From: James Trapp RI
To: A. Randolph Blough, NRR Richard Barrett, NRR Wayne Lanni... RI
Date: Tue, Apr 4, 2000 4:02 PM
Subject: Indian Point Unit 2 Senior Management Meeting Preparations

In our efforts to prepare for the SMM, we have attempted to use insights from the new inspection program process to help in assessing the performance at IP2. Specifically we have completed SDP assessments for several significant performance issues identified during the past year. Attached are the risk assessments for these performance issues. Since we are planning to discuss the risk associated with these issues at the SMM, we would appreciate if the Inspection Programs Branch **(Bill Dean)** and the Probabilistic Safety Assessment Branch **(Rich Barrett)** could assist us by verifying/validating that our assessment of the risk associated with these issues is correct. We would appreciate your input by Thursday (4/6/00), if possible. If our risk characterizations are correct, it appears that IP2 may fall in the Multiple Repetitive Degraded Cornerstone Column of the Action Matrix. The issues evaluated were as follows (see attachments):

1.) The August 31, 1999 plant trip and loss of offsite power to the 480 Vac emergency busses and the failure of EDG #23 to energize 480 Vac bus 6A. The performance issues associated with this event were the failure to repair a deficiency with the Station Auxiliary Transformer Tap Changer (resulted in loss of offsite power) and the failure to properly calibrate the over current setting for the #23 EDG output breaker (resulted in the loss of bus 6A). Using the site specific Phase 2 SDP worksheets, these performance issues were determine to have a <u>YELLOW</u> risk significance. This determination is consistent with the findings of an earlier NRC feasibility study that reviewed this event.

2.) The risk associated with the February 15, 2000 SGT leak <u>potential</u> performance issues were evaluated by the NRR PRAB. A review of the potential performance issues associated with the 1997 SG tube inspection at IP2 are currently under review by the agency; however, if a performance issue is identified that contributed to the occurrence of the tube leak, the risk associated with that issue was determined to be <u>RED</u>.

3.) The Emergency Response Organization failed to meet the intent of 2 EP standards in response to the February 15, 2000 Alert declaration. The emergency facilities were not activated and accountability was not performed in a timely manner. Our evaluation indicates that these would result in 2 <u>WHITE</u> findings.

We appreciate your assistance regarding this matter. If you need additional information please contact me at 610-337-5186. Thanks!

CC: Brian Holian, Bruce Boger, Doug Coe, Gary Holah...

DD/8

WORKSHEET FOR REACTOR AND PLANT SYSTEM DEGRADED CONDITIONS

Reference/Title (LER #, Inspection Report #, etc): LER 99-015, 50-247/99-09 & 99-13

Factual Description of Identified Condition (statement of facts known about the issue, without hypothetical failures included):

On August 31, 1999 Indian Point Unit 2 tripped and offsite power was lost to the 480 V emergency electrical busses. In addition, emergency diesel generator #23 output breaker failed to close and to energize bus 6A. The following equipment was rendered unavailable by the loss of bus 6A power, 23 safety injection pump, 1 PORV/ block valve (normally closed), 23 MD AFW pump, 23 CCW pump, 22 RHRP, 23 & 26 SWP. The gas turbine generators would not be available because the gas turbines power the 6.9kV busses and the problem was powering the 480V emergency buses. It would have taken a high stress operator action to reset a generator lockout before gas turbine or offsite power could be supplied to the 480 V. busses.

Offsite power remained available to the 6.9 kV busses. Therefore, the feedwater and condensate pumps and condenser would have remained available. The operating EDGs powered the MFW pump lube oil system

The loss of offsite power would occur on any plant trip. The cause of this was the setting of the degraded undervoltage relay reset and that the station auxiliary transformer tap changer was in manual and was unable to recover 480 V. bus voltage. The tap changer was placed in manual in September of 1998 and this condition would have existed since that time (no other plant trips occurred during this period).

The PORV block valves are normally closed and ½ would not be capable of being opened. The success criteria in the IPE requires 2/2 PORVs open for success of feed and bleed (F&B). Therefore, F&B would not be available.

The #23 EDG breaker which had the mis-calibrated overcurrent setting was placed inservice on July 2, 1999. The breaker would have tripped any time the EDG attempted to energize this bus after this date. These conditions existed from July 2, 1999 to August 31, 1999 or > 30 days.

Since every time a plant transient occurs offsite power would be lost, it's appropriate to use Row 1 from Table 1 to estimate the frequency of a LOOP. This condition existed for greater than 30 days so the Initiating Event Likelihood is A.

System(s) and Train(s) with degraded condition: Offsite Power and #23 EDG

Licensing Basis Function (if applicable): Provide Normal and Emergency Power to Safety-related equipment.

