

~~Official Use Only - Do Not Release~~

updated from Tony  
on 6/29/04

B. m. Hett's

6/1/04

## Palo Verde AIT

### Issue and Followup Item List

#### NOTE (GENERIC Unresolved Issues):

- (1) **URI 2004012-01** involves an NRC review of the licensee's cause and/or corrective actions
- (2) **URI 2004012-02** involves an NRC review of the potential design control issues
- (3) **URI 2004012-03** involves an NRC review of the potential safety analyses issues
- (4) **URI 2004012-04** involves Technical Specification usage questions during emergencies

~~Official Use Only - Do Not Release~~

Information in this record was deleted  
in accordance with the Freedom of Information  
Act, exemptions 2  
FOIA 2004-0307

| Focus Area   | Potential Issues/Apparent Cause   | Publish | Tracking                               | Recommendations  |
|--|---|---------|--|--|
| <b>Off-site Power Systems</b><br><i>- None of APS transformers had overcurrent protection on transformers</i><br><b>No. 1</b><br><i>- Independence of off-site sources long term</i><br><i>0</i> | <b>Reliability of 230kV protective relays</b><br>1. The redundancy of the protective relay scheme has been improved by APS.<br>2. APS has indicated that OC protection would be installed on their 230kV transformers.<br>3. Modifications to included double trip coils on the WW and Devers breakers is being considered. | Public  | URI<br>2004012-01                      | 1. Verify that over current protection installed on Arizona Power System transformers connected to Palo Verde 500kV systems.<br>2. Verify that breakers in West Wing and Devers have been modified to include dual trip coils.                         |
|  | <b>Independence of 500kV transmission</b><br>1. Hassayampa negative sequence protective relaying was removed by APS<br><i>Improved reliability - by taking out.</i>   | Public  | N/A<br><i>negative pulse-jump prs-</i> | No action needed For follow up   |
| <b>U2, Train "A" Emergency Diesel Generator Failure</b><br><b>No. 2</b><br><i>- existing condition of transformer root cause</i>   | <b>Apparent cause of EDG failure was failure of diode in exciter rectifier circuit. [OK]</b> Resulted in loss of power to Train "A" ESF busses.<br><i>replaced recently - only 65 - 70 hrs on diode</i>   | Public  | URI<br>2004012-01                      | 1. Review licensee determination of root and contributing cause(s).<br>2. Review licensee's extent of condition analysis.<br>3. Verify that licensee's corrective actions are consistent with industry operating experience for these types of diodes. |

| Focus Area  | Potential Issues/Apparent Cause   | Publish | Tracking       | Recommendations   |
|---|---|---------|----------------|---|
| <b>Emergency Response Organization Challenges</b><br><i>(3) Interfaces during response</i><br><br><i>- Also TSC EDG</i><br><i>- Also - AUX generator to charging pump</i><br><br><i>- when 1st power to TSC, can't use computers &amp; have to go manual - degraded ability</i> | Problems were identified with the emergency notification of state and local officials. <i>V1 - not all notified by state</i><br><i>V2 - ok</i><br><i>V3 - 2 communications affe - not notified by state -</i>         | Public  | URI 2004012-01 | 1. Review licensee determination of root and contributing cause(s). <i>- make clear who's doing</i><br>2. Review licensee's extent of condition analysis.<br>3. Assess licensee corrective actions.<br>4. Determine if a finding or violation occurred and assess significance. |
|   | Problems were identified with the ability to <u>develop protective action recommendations following a LOOP.</u><br><br><i>- when 1st power to TSC, can't use computers &amp; have to go manual - degraded ability</i> | Public  | URI 2004012-01 | 1. Review licensee determination of root and contributing cause(s).<br>2. Review licensee's extent of condition analysis.<br>3. Assess licensee corrective actions.<br>4. Determine if a finding or violation occurred and assess significance.                                 |
|   | Problems were identified with the implementation of emergency response organization notification of an event. <i>Dist out system didn't work</i>  | Public  | URI 2004012-01 | 1. Review licensee determination of root and contributing cause(s).<br>2. Review licensee's extent of condition analysis.<br>3. Assess licensee corrective actions.<br>4. Determine if a finding or violation occurred and assess significance.                                 |

