U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-237/94016(DRS); No. 50-249/94016(DRS)

Docket Nos. 50-237; 50-249 Licenses No. DPR-19; No. DPR-25

Licensee: Commonwealth Edison Company
Executive Towers West III
1400 Opus Place - Suite 300
Downers Grove, IL 60515

Facility Name: Dresden Nuclear Power Station - Units 2 and 3

Inspection At: Dresden Nuclear Power Station, Morris, IL

Inspection Conducted: August 15 through September 16, 1994

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Inspection Summary

Inspection on August 15 - September 16, 1994 (Reports No. 50-237/94016(DRS); No. 50-249/94016(DRS))
Areas Inspected: Special announced systems based instrumentation and control inspection (SBICI) performed in accordance with NRC Inspection Procedure 93807.
Results: The team considered the design and operation of the instrumentation and control (I&C) loops reviewed and the I&C engineering and technical support to be adequate. A summary of strengths and weaknesses in I&C system design and engineering support are provided in the Executive Summary. The team identified one violation with two examples of inadequate post modification testing (Section 4.2). In addition, seven inspection followup items were identified (Sections 3.2.1.b, 3.2.2, 3.3.1.b, 3.3.2.b, 3.4.1, 3.5.1, and 3.7.1.b).

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EXECUTIVE SUMMARY

During August 15 through September 16, 1994, a U. S. Nuclear Regulatory Commission (NRC) inspection team conducted a system based instrumentation and control inspection (SBICI) at the Dresden Nuclear Power Station, Units 2 and 3. The inspection focused on the design and configuration of selected safety related and important to safety instrumentation and control (I&C) systems and components. The inspection purpose was to: (1) determine if selected instrument setpoints were properly derived such that automatic actions would occur to prevent safety limits from being exceeded; (2) determine if calculations, supporting these setpoints, considered all appropriate uncertainties; (3) determine if setpoint calculation methods were technically consistent with accepted standards; and (4) evaluate I&C related activities, engineering and technical support (E&TS), and self assessment.

Instrument loop selection was based on the predominant accident scenarios identified in Dresden's individual plant examination (IPE) and updated final safety analysis report (UFSAR).

The team considered the design and operation of the instrument and control loops reviewed and I&C engineering technical support to be adequate. However, the team identified the following weaknesses:

- Several instrument setpoint calculations contained various unverified assumptions, carried inconsistent number precision through the calculations, or utilized calibration procedure and calculation tolerances that did not always agree.

- Several instrument calculations did not identify the setpoint analytical limit, or the environmental conditions that the I&C loops would encounter in the event of an accident.

- Two post modification tests did not demonstrate that modified systems would perform satisfactorily in service.

The team concluded that increased management attention was warranted in I&C design control areas, specifically in setpoint calculations.

The team identified the following positive attributes:

- The counterpart team was knowledgeable and experienced.

- The HPCI design basis document was good.

- The setpoint methodology used was technically sound and reflected current industry practices.

DETAILS

1.0 Introduction

Selected instrumentation and control (I&C) setpoints were examined in detail, including their design basis requirements, assumptions, calculations, and component configuration. In particular, the setpoint methodology (uncertainties or errors) associated with the selected instrumentation loops were evaluated to determine if setpoints were correct and adequate safety margin existed.

Instrument loop selection was based on the predominant accident scenarios identified in the individual plant examination (IPE) and the updated final safety analysis report (UFSAR).

The team walked down originally installed and as-modified I&C equipment for configuration and equipment types, reviewed component qualifications, testing, and calibration records. The team also assessed the licensee's engineering and technical support (E&TS) organization's capability with respect to personnel qualification and staffing, timely and adequate root cause analyses for failures and recurring problems, and involvement in design modifications and operations.

The areas reviewed and the concerns identified are described in Sections 3.0 and 4.0 of this report. Personnel who attended the exit meeting on September 16, 1994, are listed in Appendix A. A complete list of the team's requests for information are listed in Appendix B.

2.0 Action on Previously Identified Inspection Findings

a. (Closed) Open Items (237/92028-03; 249/92028-03): The inspectors identified during fuse verification walkdowns that several control room porcelain fuse holders were identified as "withstand rated 10,000 Amps. rms." However, the fuses installed were short circuit rated (withstand capability) to 200,000 amperes.

In response, the licensee provided Calculation No. D-0050EF which identified the maximum available short circuit current as 1,487 amperes. Other than the porcelain fuse holders discussed in this open item, no others have been identified with a 10,000 ampere rating. The licensee is developing a fuse list. Approximately 80% of the known fuse population have been walked down. No other fuse holder discrepancies have been identified. The fuse list is tentatively scheduled for completion by December 1995. The team reviewed Dresden Administrative Procedure (DAP) No. 11-27, "Control and Maintenance of Fuses and The Fuse List," and concluded the licensee was adequately controlling fuses. This item is considered closed.

b. (Closed) Open Item (237/91038-06): The EDSFI team was concerned that the swing (Unit 2/3 EDG) diesel room was excessively hot. The EDG generator, exciter and relays are rated for a maximum 122°F temperature. The swing diesel room was not provided with any forced ventilation when in the standby mode.

In response, the licensee now monitors the swing diesel room temperature once per shift. If the room temperature exceeds 118.4°F, the operator manually starts the room fan and runs the fan until the room temperature drops below 114.8°F. The team reviewed the outdoor afternoon temperatures recorded at Dresden during June 1994 and compared them to the swing diesel room temperatures. The highest outdoor afternoon temperature was 94.64°F and the room temperature was 98°F. The team concluded the licensee adequately addressed the swing diesel temperature concern. This item is considered closed.

c. (Closed) Unresolved Items (237/91038-05; 249/91042-05; 249/92023-05): The licensee was unable to provide documentation to support that electrical cables were not thermally overloaded.

In response, the licensee completed a Cable Tray Temperature Measurement Program at Dresden and Quad Cities Stations. Eighteen routing point cable tray temperatures were measured and compared to a computer model. The measured and computed temperatures agreed very closely. The licensee intends to change the Sargent and Lundy Interactive Cable Engineering (SLICE) program to better reflect the actual cable tray thermal conditions. This program is tentatively scheduled for completion by June 1995. The team reviewed preliminary program results. The cable temperatures were adjusted based on a 40°C ambient temperature. No cable routing points exceeded their 90°C cable rating. The maximum cable temperature identified was ≈ 62°C. The team concluded the licensee was adequately addressing potential cable overloading. These items are considered closed.

d. (Closed) Violation (237/92028-02; 249/92028-02): The licensee failed to take corrective actions to replace improperly sized fuses used to protect safety related components and circuits. For example, two 30A fuses and one 40A fuse were installed in the Unit 2 EDG excitation cabinet, where the drawings specified 25A fuses.

In response, the licensee installed the correct fuses. In addition, the licensee strengthened DAP 11-27 to address fuse discrepancies. The team reviewed Calculation No. D0011-EF that concluded the installed fuses provided adequate protection. However, the calculation stated that the fuses specified on the drawings were the correct size. The team reviewed the fuse discrepancies identified in the past year and concluded that all of the discrepancies were adequately dispositioned. This item is considered closed.

e. (Closed) Violation (237/92028-01; 249/92028-01): The station failed to follow plant procedures to locate, isolate and remove; enter an administrative LCO; and issue a JCO when appropriate for three acknowledged DC grounds.

In response, the licensee counseled the Operation's staff involved about the importance of procedure adherence. During the tailgate session, the three Notice of Violation examples were discussed. The team reviewed the DC grounds identified in the past 6 months. The licensee adequately implemented the ground detection procedure for three identified grounds. This item is considered closed.

f. (Closed) Open Item (237/91016-04; 249/91016-04): The NRC was concerned that the original EDG output breaker trip logic design did not include a LOOP/LOCA trip signal to realign the EDG in the emergency mode when tested in parallel with offsite power. The potential existed to overload or backfeed the redundant bus during testing. This item was referred to NRR for resolution.

In response, NRR indicated that adding an emergency override feature as described in Regulatory Guide (RG) No. 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," position C.1.b.3, would resolve the above concern. However, the RG 1.108 requirements were implemented for nuclear plants licensed after August 1977, that is, after Dresden's plants were licensed. Also, the NRC recognizes that these conditions (EDG in parallel with the grid for monthly testing) represent a limited window of vulnerability, and the probability of experiencing the above cited problems were very low. Therefore, NRR does not believe backfitting the EDG designs of these plants with the test override feature is sufficiently safety significant to warrant backfit. This item is considered closed.

g. (Closed) Violation (237/92021-03; 249/92021-03): The licensee did not include four safety related SBGT current sensing relays in a calibration program.

In response, the licensee satisfactorily calibrated the four relays and added the relays to the calibration program. During the corrective action reviews, the licensee identified other relay types that require calibration, such as time delay relays (TDRs). The Safety Related Contact Testing Adequacy (SRCTA) program was expanded to include TDRs and other relay types in the program. The inspectors reviewed the TDR program and concluded the licensee had adequately addressed this concern. This item is considered closed.

3.0 Instrument Loops Reviewed

In assessing I&C capability, the team reviewed the plant's instrumentation and control system design, configuration and operation. The team reviewed the setpoint program, original and recent calculations, installed I&C equipment, I&C testing and procedures, equipment qualification, and compliance with regulations, design engineering standards and accepted engineering practices. The review was based on the following information:

- setpoint calculations
- system descriptions
- UFSAR
- technical specifications (TSs)
- system design basis documents
- probabilistic risk assessment (PRA)
- manufacturer documents
- test and operating procedures
- control logic diagrams
- elementary and loop schematic diagrams

The team conducted I&C equipment walkdowns to verify that the operational, environmental and seismic criteria had been correctly applied. For each instrument loop selected, the team reviewed the process sensing line and instrument design interface, and the trip device or control room indicator design.

The following instrumentation and control loops were reviewed:

Unit 3

1. Suppression Pool (torus)
   a. Temperature
   b. Level (indication and HPCI transfer on high level in the torus)
2. HPCI Initiation
   a. Low-low reactor water level
   b. High drywell pressure
3. HPCI Turbine Trips
   a. High reactor water level
   b. High turbine exhaust pressure
   c. Low booster pump suction pressure
4. HPCI Isolation Trips
   a. High steam line flow
   b. High steam line area temperature
   c. Low reactor pressure
5. Condensate Storage Tank
   a. Level (high level transfer HPCI to suppression pool)
   b. Level Indication

Unit 2

1. ATWS Recirculation Pump Trip
   a. High reactor pressure
   b. Low-low reactor water level
2. ATWS Initiation
   a. High torus water average temperature alarm
   b. High reactor dome pressure
   c. Low-low reactor water level alarm
3. LPCI Initiation
   a. High drywell pressure
   b. Low-low Rx level coincident with low reactor pressure or
   c. Low-low Rx level sustained for 8.5 minutes
4. LPCI System Protection
   a. Low pressure injection permissive
   b. Keep fill system
5. Reactor Vessel Level
   a. Level indication (narrow range)
   b. Low reactor water level trip (RPS)
6. Standby Gas Treatment (secondary containment initiation)
   a. High reactor building air monitor radiation
   b. Group 2 primary containment isolation
      - Low reactor water level
      - High drywell pressure
      - High drywell radiation

3.1 Setpoint Calculation Methodology

3.1.1 Setpoint Calculation and Basis

The team reviewed Engineering Procedure Nos. TID-E/I&C-10, "Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy," and TID-E/I&C-20, "Basis for Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy." These procedures are used as the method and basis for instrument channel setpoint calculation preparation, review, approval and loop accuracy analysis. The team concluded that the methodology was technically sound, consistent with current industry practices, such as ISA 67.04-1988, and sufficiently comprehensive for their intended purpose.