Maintenance Rule category (check one): __X__ risk-significant ______ non-risk-significant

Time degraded condition existed or assumed to exist: Tap Changer Place in Manual 9/98 and #23 EDG breaker mis-calibrated July 1999.

Functions and Cornerstones degraded as a result of this condition (check ✓)

INITIATING EVENT CORNERSTONE

__√__ Transient initiator contributor (e.g., reactor/turbine trip, loss offsite power)

_____ Primary or Secondary system LOCA initiator contributor (e.g., RCS or main steam/feedwater pipe degradations and leaks)

MITIGATION CORNERSTONE

__√___ Core Decay Heat Removal

__√__ Initial injection heat removal paths

_____ Primary (e.g., Safety Inj)

____ Low Pressure

____ High Pressure

__√__ Secondary - PWR only (e.g., AFW)

__√__ Long term heat removal paths (e.g., contmt sump recirculation, suppression pool cooling)

_____ Reactivity control

BARRIER CORNERSTONE

____ RCS LOCA mitigation boundary degraded (e.g., PORV block valve, PTS issue)

_____ Containment integrity

_____ Breach or bypass

__√__ Heat removal, hydrogen or pressure control

_____ Fuel cladding degraded

PHASE 1 SCREENING PROCESS

Check the appropriate boxes ✔

Cornerstone(s) assumed degraded:

☒Initiating Event ☒Mitigation Systems ☐RCS Barrier ☐Fuel Barrier ☒Containment Barrier

If more than one Cornerstone is degraded, then go to Phase 2. If NO Cornerstone is degraded, then the condition screens OUT as "Green" and is not assessed further by this process.

If only one Cornerstone is degraded, continue in the appropriate column below.

Initiating Event	Mitigation Systems	RCS Barrier	Fuel Barrier	Containment Barrier
1. Does the issue contribute to the likelihood of a Primary or Secondary system LOCA initiator? ☐**If YES →Go to Phase 2** If NO, continue 2. Does the issue contribute to both the likelihood of a reactor trip AND the likelihood that mitigation equipment will not be available? ☐**If YES →Go to Phase 2** ☐If NO, screen OUT	1. Is the issue a design or qualification deficiency that does NOT affect operability per GL 91-18 (rev 1)? ☐**If YES → Screen OUT** If NO, continue 2. Does the issue represent an actual Loss of Safety Function of a System? ☐**If YES → Go to Phase 2** If NO, continue 3. Does the issue represent an actual Loss of Safety Function of a Single Train, for > TS AOT? ☒ **If YES → Go To Phase 2** If NO, continue 4. Does the issue represent an actual Loss of Safety Function of a Single Train of non-TS equipment designated as risk-significant under 10CFR50.65, for > 24 hrs? ☐**If YES → Go To Phase 2** ☐ If NO, screen OUT	☐ 1. **Go to Phase 2**	☐ 1.Screen OUT	1. TBD

Result of the Phase 1 screening process: _____ screen OUT as "Green" ___X__ go to Phase 2

Important Assumptions (as applicable):

Table 2.6 SDP Worksheet for Indian Point Unit 2 Nuclear Plant — LOOP

Estimated Frequency (Table 1 Row) 1 Exposure Time >30days Table 1 Result (circle): H

Safety Functions Needed:	*Full* Creditable Mitigation Capability for each Safety Function:
Emergency AC Power (EAC)	1 / 3 Emergency Diesel Generators (1 multi-train system) or 2 /2 action)
Recovery of AC power in < 5 hrs (REC5)[(1,2)]	Recovery of AC power (Operator action)
Recovery of AC Power in < 2 hrs (REC2)[(2)]	Recovery of AC power (Operator action under high stress)
Early Inventory, HP Injection (EIHP)	1 / 3 HPI pumps (1 multi-train system)
Secondary Heat Removal (TDAFW)	1 / 1 TDAFW pump (1 train)
Secondary Heat Removal (AFW)	1 / 2 MDAFW trains (1 multi-train system) or 1 / 1 TDAFW train (1
Primary Heat Removal, Feed/Bleed (FB)	2 / 2 PORVs open for Feed/Bleed (operator action)
High Pressure Recirculation (HPR)	1 / 3 HPI pumps with (1 / 2 LPIS pumps or 1 / 2 RSS pumps) with recirculation (operator action)

