R ??  
Check Lo Sofero

→ Check water side of "B" generator -  
what pressure on SW side. -  
Concentration in SW side. -

22-3/31

3/31

2:10 AM

Ron

## Newberry in CR —

- Getting ready to take samples
  - Rad. shield around recombined being built
  - 2-3 hr get sample system going.
- Aux. lily. — W coming to cleanup  
Benwaya don't know when
- Arnold (V.P.) — <sup>Ted</sup> Stern (W pumps) says operation is marginal.  
minners → Bingham with W meters
- Telford — Average dose top of dome — 5K R/H  
3 1/2 ft Concrete
  - Pump saw 5000 R/H for 40 hr
  - = 200000
  - B 1/2 W says takes a lot more — Usually in N<sub>16</sub> field.
- Mat'ls on pump back line. —
  - | 3/4" Stakalens or Copper —  
Should take 100 lb.
- Has let down been pressurized.
  - | No — vented as needed.
  - | Hope to activate when



23-3/31

- Condition of "B" 3/6 -
  - Think had failed tubes -
  - From getting car Fw on.
- Accident Sequence -
  - Maytis' log book -

3/31 Ross -

3:00 \* Utility request lead Bids ASAP.

\* People with expertise in remote shielded vehicles  
Things like the "Robot"

ck: Gorsch

\*

Stallo New Phone Nos.  
 State Police  
 944-4067  
 -4068  
 -4069  
 -4060

1/2 To: Ross  
 → N. Moseley

Exc - DOE Emergency Operations Center  
 may find some in Philly

Salem -  
 P. Btm -

} gave info to  
~~Stallo~~ Ross -  
 4/11

24-3/31

4:10  
Ross

→ H-Recombiner —

want to get sample first —

4:45 am

L. Cossich Re: Lead bricks

→ Check SOB or NR

→ Nat. Mil. Command Center

Make problem known to White House  
Situation Center —

• Say 4.V. Council suggested.  
• Either they will work  
or

5:15 am

D. Ross

→ Will call ~6 AM @ R. notes for Press Release

5:35 am

→ Contact at Bettis

Stello

— got a Special Problem Sheet.

- Best effect on gas evolution — looking for
- Can we get  $H_2$  low in Purig or ORV?
- Contriguely Preving?

Stello Request!  
//  
//  
//

80 R/hr waste tank

Hanauer — Views on T/C

generally if a T/C gives generally good  
trends you usually believe!

25-3/31

VS-DE-SHH - Just had discussion with B&W re: unusual ways to bump system - no real good ideas.



- Pumps -

- Motor - good to  $10^7$
- fil - good to  $10^8$
- ? - Surge Capacitor :: don't shut off.
- Should be more relaxed re: pump.

check Ted Stern (w)

Feed Back at NBS

301-921-2523

Dick Brasley -

B&W Contingency Plans.

Should H<sub>2</sub> explode:



- Explosive Forces
  - 1000 psi - 1000 cu ft
  - Stoic. Mixture - 0 tonne
  - 14000 psi -
  - Instantaneous <sup>stumps</sup> 100,000 psi - Lead + Nozzles

[ Phone nos. must not get

26-3/31

6:15am

J. Ross.

Pumps - Monitoring Vibration

Normally 7-8 mil  
Now 20 mil  
Shutdown 30 mil

2 Renewal Salvatori  
Pump Contact

checking growth

6:05

Tin = 280  
Plevel = 216  
SG A = 33 lb (heat path)  
Then bypass  
SG B = 28  
React P = 1023

venting intermittently until 3AM

Recombiner - Tidy up shield - Will hope to  
start with Block.

Air Sample - soon

Sequence  
of  
Events  
for  
Ross.

Loss of Condensate Pump  
Loss of FW  
Caused T. Trip  
at 2255 ping - PORV opened  
at 2355, Hi pressure Trip  
at 2435, Safety opened  
at 2205, P relief valve closed - of Safety  
Then rupture disk in Quench Tank blew  
at 1640 psi, ~~Asst Rickings to study~~  
ECC Injection came on  
at 8 min, ECC bypassed (Reset?)  
pumps cut back

27-3/31

- Aux FW values opened at 8 min.
- At 50 min, 2.4 psi  
Cont T. 120 - 160°F
- Isolated "B" S.G. because  
Thought leaking
- Quench Tank relief opened
- Started HPI
- Tripped two RCP
- " Other two RCP - 2 min later
- 6:50 - Site emergency

## Special Assignment

H. Pickering

pls study 2<sup>nd</sup> criticality  
for dumped core.

decay heat-time

Ziegen - loose parts monitor man

[ Ed Schave 904-882-3225  
Remote Robot -  
Airlift - E.S. hasn't yet. ]



28-3/31

D. FISERHUT

Accident SEQUENCE from D. Ross 3/31 - 6:30 AM

Loss of CONDENSATE PUMP

Loss of Feedwater

Turbine Trip

At 2255 psi, P.O.R.V. opens

At 2355 psi, Hi pressure Reactor Trip.

At 2435 psi, Safety Valve opened.

At 2205 psi, Either S.V. or P.O.R.V. closed.

Quench Tank Rupture disk blew

At 1640 psi, Ecc injection came on

8 minutes later, Ecc injection reset

3 pumps out back

8 minutes later aux. Fw valves opened

At 50 min., 2.4 psi in containment

(T = 120° - 160° F)

Isolated "B" S.G. because of apparent leakage

Quench Tank Relief opened

Restarted Hi pressure injection

Tripped 2 RC Pumps

2 minutes later, other 2 RCP tripped

6:50 - Site Emergency.

29-3/31

3/31/79 Bradsky —

7:00 AM

Beth's — call Joe Patkowski 721-6779

less than 1 mo. ago — did

7:10

J. LaFlux — AECB Canada offered  
LOCA calc. paper  
SE put them in touch with Hauerer

7:30

Stallo

Taken  
6:30 AM

Containment Sample

H<sub>2</sub> - 1.7%  
O<sub>2</sub> - 16.5  
N<sub>2</sub> - 81.8%

From top of dome  
325 mg/l - 25cc Sample  
- Contact

50 µCi/cc

Novak

~~Hauerer  
Some concerns  
Steel lined  
No real  
Concern~~

TM-2 Pump Motors are  
Allis-Chalmers Motors  
Bingham Pump

7:45 AM

Ash Stallope: RCPs.

— 9000 HP — 6900 V. pumps  
what kind of contingency power source  
is there around.

8:30 AM

V.S. — Said will look into.  
e.g., following LOOP  
AND



30-3/31

8/21/60 8:30 AM  
~~8/21/60~~

Made another TTT <sup>table</sup> ~~plot~~ available

Debra - Carter called. <sup>1st</sup> thing this A.M.  
- Must coordinate ~~for~~.

→ [ Need another primary coolant sample → ]

- [ ~~DE~~ asked for potentiometers  
- Need calib. on outlet T/cs. ]

Vollmer -

gave - table -  
of T/c readings.

J. Hendrix -

Bethis - Cys are these compatible with  
high full T - maybe 3000-4000° F.

EG's also doing this calc.

Probably can get this amount  
from Temp lower (2000°) for longer  
times.

??

31-4/01

4/01/79 1:30 AM

Ross.

Pres. Spray line or "B" loop.

Block Valve in Relief line } Be sure can go on  
Vent line } vital bus.

Q: Potential for re-criticality

Stello "what if" list. —

More RHR capacity — Indications of stuff in  
H/x tubes.

4. O<sub>2</sub> on top of makeup coolant

∴ Using makeup adds O<sub>2</sub> —

ASAP Maybe replace with air, N<sub>2</sub>, or CO<sub>2</sub>.

5. Chemical scrubbers

- To stop radiolysis — chemists working w/ GPU.
- Some side effects.

6. Procedures for using In-cans

7. Change of T.

— Maybe could change P as well as T.  
at 1000 psi, better solubility

8. Sept Qualification. —

in/out of cont.

Inside weak link — capacitor on RCP

— Maybe Rad Sensitive

Outside — Sept. 10's of R. — Prob. all OK

32-4/01

\* When going on RHE - prob. get 4000 R/hr  
on RHE eqpt.  
Eqpt. lasts ~ 3 yrs @ 4000 R/hr

Nuclear Uncertainty  $\pm 250$  ct

\* Component cooling water - all pumps - on?  
Suggest.