The calculations reviewed by the team were consistent with the licensee's methodology, with the following exceptions:

a. Several unverified assumptions were referenced in the calculations reviewed, such as:

   - unissued draft design sketch
   - untraceable design information identified on telecon memos
   - several calculations used instrument seismic or environmental accuracy data only if it was available or assumed an accuracy

   Collectively, the team considered these examples of weak design calculation controls.

b. Inconsistent number precision was carried through the calculations. The number of decimal places used in the calculations did not match the measurement precision in the calibration procedures. However, the team did not identify any instances where this practice resulted in unacceptable setpoint margin.

c. Calculations used manufacturer instrument drift data rather than station historical drift data.

   The licensee indicated that a program was being developed to collect and analyze historical drift data for setpoint determinations. This was acceptable to the team.

d. Several calculations prepared by contractors were presented in a study format rather than an engineering calculation format. The team noted that calculations performed by ComEd were more focused from input to the finished product. The team did not identify any errors attributable to calculation format. The contractors did prepare a useful and auditable "Master Calculation" for reactor water level (RWL) calculations. The master calculation established the general assumptions and bases for more detailed calculations involving RWL. The team considered the "master calculation" a good approach.

3.1.2 Environmental and Seismic Effects

The team identified several examples where the licensee identified instrument seismic or environmental effects in the calculations only if manufacturer information was available. The calculations did not always clearly state the environment and accident conditions that the instrument loop must function in. In some instances, the calculations appeared generally limited to determining numerical values for loop error based on available data, rather than serving as the basis for loop performance during a DBA. While the calculations appeared correct within this limited scope, they were not always useful for drawing conclusions about instrument loop performance during all operating conditions. However, sufficient margin existed in the calculations that the team did not identify any operability concerns.

3.2 Suppression Pool (Torus) Temperature and Level

The instruments selected for review included torus bulk temperature (TR-3-1641-9) and water level (LI-3-1602-3, narrow range and LI-3-1640-10A, wide range). These indication channels are used to maintain suppression pool operating limits within technical specification limiting conditions for operation and are considered RG 1.97, Category 1 instruments. In addition, the team reviewed high torus level float switches (LS-2351A/B) located in float chambers. These switches are used following an accident for automatic HPCI suction transfer from the condensate storage tank to the torus.

3.2.1 Setpoint Calculation and Basis

a. Prior to the I&C inspection, the licensee identified that the torus bulk temperature procedure operating limits did not allow sufficient margin for instrument uncertainties. The licensee performed an operability evaluation for this condition and was implementing corrective actions during the inspection. The operating limits were changed to allow additional margin for measurement error. This was acceptable to the team.

b. Post accident monitoring channels, torus wide range level (Calculation No. NED-IEIC-0149) and torus bulk temperature (Calculation No. NED-I-EIC-0251) did not include environmental terms in the tolerance calculation. The bulk temperature calculation excluded seismic effects and the level calculation selectively excluded seismic effects for the recorders and panel meters. In addition, temperature, humidity, and radiation effects were unknown. This is considered an inspection followup item (237/94016-01(DRS); 249/94016-01(DRS)) pending NRC review of the licensee's actions to obtain and incorporate this information in the calculations.

Based on other margins identified in the calculations, the team concluded the above items would not affect operability. However, these items represent another example of weak design calculation control.

3.2.2 Moore Industries Isolation Device Qualification

The team was concerned that the Moore Industries isolators' installed configuration was not bounded by the test configuration that the devices were qualified to for maximum credible faults (MCF) and surge withstand capability.

During a plant tour, the team identified Moore Industries torus temperature isolator Nos. 943-237, -238, -242A and -242B, and several isolators installed in computer input cabinet No. 903-68 with their input, output, and power wiring bundled together. This field configuration appeared to defeat the isolation device purpose for separating safety related circuits from nonsafety circuits.

During the inspection, the licensee was unable to retrieve qualification documentation to support the installed configuration. Preliminary calculations performed by the licensee indicate the installed configuration was acceptable. However, this is considered an inspection followup item (237/94016-02(DRS); 249/94016-02(DRS)) pending NRC review of the licensee's calculations.

3.3 HPCI Initiation

The HPCI initiation instruments selected for review included low reactor water level (LIS-3-0263-72A) or high drywell pressure (PS-3-1632A). The instruments are used to initiate HPCI for LOCA or MSLB accidents.

3.3.1 Setpoint Calculation and Basis

a. The team identified several calibration data sheet tolerances and setpoints that were less conservative than the values used in the setpoint calculations:

   - Surveillance Procedure (SP) No. DIS 0500-03 (lo-lo RWL) used a ± 2 INWC as the calibration tolerance while a ± 1 INWC tolerance was used in Calculation No. 0349-E-30 (Unit 3 low reactor water level ECCS initiate). In response, the licensee issued a Problem Identification Form (PIF) to initiate corrective actions. The team considered the difference between the calibration tolerance and the calculation to be minor.

   - SP No. DIS 2300-04 high drywell pressure setpoint was set less conservative (negative margin) than the setpoint established in Calculation No. NED-I-EIC-0111 (Unit 3 high drywell pressure ECCS initiation). However, the surveillance procedure setpoint did not exceed the TS value. In response, the licensee issued a PIF to initiate corrective actions. This was acceptable to the team.

   The team reviewed an informal licensee analysis for the above items and concluded the discrepancies did not affect operability. However, these items represent another example of weak design calculation control.

b. Calculation No. 0349-E-30 (Unit 3 RWL) contained the following unverified assumptions or documents:

   - Reference No. 17 identified a draft sketch (NUS SK-0349-M-002A).

     A note on the sketch stated, in part, that it was not required to be issued because "...design parameters [are] included and checked in design calculations." However, the calculation referenced the informal sketch as the basis for several instrument elevation datum points.

- Reference No. 24 identified training materials, Reference Nos. 41 and 50 identified two telecons, and Reference No. 28 identified a calibration procedure that were used to support the RWL analytical limit basis.

  The licensee was unable to provide a qualitative basis to the team for these assumptions and documents.

- Paragraph No. 5.5.5.6.2 indicated that the RWL analytical limit (AL) was derived from the technical specification (-59" RWL).

  ISA Standard S67.04-1988, "Setpoints for Nuclear Safety-Related Instrumentation," defines an AL as the "Limit of a measured or calculated variable established by the safety analysis to ensure that a safety limit is not exceeded." Although the licensee is not committed to this Standard, the team was concerned that the analytical limit for RWL was derived from the TS and not the safety analysis.

  In response, the licensee stated that the RWL setpoint setting was more conservative than the TS value. In addition, the licensee indicated that consideration would be given to establishing the AL in accordance with ISA Standard S67.04-1988. This was acceptable to the team.

- Attachment 2, page 26, discusses a telecon during which the Yarway manufacturer identified the level switch repeatability error as ± 3%. It was not apparent to the team that the manufacturer's value was consistent with the reference accuracy value used in the calculation. For example, repeatability errors should be separately identified because such errors are not amenable to calibration or adjustment.

  In response, the licensee indicated that the manufacturer data, although attached to the calculation and referenced in the manufacturer's internal QA specification, was not used. Data in Calculation No. NED-I-EIC-0100 was used instead; however, this calculation was not provided to the team in sufficient time to complete a review. This is considered an inspection followup item (237/94016-03(DRS); 249/94016-03(DRS)) pending NRC review of Calculation No. NED-I-EIC-0100.

Based on other margins identified in the calculation, the team concluded the above items would not affect operability. However, these items represent another example of weak design calculation control.

3.3.2 Environmental and Seismic Performance

a. The team noted that the original equipment Yarway RWL switch setpoint calculations did not include an environmental error term. The level switches are required to mitigate LOCA and HELB (main steam line break inside containment) accidents.

In response, the licensee stated, in part, that the level switch protective functions would be performed ". . .prior to environmental

changes resulting from the abnormal condition (i.e., less than two minutes). As such they are not required to be qualified per [IEB] 79-01B." The level switches are located in EQ Zone Nos. 24 and 27. The following environmental conditions are postulated in these zones:

Process	Normal	HELB	LOCA
Temperature	104°F	212°F	104°F
Pressure	14.7 psig	14.8 psig	14.7 psig

The high energy line breaks that could occur in the vicinity of the level switches involved isolation condenser lines, the HPCI steam line, or a RWCU line (bounding accident). However, the level switches are not required to mitigate accidents that dominate EQ Zone Nos. 24 and 27. In addition, a drawing review did not indicate that the above lines could directly spray on the instrument racks.

The team concluded the Yarways could perform their safety function. In addition, ISA S67.04-1988 supports the licensee's basis for not including environmental effects in the Yarway calculation. Section 4.3.1.4, "Instrument Uncertainties by Design Basis Events," indicated that only uncertainties specific to the event and required period of service need be used. The use of different uncertainty components for the same process equipment for different events is permitted.

b. The team noted that original equipment SOR drywell pressure switches and Yarway RWL switches were classified as "commercial grade". Information provided in the calculations did not address their seismic qualification.

In response, the licensee provided the "commercial grade" dedication packages, however, the packages did not address the instruments' seismic capability. This is considered an inspection followup item (237/94016-04(DRS); 249/94016-04(DRS)) pending NRC review of the seismic documentation for these instruments.

Based on other margins identified in the calculation, the team concluded the above items would not affect operability. However, these items represent another example of weak design calculation control.

3.3.3 Condensate/Particulate Traps in Drywell Pressure Impulse Lines and Methods for Ensuring the Lines Are Unrestricted

The team noted that the drywell pressure calibration procedures did not verify if the instrument impulse lines were blocked or restricted. The lines must be open and unrestricted to insure the pressure instruments will respond to a DBA. In addition, installation drawings did not identify any provisions for protecting the impulse line opening inside the drywell or provisions to drain impulse line low points.

In response, the licensee walked down the lines and identified several low points (traps) that require further review. A PIF was issued to evaluate this item. This was acceptable to the team.

3.4 HPCI Turbine Trips

The HPCI turbine instruments selected for review included high reactor water level (LIS-3-0263-72A), high HPCI turbine exhaust pressure (PS-3-2368A) and low HPCI pump suction pressure (PS-3-2360). The setpoints must be set with adequate margin for equipment protection and must have adequate margin to prevent spurious HPCI trips during a DBA.

3.4.1 Setpoint Calculation and Basis

a. Calculation No. NED-I-EIC-096 (HPCI turbine high exhaust pressure trip and suction pressure trip) did not evaluate Mercoid pressure switch seismic effects.

b. Calculation No. NED-I-EIC-096 identified the Mercoid pressure switch temperature limit as 180°F, but the identified accident temperature was 230°F.

c. The calculation did not identify any setpoint margin for the HPCI low suction pressure trip.

The licensee was unable to retrieve information on the above items during the inspection. This is considered an inspection followup item (237/94016-05(DRS); 249/94016-05(DRS)) pending NRC review of the licensee's actions to address the above. Based on other margins identified in the calculation, the team concluded the above items would not affect operability. However, these items represent another example of weak design calculation control.

3.5 HPCI Isolation Trips

The HPCI isolation instruments selected for review included high steamline flow (DPIS-3-2391-3), high steamline area temperature (TS-3-2370-A) and low reactor pressure (PIS-3-2391-1A).

3.5.1 Setpoint Calculation and Basis

a. Calculation No. NED-I-EIC-108 (HPCI turbine/pump trip on high area temperature) did not evaluate temperature switch seismic effects.

b. Calculation No. NED-I-EIC-108 stated, in part, that ". . .post-accident radiation induced errors are assumed to be small. . . ." No basis was provided in the calculation to support this assumption.

