

Pravin Mohan
 Sequence of Events from Crew Debrief

Unit 3 Reactor Trip on 04/17/05

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Time	Event / Condition	Source
Activities prior to trip	CMS22 sample was being taken prior to trip. Exited action at 08:11. Routine rounds by PEOs and Control Room operators were in progress.	Kelly
08:29	U3 Reactor trip First out - Steamline Press Lo SI Lots of Annunciators Rods on bottom per DRPI	RO - Frechette
Initial Observations	Red Indication was observed for PZR Safety Reliefs. RCS pressure was not observed to go above 2350. Observed PORVs open indicating lights and pressure decreasing.	Frechette.
Initial Observations	Saw PZR pressure cycling but no indicating lights on PORVs.	Franks.
Initial Observations	Saw PZR Safety Relief open indication, PZR pressure cycling, but did not see PORV indicating lights cycling.	Smith.
Initial Observations	Saw PZR pressure cycling at PORV set pressure.	Socha
Initial Observations	Control Room entered E-0. No problems during steps 1 through 3.	US Debrief
Initial Observations	Step 4 of E-0, Check SI actuation. Observed only group 2 ESF status lights lit. Manually actuated B train SI.	US Debrief
Initial Observations	E-0 Step 16 brief, identified no Terry Turbine Aux Feed flow, B and C SG safeties had lifted, PORVs opened, PZR safety relief red lights, and for the MSI kickout, had to perform manual initiation.	US Debrief
PEO Observation	Terry Turbine not running. Found V5 unlatched and shut. Mech Trip tappet was not down.	Sibilia
08:40	Manual MSI	US debrief

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08:42	Alert CI declared	US debrief
08:42	Observed PZR code safeties indication. Also noted tailpipe temperatures high.	
08:49	Message released	US debrief
08:50	S/G safeties seated	US debrief
08:50	Judgment call – possible E-2 transition, decided SI termination more important, transition not made to E-2 based on uncontrolled SG pressure decrease, which crew felt was not occurring.	US debrief
08:51	Message sent	US debrief
08:54	Determined no SG tube rupture based on SG level trend, E-0 step.	SM debrief
08:56	B SG safety relief noticed open again.	SM debrief
08:56	Water noticed on Aux Bldg floor. PEO report significant packing leaks on V 661 and MV 8511B.	Sibilia
08:59	Transition from E-0 to ES 1.1.	Kelly
PEO Report	Dispatched to observe SG safeties. First saw steam flow from B SG safety, then C SG. Very cloudy, Observed flow from 74D and A SG safety had a small plume of steam. B and C SG safeties were definitely open.	Morgan
09:02	PEOs were dispatched to 32-3T to re-energize. Report from PEO that 32-3T Alt Source supply light was not lit. Had to replace bulb. Also, the precharge pushbutton appeared to stick.	Smith. Beradi
09:04	Leak flow through CHS*V661 and MV8511B terminated	SM debrief.
09:05	Observed Thermal Barrier valves closed on two RCPs. Could not reopen at first based on no Instrument Air to Containment. Were reopened later.	Frechette.

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09:15	Terminated SI per ESI.1. Swapped to B Charging later and shut V 659 (at 10:30), V 663 was already closed.	Socha
09:15	Letdown flow re-established	US debrief
09:15	No precharge light on Inverter 6.	SM debrief
09:20	Normal Letdown re-established.	SM debrief.
09:20	SM discussing plant conditions with TSC.	SM debrief.
09:20	SM relieved of CRDSEO and became MCRO.	SM debrief.
09:23	Duty Officer called NRC.	SM debrief.
09:45	Shutdown both EDGs.	Socha.
09:50	Field report that the SG Safeties were closed.	SM debrief
09:53	Report from Chemistry that SG A, B and C had no activity. Could not get sample from D SG.	SM debrief.
09:55	SM signed updated message.	SM debrief.
Crew Comment	Report that MSS*V5 was reset but no log time on this.	SM debrief.
10:00	RX trip on D SG low level came in but was restored.	SM debrief.
10:00	Aux building filter fire alarm came in. Reported running with no discharge path. Filter was shutdown. It was concluded at the time that this did not impact Operability of SLCRS or Aux Building Filters.	SM debrief.
10:00	FR I-1 guidance was used for PZR level control and to re-establish a bubble.	SM debrief.
10:05	Swapped to B charging.	SM debrief.
10:08	RCS pressure was 2050 PSIA and rising.	SM debrief.

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10:08	Action to manually place turbine on turning gear.	SM debrief.
10:08	Pumping and cooling the PRT.	SM debrief.
10:15	Decision not to use containment vacuum pumps.	SM debrief.
10:15	PZR level came back on scale.	SM debrief.
10:15	Due to concern over action statement on Containment pressure, evaluated starting Containment Vacuum pumps to lower pressure, but decided not to due to concerns that the PRT rupture disk may have ruptured.	SM debrief.
Crew Comments	Due to MSI, we did not have the PV20s for post trip cooling. SG pressure was down close to 1000 psig. Had MSS*74s open to relieve steam to get SG Safety Reliefs to reseal.	SM debrief.
Crew Comments	Did not expect the small RCS temperature changes we were experiencing to have the large effect on PZR level that we saw.	Frechette.
Crew Comments	Backed off on the MSS 74s and puffed the SG Safeties again.	SM debrief.
Crew Comments	SG Safeties appeared to be lifting at low pressures.	Noniewicz.
10:19	MSS*V5 opened and Terry Turbine now running.	SM debrief.
10:25	Turbine Turning Gear energized.	SM debrief.
10:25	Terry Turbine running.	SM debrief.
10:30	Charging system leakage isolated.	SM debrief.
10:32	CHS*V659 shut to isolate leaks.	SM debrief.
10:39	Loading charger 9 on Bat 6.	SM debrief.
10:43	B CDS Chiller did not auto restart. Tripped on low condenser pressure when CCP flow restored. C	SM debrief.