Seal water to pumps

- IA RCP doesn't have any.

- only have Seal H<sub>2</sub>O on

what  
if ↓

(Contraption !!)

\* If can add more water, add it.

\* Status of Unit 1 —

• Put in longest state mode —

• Suggest removing head —

• leave fuel in —

• add remote control pump

• add TV.

\* Check SFSP

\* 4-12: Robot with TV, Umbrella Cord

Put in Robot in Control Rm of Unit 2.

\* where would last operating crew go.

Bunkered position if can do anything. (w/Robot)

\* Dig big hole outside Unit 2.

Cont. vent into hole - water

Filters

Coolant  
pumps

33-4/01

\* Explosive potential of  $H_2O_2$ .

• About 2-3%  $O_2$  in bubbles.

• Adding  $O_2$  about 1% per day.

• Flammability limit of gas is 6-8%  $O_2$

• Detonation limit  $\approx 12\%$   $O_2$ .

• In all experiment, never seen a spontaneous detonation of  $H_2$  in a situation like this -  
Needs an ignition source in this environment  
and probably next

STAY WHERE YOU ARE!  
likely will be able to get down.

2 AM

J. TAYLOR, BiW

Q: D. TONDI - Phone No.

Q: Cooling on Core Sump down

• BiW starting to work -

Factor R; S. ISRAEL will be in Office.

• Calc. Melt fuel between 2 spacers  
Fall to Spacer -  $\approx 5500^\circ F$  in dr.

Proposal - worried about some open paths -  
what about shorting of cont insulation system

2:30 AM

Harty U. of Buffalo  
Dr. Grass, (KAPL old Exp.)

Explosives in Rts. or Containers.

Did parametric work -

If mixtures, at diff. P then diff final Ts.

3A - 4/01

4/01/79 T. Dorah (needs info for B&W)

3:00 AM

① Boron precipitation

- detect, or predict
- If so, where in core
- So what

②  
 Can they go back to power with all rods out  
 - Keg needed  
 - Picked boron?

Olshinski went home  
 throwing up -  
 Called company Sr.

③ Better  
 Did they sample for  
 Boron  
 any Silver - }  
 Indium - } bar of CE  
 Cadmium

3:10 am Ron

Looks like TMI will be pumping waste gas back to cont. about 7:00 AM ± 1 hr.

8:00

∴ check in with for oil?

Stella

3:20 AM - Considering Isolating Accumulators

\* - to avoid N<sub>2</sub> possibility

See next page.

Tech Spec change Violation!

VS - All. legal advice

do may  
- Accumulators

- 540 psi

- 8' level (Normal 14)

- HPCI Oper. (Yes) - 0 pumps!

- Any other Hi press. H<sub>2</sub>O? - No!

3:30 AM - J. Scinto - "So whatever is necessary to make the plant safe & forget the Tech Specs as a formal document."



34-A - 4/01

Accumulators are for the purpose of immediately providing a large volume of water to core for a ~~low~~ LOCA - such is required to help keep the core covered for a core operating at high power with a sudden break.

Present situation is different - core has been down for days - this volume not so important - there is ~~an~~ another source of HP water, the HPCI which is operational.

If need more water than HPCI can supply, accum. could only supply for short while - that short while not important, some decay but not high.

If need occur - can re-open valve anyway - have time to do this since decay but low.

(unlikely)  
HPCI failure would be worst problem if occur. out. N<sub>2</sub> injection, however is a certainty if depressurize core without isolating the accumulators - this would contribute to the gas bubble, delay restoring cooling to core. This is worse problem than slight potential for HPCI failure -

Should isolate accumulators.

Ray E. Wade  
4/1/79  
(early AM when  
request made)

35-4101

4/01 3:35A

Wfo fr. Case  
Cont. Air Sample - w/ reduced Bubble

Sample 3 - 1.9% H<sub>2</sub>

4/01 4:00AM - Ross

one per shift

Need Another <sup>Conto</sup> Air Sample - 3:00pm 9:00pm

1.7 → 1.0 → 1.9% H<sub>2</sub> - 1.7%

Maybe hot spot in cont. is acting as a recombin.

- Tu 114n =  $< 4 \times 10^8$  spm/ml
- Ca 115n =  $< 8.3 \times 10^7$  "
- Aq-110n =  $< 4.8 \times 10^7$  "

working on new values at Bettis  
including Born.

Boron precip - man 1. Hair Parc.  
2. Wom Wagner

Dr. Conner - Vic  
Bettis → 412-462-5000  
          x 497  
          x 7310

Stalls - clear indication ~~that~~ sub. re: fuel  
analysis:  
→ CO<sub>2</sub> been 3000-4000°F  
→ little fuel melt

4/01 (36-4/01)  
4:30 am Dr. Marty & Haas, U. of Buffalo

### H<sub>2</sub> Solubility

KAPL-M 64198 Oct. 64

1000 psi - (SCC/Kg H<sub>2</sub>O) limits  
at STP (32°F 1 atm)

T	Solubility
200°F	1200 <sup>250</sup> <sub>1550</sub> SCC/Kg
300°F	<del>1650</del>
400°F	1850
APEX 420°F	2000
450°F	1900
500°F	1400
520°F	950

800 psi	T	Solubility
	200°F	1000
	300°F	1300
	<del>400°F</del>	<del>1420</del>
	350°F	1420
APEX	375°F	1450
	450°	1250
	500	520

600 psi	T	Solub
	200°F	720
	300	900
APEX	350	980
	400	900
	450	580

Revised info to handle group of 84.

37-4/01

con 4

Haass - J.O.J.  
Buttali

Overpressure →

Detonation limits → 17% H<sub>2</sub>

Peak Overpressure →

Max. Theoretical Peak O-P =

Need H<sub>2</sub>

X<sub>e</sub>

O<sub>2</sub> breakdown.

Has Curves →

4/01/79

4:35am Ross

Some release at site —

wind from site toward trail

2 mph W → E

at Trailer → 4.5 m/s

went up 1/2 back down.

very quickly

Trouble with Air Oper. Valve

- Did let some out

- "Activity is negligible — Planned Release

as part of Sampling program"



Trailer fr. Bldg —

Isolated waste gas tank

\* CRs are Al-B<sub>2</sub>C Not Ag-N-Cd.

Inside Cont. — 40 R/hr inside airplane eqpt hatch <sup>airplane shield</sup>

- 140 R/hr at personnel access hatch <sup>inside shield.</sup>

- low chamber = 6 R/hr

38-4/01 Daylight Room 3/31

4:50am At top of containment used Curtiefie. —  
Zavadoshii (mr/hr)

- 2-3 mr/hr. on wall.
- 1-6 mr/hr. around roof catwalk.
- 3 mr/hr on top of dome.
- 2-5 m/hr on roof of fuel handling bldg

5:20 Novak from CR via Stalls.

~~Let down tank~~ ~~digging in Aux. Bldg.~~

Had leak between compressor & holdup tank.  
 ∴ leaking gas into waste tank (12 boxes).  
 Plumbing error on gas return line  
 open "L"

6:30

B&W

If RCP stops

present decay heat, etc

Calc → time to set
--------------------

R, wood  
calorimeter.

6:30

5 Levine

A. Continguin

B. What If's —

Fault tree —



4/01/79 (39-401)  
6:45 AM Plant Status

• Primary System Sample -

• Recombiner - 2<sup>nd</sup> To be installed soon - held up for week gas.

• Waste Gas Sample - Still trying to get samples.  
No immediate panic.

• ~~BEF - Bette~~

• Boron-Bettis - working P-9 AN = 45000 ppm in worst place. -

• CR-Bettis - In <sup>7</sup>Ag - 3 cks  $\frac{1}{2}$  dissolved - That's limit of detectability - Saw none.

6:45 Jim O'Reilly

O 1-2-3

Cry River

} all operating full power or as need dictates.

May need a lead pig to ship sample  
7" High x 3" diameter - working space.

So far got 400 Ton by last night.