*3500*  
*is making*  
*after*  
*who makes*  
*the call*

*Ex 2*

| Focus Area                                   | Potential Issues/Apparent Cause   | Publish | Tracking          | Recommendations   |
|--|---|---------|-------------------|---|
|  |   |         |                   |   |
| U1, Atmospheric Dump Valve 185 Failure       | <p>Apparent cause was internal control air leakage allowing valve to drift close on low demand signals. [OK] Operator distraction during event.</p> <p><i>- operated at low thresholds to deproportionate<br/>desoxy heat on U1 -<br/>- better problem in positions</i></p> | Public  | URI<br>2004012-01 | <ol style="list-style-type: none"> <li>1. Review licensee determination of root and contributing cause(s)</li> <li>2. Review licensee's extent of condition analysis</li> <li>3. Verify licensee's corrective actions consistent with industry operating experience for AOVs</li> </ol> |
| U1, Letdown Heat Exchanger Isolation Failure | <p>Apparent cause was poor design control, inadequate training on design modification, and inadequate procedures. [OK] Operator distraction during event.</p> <p><i>- diverted flow from ion exchanger<br/>but didn't isolate from system<br/>in U1.</i></p>                | Public  | URI<br>2004012-02 | <ol style="list-style-type: none"> <li>1. Review adequacy of temporary modification.</li> <li>2. Review adequacy of training.</li> <li>3. Review adequacy of procedures.</li> </ol>   |

EX 2  
24

| Focus Area   | Potential Issues/Apparent Cause  | Publish | Tracking          | Recommendations   |
|--|--|---------|-------------------|---|
| <b>U3, Bypass Valve Control System Issue</b><br><i>- plant response in U1 - cause static switch devices from LF to an empty source in LDT</i><br><i>U3 responded different than U2 on trip</i> | Bypass valve control system caused a Unit 3 main steam isolation. The licensee declared apparent cause as control system "anomaly." The teams review found potential design issues.  | Public  | URI<br>2004012-02 | <ol style="list-style-type: none"> <li>1. Review the electrical characteristics of the U3 event. Focus particularly on how the control cabinets are powered and what role the D-11 static switch had on the controls.</li> <li>2. Review licensee determination of cause and corrective actions</li> <li>3. Determine if a design control violation occurred</li> <li>4. Review extent of condition.</li> <li>5. Assess significance</li> </ol> |
|  | Determine if existing bypass valve control system meets the plant design bases. System response appeared different than what was analyzed.   | Public  | URI<br>2004012-03 | <ol style="list-style-type: none"> <li>1. Compare control system design to analyses assumptions.</li> <li>2. Determine if a finding or violation occurred and assess significance.</li> </ol>   |
|  | Given the actual plant conditions, the team could not explain why Unit 3 responded differently than Units 1 and 2.   | Public  | URI<br>2004012-03 | <ol style="list-style-type: none"> <li>1. Review the licensee's assessment why U3 responded differently than U1 and U2.</li> <li>2. Determine if a finding or violation occurred and assess significance.</li> </ol>  |
| <b>U3, Reactor Coolant Pump Lift Oil Pump Breaker Thermal Overloads</b><br><i>Issue - complicated recovery</i>   | Reactor coolant pump lube oil lift pump circuit breaker thermal overloads are only set 0.1 amp above normal running current. This results in increased probability of breaker tripping and operator distraction during plant recovery. | Public  | URI<br>2004012-02 | <ol style="list-style-type: none"> <li>1. Review design of thermal overload protection of RCP lube oil pump breakers.</li> <li>2. Assess significance of delay on plant recovery.</li> <li>3. Extent of condition. - (from Paul)</li> </ol>   |
|  | Reactor coolant pump starting procedures do not caution operators on potential thermal overload trip if pumps are operated for an extended duration.   | Public  | URI<br>2004012-02 | <ol style="list-style-type: none"> <li>1. Review design control aspects of modifications to the thermal overload protection of RCP lube oil pump breakers.</li> <li>2. Determine if design control or procedure violation occurred.</li> </ol>  |