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	CDS Chiller restarted automatically.	
10:44	DWST Level low TS 3.7.1.3	SM debrief.
10:44	A Aux building filter shut down.	SM debrief.
11:00	Discussed with EOF on which Tech Specs we should be in and actions..	
11:01	Focus brief – pump PRT, RCS samples, Ionics, stabilize PZR level 50 to 85%, Action to stabilize the plant and where we are going.	SM debrief.
11:10	LCO times discussed	SM debrief.
11:20	Discussion on allowed time to shutdown per TS 3.7.1.1 Action a. Might have only 3 ½ hours to cooldown or the full 12 hours. Decided this was not AOT time and can credit the full time allowed. Discussion included Sarver, Semancik and Smith.	SM debrief.
11:32	Started looking at shutdown margins	SM debrief.
11:32	Energized SR audio count rate.	SM debrief.
11:37	Max CHS flow.	SM debrief.
11:43	Stopped RCS cooldown. Maintain at 550 to 560 F. Relying on MSS*74D, had no preference, this was working so I stayed with it. There was a concern over limitation on cycling the 74s and the limit of 7 cycles for the thermal overloads.	Noniewicz
11:51	Shut down the aux building filter.	SM debrief.
12:05	PRT filled to 65 to 85% for cooling.	SM debrief.
PEO Report	SJAEs had a small leak, pencil stream.	Beradi.
12:19	Spoke with Doug McCracken on updating ISONE	SM debrief.
12:26	Verified with Chemistry the required RCS boron and activity samples for power changes > 15%. Chemistry reported RCS boron was 912 at 11:42.	SM debrief.

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12:30	B CDS Chiller started.	SM debrief.
12:57	Transition to OP 3208.	Christianson
13:01	ADTS concurred on transition to OP 3208.	Socha.
Crew Comment	Became accustomed to SG Safeties opening. Complacency on believability of valve indicators and sending PEOs out to confirm steam release. Did not send PEOS out every time.	SM debrief.
14:05	Problems encountered with taking care of Condensate. Cal Ackley took over control of shutting down the secondary plant.	SM debrief.
Crew Comment	Had to swap RCP Seal Injection filters due to clogging. Expected response but aggravated the situation.	SM debrief.
14:50	Decided to use CHS-HCV182 to throttle seal flow vs sending PEO out to locally do this. Got valve ¾ closed then sent PEO out and reopened 182.	SM debrief.
14:50	Required boron concentrations and TS reviews continuing.	SM debrief.
Crew Comments	NOPs were not clear. OP 3208 prereqs, initial conditions, etc, due to entry from ES 1.1. Had to go back to OP 3206 and 3207 to decide what additional actions had to be performed.	SM debrief.
Crew Comments	Problems with numerous requests from Chemistry.	SM debrief.
Crew Comments	Not having CTV 19D available complicated Chemistry sampling.. 19A was also closed but chemistry was able to get a sample before it closed. As a result of all of this, we were not able to get an activity sample on the D SG. Did not initially consider impact of this while cooling down with 74D.	SM debrief.
Crew	MSIV bypass valves were tagged closed, could not	SM debrief.

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Comments	restore steam flow to the condenser.	
Crew Comments	D RCP was shutdown per cooldown proc.	SM debrief.
Crew Comments	Problems with the datalogger in obtaining temperatures.	SM debrief.
Crew Comments	Aux boiler tripped. B was started first, then A. Could not get it to press up. Isolated steam to Unit 2. Confusion over steps in procedure and what to do with V51.. Discussed with Ray Martin. May need procedure work and develop a GA for use in EOP space.	Beradi
Crew Comments	Problems opening Control Room door. Air banks were blowing down due to CBI. Had to enter from the Equipment room above and through the back stairs.	Morgan
Crew Comments	Announcement of the trip was made via page on 810. Could not be heard in all locations.	Socha
Crew Comments	No procedural guidance on long recycle for Condensate. Could not reject. ES 0.1 has answers but we were not in that procedure.	SM debrief.
Crew Comments	Had a problem getting EDRS activated.	Semancik
Crew Comments	Lost CCP flow to two RCPs, but not the other two, not sure why.	SM debrief.
Crew Comments	Had to manually rearm turbine lift pumps.	SM debrief.
Crew Comments	Need to check the Tech Specs on RCS relief valves before we go back up.	SM debrief.
Crew Comments	Did not have speed wrench to operate manual valves. We had 6 PEOs and we were challenged.	Lamothe
Crew Comments	B and C SG Safeties lifted based on MB indication	SM debrief.

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Crew Comments	Red lights on PZR safeties based on acoustics.	SM debrief.
Crew Comments	Need to determine what SI check valves had forward flow through them, use real time.	SM debrief.
Crew Comments	No injuries were reported.	SM debrief.
Crew Comments	There was no review of EAL for reclassification when Charging leak through V661 and RV8511B, e.g., RCS leak in aux building. Alert C1 based on Stuck open S/R outside Containment.	Smith.
Crew Comments	Various steps in ES 1.1 could not be completed before transition to OP 3208. Treated as steps in progress, need to review these.	SM debrief.
Crew Comments	Had 1st out MS Press SI locked in, did not want to reset. Wait until clear before doing other stuff.	SM debrief.