PLW Control

ROUTING AND TRANSMITTAL SLIP

Date

TO: (Name, office symbol, room number, building, Agency/Post)		Initials	Date
1. S. Newberry	P-1132		
2. A. Ignatonis	P-1132		
3. J. Wermeil	P-802		
4. M. Greenberg	P-802		
5.			

Action		File		Note and Return	
Approval		For Clearance		Per Conversation	
As Requested		For Correction		Prepare Reply	
Circulate		For Your Information		See Me	
Comment		Investigate		Signature	
Coordination		Justify			

REMARKS

Please provide comments by 7/2/79

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
R. H. Vollmer	542
	Phone No. 27347

5041-102

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

☆ GPO: 1978-0-261-647 3354

Dick,

2/2 John Collins file

I am not completely familiar with the methods for sensing RCS pressure other than Heise gage, so I have no substantive comments on these methods.

Our SER states that RCS pressure control system will be "hydroed" to 150% design pressure (1500 psi), while this memo. (par. D) states that system has only been tested to 900psi. The licensee need to justify departure from original design of system. This may be perfectly acceptable considering the range of operating pressures.

Scott Newberry

8211220142 790702
PDR ADOCK 05000289
P PDR

D. Vollmer - Incident #7

Inter-Office Memorandum

GPU Service

Date June 17, 1979
TSG-228

Subject RCS Pressure Indication

To J. G. Herbein

Location Three Mile Island

Review basis of 340 psi ± 25 RCP NPSH?

As a result of the loss of the last "normal" RCS pressure indication (PT 400) as of 0600 hours this morning, the following is a list of options to be considered for RCS pressure control in order of preference.

A. Maintain pressure by using DVM in Control Room within 365 psig ± 25 psi or 4.473 to 4.836 volts, (See Attachment 4(b) and 2) as indicated in EP-12.

Review EP-12

B. Maintain pressure by using RCS Sample Line Heise gage readings within 365 psig ± 25 psi (See Attachment 4(a) and 1) as indicated in EP-12.

C. Maintain pressure by using RCP-2A cavity seal pressure readings within 375 psig ± 25 psi (See Attachment 4(c) and 3).

Where does this actually sense?

D. If any two of the three items above, A., B. and C., have failed and if RCS Pressure and Volume Control System is available, system should be put in operation. It is my understanding that the system has been hydrotested to 900 psig and found acceptable except for minor modifications. I have discussed today the 900 psig hydrotest with B&W and have received a verbal acceptance per Bill Spangler, Dick Skillman and Greg Schaedel. A letter has been written by B&W concurring with the above hydro and should be received on site by tomorrow, Monday, June 18, 1979.

Should review in detail.

Basis?

Due to the possible urgency of the matter, it is suggested that the system be made available for use as soon as possible with local rather than Control Room control, if such a change will help make the system available for use at an earlier date.

E. Redraw the bubble in the pressurizer and maintain pressure with the heaters as indicated in Procedure Z-63.

F. Use the Heise gage between DH-V-2 and DH-V-3 by opening DH-V-1 or DH-V-171. Consideration should be given to lowering RCS system pressure to the lowest allowable point such that the possibility of lifting of DH-R1 is minimized. Installation of at least one additional Heise gage of the same connection as the existing one should be considered for redundancy.

G. As a last resort, Procedure Z-58 "RCS Pressure Control - Solid System with Core Flood Tanks Floating" should be reviewed and PORC'd. It should be noted that possible problems with this procedure are:

1. Possible loss of CF Tank level indication.

2. Possible loss of CF Tank pressure indication.

3. Need to drain CF Tanks (disposal and containment integrity).

4. Possible addition of nitrogen to RCS.

5. Possibility of loss of natural circulation due to gas in RCS following a rapid depressurization.

In conclusion, items A., B. and C. are strongly recommended. Items D., E., F. and G. should only be used in the given order only if the situation warrants the action.

Other items to be considered are:

1. Verifying the ability to change narrow range pressure transmitters to wide range pressure transmitters if the instruments are still functioning.

