

SPC Meeting ~~R. Conte~~ NRC

7/11/79
11:20
J.T. Collins
For your info.
This is mtg summary on SPC testing we talked about briefly. We can discuss if you have any questions.
Scott

Attending: Bill Zew, Jerry Maus,
NRC - Richard Conte
File
Press Vol
Control S.F. Newberry

Bill Zew described the testing events of 7/10/79.
See attached write up.

Action is to be taken in two parts:

1. Bring in Dave (Vendor for regulators) and see what his recommended actions are in respect to:
 - a) Modifying the present regulators
 - b) Provide bleed path
 - c) etc.

2. If we could continue to operate system for training using the present regulators.

It was agreed that training would continue only when the below items were accomplished.

- a) Had vendor recommendations on reg
- b) We keep MV system in parallel when using SPC system.
- c) Modify procedure to reflect new information based on 7/10/79 test.
- d) Performed more pre op checks on reg. to confirm repeatability of reg operation.

V.R.
W.H. Zew

SPC System Test

7/10/79 ^{20 of 12}

Initial Conditions

- RCS at 260# by sample Heise
- B Makeup pump running - RCP seal inj was being supplied at ≈ 14 GPM & was watched by let down controlling MV-US at 50% on controller.
- Tested by 2-79-35.
- SPC - pressure 94#

It was decided at the start to provide a little bleed path for setting up the N₂ reg. and we would start with one of the smaller sized reg initially. (This was decided based on phone call conversation with N₂ Reg. Vendor)

We set up a small N₂ bleed path through PCV-14 and slowly increased N₂ pressure till at T = 14 minutes the 3C regulator opened and RCS pressure by sample line Heise was 265#.

Then we returned PCV-14 set point back to 310# & tried to adjust 3A then 3B regulator. After we attained ΔP 's of $\approx 27-29$ # on 3A & 3B regulator and they failed to open, we ~~had~~ decided to leave 3A & 3B alone & continue on to use 3C & 3D regulators. We adjusted 3C and pressure came up from 365 \rightarrow 378#.

We then increased letdown flow to try & reduce RCS pressure down before we tried the 3D regulator. We found we had very good control with MV-US in reducing pressure. We went from 50% on MV-US to $\approx 75\%$ & attained a slow but steady

reduction to 272#. Then we restored MV-V5 back to 50% + held pressure.

Next we cut in reg 3D and it took $\approx 22^*$ DP to open it and pressure came up from 272 to 292# in RCS.

Then we again opened up MV-V5 to reduce RCS pressure in preparation for using the variable speed charging pump. At $T = 135$ at 282# we started to throttle recirc valve 50 + raise pump pressure while at minimum speed. We ended up shutting 50 fully + discharge pressure was only $\approx 250^*$ #. We then began to increase speed of the pump and increase discharge to $\approx 295^*$ at which time we had slowly increased RCS pressure up to 291# and we had positive T-3 level change of $\approx 1\%$. At this time we reduced speed to minimum and reopened recirc valve fully. (Max speed on pump was $3\frac{3}{4}$)

Next we again opened MV-V5 and reduced RCS pressure to 282#. Then we again throttled MV-V5 to 50% to hold pressure. Finally we slowly ~~cut~~ throttled MV-V5 down to $\approx 10\%$ open + increased pressure to 290# to insure make up system again regained pressure control.

Then the RCS + SPC system were isolated from each other MV-V16E 40 + SPC-71 were shut. RCS control was solely by make up system per ≈ 63 . The SPC system was then isolated + pressure allowed to decay off.

Things Learned -

- ① The H_2 regulators need to be modified and or replaced
- ② The control of RCS using MV-VS was very smooth & controllable
- ③ The control of the variable speed charging pump was very smooth & controllable.
- ④ Communications & indication were adequate.
- ⑤ I feel that the isolating of seals & let down flows can be done smoothly while on SPC control. We haven't tested this mode during the test, but judging from the (soft) smooth control of MV-VS this should be a much smoother operation than was previously addressed.

V.R.

W.H. Jew

RCS Heise Readings

1st hr.