NRC Staff people

20-25 IE - Survey

20 - Mobile Network - Monitor / admin / tech. Support R. 11

How to get out of situation -

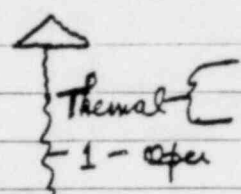
Gas Bubble. - About 820 A3

Stated to be about same for several hours.

4/01 (40-4/01)

8:40am Vallmen

H<sub>2</sub> Sample - 2.7% H<sub>2</sub>  
~ 1 hr exp.



Must decide on using recombiner  
Getting large sample for 2 checks. -

No firm info on gas in RV.  
Taylor thinks not flammable.

checking on venting

waste gas tank -  
NOT getting a sample -  
Radiation Field

Mattson

H<sub>2</sub>-O<sub>2</sub>

Ritzman ← ORNL, AVCO  
Telasco ← KAPL, W

Are bubble sizes  
at 875 psi

check:

Production Rate O<sub>2</sub> - 1% / day of size of bubble  
fr. Radiolysis

Assume: Pure H<sub>2</sub> + O<sub>2</sub>

- Flammability 5% O<sub>2</sub> in pure H<sub>2</sub>
- Detonation 12% O<sub>2</sub> " " "
- Combustion in H<sub>2</sub>-Steam system 18% O<sub>2</sub> {with 50% steam}

Impurities raise these values (Budwitz thinks this  
doesn't buy you much under 10%).

Budwitz says KAPL data says should be 5%

For reactor 6-8% Flammability  
12% Detonation {Kapl says 11-12%}

Use for 5% - Flammability  
evaluation: 12% - Detonation

41-4/01

- \* Do NOT THINK this will burn - However, Microscopically at almost any  $T_g$ , <sup>may possibly</sup> ignite on Sharp Surfaces  $\therefore$  unclear whether it will
- \* Fe, FeO<sub>2</sub>, ... in Suspension could cause H<sub>2</sub>-O<sub>2</sub> gas ignite. - On microscopically.

A. Schindler  
944-4067

Tom Muddy - Picadilly ~~to~~ Arsenal (SLAG)

{ 12% O<sub>2</sub>; 5% steam; 83% H<sub>2</sub>  
 24  
 12,600 psi shock pulse shocking wave

Res - Semicale -

If test is right, will wind up in all high parts of the system; very little will go out pressurizer, H<sub>2</sub> will be all over the system.

∴ No Rapid venting is recommended.

Budnitz - 1<sup>st</sup> day - O<sub>2</sub> generation is ~3 times later days.

∴ Use 5% O<sub>2</sub> Today

4/01 1pm To Volmer:

- QS:
- Scenario
  - Pump Vibration
  - Hendie miss Steels? } yeah! missed!

Site (li usee) - Pump vibration - <sup>19</sup> miles - 8:00 AM 4/01

- H<sub>2</sub> in Cont. - 2.4%
- 11:30am - 627. ft<sup>3</sup>
- Measurements say bubble is shrinking statistically

42-4/01

Budnitz Burning

- Yield at ~~8800~~ 6100 (Hoop Stress)
- Failure at ~~6900~~ 6900
- 2 to 10 msec.
- Peak pres detonation pressure.

10,000 <sup>gal</sup> @ 150 lb

4/01/79 ~~3pm~~ —

1500

Bubble =

H<sub>2</sub> =

ft<sup>3</sup>

% @

(11:30 AM = 627 ft<sup>3</sup>)  
(H<sub>2</sub> = 2.4%)

8:45 AM  
3 SAMPLES

4/01/79 Vallmer (early had 100 ml; used 2ml) (10 ml would easily do the job)  
4:20pm - ph

check status of 1" vent on pressurizer

	times	H <sub>2</sub>	O <sub>2</sub>	N <sub>2</sub>
3/31				
-	0700	1.7	16.5	81.8
	1500	1.9	21.2	76.9
4/01	2100	1.7		
	0845	2.4	18.1	79.5
	1200	3.2	19.	77.5
	2330	2.3	18.9	78.9
For	0630	2.4	17.6	77.9

43-4101

5:00pm - Levine

Call fr. Telence says that  
get ~ 1000  $\text{ft}^3$  of  $\text{H}_2$  / day out of Sump.

Containment = 2,000,000  $\text{ft}^3$



NOTES  
BY  
DON  
DAVIS

44-4101

9/1/79

— Davis shift to Midnight

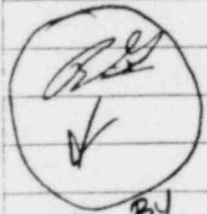
1. Called in Decay heat curve — in Red Notebook in systems area
2. Called in H. Richings re. alleged Boron concentration of 827 ppm from Bettis
  - Richings story in Red Notebook
  - bottom line — error from Bettis 1700 ppm
3. Ross called re. GPU needs help (Gov't) decontaminating Aux Bldg.  
Gosnick call Jay Belenfant, DOE to get assistance — DOE to assess need at site, get with D. Ross on details and utility contact — No further action needed at QTDG
4. D. Ross called re. formation of Industry Advisory Group — 3 committees  
Nat'l Guard Army 944-4756  
Ed Zabraski —  $H_2$  or  $O_2$  and core thermal  
Milt Levenson — Review of Cold Shutdown Procedures  
Warren Owens — contingency procedures — abnormal transients  
Fred Stern — 652-7180
5. Need to follow up on extra onsite power supplies for Loss of offsite power

Motels  
234-5021

45-(4/c1-4/02)

12:20 pm Major Flap

1 ~~press~~ out of 3 press. level instr. crapped out - Hanamer's other



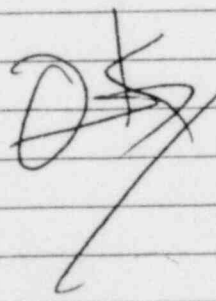
1:10 Gone away - no failure

Notes by  
BHAM  
GMMBS  
↓

1:30 Stello to Hanamer - would like labs to set up single "command post" manned around the clock (ORNL, ANL, Sandia) Idaho, BNL Both site & we would have same contact & let work would be - coord. Jossik action



1:35 Press has Stello's phone no. Story that B4W thinks bubble in zone is out



Would like guidance on what to say & tech. Make sure we get guidance back to Vic by 4 or 5 am on what we think (Frank & Marah working?)

Thaleni - info for Tadisco on hydrogen what exactly did hears. (Hanamer checking)  
4/1  
2300 H<sub>2</sub> - 2.3% O<sub>2</sub> - 18.9% N<sub>2</sub> - 78.9%



Samples - waste gas decay tank samples soon  
Last temp. - only 3 spots over 400°F  
Recombine procedures ready - getting their ment.  
Site has OK'd - Will notify me before they start

46-4/02

→ Take Jessie at 5:30 am

Discussion with Jonathan (w/ AC motor)

Westinghouse RCP - should work

down to 275 psi (maybe lower 70 psi NPS limit)

Discussion with Bland

Recombiner were leak tested - connections will be <sup>pressure</sup> tested before use

NaOH loss from tanks

Bland asked Benavoya for radiation cost to replenish

(Benavoya doesn't see need to replenish - I do)

from Denver SAE <sup>pdw</sup> Ziegler + Mayo - taking noise data

Random noise on pressure signal

Looks like good sensor

avg. 955 high 973 low 948

Cable spreading room terminal blocks

Should dual pen fast recorder

oscilloscope, spectrum analyzer

Ross will get consultants on phone

or maybe to site - need to discuss about what it means to system

Will take more <sup>data</sup> tonight

From Woodruff 24:00 oscillation down to 3 psi / 10 sec  
from <sup>measuring</sup> (someone request water volume)

653.9 ft<sup>3</sup> @ 203.7" Lp2r (germanizer kind)

11089 ft<sup>3</sup> @ 32.57" level A S/G

Containment air sample - taken at 2300 on 4/1

Being sent to Bettis

(Later lost by)

47-4/02

Benavoga needs calc. assistance  
Using georing syst act. \*

@ STP - 300 FT<sup>3</sup>/hr (Met. Ed.)

also in liq. rad waste tank

Question what activ. in cont. sump

Need to  
get calc acc  
working this  
also, what things  
generated by  
combustion of  
3.5% O<sub>2</sub> (7% H<sub>2</sub>)  
also what is  
cont. MW for  
for 92% H<sub>2</sub>

Stella to Jordan 3:45

Setting ready to draw liquid sample

from loffer - pressurizer - 5x10' made  
inside at

100 hrs.