2. Installation of a Heise gage of MU-V-400.

The above items will be included in EP-12 as required.

If you have any further questions, please feel free to ask.

Julien D. Abramovici

B. D. Elam

JDA/al
ATTACHMENTS(5)

cc: R. C. Arnold
G. R. Capodanno
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ATTACHMENT 1

RCS SAMPLE LINE HEISE CAGE

6/17/79

	TIME	PT 400	HEISE	ΔP
6/12	1600	348	374	26
	2000	344	372	28
	2400	346	372	26
6/13	0400	344	371	27
	0800	365	375	10
	1200	338	360	22
	1600	346	372	26
	2000	344	364	20
	2400	351	376	25
6/14	0400	350	375	25
	0800	344	372	28
	1200	345	372	27
	1600	343	368	25
	2000	341	—	—
	2400	343	372	29
6/15	0400	348	374	26
	0800	342	—	—
	1200	349	370	21
	1600	333	—	—
	2000	355	380	25
	2400	348	—	—

	TIME	PT 400	HEISE	ΔP
6/16	0400	352	376	24
	0800	350	374	24
	1200	353	370	17
	1300	351	—	—
	1400	350	376	16
	1500	349	375	26
	1600	348	374	26
	1700	348	374	26
	1800	337	375	38
	1900	344	—	—
	2000	347	368	21
	2100	348	374	26
	2200	340	—	—
	2300	340	—	—
	2400	343	364	21
6/17	0100	345	368	23
	0200	343	366	23
	0300	341	—	—
	0400	341	362	21
	0500	345	—	—
	0600	—	—	—

$$\Sigma \Delta P = 748$$

$$n = 31$$

$$\overline{\Delta P} = \frac{\Sigma \Delta P}{n} = \frac{748}{31} = 24.1$$

ATTACHMENT 2

DVM RCS PRESSURE INDICATOR

6/12/75

	TIME	PT 400	~~HEISE~~ DVM	ΔP
6/12	1600	348	377	29
	2000	344	374	30
	2400	346	375.5	29.5
6/13	0400	344	373	29
	0800	365	360	-5 ?
	1200	338	—	—
	1600	346	374	28
	2000	344	373	29
	2400	351	380	29
6/14	0400	350	379	29
	0800	344	373.5	29.5
	1200	345	365	20
	1600	343	371.5	28.5
	2000	341	371.5	30.5
	2400	343	374	31
6/15	0400	348	377	29
	0800	342	372.5	30.5
	1200	349	~~379~~	30
	1600	333	362.2	29.2
	2000	355	383	28
	2400	348	376	28

	TIME	PT 400	~~HEISE~~ DVM	ΔP
6/16	0400	352	380	28
	0800	350	360	10 ?
	1200	353	375	22
	1300	351	375	24
	1400	350	375	25
	1500	349	377	28
	1600	348	376.9	28.9
	1700	348	377	29
	1800	337	367	30
	1900	344	373	29
	2000	347	376	29
	2100	348	377	29
	2200	340	376	36
	2300	340	371.7	31.7
	2400	343	372.5	28.5
6/17	0100	345	371	26
	0200	343	369.7	26.7
	0300	341	367.3	26.3
	0400	341	369.1	28.1
	0500	345	371	26
	0600	—	—	—

$\Sigma \Delta P = 1082.9$

$n = 40$

$\overline{\Delta P} = \frac{\Sigma \Delta P}{n} = \frac{1082.9}{40} = 27.1$ PSI

If the two (?) readings are eliminated $\Delta P = 28.4$ PSI

ATTACHMENT 3

6/17/25

RCP CAVITY SEAL PRESSURE

	TIME	PT 400	RCP CAVITY	ΔP
6/12	1600	348	390	42
	2000	344	390	46
	2400	346	370	24
6/13	0400	341	370	26
	0800	365	370	5
	1200	338	370	32
	1600	346	385	39
	2000	344	385	41
	2400	351	380	29
6/14	0400	350	380	30
	0800	344	380	36
	1200	345	370	25
	1600	343	380	37
	2000	341	380	39
	2400	343	380	37
6/15	0400	348	380	32
	0800	342	—	—
	1200	349	385	36
	1600	333	380	47
	2000	355	380	25
	2400	348	385	37