Circle Affected Functions	Recovery of Failed Train	*Remaining Mitigation Capability Rating for Eac Sequence*
1 LOOP - AFW - HPR (3)	1 (MFW)	2 (1-MDAFWP) +1 (TDAFWP) +2 (HPR)=6
2 LOOP - AFW - FB (4)	1 (MFW)	2 (1-MDAFWP) + 1 (TDAFWP) + 0 (FB)=4
3 LOOP - AFW - EIHP (5)	1 (MFW)	2 (1- MDAFWP) + 3 (2-SIP)=6
4 LOOP - EAC - HPR (7, 11)		Do not believe sequence would lead to CD
5 LOOP - EAC - EIHP (8, 13) (AC recovered)		3 (2-EDGs) + 3 (2 HPI) + 3 (Charging Pumps) = 9
6 LOOP - EAC - REC5 (9) (AC recovered)	1 (MFW)	3 (2-EDGs) + 2 (REC5)= 6
7 LOOP - EAC - TDAFW - FB (12)	1(MFW)	3 (2-EDGs) + 1 (TDAFW) + 0 (0 PORVs)=5
8 LOOP - EAC - TDAFW - REC2 (14) (AC recovered)	1 (MFW)	3 (2-EDGs) + 1 (TDAFW) + 1 (REC2) = 6

Identify any operator recovery actions that are credited to directly restore the degraded equipment or initiating e

Since offsite power was not lost to the 6.9kV buses the operators could have manually recovered feedwater.

If operator actions are required to credit placing mitigation equipment in service or for recovery actions, such credit should be giv are met: 1) sufficient time is available to implement these actions, 2) environmental conditions allow access where needed, 3) is conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed available and ready for use.

Notes:

(1) In an SBO situation, an RCP seal LOCA may occur, with subsequent core damage at about 5 hours.

(2) For the functions "Recovery of AC Power in < 2 hrs (REC2)" and "Recovery of AC Power in < 5 hrs (REC5)" no similar human action was found in the IPE (Table 3.3-7, pages 3-370 to

3-374).

FINDING NO. 1

The licensee's emergency facilities were not activated for approximately one hour and 40 minutes of the declaration. Figure 5.2-1 (table B-1) of the E-Plan, states that the minimum facility staffing is to be completed within 60 minutes.

In order to meet the planning standard for timely augmentation of the ERO the licensee needs to have a timely method for activating the pagers, adequate training to ensure ERO responders know what to do, and perform surveillance tests to ensure notification equipment is operable. Several deficiencies were noted in these areas that resulted in the licensee not "MEETING" the intent of planning standards 50.47(b)(2); and 50.47(b)(6).

1. **Emergency response pagers were not activated for about 30 minutes after the event declaration and the automated telephone notification system was not activated until 50 minutes after the event declaration because the recorded event message was incorrect and had to be re-recorded. The licensee's procedure states that before the pagers are activated, the operator needs to fill out a questionnaire sheet for gathering facts about the event. This process prevented the licensee from immediately activating the pagers and contributing to late response by the ERO.**

2. **The NRC reviewed the monthly communication tests and found that the licensee does not formally document the results of the test. Therefore, there is no method for determining that all responders received the pager signal.**

3. **There was confusion at the security guard house as to where to send responders for accountability and facility assignments. There is no formal procedure describing the duties of the security guard once the main entrance has been secured.**

1) Finding → sheet 1

Actual Event Implementation Path? Yes

Actual Event → Sheet 2 → Alert

There is no RSPS associated with this finding.

Result: Green

Failure to "Meet" Regulatory Requirement? Yes

Failure to "Meet" Planning Standard? Yes

Failure to "Meet" RSPS? No

PS 50.47(b)(2) which requires timely augmentation.
PS 50.47(b)(6) which requires that provision exist for prompt communications among principal response organizations to emergency personnel and to the public

Result: White

FINDING NO. 2

Accountability of onsite personnel was not completed within 30 minutes as specified in Section 6.4.1(d) of the E-Plan. Instead, I accountability was completed in one hour and 15 minutes. Security personnel secured the owner controlled and protected areas for establishing accountability. This included closing the main entrance gate and grant access to oncoming ERO members. The Unit 3 access gate, which is an egress to the Unit 2 owner control area, was not guarded until midnight and not locked until 3:00 a.m. Although this was not a proceduralized requirement, security personnel were expected to immediately ensure that the gate was closed. As a result, some ERO responders were not accounted for because they bypassed the main gate. The consequences of not securing all access points included: (1) inaccurate accountability of ERO responders; (2) general public having open access to the emergency operations facility.

1) Finding → sheet 1

Actual Event Implementation Yes

Actual Event → Sheet 2 → Alert

Result: Green

Failure to Meet Regulatory Requirement? Yes
Failure to Meet Planning Standard? Yes

10 CFR 50.47(b)(10). The PS addresses emergency workers and the protection of the general public. In accordance to the SDP guidance document, while the protection of emergency workers is very important it is not as important as the protection of public health and safety. In the inspection procedures for the EP Cornerstone, the protection of workers is prioritized as one of the highest priorities after the RSPS. A failure to meet this PS as it applies to worker protection should be assessed as a failure to meet a PS and NOT a failure to meet RSPS.

Result: White