(based on act. in 1st primary coolant sample)  
dominated by I-131

Check on spray actuation ✓

Pump capabil. at low pressure ✓

from Ross 4:05

Rotation of people

Syst.	Operator	Operator	Operator	Operator
Mezeder	M. Wagner	Ash	neil	Kreger
Berlinger	Mills	Chromel		Benavoga
Lambert	Hodges			Blumstein
Zajlar	Cor			Donohew
Norah	Marck			Murphy
Olshinkov	deval			Collin
Newberry	Meniere			Bell
Thadani	Trahn			Schidley
	J. Murphy			

(need 4 year Taliff)

Suggests starting today

48-4/02

from Rose 4:30

5000 gal. NaOH added thru sprays  
maybe 6 or 7 min, operation  
injected at  $9\frac{1}{2}$  to 10 hrs?

→ ~~from~~ Thadani & Rose haven't seen  
4:40 draft scenario yet  
asked them to get it & mark up

from Dalek Thadani - (I asked about 3:56 am  
904 psig reported pressure)  
4:45 Control room check  
Operating in 975 to 1000 psi  
Recombiners ready - est. startup 9:30 am

from M. Taylor  
Containment air sample est. 7:30 am

from Toth & Mennier

Bubble data - problem with equation  
but may give OK results  
~~uncertainty~~  
~~pressure~~ pressure injected ~~pressure~~ ~~level~~  
maybe tank level - question of  
solubility of gas in water

B4W doing error analysis

→ 5:20 - Called Rose & requested measurements  
do not yet form basis for depressurization  
~~the only the containment from injection~~

5:30 Hydrogen recombiners  
Will start in 2 hrs (7:30)  
Alerted dome of heli.



49-4102

Hanauer - Does in cont

Bethi 675 Xc-133 81 Kv  
etc.

Waste gas storage tank

56.1% H<sub>2</sub> (first cut)  
43.9% N<sub>2</sub>

Blend - sample time ~~8:30~~  
cont. air & waste gas <sup>4:30</sup> taken  
waste gas sample  
2 R/hr cont. reading of  
the ~~cont.~~ <sup>13.5V</sup> ~~cont.~~ <sup>25hr sample</sup>  
cont. ~~at~~ <sup>50m x 1hr</sup>

Hanauer - offers numbers on  
val in cont 20 to 30,000 Ok  
R/hr

Ross  
8:00 industry, advic. mtg. - three  
~~groups~~ groups

7:05 Ross - <sup>(Mather)</sup> Request for 1hr high  
level, QAD answer  
do it there position that there  
is no bubble and what is  
their basis - <sup>we</sup> need to know  
Minner called no position will  
call back at 8:30

(50-4/C2)

7:30

asked Barrett to confirm that waste gas tank sampled was used for letdown during bubble reduction

D. Simulcut Notes ↓

(CONT.)

4/02 9:00am

De request to Noxon

150 cu ft	5% O <sub>2</sub> & 12% O <sub>2</sub>	+ Pure H <sub>2</sub>
500 ft	5% O <sub>2</sub> & 12% O <sub>2</sub>	+ Pure H <sub>2</sub>
all at 1000 psi - Bubble <del>pressure</del> <sup>TEMP</sup> 900°F		

24 psig  
28 psig

4/02 10:45 AM

Q: From MATSON.

B+W CONTA  
→ MAT CHIRWELL

A. list of eqpt that may go -  
Do we agree.

B. What if?

C. If not, what mode now?

Detection  
in vessel g.  
vessel failure -  
going into  
containment

B+W said some inst.

cont. good  
for 90 psig

4/02 11:20 AM

H. Denton Pres Conference

- Estimate 50° cu ft
- Yesterday info too conservative re O<sub>2</sub> & H<sub>2</sub>
- Recombiners - operational (iso. values functional)  
• 2 hrs to startup & working
- H<sub>2</sub> in waste gas storage  
• 56% H<sub>2</sub> - 44% H<sub>2</sub>  
• won't start pumpback until after recombines
- 1<sup>ST</sup> rad. failure of instrumentation  
Flow transmitter on inactive loop
- Offsite doses - declining  
• 1-4. mR/hr early yesterday  
• 1.5  
• .1 mR/hr Today

51-4/02

→ 37 Comimeters: (24 hr - ended late yesterday);

5 mi NE - 1.1 MY (Is this Hot?)

next - 0.4

most < 0.05

ERROR  
This should  
be written at  
yesterday late.

→ Bulletin re: Other B/W plant  
Have we found B/W design defect.

→ Is 50 ft<sup>3</sup> a serious design -

Don't think so - won't yet buy 50 ft<sup>3</sup>

→ "Safer than yesterday" ←

→ Evacuation -

· State does this

· H<sub>2</sub> exp. likely - decreasing

· O<sub>2</sub> evolution rate was too high.

→ why change from 1000 → 50 ft<sup>3</sup>: Tech. <sup>or</sup> procedural.

· Pressurizer Spray

· let-down flow

· leakage from RCP Seals

→ when cool down -

No hurry - will

Rad & H<sub>2</sub> in

4/2 11:30 AM Vollmer

- Boron (factor 2 error)

Startup was ~1000 ppm

Now 1750 ppm in primary coolant  
on old sample

- Industrial Waste Tank - (them or Fu Flap)

Pres. had to - Now think releasing iodine  
Peeching - Thinking Turbine Bldg Sumps went into  
These tanks

S2-4/02

→ Pressing Pressure indication

Do you get more fluctuations from solid system.

→ ORNL - Decontamination Crew ←

LVA Sent ←

→ 30,000 R/hr - Think this comes from headstgs.

• Burns & Roe checked staff's calc

10<sup>+1</sup> to 10<sup>+4</sup> factor given by Davis

• Vollmer to get us done Reading.

40,000 R/hr  
Now!

→ waste gas tank -  
pumpback →

G. Clifman  
C. Burke

Sqft door

200

20,000 yesterday  
both up by factor of 2.

Heavily backlogged on procedural review - Need this afternoon to start tomorrow's day shift

4/02 Vollmer

Status

CR. says is on.

→ 1/2 Power & holding on Recombiner

→ Contr. from Celler - Told them to check w/ Harrison

→ Oscillations - Noise level - hard to get.

→ No info.

→ Checking inst. that's susceptible

→ People - Hours 5 } will be coming back.

Carl B. } personal situation.

→ Rad waste tankage available - LATER

→ Rad map - (A/E work would be nice) - LATER

→ Computer Printout ← will try to get to us.

→ Recombiner Dosco ←

Helicopter - 4.5 to 20 min over any. Bldg - under wire.

Mr. Puig -

XXXXXXXXXXXXXXXXXXXX

x 2196 B&W Corrosion Point  
52k-4/02  
-102 12:15pm

Jeddins  
Billy Eyrighan

B&W Official Position

This A.H.'s spray data  $\rightarrow$  Negative Bubble -

\*\*\* \*\* B&W Official Position - No bubble - (Error band  $\approx 70$ )

Now redoing this A.H.'s calculation without solubility term - it caused negative  $\phi$  if no bubble, no sensitivity term.  
- Hitters - Are you sure pellet value <sup>sensitivity term</sup> 0.001  
letdown line didn't open.

Think goes to makeup tank.  
But, if opened - would calculate higher size bubble.

This calc. (Eall latest) done on <sup>pressure</sup> up-swing calc.  
Earlier did <sup>visc</sup> down-swing calcs. - Bigger swing,  
more sensitivity.

Deaeration Rate -

Half-time - 2 days @ 15 gpm -  
Don't have no. for spray. —



53-4/02

4/2 1:50 pm Barrett info:

at 1:30 Started Recombimer

- over Bldg - lic. helio 4.5 - 20 mi
- west - on side of Bldg - 4-9 mi
- West - across River - < 1 mi - Saw Bldg.
- R-Comb Shut down but on N<sub>2</sub> purge with cont. valves open to see if can trace radioactivity.