The licensee was unable to retrieve information on the above items during the inspection. This is considered an information followup item (237/94016-06(DRS); 249/94016-06(DRS)) pending NRC review of the licensee's actions to address the above. Based on other margins identified in the calculation, the team concluded the above items would not affect operability. However, these items represent another example of weak design calculation control.

3.6 Condensate Storage Tank Level

The instrument selected for low condensate storage tank level (LS-3-2350A) review initiates automatic HPCI suction transfer from the condensate storage tank to the suppression pool (torus).

3.6.1 Setpoint Calculation and Basis

The team noted that a setpoint calculation was not available and that the level switch (LS) was only functionally tested.

In response, the licensee developed an informal analysis and walked down the LS (mechanical float assembly) installation. The LS is located in a float chamber and has a limited mechanical operating range. The switch was not designed to be calibrated.

The team reviewed the informal analysis and concluded the LS would initiate HPCI suction transfer with adequate margin before losing HPCI pump NPSH. In addition, the team concluded a functional test was acceptable for this application.

3.7 ATWS Recirculation Pump Trip and Alternate Rod Insertion (ARI)

The anticipated transient without scram system was installed as a backup to the reactor protection system. The instruments selected for recirculation pump trip (ATWS RPT) and ARI review included high reactor pressure (PT-2-0263-20B) and lo-lo RWL (LT-2-0263-23B).

3.7.1 Setpoint Calculation and Basis

a. Calculation No. 0349-E-10 (Unit 2 RWL) did not conform to ISA S67.04-1988 (see Section 3.3.1.b, 3rd Bullet).

b. Calculation No. 0349-E-10 (0349-E-30) did not include instrument drift data, calibration tolerances and environmental effects in the setpoint determination. The setpoint was determined from a scaling calculation. This is considered an inspection followup item (237/94016-07(DRS); 249/94016-07(DRS)) pending NRC review of the licensee's actions to obtain and incorporate this information in the calculation.

Based on other margins identified in the calculation, the team concluded the above items would not affect operability. However, these items represent another example of weak design calculation control.

3.8 ATWS Manual Initiation

Manual initiation was based on channel indication or alarms. The instruments selected for review included high torus water average temperature (TR-2-1641-200B), high drywell pressure (PS-2-1632B), and low RWL (LT-2-0263-57B or LS-2-0263-143B). The calculations associated with these instruments are identical to those previously discussed in Section Nos. 3.2.1.b, 3.3.1.a and 3.7.1.b, respectively, and the findings identified in those Sections are applicable to these instruments.

3.9 LPCI Initiation

The LPCI initiation instruments selected for review included high drywell pressure (PS-2-1632B) or lo-lo RWL coincident with low reactor pressure (LIS-2-0263-72B and PS-2-0263-52B). In addition, LPCI Loop II keep fill system (PS-2-1557B) and low reactor pressure permissive (PS-2-0263-52B) instruments were reviewed.

3.9.1 Setpoint Calculation and Basis

a. A calculation did not exist for the keep fill system.

In response, the licensee indicated that the keep fill setpoint was an original design setting based on operating experience. The licensee provided the team a schedule for completion of setpoint calculations with priority based on design basis relevance. Categories of the setpoints included in the schedule were safety related, control system, regulatory related, reliability related, and nonsafey related setpoints. ESF/ECCS/RPS trip actuation or permissive signals, emergency operating procedures (EOPs), and RG 1.97 indication channel calculations receive the highest priority. Calculations for the remaining TS instruments, such as the keep fill system, are to follow. This was acceptable to the team.

b. Calculation No. 0349-E-10 (Unit 2 lo-lo RWL ECCS initiation) identified negative setpoint margin. Although negative setpoint margin indicates the potential for the combined setpoint uncertainties to exceed the TS allowable value, the actual surveillance procedure setpoint did not exceed the TS value.

Calculation No. NED-I-EIC-091 (Unit 2 high drywell pressure ECCS initiation) identified negative setpoint margin. However, the actual surveillance procedure setpoint did not exceed the TS value.

Based on other margins identified in the calculations discussed in b. and c. above, the team concluded these items would not affect operability. However, the above items represent another example of weak design calculation control.

3.10 Reactor Water Level Narrow Range Indication

The feedwater RWL instruments selected for review included the reactor level indication (LT-646B, LI-640-29B, and L/FR-640-26) and alarms for feedwater control.

3.10.1 Setpoint Calculation and Basis

The team noted that a loop error calculation was not available.

In response, the licensee indicated that the loop settings were based on original equipment operating experience. The licensee provided the available design information. Subsequent team review did not identify any discrepancies and the team concluded the instruments were operating within their design limits. The licensee indicated that the performance of a loop error calculation was being considered. This was acceptable to the team.

3.11 Standby Gas Treatment (SBGT) Initiation

The SBGT initiation instruments selected for review included the reactor building radiation monitor (RIS-2-1705-8B), lo-lo RWL (LT-2-0263-57B), high drywell pressure (PS-2-1621B) and high drywell radiation (RE-2-2418B).

3.11.1 Setpoint Calculation and Basis

The team noted that formal calculations did not exist for the reactor building ventilation trip and the high drywell radiation monitor.

In response, the licensee indicated that the ventilation trip was an original equipment setting and the high drywell radiation monitor settings were based upon NUREG 0737 analyses or offsite dose calculations. The team reviewed supporting documentation and concluded the setpoints were reasonable.

4.0 Engineering and Technical Support

The team evaluated Dresden's I&C engineering and technical support (E&TS) capability by reviewing the licensee's programs for modifications, engineering interfaces, document and drawing control, discrepancy management, safety evaluations (10 CFR 50.59), test development and control, setpoint methodology, calibration procedures, QA and maintenance. In addition, the team reviewed training programs for I&C engineers and interviewed design, construction and system I&C engineers.

Overall, the team concluded Dresden was receiving adequate I&C engineering and technical support and that I&C engineering expertise was available; however, efforts toward developing an integrated engineering approach appeared minimal. Ownership for the design, calculations and systems was difficult to identify because weak linkages existed between design, construction and system engineering. One consequence observed was slow progression of engineering initiatives from program conception to implementation. For example, engineering was slow in identifying and correcting performance problems with the Yarway level switches. It appeared to the team that ComEd's control of external design engineering activities was weaker than internal design activities. The team noted that I&C setpoint calculations performed by ComEd were more focused with a clear path from calculation input to the finished product. Several contractor I&C calculations appeared to jump around from instrument loop to instrument loop and appeared to be in a study format rather than an engineering calculation format. Although the setpoint calculation review did not identify any operability concerns, numerous design calculation control weaknesses were identified. This area may require additional management attention to ensure the setpoint methodology program is implemented consistently. The licensee informed the team that they were adding additional design engineers to the site. Engineering's goal was to perform $\approx$ 80% of Dresden's design activities in-house.

The team identified several positive attributes. The Dresden counterpart I&C team was knowledgeable and experienced. In addition, recent setpoint methodology used was technically sound and reflected current industry practices. Finally, the HPCI design basis document (DBD) was good.

4.1 Engineering Staff Training

The team reviewed selected I&C engineers' training programs, training records and work experience. In addition, the team conducted interviews and technical discussions with selected I&C engineers. The I&C engineers interviewed were experienced and had a positive attitude. The team concluded that training was not focused on specific I&C skills and it appeared that I&C engineers were not completely trained on existing instrumentation system designs. It appeared to the team that the emerging I&C engineering group and their involvement with setpoint methodology may require additional training to ensure consistent implementation.

The team was informed that in October 1993, 22 modification and technical staff engineers received training on post modification testing as an effort to resolve previously identified weaknesses in that area. This training was provided after post modification test (PMT) No. SP 93-10-90 was approved for use in Modification No. P12-3-93-614 (see Section 4.2.a).

4.2 Design Control and Modifications

The team concluded that Dresden was adequately controlling station modifications. Safety evaluations were thorough and well documented. Eight permanent and three temporary modifications were reviewed. Two permanent and the three temporary modifications were walked down. The walkdowns reviewed the modifications against the design drawings and concluded the installations reflected the as-built configuration.

The team reviewed the PMTs for the modifications. Inadequate PMTs were identified in two permanent modifications.

a. Modification P12-3-93-614: Reroute Torus Bulk Temperature Monitoring System conduits to lessen Unit 3 flooding and/or corrosion concerns (completed July 1994). This modification replaced existing thermocouple cables and conduits for the post accident monitoring suppression pool temperature indication channels.

   The team identified there was no basis for the ± 6°F acceptance criteria specified in Special Procedure (SP) No. 93-10-90, "Modification Test for Torus Temperature Monitoring Conduit Relocation Minor Design Change P12-3-93-614."

   In response, the licensee used design Calculation No. NED-I-EIC-0251, "Suppression Pool Temperature Loop Accuracy Calculation," and determined the acceptance criteria to be ± 4.6°F. Based on indicator readability, the acceptance criteria specified in the PMT procedure should have been ± 5°F. Although the actual temperature values recorded during performance of the SP were ≤ 5°F. The failure to include acceptance limits contained in applicable design documents is a violation (237/94016-08a; 249/94016-08a(DRS)) of 10 CFR 50, Appendix B, Criterion XI, Test Control.

   The team noted that the Unit 2 special procedure recorded temperature values showed no variances from the desired input values. Unit 3 recorded temperature values varied between -4°F and +5°F. The team was concerned as to why the PMT results were different between units.

In response, the licensee indicated they would investigate the Unit 3 temperature variances and retest the modification. This was acceptable to the team.

b. Modification M12-0-90-025: Modify Standby Gas Treatment System (SBGT) logic so an isolation in either Unit will isolate both Units' Reactor Building Ventilation Systems (completed February 1991). Four relays were added to automatically close both Units' reactor building isolation dampers and trip their respective building ventilation and exhaust fans.

The team identified that new SBGT Train A relay (30K5 and 30K24) contacts (Drawing No. 12E-2400C, sh.1) and Train B relay (30K21 and 30K25) contacts (Drawing No. 12E-2400C, sh.2) were inadequately tested. Special Procedure Nos. SP 91-2-29, "Standby Gas Treatment Train A Logic Modification Test," and SP 91-1-12, "Standby Gas Treatment Train B Logic Modification Test," verified the isolation dampers automatically closed and that all reactor building fans tripped. However, the post modification tests did not identify that original construction relays CR-2 and CR-3 (Drawing Nos. 12E-2399C and 12E-3399B) would, in parallel, trip the reactor building fans upon isolation damper closure. Therefore, positive identification that the new relays had performed their intended function was not verified.

In response, the licensee indicated they would verify by test that the relay contacts could perform their intended functions. The failure to demonstrate that systems and components will perform satisfactorily in service and assure test requirements have been satisfied is a violation (237/94016-08b; 249/94016-08b(DRS)) of 10 CFR 50, Appendix B, Criterion XI, Test Control.

4.3 Review of Licensee Self-Assessment Program in the I&C Area

The team reviewed I&C related audits and surveillances performed during the last three years. Recent self-assessments appeared to be more self critical than earlier audits that had few technical findings. For example, the current instrument trending program was found marginal since only as-found values outside specified surveillance tolerances were trended (marginal instrument drift patterns may not be noted). The team concluded that recent licensee I&C self-assessments were acceptable.