| Focus Area   | Potential Issues/Apparent Cause  | Publish | Tracking          | Recommendations   |
|--|--|---------|-------------------|---|
| <b>U3, Low Pressure Safety Injection System In-leakage</b> | Operators were required to manually implement low pressure safety injection system depressurization procedures to prevent over-pressurization. <u>Operator distraction</u> Licensee apparent cause involved a thermal and hydraulic phenomena that caused the leakage. [Not OK] Most likely apparent cause was mechanical misalignment of Borg-Warner check valves.  | Public  | URI<br>2004012-01 | <ol style="list-style-type: none"><li>1. Review licensee determination of root and contributing cause(s).</li><li>2. Review licensee's extent of condition analysis.</li><li>3. Determine if a finding or violation occurred focusing particularly on the effectiveness of Borg-Warner corrective actions from past issues.</li><li>4. Focus on whether the licensee is adequately assuring check-valve operability.</li><li>5. Focus on adequacy of check-valve as-found testing and what the results of as-found testing imply about operability.</li><li>6. Assess significance.</li></ol> |
| <b>Assess difference in U3 response to LOOP.</b>           | The Unit 1 and 2 reactors tripped on DNBR and the Unit 3 reactor tripped on VOPT. The Unit 3 response was not the anticipated plant response documented in the FSAR for a LOOP. A review of data indicated that U1, U2, and U3 bus frequency increased to nearly 67Hz, much higher than anticipated. Apparent cause may be associated with turbine control response. | Public  | URI<br>2004012-01 | <ol style="list-style-type: none"><li>1. Review licensee determination of root and contributing cause(s).</li><li>2. Review licensee's extent of condition analysis.</li><li>3. Focus on the licensee's assessment of the impact of the high frequency (e.g., RCS hydraulic affects, electrical affects @ high frequency, etc.)</li><li>4. Determine if a finding or violation occurred and assess significance.</li></ol>  |

| Focus Area   | Potential Issues/Apparent Cause   | Publish | Tracking          | Recommendations  |
|--|---|---------|-------------------|--|
|  | <p>FSAR Section 10.2.2.3.1.4, "Power/Load Unbalance," indicates that... "150 ms delay is based on a three-phase bolted fault a PVNGS 525 kV switchyard as a worst case scenario..." Also .... "... load control unit is a rate sensitive power/load unbalance circuit whose purpose is to initiate control valve fast closing action under load rejection conditions that might lead to rapid rotor acceleration and consequent over speed."</p> <p>Given the characteristics of the LOOP which occurred @ PVNGS, it appeared that the licensee's analyses documented in the FSAR may not identify the worst-case scenario.</p> | Public  | URI<br>2004012-03 | <ol style="list-style-type: none"> <li>1. Review licensee's assessment of whether the June 14, 2004 LOOP represented a new worst-case scenario and proposed corrective actions to update the FSAR analyses.</li> <li>2. Determine if a finding or violation occurred and assess significance.</li> </ol>   |
| <p><b>General Electric Magna Blast Breakers</b></p> <p><i>non IE breakers</i></p> <p><i>- HAD TO go out into switchyard to close.</i></p> <p><i>- Brown started transformer at 9:00 AM - was it a bus?</i></p> | <p>Two GE Magna Blast breakers failed to <u>operate upon demand during plant recovery</u>. The licensee's apparent cause was that the breakers "were not cycled often enough." [Not OK] NRC raised issues associated with licensee's apparent cause and planned review.</p>   | Public  | URI<br>2004012-01 | <ol style="list-style-type: none"> <li>1. Review licensee determination of root and contributing cause(s).</li> <li>2. Review licensee's extent of condition analysis.</li> <li>3. Assess licensee corrective actions.</li> <li>4. Review licensee's use of industry operating experience for GE Magna Blast breakers.</li> <li>5. Assess whether the issues identified involved any human performance or PI&amp;R aspects.</li> <li>6. Determine if a finding or violation occurred and assess significance.</li> </ol> |

| Focus Area  | Potential Issues/Apparent Cause  | Publish | Tracking          | Recommendations   |
|---|--|---------|-------------------|---|
| <b>Auxiliary Feedwater System</b><br><br><i>- most significant point on this one</i><br><br><i>Emergency Response piece</i> | During plant recovery, U1 experienced thermally induced vibration of the feedwater piping.   | Public  | URI<br>2004012-01 | <ol style="list-style-type: none"> <li>1. Review licensee determination of root and contributing cause(s).</li> <li>2. Review licensee's extent of condition analysis.</li> <li>3. Assess licensee corrective actions.</li> <li>4. Determine if a finding or violation occurred and assess significance.</li> </ol>   |
|   | Emergency procedures which direct a main steam isolation do not caution operators on the fact that the MSIS isolated TDAFW steam drains. The emergency procedures do not result in the implementation of manual drain processes to ensure TDAFW operability. | Public  | URI<br>2004012-02 | <ol style="list-style-type: none"> <li>1. Review design control aspects of the TDAFW manual drains.</li> <li>2. Determine if a design control or inadequate procedure violation exists.</li> <li>3. Assess whether the issues identified involved any human performance or PI&amp;R aspects.</li> </ol>   |
|   | Following the 1990 TDAFW overspeed trip, the licensee directed corrective actions that included procedure revisions and the use of manual drains to ensure operability.  | Public  | URI<br>2004012-02 | <ol style="list-style-type: none"> <li>1. Review design control aspects of the TDAFW manual drains.</li> <li>2. Determine if a design control or inadequate procedure violation exists.</li> <li>3. Assess whether the issues identified involved any human performance or PI&amp;R aspects.</li> <li>4. Assess the adequacy of previous corrective actions.</li> </ol> |
|   | Assess licensee management emergency response effectiveness in directing the equipment needed to manually drain the TDAFW steam traps away from U2 (the unit with one ESF bus denergized).   | Public  | URI<br>2004012-01 | <ol style="list-style-type: none"> <li>1. Review licensee determination of root and contributing cause(s).</li> <li>2. Review licensee's extent of condition analysis.</li> <li>3. Assess significance.</li> </ol>  |