4/2 2:20 pm Called Bradford 634-5308 ✓

Tom Gibbons legal Ass't.

Cindy 634-1461 ✓

Coung Asimov

KENNEDY 634-1463 ✓

<sup>consult</sup> Claudia Staller

ALFARNE 634-3323 ✓  
G. Sauter

H. Denton  
Tape due there w 3 pm  
San Chik  
PW out this off.  
Same stuff as  
H. Denton  
P. Conf.

4/2 2:20 Cass - Mattson Agreement

Met Sid asking info analysis

→ Analysis to labs for Met Sid + ~~Bradford~~ ~~Staller~~  
ERT coordinates? Levine does

→ Requests for Eqp't - Coord through Skillov/Mattson

4/02 3:00 pm Vollmer

As bubble a rises → oscillations increased

Recombimer - Probably no leakage

- Helicopter - very cloudy - pockets of gas blown down by helicopter - every time heli went over meter, got reading.
- Recombimer is operating - going to up in T - now 500/600 - need to go to ~1300.

54-4102

\* Accumulators are valved out.

\* S.G. "A" level -

now still at 35% - checking -

3:25pm

Vollmer

Sch. 40 pipe - 3ft long - 1" D.

Reading 700 mm/contact.

Specific activity inside?

Cont. gas at recombiner - operation ~ 1 hr.

- at inlet 90-90°F

→ Recombiner at 1100°F

Should hit 1300°F in ~ 15-30 min.

Then will know H<sub>2</sub> %.

4:10 Dr. Ziegler

Putting together a fact sheet -

Bob Crighton / Hot Anderson  
ORNL

- No loose part indication

- RCS primary Sys. fluctuation

- 55 psig Peak-to-peak normal

- with 1000 psig (950-1000 psig)

- Bubble calculation

• Bailey Computer as input - Took <sup>instantaneous</sup> primary values <sub>not average.</sub>

• Formula calls for subtractions

• Fluctuations are random & a-periodic (also seen on Ozone)

Bull - Crighton needs -

- Time pressure bases on A & B
- Have noise spectra

- Pump accelerators have been good quiet

→ NO SPECULATIONS AT THIS TIME.

55. 4/02

4/02/79 4:30 pm

From Nooran (fr. Picadilly)

Containment peak pressures:

Gas in vessel  $\rightarrow$  Explosion  $\rightarrow$  Some burning gas into containment from vessel failure. —

gas at 1000 psig; <sup>Temp</sup> ~~pressure~~ bubble 300°F

500 ft<sup>3</sup> gas - 12% O<sub>2</sub>  $\Rightarrow$  28 psig in cont.  
100 ft<sup>3</sup> " - 10% O<sub>2</sub>  $\Rightarrow$  24 psig in cont.

$\rightarrow$  R. pressures to come shortly.

4/2 5:50 pm - R. Vallind - Site —

~~Pressure~~

Had volumetric items.

— Pressure level — lower rad qual

— 3 items.

— Symptoms of failure — random watering

— licensee hesit given Site Computer printout of accident.

	4/02	
— Volume of gas bubble —	7:40	47 ft <sup>3</sup>
	12:30	208
	13:30	195
	15:15	174
	16:00	48

— Highest D-10 479°F G-11 434 E-11 422

— H<sub>2</sub> — 2.0%

— Recalibrated — 700 mR Some variation

3-4/02

Latest makeup value =  
Letdown =

↓ 4/2  
~1900  
Kills  
Brian Guerin  
NOTES

from Stello

Wants dose rate est. checked by ORNL  
and briefing on equip. failure prob.

Discussion with Case, Jordan, Stello on  
sending people to site to look at logs  
& charts before Comm. briefing  
on Wed. on whether other plants should  
be shut down. Stello is telecopying  
~20 pages to see if we can get what  
we need from that.

TE says they can put Klingers on prob. at  
site if NRR sends someone to look

Davis

Aux. feedwater was valved off (per  
Stello)

Think Klingers has looked at charts to  
confirm what operator said

Suggest we have Klingers listen to tapes  
& come down tomorrow to help prepare  
& participate in briefing - sounds good

2100  
from Ross B+W should I get environ. qual. that we  
may have

Going to labs - would like info from  
Brookby & Sandia weapons effects to  
instruments - Biddy & Torbo transmitters  
Will they participate?  
Sandia - Al Schmidt, Bob McCloskey → Hansen working



57-9/02

4/2  
2130

from Gilinsky

Wants further HEW briefing  
Current status, evac. options,  
Cleanup operations - categorizing

thinks we

Need to get together with State on show  
they might crush our options # Collins

He will set up something for  
tomorrow 11:00 am

Gormier + maybe Gilinsky

4/2  
2145

~~the~~ <sup>on recorder</sup> shielding on blower motors - site thinks  
no need because not worried about  
damage to blowers

2150 Ross

Industry group meets tomorrow  
night - may have game plan then

Met tonight from 7-9pm

Stem, Owen, Levenson, Zeborke  
McMillan, DeCamp, Brookshier

Z committee

B&V will document  
tonight  
on no hot O<sub>2</sub>

1. Hydrogen overpressure → no O<sub>2</sub> story - to document tomorrow
2. flammable + explosive limits in this environ. - doc tomorrow

3. Core damage - reviewed time temp. history 2 hours where all thorns were jagged - think gods haven't failed because thorns not falling



SS-4/02

Z. B. Levenson / Over E Systems

Each subgroup to produce report by

A. Orally describing and ~~drawing~~  
depressurization scheme

a. scope

b. how task done

c. tasks necessary

d. assump. made

e. pros & cons.

B. Use of secondary syst for  
decay heat removal

(water full secondary -

~~water~~ overflow thru pipes)

C. Abort transfer of cooling

Use of letdown heat exchanger  
looks feasible

D. Use of natural circ. alone  
if feed & bleed

Hansen -

1. Bull - coming into work  
oscillations

2. Satterfield - coming in  
to work ensure qual

Clark Kammerer  
from ~~Comman~~

- man - room member

to HEN need to be covered

with Comman, Conger, Red

(for Kennedy  
also)

59-4/02 - 4/03

~~Handwritten notes~~

Stello

Wants more help on contingencies  
2 of 3 → ~~Smith~~, Marsh, Bill Mills  
Snyder,

Wants M.D. that understands  
health effects

|| Critical mistakes in transient  
aux syst. blocked - didn't come  
on for 8 1/2 min.  
tripped ECC on high level

<sup>1300</sup> Eisenhut - want to talk to Ed in  
morning on extra people

4/3 0000 Denton to Davis - need M.D.

4/3 0010 <sup>from Hanauer</sup> Satterfield putting together team on environ  
will get briefed on Lemis 2nd effort <sup>and</sup> <sup>goal</sup>

Diagnostics - 2 ~~ORNL~~ ORNL people to site  
"Boaintrest" at <sup>tomorrow</sup>

Bull - days, Hanauer - nights

Hanauer, <sup>& Bull</sup> wants to go to site for couple  
tomorrow - leave about 7:00 pm <sup>hours</sup>

Will call B&W get ~~tech~~ technician sent up

Diagnostics - to take place of any failed  
instruments

all <sup>Case</sup> → Transportation for Hanauer

S9A-4/02

4/2/79

From: 4. BURL

1. PUMP 150% FLOW 15700 #/sec

FLOW

PUMP  $A_1 = 15700$

$B_1 = -400$

"  $A_2 = -6700$

$B_2 = -1522$

7100 THRU CORE  
9000 " STEAM GEN

VENT VALVES ~~ARE~~ NOT FLAPPING

V VALVES NEAREST A LOOP OPEN

2. PRESSURE FLUCTUATIONS  
ARE FROM COLLAPSING BUBBLES

MAYBE BOILING

" HYDROGEN

NO MECHANICAL DANGER

MAY BE BOILING UNDER D10  
@ 487

3. THERMAL BALANCE

$3^\circ \Delta t \rightarrow 7000\% \pm 40\%$

60-4/03

4/3  
0110

Stello, to  
Hansen - team for miss, inst.  
list. - what additional  
~~items~~ items are important  
Figure out rad. damage limits  
J. Kelley + IE + I&C man