4.4 Measuring and Test Equipment (MTE)

The inspectors noted that recent improvements in the licensee's MTE control practices were, in part, driven by self-assessment findings. To address the findings and other MTE problems, an Instrument Compliance Manager position was created. Increased management direction at several levels has lowered the MTE work request backlog, created a MTE problem list and involved the instrument mechanics (IMs) in solving MTE problems. The team concluded that MTE issue controls, such as storage, calibration interval and damaged or out of tolerance MTE instruments were acceptable.

4.5 Instrument Calibration and Testing

The team reviewed calibration and functional surveillance tests, logic functional tests and response time tests associated with the instrument loops

selected. The team concluded the procedures were user friendly and of good quality. However, as discussed in previous Sections of this report, several calculated setpoints used different tolerances than identified on surveillance procedure data sheets. It was unclear to the team how Dresden would tie the calculation and procedure together to ensure changes made to either document, such as MTE, would not invalidate the calculation. Though problems were noted, the surveillance procedures did incorporate the correct technical specification (TS) setpoint values and the setpoints were conservatively set below the allowable TS limits. The team concluded the instrument testing program was acceptable.

5.0 Inspection Followup Items

Inspection followup items are matters that have been discussed with the licensee, which will be reviewed further by the team, which involve some action on the part of NRC or licensee or both. Followup items disclosed during the inspection are discussed in Sections 3.2.1.b, 3.2.2, 3.3.1.b, 3.3.2.b, 3.4.1, 3.5.1, and 3.7.1.b of this report.

6.0 Exit Meeting

The team met with licensee representatives (denoted in Appendix A) after the inspection on September 16, 1994, to discuss the scope and findings of the inspection. During the exit meeting, the team discussed the likely informational content of the inspection report about documents or processes reviewed by the team during the inspection. Licensee representatives did not identify any such documents or processes as proprietary.

APPENDIX A

Dresden SBICI Exit Meeting September 16, 1994

1.0 Commonwealth Edison Company

* E. Eenigenburg, Unit 2 Station Manager
* H. Massin, Site Engineering & Construction Manager
* H. Drumhiller, Station Engineering Department Superintendent
* D. Barrett, Acting Quality Control Supervisor
* J. Phelan, CECo I&C Team Leader
* G. Wagner, Acting Chief E/Instrument & Control Engineer
* P. Wicyk, Electrical - Instrument and Control Supervisor
* D. Pritchard,Work Control Superintendent
* J. Grzemski, ISEG Supervisor
* J. Williams, Dresden Construction Superintendent
* C. McDonough, Regulatory Assurance NRC Coordinator
* R. Ralph, System Engineering Team Leader
* D. Ambler, SVP Executive Assistant
* G. Tietz, Operations Manager
* M. Pacilio, Unit 3 Maintenance Superintendent
* R. Mason, Instrumentation and Control Engineer
* J. McHale, Instrumentation and Control Engineer
* K. Robbins, Instrument Maintenance Supervising coordinator
* S. Stiller, Instrument Department Superintendent
* L. McCalip, Instrument Compliance Manager
* J. Zeszutek, Regulatory Assurance Engineer
* S. Koenig, Regulatory Performance Administrator
* D. Rahn, Signals & Safeguards Inc.
* R. Ellman, Signals & Safeguards Inc.
* W. Barasa, S&L

U. S. Nuclear Regulatory Commission

* M. Leach, Senior Resident Inspector
* G. Wright, Chief, Engineering branch DRS
* C. Settles, IDNS Resident Inspector

* Denotes those present at the exit meeting on September 16, 1994.

APPENDIX B

DRESDEN SBICI REQUESTS FOR INFORMATION

001 PROVIDE 3 COPIES OF SETPOINT METHODOLOGY
002 PROVIDE INFORMATION ON MT&E PROGRAM
003 PROVIDE INFORMATION ON HOW THE MT&E PROGRAM IS IMPLEMENTED IN THE CALCULATION METHODOLOGY
004 PLEASE PROVIDE QA SURVEILLANCES OR AUDITS OF I&C ENGINEERING
005 PROVIDE PROCEDURES THAT DEAL WITH SUPPRESSION POOL TEMPERATURE
006 PROVIDE PROCEDURES THAT DEAL WITH SUPPRESSION POOL LEVEL (INDICATION AND HPCI TRANSFER AND HIGH LEVEL)
007 PROVIDE PROCEDURES THAT DEAL WITH HPCI INITIATION ON RX LO LO WATER LEVEL
008 PROVIDE PROCEDURES THAT DEAL WITH HPCI INITIATION ON HI DRYWELL PRESSURE
009 PROVIDE PROCEDURES THAT DEAL WITH HPCI PROTECTIVE TRIP ON HIGH FLOW (PIPING)
010 PROVIDE PROCEDURES THAT DEAL WITH HPCI PROTECTIVE TRIP ON HI TEMPERATURE IN HPCI PIPING
011 PROVIDE PROCEDURES THAT DEAL WITH THE HPCI KEEP FILL SYSTEM
012 PROVIDE PROCEDURES THAT DEAL WITH HPCI ISOLATION TRIPS ON STEAM LINE HIGH FLOW
013 PROVIDE PROCEDURES THAT DEAL WITH HPCI ISOLATION TRIPS ON STEAM LINE AREA HIGH TEMPERATURE
014 PROVIDE PROCEDURES THAT DEAL WITH HPCI ISOLATION TRIPS ON LO RX PRESSURE
015 PROVIDE PROCEDURES THAT DEAL WITH CST LEVEL (LO LEVEL TRANSFER HPCI TO SUPPRESSION POOL)
016 PROVIDE PROCEDURES THAT DEAL WITH ATWS RECIRCULATION PUMP TRIP ON REACTOR HIGH PRESSURE
017 PROVIDE PROCEDURES THAT DEAL WITH ATWS RECIRCULATION PUMP TRIP ON REACTOR LOW-LOW LEVEL
018 PROVIDE PROCEDURES THAT DEAL WITH ATWS MANUAL INITIATION ON HIGH TORUS WATER AVERAGE TEMPERATURE ALARM
019 PROVIDE PROCEDURES THAT DEAL WITH ATWS MANUAL INITIATION ON REACTOR HIGH DOME PRESSURE HIGH ALARM
020 PROVIDE PROCEDURES THAT DEAL WITH ATWS MANUAL INITIATION ON REACTOR LOW LOW WATER LEVEL ALARM
021 PROVIDE PROCEDURES THAT DEAL WITH LPCI INITIATION ON HIGH DRYWELL PRESSURE
022 PROVIDE PROCEDURES THAT DEAL WITH LPCI INITIATION ON LOW LOW RX LEVEL COINCIDENT WITH LOW REACTOR PRESSURE
023 PROVIDE PROCEDURES THAT DEAL WITH LPCI INITIATION ON LOW LOW RX LEVEL SUSTAINED FOR 8.5 MINUTES
024 PROVIDE PROCEDURES THAT DEAL WITH LPCI INITIATION ON LOW PRESSURE INJECTION PERMISSIVE
025 PROVIDE PROCEDURES THAT DEAL WITH LPCI KEEP FILL SYSTEM
026 PROVIDE PROCEDURES THAT DEAL WITH REACTOR VESSEL LEVEL (INDICATION - NARROW RANGE)
027 PROVIDE PROCEDURES THAT DEAL WITH REACTOR VESSEL RPS LEVEL 3 TRIP
028 PROVIDE PROCEDURES THAT DEAL WITH STANDBY GAS TREATMENT INITIATION UPON SECONDARY CONTAINMENT INITIATION FOLLOWING RX BUILDING AIR MONITOR HIGH
029 PROVIDE PROCEDURES THAT DEAL WITH STANDBY GAS TREATMENT INITIATION UPON SECONDARY CONTAINMENT INITIATION FOLLOWING GROUP 2 PRIMARY CONTAINMENT ISOLATION ON:
A) RX LO LEVEL
B) HI DRYWELL PRESS
C) DRYWELL HI RADIATION
030 PROVIDE ROUND SHEETS FOR LOOPS INDICATED ON ATTACHED LIST
031 PROVIDE DRAWINGS ASSOCIATED WITH SELECTED LOOPS
032 PROVIDE CABLE ROUTING FOR SUPPRESSION POOL
A) TEMPERATURE
B) LEVEL (INDICATION AND HPCI TRANSFER ON HIGH LEVEL IN THE TORUS)
033 PROVIDE CABLE ROUTING FOR HPCI INITIATION ON:
A) REACTOR LOW LOW WATER LEVEL
B) HIGH DRYWELL PRESSURE
034 PROVIDE CABLE ROUTING FOR HPCI PROTECTIVE TRIPS ON:
A) HIGH FLOW HPCI PIPING
B) HIGH TEMPERATURE HPCI PIPING
C) HPCI FILL SYSTEM
035 PROVIDE CABLE ROUTING FOR HPCI ISOLATION TRIPS ON:
A) STEAM LINE HIGH FLOW
B) STEAM LINE AREA HIGH TEMPERATURE
C) LOW REACTOR PRESSURE
036 PROVIDE CABLE ROUTING FOR CONDENSATE STORAGE TANK
A) LEVEL (LOW LEVEL TRANSFER HPCI TO SUPPRESSION POOL)
037 PROVIDE CABLE ROUTING FOR ATWS RECIRC PUMP TRIP
A) REACTOR HIGH PRESSURE
B) REACTOR LOW LOW WATER LEVEL
038 PROVIDE CABLE ROUTING FOR ATWS MANUAL INITIATION ON:
A) HIGH TORUS WATER AVERAGE TEMPERATURE ALARM
B) REACTOR HIGH DOME PRESSURE HIGH ALARM
C) RX LO LO WATER LEVEL ALARM
039 PROVIDE CABLE ROUTING FOR LPCI INITIATION ON:
A) HI DW PRESSURE
B) LO LO RX LEVEL COINCIDENT IN LO RX PRESS
C) LO LO RX LEVEL SUSTAINED FOR 8.5 MINUTES
D) LO PRESS INJECTION PERMISSIVE
E) KEEP FILL SYSTEM
040 PROVIDE CABLE ROUTING FOR RX VESSEL
A) LEVEL (INDICATION - NARROW RANGE)
B) RPS LEVEL 3 TRIP
041 PROVIDE CABLE ROUTING FOR STANDBY GAS TREATMENT
A) INITIATION UPON SECONDARY CONTAINMENT INITIATION FOLLOWING:
(1) RX BLDG AIR MONITOR HIGH
(2) GRP 2 PRIMARY CONTAINMENT ISOLATION ON:
A) RX LO LVL
B) HI DW PRESS
C) DW HI RAD
042 PROVIDE CALCULATIONS FOR SUPPRESSION POOL
A) TEMPERATURE
B) LEVEL (INDICATION AND HPCI TRANSFER ON HI LEVELS IN THE TORUS)
043 PROVIDE CALCULATIONS FOR HPCI INITIATION ON:
A) RX LO LO WATER LEVEL
B) HI DRYWELL PRESSURE
044 PROVIDE CALCULATIONS FOR HPCI PROTECTIVE TRIPS ON:
A) HI FLOW HPCI PIPING
B) HI TEMPERATURE HPCI PIPING
C) KEEP FILL SYSTEM
045 PROVIDE CALCULATIONS FOR HPCI ISOLATION TRIPS
A) STEAM LINE HIGH FLOW
B) STEAM LINE AREA HIGH TEMPERATURE
C) LOW RX PRESSURE