	TIME	PT 400	RCP CAVITY	ΔP
6/16	0400	352	390	38
	0800	350	380	30
	1200	353	380	27
	1300	351	380	29
	1400	350	375	25
	1500	349	390	41
	1600	348	390	42
	1700	348	390	42
	1800	337	380	43
	1900	344	385	41
	2000	347	385	38
	2100	348	385	37
	2200	340	385	45
	2300	340	380	40
	2400	343	380	37
6/17	0100	345	380	35
	0200	343	380	37
	0300	341	380	39
	0400	341	380	39
	0500	345	380	35
	0600	—	—	—

$\Sigma \Delta P = 1405$

$n = 40$

$\overline{\Delta P} = \frac{\Sigma \Delta P}{n} = \frac{1405}{40} = 35.1$ PSI

ATTACHMENT 4

EVALUATION OF ALTERNATE PRESSURE (RCS) POINTS

A. Evaluation of Attachment 1 - "RCS SAMPLE LINE HEISE GAGE" readings when compared with point 400 readings prior to point 400 failure shows that the average Heise reading is greater than point 400 by 24 psi, therefore, in order to maintain 340 psig ± 25 psi, it is suggested that if the Heise gage is to be used to control RCS pressure the limits be set at (340 + 24) psig ± 25 psi or

approximately 365 + 25 psi.

B. Evaluation of Attachment 2 - "DVM RCS PRESSURE INDICATION" readings when compared with point 400 readings prior to point 400 failure shows that the average DVM reading is greater than point 400 readings by approximately 28 psi. It is, therefore, suggested that if DVM is to be used to control RCS pressure the limits be set at (340 + 28) ± 25 psig

or 365 ± 25 psig
or 4.473 to 4.836 volts.

C. Evaluation of Attachment 3 - "RCP CAVITY SEAL PRESSURE" readings when compared with point 400 readings prior to point 400 failure shows that the average RCP Cavity Seal Pressures are greater than point 400 readings by approximately 35 psi. It is, therefore, suggested that if RCP Cavity Seal Pressure is to be used to control RCS pressure the limits be set at (340 ± 35) ± 25 psig

or 375 psig ± 25 psi.

ATTACHMENT 5

R.C. SYSTEM PRESSURE READINGS

DATE	TIME	HEISE (PSIG)	DVM (VOLTS)	DVM (PSIG)	RCP 2A CAVITY (PSIG)	COMP. PT. 400 (PSIG)
6/12/79	14 00	360.	4.704		380.	343.
	15 00	—		375.	385.	345.
	16 00	374.		377.	390.	348.
	17 00	374.		370.	390.	340.
	18 00	373.		376.	392.	348.
	19 00	—		375.	390.	346.
	20 00	372.		374.	390.	344.
	21 00	—		372.	380.	343.
	22 00	373.		373.	380.	344.
	23 00	371.		371.5	370.	341.
	24 00	372.		375.5	370.	346.
6/13	01 00	370.		371.	370.	342.
	02 00	370.		372.	375.	343.
	03 00	371.		374.	370.	343.
	04 00	371.		373.	370.	344.
	05 00	370.		372.	370.	343.
	06 00	370.		373.	370.	343.
	07 00	360.		373.	370.	343.
	08 00	375.		360.	370.	365.
	09 00	—		—	370.	—
	10 00	355.		350.	360.	337.
	11 00	—		—	370.	339.
	12 00	360.		—	370.	338.
	13 00	—		—	365.	337.
	14 00	360.		365.	370.	343.