Stello has GE washing oscillations

What does core look like -  
~~top~~ candidates Okrent, Rukhman,  
Johnson

NOTES  
BY: D. DAVIS -  
2:30 AM

A. Thadani

- ① Bubble size - based on NRR findings
  - a) B&W ~~of~~ formulation seems OK - Rostovsky / Marsh / Woods
  - b) Mechanisms for removal of bubble
    - 1) leakage out CPD seals
    - 2) letdown degassing
    - 3) Press. drain line
    - ? 4) Zr gettering
  - c) Probably bubble gone - do not completely understand how it left
  - d) 34 scf / psi change in RCS press. from H<sub>2</sub> in solution, for example 1100-1000 psi change  $\Rightarrow$  34 scf / 60 atm = .5 ft<sup>3</sup> bubble

② Requested site to examine the strong motion acceleration indicator in containment about 1:30 pm Wednesday to see if explosion turned on

\*

- ③ Site action items
  - a) Strong motion data
  - b) Whether B&W should test H<sub>2</sub> leakage in CPDs
  - c) Whether ~~to~~ Zr H<sub>2</sub> emb. limit should be pursued

61-4/3

3:50 AM

Bettis sample analysis of 4/1 sample 3:30 AM

WASTE TANK	[	$N_2 - 79.2\% +$	contain	[	79%	+ water in sample
		$O_2 - 13.2\% +$			21%	
		$H_2 = 11.4\% +$			> 0.1%	
		$\frac{> 100}{> 100}$				

Given to Grant, IE at TMI site

Considerably different from license

5:00 pm - Str bland - received at atmos. press.

5:30 AM

What is radiation level in ambers /

Pumps

instruments

6:15 am

Recombination reading 7-19 R/hr

what level in containment



62-4/3

4/03 11:20 AM

FR: Vollmer-

→ Bubble Size -	1600 - 4/2	48 FT <sup>3</sup>	1225 ft <sup>2</sup>
	0000 - 4/3	89 FT <sup>3</sup>	

based on analog ↗

→ Contact for any fuel work & Bettis, etc :-

→ Working Indiana

→ Coast from which milk samples came from DIED

→ Mobil Oil VP - Dr. Paul Weisz  
609-737-3000 x2301

→ Ed Zehoski → Met Ed  
"Z" group

Not in at 7:30pm

63-4/64  
~~3/1/64~~

4/4? 4/5 0015 Called Ross, asked if they have a particular reason for staying

0040 Hanauer - blip on #2 pressure transmitter, spike, then normal - may be precursor of failure

2 new people from ORNL on fluctuation

B+W-C. Mayl

SAI - Ed Ziegler (ex B+W)

ORNL { Fry  
Koyter

TEC - N.J. Ackermann (heading effort)

Objectives: (1) monitor health of key instrumentation  
(2) acoustic monitoring  
(3) exploratory

Hanauer preparing list of instr. vs water level

Latterfull - working

- (1) what are key instruments
- (2) how are instr. qualified
- (3) what dose rates are they getting.

~~Wason - systems~~

Mur

64-4/c.

from Stello  
Headiker - <sup>new</sup> 4/2 eds says RHR may  
2000 lb/hr/ft<sup>2</sup> - not be enough  
to work

RHR -

used full 780,000 gpm but may be bypassed  
Minner working

met. Ed  
Minner - contingency for level control failure

1. see. give spray flow, vent, heater
2. restore makeup to previous level
3. increase flow to 50 psi above  
previous
4. when solid turn on heaters  
& keep temp in pressure zone  
25°F below previous level

What if leak?

→ Novak thinks they ~~do~~ have  
alt. way of measuring level  
stopped degassing  
Shut off all flow & get correlation on  
level tank  
(0200 - Novak called & said it didn't work)

Stello - 20 hrs sleep in charge

Case - Running account of small events for <sup>Stello</sup> <sup>in moon</sup>

65-4/0.

Darton - has approved 3 coming back  
Bedinger, Lanier, Magyetic

from Stello

Would like stress analyst to  
look at steam generators - thermal  
shock

0200 from Thadani -  
sample from RCS -  
sample hood to atm.

degassing of sample (400 ml)

$$\frac{400 \text{ cc}}{11,800 \text{ ft}^3 \times 28000 \text{ cc/ft}^3} = \frac{4 \times 10^2}{1 \times 10^4 \times 3 \times 10^4} = 1 \times 10^{-6}$$

core inventory of Xe-133  $\approx 4 \times 10^7 \times 0.7 = 3 \times 10^7$   
 $\therefore \sim 30$  curies degraded  
est. < 1 hr offsite

(30% in atm,  
assume rest  
in coolant)

told Thadani that we should be  
notified of sampling in advance so we  
can get down helicopters up.

0255 from Bland/Morris

0100 Containment air sample - splitting  
between SAI + B+W

0300 from Bland

Waste gas decay tank curie inventory ~

0305 IE link says they are going solid  
on S.G.

Called Rose to check it out

0315 IE link says bad info - only preparatory  
work on S.G.

(66-410)

0315 List of flood timer for key instruments by Lyubovich Hanauer being telecopied to site

0325 M. Taylor to Hanauer

~~467-5711-4~~ Should we open isolation valve inside cont.

0330 <sup>from Stello</sup> More noise on same level transmitter <sup>pressure</sup>

0335 from Minner - RHR  
can produce 10,000 lb/hr/ft<sup>2</sup>  
Need 2000 lb/hr/ft<sup>2</sup> to maintain temp.

Both pumps together can produce 20,000 lb/hr/ft<sup>2</sup>  
Passed to Stello  
0345 from Stello  
Novak will know on backup reboiler  
makeup in 1/2 hr  
Within about 2 hrs will know on pressure indicator method

---

0700 Stello/Zavaloski  
Hank Buchanan at St. Lucie re chemical systems.  
Site suggests we look at charcoal systems (blowers + filters) if they are going to use RHR

0725 ~~6-11~~ Slow increase noted in thermocouple  
6-11 - Passed on to Stello -  
he thought mainly due to water temp. increase



67-46.

1420 4/5/79  
from Odense

3 av. 35 menovaries

Pulled sample of water near tendon  
access in aux bldg.

Rad 450 R/hr  
looking at pH 1020 4/4/79  
counted at 1415  
40 mcr/hr. - (contact?)

Counted by B+W onsite

	uCi/cc
Mo-99	$8.9 \times 10^{-3}$
I-131	.67
Cs-134	$9.9 \times 10^{-4}$
Cs-136	$1.85 \times 10^{-3}$
Cs-137	$4.08 \times 10^{-3}$
La-140	$5.026 \times 10^{-3}$

---

B-S.G. drawn 3/30/79 @ 10:30

7.9 uCi/cc I-131

0700 on 4/3 2.9 uCi/cc I-131  
some Cs (Barrett has data)

(68-4/05)

Summary of Telephone Contacts with B&W Plants  
for Reaction to Bulletin Provisions on  
Containment Isolation

(Calls made 4/5/79 1430-1600)

Davis-Besse

(Grimes & Schroeder)

Present Isolation -

RC Pressure  $< 1600$  psi or Containment Press.  $> 4$  psig  
(includes sumps and waste tanks and RC Pump  
seal injection and return lines and RC Makeup lines)

At Containment Pressure  $> 24$  psig - isolate

Component cooling water lines and

- Main steam and Feedwater lines.

Now have pending request for Tech. Spec  
change to isolate pump seal injection  
and return lines and RC makeup lines

on RC Pressure  $< 400$  psi instead of 1600 psi

(Source: Gene Novak - Fred Miller Toledo Edison).

Arkansas Nuclear

(Grimes & Schroeder)

Present Isolation -

Containment pressure  $> 4$  psig

Sump and Drain Valves from Quench Tank  
are manual valves (normally closed)  
outside containment.

Main steam and FW lines isolate on Low  
Steam Flow or Pressure.

(Source: Dan Williams)

69-4/05

Rancho Seco (Grimes & Schroder)

Present Isolation -

Isolate on Safety Injection signal, but this does not include cooling water to pump seals or CRD cooling. (Would not want to isolate these on SIS)

FW automatically switches to Aux. FW  
(Source: Dal Rasch)

Crystal River (Schroder)

Present Isolation -

Containment Pressure  $> 4$  psig

Includes Drain Tank and Sump, FL<sup>1</sup>,  
RC Pump cooling and CRD cooling

Main Steam line isolates on MSLB Logic.