046 PROVIDE CALCULATIONS FOR CST LEVEL (LO LEVEL TRANSFER HPCI TO SUPPRESSION POOL)
047 PROVIDE CALCULATIONS FOR ATWS RECIRC PUMP TRIP ON:
A) RX HI PRESSURE
B) RX LO LO WATER LEVEL
048 PROVIDE CALCULATIONS FOR ATWS MANUAL INITIATION
A) HI TORUS WATER AVERAGE TEMP ALARM
B) RX HI DOME PRESSURE HIGH ALARM
C) RX LO LO WATER ALARM
049 PROVIDE CALCULATIONS FOR LPCI INITIATION ON:
A) HI DRYWELL PRESSURE
B) LO LO RX LEVEL COINCIDENT WITH LO RX PRESS
C) LO LO RX LEVEL SUSTAINED FOR 8.5 MINUTES
D) LO PRESS INJECTION PERMISSIVE
E) KEEP FILL SYSTEM
050 PROVIDE CALCULATIONS FOR REACTOR VESSEL:
A) LEVEL (INDICATION - NARROW RANGE)
B) RPS LEVEL 3 TRIP
051 PROVIDE CALCULATIONS FOR STANDBY GAS TREATMENT:
A) INITIATION UPON SECONDARY CONTAINMENT INITIATION FOLLOWING:
(1) RX BLDG AIR MONITOR HIGH
(2) GROUP 2 PRIMARY CONTAINMENT ISOLATION
A) RX LO LEVEL
B) HI DRYWELL PRESS
C) DRYWELL HI RADIATION
052 PROVIDE CLOSURE PACKAGES FOR:
237/249/91016-04, 237/91038-05, 237/91038-06, 237/249/92028-03, 237/249/92021-03, 249/92023-05, 237/249/92028-01, AND 237/249/92028-02.
053 PROVIDE LIST OF I&C MODIFICATIONS/EC'S PERFORMED OVER LAST 5 YEARS.
054 PROVIDE LIST OF LER'S, DR'S, ETC. THAT DEAL WITH INSTRUMENTS OVER LAST 5 YEARS.
055 PROVIDE A DISCUSSION AND AVAILABLE INFO REGARDING OLD FSAR VS. UFSAR SECTION TRANSLATION.
056 PROVIDE HPCI TURBINE HI RX LEVEL TRIP SETPOINT CALCULATION AND LOOP CALIBRATION PROCEDURE.
057 PROVIDE HPCI TURBINE HI TURBINE EXHAUST PRESSURE TRIP SETPOINT CALCULATION AND LOOP CALIBRATION PROCEDURE.
058 PROVIDE HPCI TURBINE LOW BOOSTER PUMP SUCTION PRESSURE TRIP SETPOINT CALCULATION AND CALIBRATION PROCEDURE.
059 PROVIDE A LIST (OR LISTS) OF INDUSTRY INITIATIVES (INs, VENDOR TECHNICAL BULLETINS, GENERIC LETTERS, SILs, ETC.) (LAST 5 YEARS) DEALING WITH I&C.
060 PROVIDE ATWS SER FOR UNIT 2.
061 PROVIDE PIR 12-2-93-106, CAR 12-93-040, AND DVR 12-2-92-026. INCLUDE ANY SUPPORTING INFORMATION.
062 PROVIDE LERS 3-91-03, 3-92-19, 3-93-1 PLUS SUPPLEMENT, AND 3-94-8. INCLUDE SUPPORTING INFORMATION.
063 1989 TO 92 TIME FRAME - I COUNTED APPROX 20 UNIT 2 & 3 DVRs DEALING WITH ECCS LVL INST DRIFT. WHAT HAS BEEN DONE TO CORRECT THIS? PROVIDE ALL SUPPORTING INFORMATION.
064 PROVIDE DVRs: 12-2-90-022, 12-2-90-025,
12-2-90-116, 12-2-90-160, 12-2-91-148, 12-2-92-111 AND 12-2-92-152. (INCLUDE SUPPORTING INFORMATION)
065 PROVIDE DVRs: 12-3-90-068, 12-3-91-036,
12-3-91-063, 12-3-92-014, 12-3-92-021, 12-3-92-038,
12-3-92-075. (INCLUDE SUPPORTING INFORMATION)
066 PROVIDE MODS: M12-0-90-025, M12-2-91-022,
P12-3-93-614, P12-2-93-601, P12-2-92-748, M12-3-89-024, P12-3-94-224 AND P12-3-93-208.
067 PROVIDE MOD PROCEDURE, TEMPORARY MOD PROCEDURE AND LIST OF TEMPORARY MODS FOR BOTH UNITS.
068 PROVIDE DRESDEN'S RESPONSE TO BULLETIN/LETTER FROM NRC THAT ADDRESSES CONDENSATE POT DEGASSING AND IT'S AFFECT ON LEVEL MEASUREMENT.
069 RUFSAR 6.3.3.1.3.2.1. PGS. 6.3-29,
(1) WHAT IS THE HI DP STEAM LINE ISOLATION OF HPCI TURBINE IN 50 SEC?
(2) ARE THEIR ANY SETPOINT CALCS AND CALIBRATION PROCEDURES?
(3) DWG. #'S.
070 PROVIDE DRESDEN'S CONTROL OF M&TE PROCEDURES (WE HAVE A COPY OF TID-E/I&C-26).
071 PROVIDE PROCEDURES QE 16, QE 16.1, QE 72, QE 80, QE 80.1, TID-E/I&C-11 AND 12 AND ANY DRESDEN PROCEDURES THAT CONTROL SETPOINTS. (NOTE: TID-E/I&C-21 CORRECTS TYPOGRAPHICAL ERROR OF REQUESTED TD-E/I&C-12)
072 URI 237/91038-05; 249/91042-05. SEE ATTACHED.
073 TORUS HI LVL HPCI TRANSFER:
(1) PROVIDE LS CALIBRATION PROCEDURE (FUNCTIONAL TEST WAS PROVIDED).
(2) PROVIDE FT^3 VALUE FOR THE SETPOINT.
(3) PROVIDE THE ANALYTICAL LIMIT FOR THIS SETPOINT.
074 CST LVL INDICATION:
(1) DOES THIS INST. LOOP HAVE ANY ALARM/CONTROL FUNCTIONS?
(2) USING EOPS/ABNORMAL OPERATING PROCEDURES, DOES OPERATION'S USE THIS INST. LOOP TO MAKE ACCIDENT MITIGATION TYPE DECISIONS? IF YES,
(3) WHAT ARE THE LEVELS AND WHAT ARE THEIR ANALYTICAL LIMITS?
075 U3 TORUS:
(1) PROVIDE NARROW RANGE LVL XMITTER INSTALLATION DRAWING.
(2) PROVIDE XMITTER PIPING CONNECTION TO THE TORUS (TAP HEIGHT LOCATION).
(3) PROVIDE XMITTER VENDOR MANUAL AND OTHER LOOP COMPONENTS (INCLUDE VENDOR MANUALS).
(4) PROVIDE XMITTER ENVIRONMENTAL CONDITIONS, SUCH AS HELB ENVIRONMENT.
076 U3 TORUS HI LVL:
(1) PROVIDE LVL SWITCH VENDOR MANUAL.
(2) PROVIDE TORUS INSIDE DIMENSIONS (DRAWING IF AVAILABLE).
(3) PROVIDE ACCIDENT ENVIRONMENT FOR LS AND ANY EQ INFORMATION.
(4) PROVIDE TORUS LEVEL CURVE FT^3 VS. LEVEL.
077 (1) PROVIDE COPY CST LEVEL SWITCH VENDOR MANUAL.
(2) PROVIDE CST LS INSTALLATION DRAWING (WE HAVE M-310 SH 62)
(3) PROVIDE CST LS PIPING CONNECTION TO CST DRAWING (TOP LOCATION) .
(4) PROVIDE CST LS ENVIRONMENTAL OPERATING CONDITIONS, SUCH AS TEMP.
078 U3 TORUS NARROW RANGE LEVEL:
(1) DOES THIS INST. LOOP HAVE ANY ALARM/CONTROL FUNCTIONS?
(2) USING EOPS/ABNORMAL OPERATING PROCEDURES, DOES OPERATION'S USE THIS INST. LOOP TO MAKE ACCIDENT MITIGATION TYPE DECISIONS? IF YES,
(3) WHAT ARE THE LEVELS AND WHAT ARE THEIR ANALYTICAL LIMITS?
079 (1) PROVIDE HPCI CST NPSH CALCULATION
(2) PROVIDE CST TANK DIMENSIONAL (INSTALLATION/DESIGN) DRAWING.
(3) PROVIDE CST TANK CURVE, SUCH AS GALLONS VS LEVEL.
080 (1) IS THERE A CST LEVEL INDICATION LOOP CALCULATION, IF SO, PLEASE PROVIDE.

(2) PROVIDE CALIBRATION PROCEDURES AND VENDOR MANUALS FOR CST LI LOOP.

081 OPN ITEM 237/91038-06
(1) PROVIDE UNIT 2/3 DIESEL GENERATOR ROUND BOOK PG 22 (D/G ROOM TEMP)
(2) PROVIDE UNIT 2/3 DIESEL GENERATOR ROOM TEMPERATURES FOR JUNE 1994.

082 OPN ITEM 237/91038-06
NEED TO DISCUSS UNIT 2/3 DIESEL GENERATOR ROOM TEMPERATURES WITH SYSTEM ENGINEER.

083 PLEASE PROVIDE OR MAKE AVAILABLE FOR REVIEW CLOSURE PACKAGES ASSOCIATED WITH INDUSTRY INITIATIVES; N92-06 & N92-06S1 (IN), N90-28 (IN), N82-16 (IN), GL-92-04, N90-22 (IN), SIL 470 & SIL 470S1 (GE TECH REP), N93-27 (IN).

084 OPEN ITEM 237/249/92028-03: HAVE OTHER PORCELAIN FUSE HOLDERS AND/OR OTHER FUSE HOLDER TYPES BEEN VERIFIED THAT THE AVAILABLE FAULT CURRENT IS LESS THAN THE HOLDER 'WITHSTAND' RATING?

085 OPN ITEM 237/249/92028-03:
(1) IS THERE A PROGRAM TO ADDRESS NON-LIKE-FOR-LIKE FUSE DISCREPANCIES, PROVIDE INFORMATION?
(2) HAVE INSTALLED FUSES AT DRESDEN BEEN WALKED DOWN AND VERIFIED AGAINST DESIGN DRAWINGS?

086 OPN ITEM 237/249/92028-03:
(1) PROVIDE COORDINATION CURVE FOR BUSS NON 3 FUSE AND GE TYPE TEF 15A CIRCUIT BKR.
(2) PROVIDE MAX FAULT CURRENT FOR CIRCUITS FU1 THROUGH FU16 IN PANEL 2/3-5400-105 (CR HVAC), REF. CALC 8772-14-19-19.

087 OPN ITEM 237/249/92028-03: S&L DISCREPANCY #D-92-150 IDENTIFIED THAT COORDINATION DID NOT EXIST BETWEEN THE FUSES AND UPSTREAM CIRCUIT BKRS. THESE CIRCUITS ARE SAFETY RELATED. COULD THE OPENING OF A SINGLE UPSTREAM BKR FAIL THE CR HVAC AND OTHER SAFETY RELATED EQUIPMENT? FOR FU1 THROUGH FU16.

088 OPN ITEM 237/91038-06:
(1) PROVIDE HIGHEST AFTERNOON DRESDEN OUTDOOR TEMPERATURE FOR EACH WEEK DURING JUNE 1994, INCLUDE DATE.
(2) WERE THE RX UNITS OPERATING DURING JUNE, 1994.

089 V10 237/249/92021-03:
(1) PROVIDE COPY OF PROCEDURES OADMP-1 AND OADMP-1A.
(2) PROVIDE LAST CALIBRATION RECORD FOR THE FOUR SBGT HEATER CURRENT SENSING RELAYS.
(3) PROVIDE RELAY VENDOR MANUAL.