DATE	TIME	HEISE (PSIG)	DVM VOLTS	DVM PSIG	RCP2A CAVITY (PSIG)	COMP. PT. 400 (PSIG)
6/13/79	1500	365.		367.	385.	340.
	1600	372.		374.	385.	346.
	1700	376.		376.	385.	347.
	1800	368.		371.	380.	343.
	1900	—		370.	380.	341.
	2000	364.		373.	385.	344.
	2100	370.		370.	380.	342.
	2200	364.		370.	380.	341.
	2300	374.	4.730		380.	346.
	2400	376.	4.764 ✓		380.	351.
6/14	0100	370.	4.712		380.	345.
	0200	374.	4.741		380.	349.
	0300	370.	4.713		380.	344.
	0400	375.	4.758 ✓		380.	350.
	0500	376.	4.760		380.	350.
	0600	374.	4.742		380.	348.
	0700	370.	4.716		380.	344.
	0800	372.	4.716 ✓		380.	344.
	0900	371.	4.618		360.	342.
	1000	361.	4.5818		360.	340.
	1100	369.	4.654		375.	343.
	1200	372.	4.654 ✓		370.	345.
	1300	370.	4.618		37.	340.
	1400	371.	4.618		365.	346.
	1500	371.		374.	385.	345.
	1600	368.		371.53	380.	343.
	1700	372.		373.45	380.	345.

DATE	TIME	HEISE (PSIG)	DYM (VOLTS)	DYM (PSIG)	RC92A CAVITY (PSIG)	COMP. PT. 400 (PSIG)
6/14/79	1800	—		371.53	380	342
	1900	367		370.4	380	342
	2000	—		371.5	380	341
	2100	370		374.41	385	345
	2200	370		375.5	390	346
	2300	374		376	370	346
	2400	372		374	380	343
6/15	0100	374		374	380	344
	0200	372		375	380	345
	0300	371		372	380	343
	0400	374		377	380	348
	0500	374		377	380	347
	0600	372		374	380	346
	0700	368	4.702		380	342
	0800	—	4.709 ✓		—	342
	0900	374	4.737		0.49	346
	1000	372	4.706		380	343
	1100	372	4.723		385	344
	1200	370	4.757 ✓		385	349
	1300	370	4.721		385	345
	1400	368	4.721		380	341
	1500	—		371	380	343
	1600	—		362.2	380	333
	1700	366		369.9	380	—
	1800	365		370	380	341
	1900	—		370.3	380	341
	2000	380		383	380	355

DATE	TIME	HEISE (PSIG)	DVM (VOLTS)	DVM (PSIG)	RR2A CAVITY (PSIG)	CMP PT 400 (PSIG)
6-15-79	2100	—		389.4	380	363
	2200	—		383.6	380	355
	2300	378	4.766		390	353
	2400	—	4.734 ✓	~~373.4~~	385	348
6-16-79	0100	370	4.719		385	346
	0200	378	4.751		385	350
	0300	378	4.785		385	355
	0400	376	4.764 ✓		390	352
	0500	—	4.723		385	347
	0600	370	4.703		380	344
	0700	—	4.727		380	346
	0800	374	4.6181 ✓		380	350
	0900	374	4.6181		380	348
	1000	374	4.690		385	347
	1100	364	4.654		380	348
	1200	370	4.727 ✓		380	353
	1300	—	4.727 ✓		380	351
	1400	376	4.727 ✓		375	350
	1500	375		377	390	349
	1600	374		376.9	390	348
	1700	374		377	390	348
	1800	375		367	380	337
	1900	—		373	385	344
	2000	368		376	385	347
	2100	374		377	385	348
	2200	—		376	385	340
	2300	—		371.66	380	340
	2400	364		372.5	380	343

DATE	TIME	HEISE (PSIG)	DVM (VOLTS)	DVM (PSIG)	RP-ZA CAVITY (PSIG)	CMP PT 400 (PSIG)
6-17-79	0100	368		371	380	345
	0200	366		369.7	380	343
	0300	—		367.3	380	341
	0400	362		369.1	380	341
	0500	—		371	380	345