Do not recommend isolation on SIS  
of pump cooling and CRD cooling

(SIS is at 1500 psi RC Pressure)

(Source: Guy Beatty)

70-405

Ozone (Schroder)

Present Isolation -

Isolates on Containment Pressure  $>4$  psig.  
Sump and Drain Lines are normally  
closed - require operator action  
to open.

Would not want to isolate pump  
cooling on SIS (1575 psig).  
(Source: Dave Gill, Duke Power)

K. Parczewski

T. Marsh

R. Woods

4/5/79

70A

## Gas Bubble Sizes vs Pressure

if Have to Depressurize

Conservatively assumes saturated  $H_2$  in  $H_2O$  solution at 1000 psia (hopefully, <sup>actually</sup> less than saturated)

<u>pressure, psi abs.</u>	<u>ft<sup>3</sup> * gas</u>	<u>ft<sup>3</sup> ** gas</u>
1000	0	0
820	65	2362
684	129	3911
547	227	5503
410	388	7051
273	713	8628
15	16,100	10,704

\* at the pressure indicated and 280°F, except for the 15 psia entry which is for 212°F.

\*\* at STP, ie 15 psia and 32°F



4/5  
4/5

1635 from Gossick

Mattson wants B. B. Mills tonight

sending back Kreyer, Berlinger,  
Majetan,

Check with Case (OK) put Mills on alert  
Call Mattson (done) 28172 ~6:00am

Case or Eisenhut to call Vollmer

1740 Vollmer - ~~so~~ people are back working on  
primary coolant sample after  
precipitator transmission flaps

~~1745 from Mattson~~  
1800 from Adensen  
are using letdown demins.  
& filters for letdown flow

1200 gal/hr = 25,000/day x 7 days 175,000 gal  
~~Back to letdown tank~~

Common sample line and room where

Blas tank	precipitator pressure	letdown	A	B	C
	(psi/cc)	I-131	$10^2$	75	$1.1 \times 10^2$
		Cs-134	$3.4 \times 10^1$	—	—
		Cs-136	$8.5 \times 10^1$	—	—
		Cs-137	1.3	$2.9 \times 10^1$	—
		La-140	1.6	—	$1.2 \times 10^1$
		Mo-99	—	—	7.2

Zavadzki aux samp pH - 8.41

72-4/05

from Eisenhut

Needs answer

Minors (1) Design basis requirements for feedwater system - is feedwater + all aux. feed a design basis?

(2) Why not do same for all W & CE plants as for B&W?

Jordan - drafting some items will be generally applicable. Will put circular type words in bulletin for other plants.

- (1) verify aux feed valves open - & verify
- (2) do not rely solely on pressure level - go with pressure
- (3) Keep HPI running until LPIS ~~is~~ running or 1 HPI for 20 min or until T<sub>h</sub> is 50° F below set.
- (4) If RCP pumps are operating - keep them operating
- (5) If ECCS activation, isolate cont.

What are key differences

- (1) less vol. in secondary
- (2) diff. pressures

Latest status summary

73-4/05

2335 from Thodani

Containment air sample (1st sample)  
sent to Bettis ~~dpm/ml~~

	3/31	<del>3/31</del>	4/4 corrected results
	dpm/ml	uci/cc	dpm/ml uci/cc
Xe-133	$1.5 \times 10^9$	<del>2.6</del>	$5.7 \times 10^7$ 2.6
Xe-133m	$3.5 \times 10^7$		$1.75 \times 10^7$ 7.9
Xe-135	$1.8 \times 10^7$		$7.8 \times 10^6$ 3.5
I-131	$1.4 \times 10^5$		$5.6 \times 10^4$ 0.025

4/5/79

0000 U. Stello

Answers on thermal shock by noon tomorrow  
(Norman assigned)

0045 Hansen - from Penning

If melt - if cont. spray heat ex.  
on about a wk before failure  
due to gas/H<sub>2</sub>/steam  
Okrent vent/purge might fix

345 Stello called re setting  
ANO-1 up like TMI-2, etc.  
isolated S.G. 1 pump oper. in &  
experimenting to check nat'l  
wire & press. level schemes and  
operating procedure - wants EMT  
position.

4:30 H<sub>2</sub> degassing of reactor coolant = yitr  
 Stella has turned on Bettis to Cole  
 wants feedback from Levine on  
 degassing RCS and Rubenstein  
 gases from core  
 Promised phone calls in morning from  
 both to brief Stella  
 Relayed meteor. info - better  
 dispersion in afternoon (factor of 10)  
 than now - (Hypothetical doses  
 attached)

5:00AM Increases in letdown flow  
 Check other ways to max degass.

6:21 Notified V. Stella that computed  
~~contaminant~~ ~~sup level~~ increased  
 from 2' to 3'4" ∴ SG B press and  
 2 RCS loop A flows submerged  
 and only 2" to many other instr.

6:30 Ask L. Barrett to evaluate potential  
 pumping of contaminant sump to waste  
 tanks

6:00 AM - Gossick had Stella re check  
 need for sanitary plant - re. utility  
 pay for. Stella checked it out again  
 - request was before utility got approval  
 to dump

4/5  
1230 from Libarkin - Etherington & Michelson want to talk about contingency planning - told him to have them call

634-~~3265~~  
634-~~3265~~

Described offsite options

Okrent  
What is decision chain to reach decision in NRC

Can Japel (EE)

fuel pool venting

Levenson  
not this  
Emergency procedure approved  
& in control room  
Emergency power to heater?  
offsite power supplies

1300 phone for B & W - Taylor & Deddins

Effective immed. group is headed by  
H. P. Check  
Note from  
Can to Check  
Should complete task force effort by  
April 12

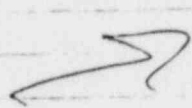
official position

1. Can you isolate at cont. on HPI signal
2. Pressure level vs pressure what is preference
3. Keep RCP running
- 4.

Lewis & Davis to split night



76-



Call each of B+W licensees

Reid  
27.3.81

1. Considering issuing guidance
2. On initiation of ELCS, isolate containment

Randy Price -

1. How many TLDs, what area, why that number
2. What info. is being required to have ordinarily
3. What other environ. monitoring

Bennett to <sup>equip</sup> call

~~1400~~ from Vollmer

Why primary coolant sample  
Davis took dictation on why we needed

1 from Marsh - Check told him to work on  
Big Rock Pt. for now thru weekend  
& not to show here

77-

1625 from Noonan

Don't see a thermal shock problem

No problem on pipe loads remaining solid.

might have buckled cracked tubes when shroud cooled

4/6 5pm A. Thadoni called re use of Furmenite to stop leakage in sample line (Heise Gauge)

5:20 Vi Stella - no longer need - inaccessible location

4/6 1020

Z. Myratt - aux bldg. filters - problem loaded & may start releasing

Caller <sup>EPS</sup> Brookside ~~Myratt~~ Onsite, Myratt assigned

Don't

717-944-4631 Brookside

11000

from Noonan - TMI may have gone below min. temp. requirements in lower head - TMI ~25°

but maybe met.

Possible problem with other operating plants - they have higher mins.

78

1010  
from Rose

base case summary - what Met. Ed. program  
for next 9 days - call Lauben on 0301

1145 Went thru "base case summary"  
with Lauben

---

H<sub>2</sub>/O<sub>2</sub> prob. - radiolysis?  
Will natural circulation work?  
What instrumentation should be used?  
Pressure reduction - what level.  
Potential for rad. leakage  
Are steps reversible  
Syst. interaction

1245

---

Charcoal filter systems  
SRP?  
Hanford?

1420

---

Mattison to Case  
All lab contacts at 3 mile thru  
Ebarando (call trailers)

1730

J. Collins asked for rel. humidity given  
68°F dry bulb / 51°F wet bulb  
Met. people replied back

79-4107

7/7

~~1305~~ 1305 called Barrett on demin. heating calc.  
— calc. on left hand side  
— 15KW on demin. — gave results to Collins (10 hrs or so)  
150 psi relief valve  
15 hrs<sup>20</sup> to adiabatically heat up to 150 psi

Should not shut off demin.