59/12

TIME (min)	RCS Heise	TIME	Heise RCS	TIME	RCS Heise	TIME	RCS Heise
15 sec	255 #	24 -	265	50 -	278	76 -	
120	260	25 -	265	51 -	278	77 -	
start 0	260	26 -	265	52 -	277	78 -	
1	260-260-260	27 -	265	53 -	277	79	
2	260	28 -	265	54 -	277	80 -	
3	260	29 -	265	55 -	277	81 -	
4	260	30 -	265	56 -	276	82 -	
5	260	31 -	265	57 -	276	83 -	
6	260	32 -	265	58 -	275	84 -	
7	260	33 -	265	59 -	275	85	
8	260	34 -	265	60 -	275		
9	260	35 -	265	61 -			
10	260	36 -	272	62			
11	260	37 -	278	63 -			
12	260	38 -	278	64 -			
13	260	39 -	278	65 -			
14	265	40 -	278	66 -			
15	265	41 -	278	67 -			
16	265	42 -	278	68 -			
17	265	43 -	278	69 -			
18	265	44 -	278	70 -			
19	265	45 -	278	71 -			
20	265	46 -	278	72 -			
21	265	47 -	278	73 -			
22	265	48 -	278	74 -			
23	265	49 -	278	75 -			

RCS - Heise Readings 2nd hr.

6/5/12

TIME (Min)	RCS Heise	TIME Heise	RCS	TIME Heise	RCS	TIME Heise	RCS
		24-	292	¹¹⁰ 50-	286	76-	
		25-	291	51-	286	77-	
		26-	290	52-	289	78-	
69	275	27-	289	53-	290	79-	
2	275	28-	288	54-	291	80-	
3	275	29-	288	55-	291	81-	
4	275	⁹⁰ 20-	288	56-	290	82-	
5	273	31-	287	57-	290	83-	
6	273	32-	286	58-	289	84-	
7	273	33-	286	59-	288	85-	
8	273	34-	285	¹²⁰ 60-	287		
9	272	35-	284	61-			
10	272	36-	284	62-			
11	272	37-	283	63-			
12	272	38-	282	64-			
13	272	39-	282	65-			
14	272	¹⁰⁰ 40-	282 *	66-			
15	272	41-	282	67-			
16	272	42-	282	68-			
17	272	43-	283	69-			
18	272	44-	283	70-			
19	272	45-	283	71-			
20	272	46-	283	72-			
21	289	47-	284	73-			
22	292	48-	284	74-			
23	292	49-	284	75-			

RCS - Heise Readings 3rd hr

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TIME (Min)	RCS Heise	TIME Heise RCS	TIME Heise RCS	TIME Heise RCS
		24 -	50 -	76 -
		25 -	51 -	77 -
		26 -	52 -	78 -
120	1 - 286	27 -	53 -	79 -
	2 - 286	28 -	54 -	80 -
	3 - 285	29 -	55 -	81 -
	4 - 284	30 -	56 -	82 -
	5 - 284	31 -	57 -	83 -
	6 - 283	32 -	58 -	84 -
	7 - 283	33 -	59 -	85 -
	8 - 282	34 -	60 -	
	9 - 282	35 -	61 -	
	10 - 282	36 -	62 -	
	11 - 282	37 -	63 -	
	12 - 282	38 -	64 -	
	13 - 283	39 -	65 -	
	14 - 283	40 -	66 -	
	15 - 284	41 -	67 -	
	16 - 284	42 -	68 -	
	17 - 286	43 -	69 -	
	18 - 287	44 -	70 -	
	19 - 288	45 -	71 -	
	20 - 290	46 -	72 -	
	21 - 290	47 -	73 -	
	22 - 290	48 -	74 -	
	23 - 290	49 -	75 -	