090 PROVIDE NRC INSP. REPORT NOS. THAT REVIEWED DRESDENS ATWS COMMITMENTS.

091 V10 237/249/92028-01
(1) PROVIDE DOP 6900-07 AND DAP 07-05
(2) FOR THE PAST 6 MONTHS, PROVIDE A LIST OF ALL U2 AND U3 125 VDC GROUNDS THAT INITIATED ENTRY INTO DOP 6900-07, INCLUDE DATE AND POTENTIAL.
(3) PROVIDE CORRECTIVE ACTIONS FOR THE LIST AND DATE WHEN GROUND WAS REMOVED.

092 OPN ITEM 237/91038-068: EDG (2/3) ELECTRICAL RELAYS AND EXCITER ARE RATED FOR A MAXIMUM TEMP OF 122°F)
(1) IS THIS TEMPERATURE EXTERNAL TO THE EQUIPMENT CABINETS OR AN INTERNAL CABINET TEMPERATURE.
(2) WHAT IS A TYPICAL INTERNAL CABINET TEMP IN THE 2/3 EDG ROOM?

093 V10 237/249/92028-02:
(1) PROVIDE FUSE DISCREPANCY TPRs LIST BACK ONE YEAR.
(2) PROVIDE PROCEDURE DAP 11-27

094 V10 237/249/92028-02:
(1) PROVIDE WR AND DCR PACKAGE THAT CHANGED OUT THE DG EXCITER CABINET 40A FUSE TO A 30A FUSE.
(2) WHY IS THE 30A FUSE ACCEPTABLE VS VENDOR SPECIFIED 25A FUSE (REF. TPRs DF-0147 & 0186)?

095 PROVIDE (2) COPIES OF DRESDEN ENVIRONMENTAL ZONE MAPS AND NOTES (DRESDEN UFSAR SECTION 3.11)

096 PROVIDE TORUS FT^3 VS LEVEL CURVE NOT SUPPLIED ON T-076.

097 PROVIDE COPIES OF IR DROP CALCULATIONS.

098 CALC 349-E-10 REV. 6 INDICATES TECHNICAL SPEC VALUES AS ANALYTICAL LIMITS. PROVIDE SOURCE OF THE QUANTITATIVE BASIS FOR ANALYTICAL LIMITS AND THEIR MARGINS.

099 CALC NO. 349-E-10 REV. 6 SEC. 5.5.1.18 INDICATES A TRIP UNIT CHANGE TO G.E. VENDOR DATA ATTACHED IS FOR A ROSEMONT TRIP UNIT. PLEASE CLARIFY.

100 CALC NO. 349-E-10 REV. 6 SEC. 5.5.12.1 IDENTIFIES A "HEAD CORRECTION". PROVIDE SOURCE OF THIS NUMBER AND HOW DETERMINED. (WALKDOWN - INSTALLATION DWGS?)

101 (CALC 0349-E-30) PROVIDE REFS. 24,28,41,50 AND APPROPRIATE DESIGN BASIS DOCUMENTATION THAT SUPPORTS THE BASIS FOR THE ANALYTICAL LIMITS FOR RV LEVEL SETPOINTS.

102 (CALC 0349-E-30) PROVIDE INSTALLATION DETAILS OF RECORD; THESE APPEAR TO BE REF. 7,8,17. INSTALLATION DETAILS FOR LEVEL INSTRUMENTS SHOULD IDENTIFY LOCATION, ARRANGEMENT, LINK ROUTING/SLOPES, INSTALLATION TOLERANCES, AND ELEVATIONS TRACEABLE TO TOP OF FUEL.

103 (CALC 0349-E-30) PROVIDE THE ANALYSIS SUPPORTING THE SIZING OF THE CONDENSING CHAMBERS THAT DEMONSTRATES THE CHAMBERS WILL ACCOMMODATE THE TOTAL VOLUME DISPLACEMENT OF CONNECTED INSTRUMENTS.

104 (CALC 0349-E-30) PARA 5.5.1.12, 5.5.5 APPEARS TO INDICATE THAT RV LEVEL INSTRUMENTS ARE NOT REQUIRED TO PERFORM IN A HARSH ENVIRONMENT. WHY AREN'T THE ENVIRONMENTAL EFFECTS OF INITIATING EVENTS SUCH AS LOCAS OR HELB - INCLUDED (EG FLASHING OF THE REFERENCE LEG)

105 (FSAR 9.2.6.5) WHY ISN'T THE AUTO TRANSFER OF HPCI SUCTION FROM THE CST (ON LOW CST LEVEL) TO THE SUPPRESSION POOL IDENTIFIED IN THIS FSAR SECTION?

106 PROVIDE PROCEDURE ENC-QE-69

107 PROCEDURE TID-E/I&C -10, PG 5, DEFINITION AST. IS THIS THE DIFFERENCE BETWEEN THE PROCESS OPERATIONAL LIMIT TRANSIENT AND THE POSITIVE SETPOINT TOLERANCE FOR A DECREASING TRIP AND NEGATIVE SETPOINT TOLERANCE FOR AN INCREASING TRIP?

108 PROVIDE AN ANALYSIS DEMONSTRATING THAT SUFFICIENT MARGIN FOR UNCERTAINTIES IN THE SUPPRESSION POOL HIGH LEVEL SETPOINT VALUE IS PROVIDED. IDENTIFY THE INSTALLATION TOLERANCES AND OTHER UNCERTAINTIES. PROVIDE THE BASIS FOR THE ANALYTICAL LIMIT (ACCIDENT ANALYSIS, VOLUME/LEVEL CALCULATIONS, ETC).

109 PROVIDE FOLLOWING REFERENCES IN CALC 349-E-10 REV. 6, ITEM 7: M-4023 SH. 1 & 2;
ITEM 8: M-310 SHTS 28 & 38;
ITEM 11: 257HA350AM REV. 10;
ITEM 18: NUS SKETCH SK-0349-M-001 REV. B.

110 HOW IS THE TRENDING DATA FOR INSTRUMENTS CURRENTLY APPLIED TO THE SETPOINT CALCULATIONS.

111 SCHEM. 12E-3430 SH. 1 REV. AP IDENTIFIES A CROSS REF. TO 12E-3769A FOR DEPICTION OF LIS 263-72A, BUT 12E-3769A REV. S DOES NOT SHOW THE DEVICE. WHAT MAKE/MODEL NO. IS THE DEVICE, AND WHERE IS THIS INFO. DEPICTED?

112 PROVIDE ACCESS TO EQ PACKAGE (COPY NOT NECESSARY) FOR REACTOR LOW WATER LEVEL INSTRUMENTATION.

113 SBGT M12-0-90-025:
(1) WHY WAS THE DESIGN CHANGED TO TRIP ALL RX. BLDG. VENT & EXHAUST FANS, INCLUDING THE UNAFFECTED UNITS, IN CASE AN INITIATION SIGNAL IN THE OPPOSITE UNIT?
(2) IS THIS BECAUSE THE ISOLATION DAMPER CLOSURE CAUSED THE UNAFFECTED UNIT RX BLDG FANS TO LOSE SUCTION SOURCE?

114 SBGT M12-0-90-025: WHAT VENTILATION SOURCE WILL PROVIDE RX BLDG VENTILATION IN THE NON-ACCIDENT UNIT, IF ALL THE RX BLDG FANS ARE TRIPPED?

115 CALC 0349-E-30 SUPPORTS A "NEW SETPOINT" (P. 85) OF 85.83 $\pm$ 1 DEC AND 155.22 $\pm$ 1 INC; HOWEVER, THE CALIBRATION DATA SHEET, P.68 OF DIS 0500-03 REV. 13, ALLOWS A GREATER TOLERANCE (85.8 $\pm$ 2 AND 155.2 $\pm$ 2). ALSO, "85.83 $\pm$ 1" IS NOT STATISTICALLY MEANINGFUL. PLEASE EXPLAIN.

116 SEE ATTACHED:
M12-0-90-025 SBGT
POST MOD PROCEDURES SP-91-2-29
SP-91-1-12

117 PLEASE MAKE AVAILABLE FOR REVIEW THE LATEST NPRDS/CFAR REPORTS (LOCATION, CONTACT PERSON, TIME ETC.) PAST 3 YEARS.

118 PLEASE MAKE AVAILABLE FOR REVIEW DESIGN BASIS DOCUMENTATION (FOR HPCI LPCI, ETC - PROVIDE A LISTING OF AVAILABLE DBDs UNDER RECONSTITUTION PROGRAM).

119 MOD M12-2-91-22:
PROVIDE DOCUMENTATION TO SUPPORT SEISMIC INSTALLATION OF RELAY CV 902-30/A1 INSTALLATION DWG M310 SH 310 (HPCI VALVE M02-2301-10 INTERPOSING RELAY)

120 MOD M12-2-91-22: NEED TO WALKDOWN RELAY CVA1 INSTALLATION (HPCI VALVE M02-2301-10 INTERPOSING RELAY).

121 PROVIDE METHOD TO ENSURE THAT CHANGES TO SURVEILLANCE PROCEDURES, SUCH AS MT&E AND SETTING TOLERANCES, WILL BE CONTROLLED AND REVIEWED AGAINST APPLICABLE CALCULATIONS SO THAT THE SETPOINT CALCULATION IS NOT INVALIDATED.

122 PROVIDE ANALYTICAL LIMITS/ACCIDENT ANALYSIS LIMITS USED IN SAFETY ANALYSIS FOR TORUS - LO AND HI LEVEL AND BULK TEMPERATURE; HPCI/LPCI INITIATION - LO-LO (L2) LEVEL AND HI DRYWELL PRESS; AND RPS TRIP - L3, INCLUDE THE BASIS AND CALCULATION WHICH SUPPORTS THESE LIMITS.

123 PROVIDE A COPY OF THE OPERABILITY ASSESSMENT PERFORMED FOR THE YARWAY LEVEL SWITCH DRIFT ISSUE.

124 MOD P12-3-93-614:
(1) IS IT COMMON PRACTICE TO GROUND THERMOCOUPLES?
(2) DURING AN ACCIDENT AND IF THE THERMOCOUPLES BECAME SUBMERGED, COULD GROUND CURRENTS (COMMON MODE CURRENTS) FLOW AND CAUSE FALSE INDICATION?
(3) HAVE GROUND CURRENTS BETWEEN TC AND RECORDER SYSTEM GROUND EVER CAUSED A PROBLEM?
MOD P12-3-93-614:
(1) PROVIDE COMPLETED COPY OF DIS 1600-18 PERFORMED ON OR AROUND MARCH 8, 94;
(2) WAS THIS SURVEILLANCE PERFORMED PRIOR TO COMPLETING THE CABLE/CONDUIT CHANGES?
(3) ARE RECORDERS 1641-200 A/B CONSIDERED CLASS 1E?

126 DIS 1600-18 SUPPRESSION POOL TEMP. CAL:
(1) WHO COMPARES I.20.C., PG 69, WITH I.5.C(2), PG 56, TO DETERMINE EACH TC INPUT IS FUNCTIONING SATISFACTORILY, FOLLOWING RESTORATION?

127 SUPPRESSION POOL BULK TEMP:
(1) SINCE THIS TEMP. IS TAKEN ONCE PER SHIFT, HOW WOULD AN OPEN/SHORTED TC INPUT AFFECT THE READING;
(2) WOULD THE CHANNEL CHECK READILY DETECT THE MALFUNCTION AND/OR WOULD THE ALARM?