**Official Use Only - Do Not Release**

| Focus Area  | Potential Issues/Apparent Cause   | Publish | Tracking          | Recommendations  |
|---|---|---------|-------------------|--|
| <b>Use of Plant Technical Specifications</b><br><i>* EOPs: Should focus on response, but should not miss an LCO review or ignore totally. Training this way</i> | <p>Inspectors noted that the licensee did not enter TS LCO's until EOP's directed a review of LCO status. This occurred very late into EOP implementation. In addition, when the LCO was entered, the time clock started when directed in the EOPs. This resulted in LCO entry hours after the condition occurred. If the practice continued, the inspectors were concerned that some TS LCO Action Statements could not be implemented when necessary.</p> | Public  | URI<br>2004012-04 | <ol style="list-style-type: none"> <li>Evaluate potential Conduct of Operations and TS violations for the event:               <ol style="list-style-type: none"> <li>TDAFW operability</li> <li>U2 EDG operability</li> <li>U2 Train "A" Battery Charger</li> <li>U3 Low Pressure Safety Injection</li> </ol> </li> <li>Assess significance <i>of tech spec entry - with prob on the stack -</i></li> </ol> |
| <b>Technical Support Center Emergency Diesel Generator Trip</b>   | <p>Licensee electrician failed to return test switch to the normal position following a test run six-days prior to the event.</p>   | Public  | URI<br>2004012-01 | <ol style="list-style-type: none"> <li>Review licensee determination of root and contributing cause(s).</li> <li>Review licensee's extent of condition analysis.</li> <li>Assess licensee corrective actions.</li> <li>Determine if a finding or violation occurred and assess significance.</li> </ol>  |
| <b>U2 Station Battery</b>   | <p>Considering the discharge of the U2 station battery, need to evaluate whether battery discharge characteristics are as expected.</p>   | Public  | URI<br>2004012-01 | <ol style="list-style-type: none"> <li>Review licensee determination of root and contributing cause(s).</li> <li>Review licensee's extent of condition analysis.</li> <li>Assess licensee corrective actions.</li> <li>Determine if a finding or violation occurred and assess significance.</li> </ol>  |

**Official Use Only - Do Not Release**

| Focus Area  | Potential Issues/Apparent Cause   | Publish | Tracking          | Recommendations   |
|---|---|---------|-------------------|---|
| <b>U2 Train "E" Positive Displacement Charging Pump Trip</b><br><br><i>Isolated section<br/>part of<br/>could not<br/>be isolated</i> | The team found that the actions of the Control Room Supervisor not to be in accordance with the requirements of the emergency operating procedure for the plant conditions at the time... did not follow EOP...   | Public  | URI<br>2004012-01 | 1. Review licensee determination of root and contributing cause(s).<br>2. Review licensee's extent of condition analysis.<br>3. Assess licensee corrective actions.<br>4. Determine if a finding or violation occurred and assess significance. |
|   | The team found that the <u>auxiliary operator</u> did not implement Appendix 10, Step 1 of emergency operating Procedure 40EP-9EO10. Instead of requesting a radiation protection person to accompany him, the operator went to the radiologically controlled area access to perform a routine entry. | Public  | URI<br>2004012-01 | 1. Review licensee determination of root and contributing cause(s).<br>2. Review licensee's extent of condition analysis.<br>3. Assess licensee corrective actions.<br>4. Determine if a finding or violation occurred and assess significance. |
|   | The team found that the auxiliary operator did not properly implement emergency operating Procedure 40EP-9EO10 as required.   | Public  | URI<br>2004012-01 | 1. Review licensee determination of root and contributing cause(s).<br>2. Review licensee's extent of condition analysis.<br>3. Assess licensee corrective actions.<br>4. Determine if a finding or violation occurred and assess significance. |

- Addl - risk analysis & finding up
- looks related to 8/03 blackout
- ? important extent of condition on valve & seat leakage