- 4% boric acid — precip at 65°F  
 $H_2BO_3 \rightarrow 1\% \text{ boron} \rightarrow 10,000 \text{ ppm}$

Find out what temp is after letdown coolers

Resin good for 10° rods — styrene beds break down  
Could foul up screens &

Slugging in pressure breakdown orifice

1000 r/hr at door of demin

7x10<sup>6</sup> ci on bed (10 gpm at original primary sample cone.)

Steaming could degrade diaphragm valves

1340 Talked to M. Anderson  
on  $HNO_3$  addition to cont. <sup>work</sup>  
15000 gal added but probably not <sup>through</sup>

1400 Noonan called — status on HPS  
injection made — he is having  
Kelley, DSS work what temp.  
they should be using for vessel  
thermal shock

1620 Noonan — systems people expect fair amount  
of mixing  
20 min. OK for normal ~~operation~~ welds  
atypical welds — just thermal

80 - 4/07

4/7

1643 H. Silver

Possible source of hydrogen  
Could get gas into RCS thru HPI pumps  
from ~~makeup tank~~ makeup tank during  
ESF signal on hydrogen charging line  
5 bottles into line

Worst is  $155 \text{ ft}^3$  at 1000 psi

Pumps take suction on makeup tank  
suction valve open  
suction valve does not close automatically  
if not closed, still should  
have water seal -  
if charging procedure wrong  
& valve open

1655 Re layed to Ross - He will check into,



81-4/07

1845 from Buhl  
running core melt case for Matthews  
BNW doing core case. - indicates sloshing

1915 Passed on to Vollmer, he said <sup>ARC</sup> site had  
approved procedure on 50psi decrease  
for degassing provided data analyzed at  
each step next step approved by NRC

1930 from G. Kelly -

Emergency Procedure E-4.

When RCP go out -  
Worried about low temp combined  
with HPI operation

1755 from Vollmer - going to start  
procedure from 850 psi - "drifted  
down to 844 psi" - going back to  
850 as start point - Letdown  
system working

(also bubble  
& noise  
checked  
each step)

Criteria for thermocouple reading  
No thermocouple reading shall be  
less than the sat. temp. at two pressure  
steps (100 psi) below current step  
eg. - at 850 → 800 - find sat. temp. at 700 psi (50°F)  
900 → 850 (50°F)  
950 → 900 (50°F)  
Chromal - computer point out  
says 844 - actual reading  
on indicator on control panel is  
100 psi higher  
∴ Reactor at 950 psi  
will start procedure at 950 psi  
(computer 850 psi)

82-4/07

2010 Noonan

bulk temp. 100°F OK at 1300 psi;  
150°F OK at 2500 psi

lower pressure helps  
low pressure/high temp, best when  
going to natural circ.

Thermal criteria (from steam table)

<del>950 → 900 psi</del>	<del>518°F</del>
<del>900 → 850 psi</del>	<del>510°F</del>
<del>850 → 800 psi</del>	<del>503°F</del>
800 → 750 psi	495°F
750 → 700 psi	486°F
700 → 650 psi	477°F
650 → 600 psi	467°F
600 → 550 psi	456°F
550 → 500 psi	445°F

must be  
about 10°F  
subcooled  
at current  
pressure

2230 Vollner - after first step 800 → 750 psi by computer  
not much g/c - max 437, @ 850? psi  
by control room pressure  
750 psi by computer

2250 J.T. Beard

B+W decay heat removal briefing  
Lane plan changed -  
Cr. River / Orconae - failures on  
valves (12 inch isolation valves)  
limit torque overdrive - cause  
for failures unknown  
Manuf. names, nos. of failed  
w want to examine RHR valves, not  
by Eric Lindsey

83-4/07

Beard - concerned on  
Pressure bypass on RHR

06018  
No. (717) 944-~~06018~~, 4041(ex.168)

2105 Vollmer

Slight reduction in RC pressure  
noise - no change in other <sup>signals</sup>  
Actually went to 735 psi by computer  
Vented - did not get much gas

Told Vollmer to get the pressure  
interlock bypasses off the  
RHR valves until they were  
down closer to RHR design pressure

2145

from Jan Bryan (her)  
IE checked control room log  
50 to 70 psi diff. has remained  
~~constant~~ (between computer & <sup>control</sup> gauge)  
constant for days

2145

Mattson <sup>Widlow</sup> → Car  
started at 1900 started at ~ 850 psi  
first step was 100 psi (inadvertently?)  
The <sup>1115</sup> couple criteria actually  
that before embarking on a step,  
must be below sat. temp. 100 psi,  
below the pressure the step is started from

2200

from D. Thompson, Car (her)  
IE rechecked and pressure interlocks  
were never bypassed

84-4/07

~ 2230 ~~Off~~ Aug. Bldg. monitors indicate high release rates  
 asked for dump plane - will take ~ 1 hr to get up  
 asked for site survey teams, underway  
 Told Mattson leak probably from makeup tank header  
 It ~~was~~ asked whether makeup tank had been piped to cont. per our suggestion; answer - no (not clear whether not piped or valves just not bypassed. I.E. Diagram indicates connection either planned or made)  
 Told Mattson to consider stop of depressurization until makeup tank connected to containment  
 He said he would go to GPU trailer & discuss.

2300 Mattson

DH-V1, V2, V17  
 Wants 24 hr answer from Lathfield on rad. dose & capability  
 Get back to Beard directly

Wants from Minnes  
 assume all in-cont. stuff failed & we are in RHR mode  
 What do we want on RHR system, <sup>outside cont.</sup>  
 before putting high-rad. fluid in it?  
 1. flow, temp, pressure, pH, ability to take samples  
 ability to add & take out water  
 Get to Beard directly

ability to get problem (signature) to look at core

85 4/07

2330 Called Mattson with latest IEP <sup>ground</sup> survey  
(also got dome up at 2247)  
noble gases went from  $9 \times 10^5$  to offscale (10<sup>6</sup>)  
so don't know how much increase  
Particulates & radon increased slightly  
Mattson & I agreed that if they  
had the survey teams out & the  
dome plane up they could proceed  
with degassing.

2340 Mattson to Case  
Going from 700 psi to 650 psi

2355 from Taylor to <sup>Bar</sup> Munnin - did have  
oversized operator & weak stem  
on some valve  
Co. R., Osceola, TMI-1

Tell  
Bar

3 valves on TMI-2 - two  
supplied by B&W by Keland (12 inch)  
1 8 inch valve supplied by <sup>from</sup> ~~Bar~~ <sup>to be</sup> ~~re-~~ <sup>remanuf.</sup>

2 suggestions - cycle one  
downstream valve (?)  
8 inch valve less likely to  
have debris because tied  
into line

Someone should check out <sup>from</sup> ~~Bar~~ <sup>to be</sup> ~~re-~~ <sup>remanuf.</sup>



86-4108

4/8  
0020

EP-21

Emergency Procedure for loss of all water procedure

Mattson / ~~W. Buhl~~  
2500 psi - 150°F  
1300 psi - 100°F

Mattson getting Roosa's numbers into procedures

~~Denton~~

300 Mattson called re. Rosa's comments on EP-25 - loss of Aux Transformer. - Reply in morning

500 Ross called saying site released to go to 550 psi -

800 Ross called re help in eval. A & B cooldown path - Schroeder / Sulzger to work in morning

9:50 AM Denton called - time to meltdown given today decay heat - for Green meeting - call off

T. Buhl - lost all flow - HPI to pump up vessel  
Water level 6' above top of core  
28 hours to start of melt + 2 hours to fill  
2 days ago 4.0 MW(t) - origin calc.  
30 in Press in contain (w cooler) - 23 psi  
H<sub>2</sub> running 63 psi  
(spray) - 29 psi  
(H<sub>2</sub> burn) 95 psi  
won't melt thru 3-4 day 1/2 bottom

D. Ross  
to handle  
with Denton

87-4/08

11:30 AM Called J.T. Beard  
re. info on RHR system

1300 J.T. Beard called asking for help  
in coming up with instrument requests  
& long-term monitors (Weninger's nearby on it)

End of Notes