128 SUPPRESSION POOL TEMP. TC:
(1) HAS DRESDEN HAD ANY PROBLEMS WITH TC DEGRADATION DUE TO MATERIAL ENVIRONMENT IN THE TORUS?
(2) IF SO, WOULD THE CHANNEL BULK TEMP. CHECK BE ABLE TO DISTINGUISH THIS DEGRADATION (CHANNEL CHECK SENSITIVITY)?

129 PROVIDE ACCESS TO EQ BINDERS FOR FOLLOWING INSTRUMENTS
LIS-003-0263-72A (RX LEVEL-YARWAY), LIS-003-1626-10 (TORUS), PS-003-1632-A (DRYWELL), PS-003-2360 (HPCI PUMP SUCTION), PS-003-2368-A (HPCI TURBINE EXH.);
DPT 003-2352 (HPCI STM LINE FLOW) TS-003-2370-A (HPCI STEAM LEAK) PT-003-2389-A (LOW RX. PRESS/HPCI ISOL)

130 PLEASE PROVIDE MISSING PAGES 27 AND 91 TO CALC NO 0349-E-10.

131 MOD P12-2-93-601:
(1) PROVIDE JUSTIFICATION FOR ROTATING THE WATER SENSING LINE TEST TAP FLANGE BY 90°;
(2) PROVIDE JUSTIFICATION THAT DETAIL 'B', DWG M310, SH 207, IS SEISMICALLY QUALIFIED;
(3) PROVIDE TRANSMITTER (1153 DD5 RG) VENDOR MANUAL (V-205)

132 DIS 1600-17, REV. 7, PG. 9, NOTE FOLLOWING STEP 8: DO IMs KNOW THEY ARE TO RECORD ROSEMOUNT XMIT. CALIB. MEASUREMENTS TO THREE DECIMAL PLACES? DATA SHEET 1 PG 24 (P12-2-92-601, 3/18/93) MEASURED TO TWO PLACES. WHAT OTHER PROCEDURES HAVE THE SAME NOTE?

133 PROVIDE 0349-E-00, REV. 1, CECO RVWLIS MASTER CALC. (IF NOT TO LARGE, INCLUDE TWO COPIES)

134 (FOLLOW UP ON RESPONSE TO JL-11 [N-105] OF 8/26/94)
(1) THE CECO RESPONSE SAYS FUNCTION OF LIS-003-0263-72A, ET AL, IS TO "PROTECT AGAINST AN ACCIDENT CONDITION." HOWEVER, IT APPEARS THAT THESE INSTRUMENTS ARE REQUIRED TO INITIATE MITIGATION OF ACCIDENTS AFTER THEY HAVE OCCURRED. PLEASE CLARIFY THE ORIGINAL RESPONSE. SEE ATTACHED.

135 (REF. M-310 SH 102 REV. 2)
A) IS THERE A DRAWING SHOWING THE IMPULSE LINE ROUTING FOR THE DRYWELL PRESSURE INSTRUMENTS?
B) PROVIDE ASSURANCE THAT THE LINES ARE PROPERLY SLOPED TO AVOID TRAPS OR LOOP SEALS.
C) HOW IS THE DRYWELL END OF THE IMPULSE LINE PROTECTED FROM BLOCKAGE, ETC?
D) HOW LONG IS THE IMPULSE LINE (LONGEST LINE) AND WHAT DIAMETER?

136 PROVIDE INSTALLATION DETAILS FOR:
PS-003-2360 (HPCI P. SUCTION);
PS-003-2368-A (HPCI TURBINE EXH);
DPT-003-2352 (HPCI STEAMLINE FLOW);
TS-003-2370-A (HPCI STEAM LEAK DET.);
PT-003-2389-A (HPCI STEAMLINE LOW RX PRESS);
LS-003-2350-A (CST LEVEL).
SHOULD SHOW PROCESS (PIPING, ETC.) INTERFACE AND INSTR. INSTALLATION. WHAT ARE APPROACH CONDITIONS TO FOLLOW INSTRUMENTS? (ARE FLOW ELEMENTS IN ALL UNINSTRUCTED STRAIGHT RUN OF PIPE.)

137 (PROVIDE BASIS FOR TRIP SETTINGS FOR TOPIC ITEMS 8E, 9A, 10.1 AND 10.2C, WHICH DO NOT HAVE REFERENCED CALCULATIONS) WHEN WILL THESE CALCULATIONS BE PERFORMED (TENTATIVE SCHEDULE)? SEE ATTACHED.

138 (1) PROVIDE TRAINING PLAN (QUALIFICATIONS) FOR I&C ENGINEERS BOTH SITE AND CORPORATE. (09-02-94)
(2) MAKE AVAILABLE FOR REVIEW THE TRAINING RECORDS FOR I&C ENGINEERS. (COULD BE THE WEEK OF SEPT 12)

139 PROVIDE INSTALLATION DETAILS FOR LT-002-0646 B, AND PS-002-1621B.

140 DIS 1600-7 PERFORMED (05/01/94) DURING P12-3-93-614 (TORUS TEMP CONDUCTS):
WHY DID SOMEONE CHANGE UNSAT TO SAT FOR TC 1641-205, TC 1641-208, TC 1641-213 AND TC 1641-214? I BELIEVE UNSAT FOLLOWS THE PROCEDURE AND CORRECTIVE ACTIONS WERE ADEQUATELY ANNOTATED.

141 M12-3-89-24: PROVIDE CALIBRATION PROCEDURE/PM FOR TEMP INDICATOR 3-5741-19.

142 DIS 0260-06 TABLE 1, PG. 117, LT-3-263-23B (ATWS LO LO LVL) PROVIDE THE SPAN SHIFT BIAS ADJUSTMENT SCALING USED TO ADJUST THE ZERO & SPAN CALIBRATION POINTS (ACTUAL SCALING DETERMINATION).

143 IN RESPONSE TO N132 (DB-41): PROVIDE COPY OF PIF AND AN IDEA AS TO WHAT CORRECTIVE ACTIONS ARE GOING TO BE CONSIDERED AND WHEN TO COMPLETE THEM.

144 WE UNDERSTAND ANALOG INSTRUMENTATION ASSOCIATED WITH TR 2-1641-200B FAILED WHEN POWER WAS TRANSFERRED FROM MAINTENANCE POWER TO NORMAL (UPS) POWER. A W.R. WAS WRITTEN 8-26-94, AND WE UNDERSTAND A PIF IS BEING DISPOSITIONED. PLEASE PROVIDE STATUS OF THE PIF OR OTHER ACTIONS BEING TAKEN.

145 SERVICE WATER AND OTHER PIPING (e.g., RBCCW LINES) ARE ROUTED IN THE AREA OF THE "CAGED" SAFETY RELATED INSTRUMENTS ON ELEV. 545'. WHAT ARE THE CONSEQUENCES OF A SINGLE PIPE BREAK IN THESE AREAS?

146 WHAT ARE THE CONSEQUENCES OF A BREAK IN THE HEATING STEAM LINE(S) OVER CLASS 1E PANELS 2203-73A (DIV. I) AND 2203-73B (DIV II) THAT ARE LOCATED IN U2? ARE THE LINES SEISMICALLY SUPPORTED?

147 THE MOORE INDUSTRIES ISOLATION DEVICES IN THE CONTROL BOARD (FOR EXAMPLE, TORUS TEMP ISOL 943-237, -238, -242A, -242B). AND ELSEWHERE, DO NOT PROVIDE SEPARATION OF CONNECTED INPUT, OUTPUT, AND EXCITATION

WIRING. HOW DOES THIS CONFORM TO DRESDEN SEPARATION CRITERIA? WHAT IS THE QUALIFICATION BASIS FOR THE ISOLATION DEVICES?

148 PROVIDE A GUIDED PLANT TOUR.

149 CALC. 0349-E-30 DOES NOT APPEAR TO ADDRESS THE EFFECTS OF THE "BACKFILL MOD" (TO ADDRESS NON-CONDENSABLE GASES IN REF. LEG) ON THE COLD REFERENCE LEG CONFIGURATION, WITH RESPECT TO EFFECTS ON ACCURACY. WHERE ARE THESE POTENTIAL EFFECTS EVALUATED AND ANALYZED?

150 PROVIDE REF. 21 OF CALC. 0349-E-30: CALC 0349-M-13 (RVWLIS REF LEG TEMP DISTRIBUTION)

151 SEE ATTACHED CONCERN #1 RE: POST MODIFICATION TESTING.

152 PLEASE PROVIDE THE FOLLOWING DOCUMENTS DIS 1600-18, NED-I-EIC-0251, NED-I-EIC-0089, NED-I-EIC-0090.

153 CECO/NUS DWG M-4025 SH 1, 2 (PIPING ISO FOR RV LEVEL INSTR) APC 6-30-93: PROVIDE BASIS/DISPOSITION OF "HOLD" STATUS AND DOCUMENTATION OF FIELD VERIFICATION; FOLLOW-UP ONT103 RESPONSE RE COND CHAMBER. [SPECIFIC QUESTIONS (A) THRU (D) ATTACHED]

154 THE RESPONSE TO N-112 APPEARS TO INDICATE THAT THERE IS NO SEISMIC OR ENVIRONMENTAL QUALIFICATION FOR THE YARWAY INSTRUMENTS. IF SO, HOW IS THIS ACCEPTABLE.

155 THE TRAINING MATERIAL PROVIDED IN RESPONSE TO N-101 REFLECTS A YARWAY CONDENSING CHAMBER AND IS AN OBSOLETE CONFIGURATION WHAT IS THE TRAINING DOCUMENTATION OF RECORD FOR THE NEW (COLD REFERENCE LEG) INSTALLATION?

156 [FOLLOW-UP ON RESPONSE TO T-103] THE RESPONSE TO T-103 (RVWLIS CONDENSING CHAMBERS, ETC.) INCLUDED CONTRACTOR (NUS) RESPONSES TO VENDOR (GE) COMMENTS PROVIDE DOCUMENTATION OF THE RESOLUTION OF THESE RESPONSES; I.E. WAS G.E. AGREEABLE TO THE RESPONSES.

157 CALC NED-I-EIC-90 IN SECT 10 SUGGEST CHANGING THE SETPT OF PS 1621-B FLOW 53 IN WC $\pm$ 1 TO 49 IN W.C. $\pm$ 1.5 INCREASING. TECH SPEC L.C.O. IS 55.046657 IN W.C. (WITH HEADCORR) DIS 1600-02, REV. #6 IDENTIFIES TRIPSET AS 53 IN WCI1 PLEASE CLARIFY CALC SECT 10.

158 SEE ATTACHED CONCERN #2, RE: SETPOINT TOLERANCES AND INCONSISTENCIES.

159 SEE ATTACHED CONCERN #3, RE: LACK OF ENGINEERING RIGOR.

160 HOW IS THE CALC. INFORMATION TO BE INCORPORATED INTO THE CALIBRATION PROC. FOR THE CHANGED SET PTS? NO REFERENCE TO CALCS IS NOTED IN ANY CALIBRATION PROCEDURE OR DATA SHEETS! (ENGINEERING CALC. INTERFACE TO CALIB. PROCEDURE) AND VICE VERSA.

161 PROVIDE LAST U3 RESPONSE TIME TEST OF THE RPS INSTRUMENTS IN TABLE 3.1.1 OF TECH SPECS.

162 ATTACHMENT 3 TO CALC. NED-I-EIC-91, REV. 1 (4-16-93) IDENTIFIES THAT SOR CONSIDERS DRYWELL PRESSURE SWITCHES PS-2(3)-1632A-D, ET AL. AS COMMERCIAL GRADE. ALSO, GEN ASSUMPTION 2 OF CALC. STATES THAT SEISMIC QUALIF. IS NOT REQUIRED. THESE INSTRUMENTS PERFORM SAFETY FUNCTIONS. PROVIDE THE DOCUMENTATION SUPPORTING THEIR USE FOR SAFETY FUNCTIONS.