RCS Noise & SPC Noise Readings

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TIME (MIN)	RCS Noise	SPC Noise	TIME	RCS Noise	SPC Noise
0	96 260	96	24 —	265	252
1 —	260	94	25 —	265	252
2 —	260	94	26 —	265	252
3 —	260	92	27 —	265	253
4 —	260	106	28 —	265	253
5 —	260	134	29 —	265	253
6 —	260	147	30 —	265	253
7 —	260	182	31 —	265	253
8 —	260	209	32 —	265	253
9 —	260	215	33 —	265	253
10 —	260	225	34 —	265	252
11 —	260	226	35 —	265	254
12 —	260	238	36 —	270	264
13 —	260	232	37 —	278	268
14 —	260 264 265	241 254* 252	38 —	278	267
15 —	265	251	39 —	278	267
16 —	265	251	40 —	278	267
17 —	265	251	41 —	278	267
18 —	265	251	42 —	278	267
19 —	265	251	43 —	278	267
20 —	265	251	44 —	278	267
21 —	265	251	45 —	278	267
22 —	265	251	46 —	278	267
23 —	265	252	47 —	278	267
			48 —	278	267
			49 —	278	267

RCS Heise & SPC Heise

9/12

TIME (MIN)	RCS Heise	SPC Heise	TIME	RCS Heise	SPC Heise
			76 —	277	260
50 —	278	267	77 —	272	260
51 —	278	267	78 —	272	261
52 —	277	266	79 —	272	261
53 —	277	266	80 —	272	261
54 —	277	266	81 —	290	281
55 —	277	266	82 —	292	281
56 —	276	266	83 —	292	282
57 —	276	265	84 —	292	280
58 —	275	265	85 —	291	280
59 —	275	264	86 —	290	277
60 —	275	264	87 —	289	278
61 —	275	263	88 —	288	278
62 —	275	263	89 —	288	278
63 —	275	263	90 —	288	277
64 —	274	262	91 —	288	276
65 —	273	262	92 —	286	275
66 —	273	261	93 —	286	275
67 —	272	261	94 —	285	274
68 —	272	260	95 —	285	274
69 —	272	260	96 —	284	273
70 —	272	260	97 —	283	272
71 —	272	260	98 —	282	271
72 —	272	260	99 —	282	271
73 —	272	260	100 —	282	271
74 —	272	260			
75 —	272	260			

SPC-01
109

307

*

Time (min)	SPC Heise	Time (min)	SPC Heise
101	282	128	271
102	282	129	271
103	283	130	271
104	283	131	271
105	283	132	271
106	283	133	272
107	284	134	272
108	284	135	272
109	285	136	273
110	286	137	273
111	287	138	274 *
112	288	139	274
113	290	140	274
114	291	141	274 *
115	290	142	275
116	290	143	275
117	289	144	275
118	288	145	275
119	287	146	275
120	287	147	275
121	286	148	
122	286	149	
123	285	150	
124	284	151	
125	283	152	
126	283	153	
127	283	154	

Pressure
283

* Regain
watering
control

* mu-VIGC, D
= 445
CO-CV 71

SPC - LT-3 LEVEL.

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TIME	Level %	TIME	Level	TIME	Level
	72	26 -		53 -	
1 -		27 -		54 -	
2 -		28 -		55 -	
3 -		29 -		56 -	
4 -		30 -		57 -	
5 -		31 -		58 -	
6 -		32 -		59 -	
7 -		33 -		60 -	
8 -		34 -		61 -	
9 -		35 -		62 -	
10 -	71	37 -	66	63 -	
11 -		38 -		64 -	
12 -		39 -		65 -	
13 -		40 -		66 -	65
14 -		41 -		67 -	
15 -	70.5	42 -		68 -	
16 -		43 -		69 -	
17 -		44 -		70 -	
18 -		45 -		71 -	
19 -		46 -		72 -	
20 -		47 -		73 -	
21 -		48 -		74 -	
22 -		49 -	66	75 -	
23 -		50 -		76 -	
24 -		51 -		77 -	64.5
25 -		52 -		78 -	

SPC level

12/8/12

TIME	Level	TIME	Level
79 -		105 -	58.5
80 -		106 -	
81 -		107 -	
82 -	60	108 -	
83 -		109 -	
84 -		110 -	
85 -		111 -	
86 -		112 -	
87 -		113 -	59.5 ?
88 -		114 -	
89 -		115 -	
90 -		116 -	
91 -		117 -	
92 -		118 -	
93 -	59.5	119 -	
94 -		120 -	
95 -			
96 -			
97 -			
98 -			
99 -			
100 -	59 ?		
101 -			
102 -			
103 -	58.5		
104 -	1		