163 REVIEW OF SEVERAL CALCS REVEALS ONLY ASSUMED (VENDOR) DRAFT DATA WHEN ACTUAL DATA FROM MAINTENANCE - OOS SHOULD PROVIDE SPECIFICS.
(1) WILL CALCS BE UPDATED TO REFLECT ACTUAL INSTRUMENT (DRIFT DATA) EXPERIENCE?
(2) WILL SOMEONE VERIFY THAT VENDOR DRIFT INFO IS CONSERVATIVE TO ACTUAL DRIFT DATA?

164 SEE ATTACHED CONCERN #4, RE: ANALYTICAL LIMIT RETRIEVABILITY.

165 SEE ATTACHED CONCERN #5, RE: APPLICATION OF INSTRUMENT ISOLATORS.

166 SEE ATTACHED FOR MOD P12-3-93-614.

167 THE PROCESS USED TO "NORMALIZE" A VENDOR ACCURACY SPEC SEEMS QUESTIONABLE. REF. 1 STATES THAT A VENDOR'S 30 VALUE CAN BE DIVIDED BY 3 TO "NORMALIZE" IT TO A 10 VALUE. REF. 2(CALC) PARA 7.1.2 APPEARS TO INCORRECTLY APPLY AN ASSUMPTION (ASSUMPTION 9) TO THE PROCESS INSTRUMENT, NOT THE MTE, AND INCORRECTLY IMPROVE ACCURACY BY A FACTOR OF 2.

168 CALC 0349-E-30 REV. 3 (RVWLIS): ANSWER ATTACHED QUESTIONS (A) THRU (N) REGARDING BASIS FOR OATUM POINTS AND OTHER ASSUMPTIONS/VALUES USED IN THE CALCULATION.

169 (1) PROVIDE RESULTS OF DRESDEN'S CONTACT TESTING PROGRAM.
(2) HAVE ALL CONTACTS BEEN IDENTIFIED AND TESTED?

170 CALC 0349-E-30 OR E-10 FOR PT-263-20 A, B, C, D:
(1) WHY WASN'T DRIFT, CAL ACCURACY AND MTE ACCURACY FIGURED IN THE SETPOINT DETERMINATION?
(2) PROCEDURE DIS 0260-06 USES AN MTE OF 0 TO 1500 OR 0 TO 2000 PSIG HEISE GAUGE, HOW IS THE ACCURACY OF THE MTE ($\pm$ PSIG) MAINTAINED?

171 P12-3-93-208:
(1) HAVE ATWS SETPOINT CALCS BEEN UPDATED TO REFLECT THE USE OF THE G.E. TRIP UNITS?
(2) HAVE GE TRIP UNITS BEEN INSTALLED IN BOTH UNITS AND ARE THEY CONSIDERED OPERABLE AT THIS TIME?

172 SEE ATTACHED CONCERN #6, RE: APPARENT LACK OF MARGIN BTWN DEOPs AND TECH SPEC.

173 [REF RESPONSES TO T-108, N-096, T-073, ET AL] THE RESPONSE TO T-108 IS NOT CLEAR. THERE ARE 3 ANALYTICAL LIMITS OF INTEREST:
(1) THE AL SUPPORTING THE TS TRIP LEVEL SETTING OF $\leq$5" (HI LEVEL);
(2) THE AL SUPPORTING THE MAX/MIN LCO FOR WATER VOLUME.
(3) THE AL SUPPORTING THE LCO FOR MAX/MIN DOWNCOMER SUBMERGENCE. (CONTINUED ON ATTACHED SHEET).

174 SEE ATTACHED CONCERN #7, RE: NO CALIBRATION PROCEDURES FOR CST & TORUS LEVEL SWITCHES.

175 FSAR 7.5.1.1 IDENTIFIES SUPPRESSION POOL LEVEL AND TEMP AS RG 1.97 CAT 1 TYPE A VARIABLES. HOWEVER, THE TEMP ACCY. CALC [1] EXCLUDES SEISMIC EFFECTS AND THE LEVEL ACCY. CALC. [2] SELECTIVELY INCLUDES SEISMIC EFFECTS FOR CERTAIN INSTRUMENTS (E.G., RECORDER). THIS DOES NOT APPEAR TO CONFORM 40 RG 1.97 COMMITMENTS?

176 ATWS DWG 12E-7582C: SEE ATTACHED.

177 DIS 0260-06 (REV. 1)
(1) SHOULD ANN WINDOW #46, "ATWS LEVEL/PRESSURE ABNORMAL", BE VERIFIED IN THIS PROCEDURE OR IS IT VERIFIED SOMEWHERE ELSE?
(2) STOP 40, 66, 121, TRAIN A CHECKLIST, SHOULD A NOTE BE ADDED THAT THE BKRS TRIPS IN 9 SECONDS?

178 PROVIDE A DISCUSSION OF THE ROLES & DUTIES OF THE STATION M&TE COORDINATOR.

179 PROVIDE LAST THREE CALIBRATIONS FOR TDRs;
2-2330-102B-1 AND 2-2330-102A-1; 2-595-117A, B, C, D; AND 3-150-105, 133, 182, 282. REFERENCE DVR 12-2-90-160; 12-2-92-111; AND 12-3-92-014 RESPECTIVELY.

180 PROVIDE PM THAT CHANGES OUT ENERGIZED AND DE-ENERGIZED AGASTAT GP RELAYS REFERENCE DVR 12-3-91-63 (249-200-91-06301)

181 PLEASE PROVIDE LAST 2 SURVEILLANCES FOR TORUS WR LEVEL (LT(3)-1641-5A/B) DRYWELL PRESSURE (PS-2-1632A, B) DRYWELL HIGH PRESS (PS-2-1621-B) SUPPRESS POOL TEMP (TT-003-1641-222A, TY-3-1641-225A) RX LOW LVL (PS-2-263-52B)

182 DEOP 200-1 APPEAR TO PROVIDE FOR A 0.5 IN MARGIN FOR INSTRUMENT ACCURACY FOR TORUS HI/LOW OPERATING LIMITS (TS VALUES APPEAR TO BE EQUIVALENT TO -1.0 IN AND -5IN, AND TS VALUES = AL VALUES) [1,2]. THERE IS NO CALC FOR THE N.R. TORUS LEVEL INSTRUMENT. HOW IS IT KNOWN THAT THE ACCY. IS ADEQUATE?

183 CALC NED-I-EIC-096 IDENTIFIES TEMPERATURE LIMITS OF 180°F ON THE MERCOID PS, BUT SHOWS AN ACCIDENT TEMP OF 230°F MAX AND 1 HR RAD ENV OF 5.4.E5. 15.1.3.2 STATES THAT THIS IS NOT A PROBLEM BASED ON DATA IN 11.1. PLEASE CLARIFY. REFERENCE THE EQ FOR THE DEVICE.

184 NED-I-EIC-096 DOES NOT IDENTIFY OR EVALUATE SEISMIC EFFECTS.
A) ARE THE MERCOID SWITCHES SEISMICALLY QUALIFIED?
B) IS THERE SUFFICIENT MARGIN TO PRECLUDE SPURIOUS TRIP DUE TO SEISMIC EVENT AND WHAT IS BASIS FOR MARGIN?

185 NED-I-EIC-096 CONCLUSIONS (P. 39) DO NOT APPEAR TO IDENTIFY MARGIN TO SPURIOUS TRIP OF THE HPCI PUMP. WHAT IS THE DESIGN BASIS RANGE OF HPCI PUMP TURB. EXH PRESSURE AND HPCI PUMP SUCTION PRESSURE DURING ACCIDENT/EVENT CONDITIONS? WHAT IS MARGIN TO SPURIOUS TRIPS?

186 PLEASE PROVIDE THE TOP 50 TECHNICAL ISSUE LIST (WITH RESPONSIBLE PERSON ON EACH ITEM AND ACTIVE DUE DATE).

187 [NED-I-EIC-108] GEN ASSUMPTION 2=
A) WHY ARE SEISMIC EFFECTS IGNORED? WHAT ABOUT AVOIDANCE OF SPURIOUS TRIP DURING SEISMIC EVENT?
B) ARE THE INSTALLED DEVICES SEISMICALLY QUALIFIED?

188 [NED-I-EIC-108, DIS 2300-06]: WHERE TEMP. SWITCHES ARE USED TO DETECT AND RESPOND TO STEAM BREAKS (THIS IS ONE EXAMPLE), WHAT ARE THE RESPONSE TIME REQUIREMENTS AND HOW IS IT ASSURED THEY WILL BE SATISFIED FOR DBA CONDITIONS? THE CALC AND TEST PROCEDURES DO NOT ADDRESS THIS PERFORMANCE.

189 [NED-I-EIC-108] GEN ASSUMPTION #11: HOW CAN POST ACCIDENT RADIATION INDUCED ERRORS BE "ASSUMED TO BE SMALL"?

190 DIS 2300-1, REV. 12, 2-24-94, DATA SHEET 3 IDENTIFIES A SETPOINT LESS CONSERVATIVE (NEGATIVE MARGIN) THEN IDENTIFIED IN CALC NED-I-EIC-0111, REV. 2, 7/12/94. (THIS IS ANOTHER EXAMPLE FOR CONCERN #2)

191 [CALC NED-I-EIC-0111]
(1) P. 5, PARAGRAPH 5A - WHAT IS BASIS FOR DIVIDING CAL TOLERANCE BY 3?
(2) P. 5, PARAGRAPH 5B- ARE TEMPERATURE AND SEISMIC ERRORS CONSIDERED RANDOM? IF SO, HOW JUSTIFIED?

192 LER 249/92-019: PROVIDE RESPONSE/ACTIONS TO ADDRESS TRACK #249-180-92-12801 AND 249-180-92-12802.

193 LER 249/91-003: PROVIDE RESPONSE/ACTIONS TO ADDRESS TRACKING #249-200-91-03603 AND 249-200-91-03604.

194 LER 249/94-008: PROVIDE POLICY STATEMENT #12

195 NEED TO WALKDOWN TEMP ALTs.
UNIT 2, 34-92 (DEGRADED VOLTAGE RELAY & AGASTAT TIMER)
UNIT 2, 37-93 (CHART RECORDER FOR RX LEVEL 'A' NORMAL RANGE)
UNIT 2, 50-93 (MONITOR AIR COMPRESSOR 2B 1AC PERFORMANCE)

196 LER 249/94008: CORRECTIVE ACTIONS INCLUDED CHANGING DAP 02-15, REV. 4, PG 3, POLICY E.3, TO REQUIRE THE STATION MANAGER OR DESIGNEE TO APPROVE CHANGING AN IRP LEVEL 1 OR 2 EVENT SCOPE & SCHEDULE, HOW DOES FLOW CHART F.2., PG 6, IMPLEMENT THE ABOVE? I DON'T SEE HOW A LVL 1 & 2 WILL GET TO THE PLANT MANAGER.

197 RESPONSE TO (JL-20) T-134,
(1) WHAT IS THE BASIS, CALC OR WHAT EVER FOR THE 2 MINUTE ENVIRONMENT THAT THE YARWAY HAS TO OPERATE IN?
(2) WILL THE YARWAY BE ABLE TO PERFORM IT'S FUNCTION WITH OUT BEING QUALIFIED?