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**Columbia Generating Station  
Response to Request for Supplemental  
Information for PRNM LAR**

**NRC Public Meeting  
July 22, 2010**

# **AGENDA**

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- Review Request for Supplemental Information (RSIs)
  - Ensure RSIs are understood
  - Discuss Energy Northwest's approach to responses
- NRC Feedback
- Review of Action Items

# **#1 – Changes to PRNM**

## **NRC Request**

1. Identify changes to PRNM platform from approved LTR.
2. Description should include hardware, programmable devices, software, and development processes.
3. Address changes in accordance with BTP 7-14

# #1 – Changes to PRNM (cont.)

## ENW Response

1. CGS system to be compared to Hatch (LTR), and changes identified. PRNM to be shown to be in compliance with regulatory changes correlated to RG 1.152 Rev. 2 and IEEE 7-4.3.2-2003.
2. Summary and detailed change history of all hardware and software changes to be provided. No changes to programmable devices applicable to CGS system.
3. Software change process includes a table of change history for all affected source code modules and a correlation of the design process to BTP 7-14.

## **#2 – D3 for Software CCF**

### **NRC Request**

1. Describe how a software common-cause failure of PRNM is addressed or coped with such that upon failure, CGS remains within design basis.
2. Include failure of OPRM functions with software common-cause failures.

## #2 – D3 for Software CCF (cont.)

### ENW Response

#### 1. Common Cause Failure

- Relevant sections of the GEH LTR that address common-cause failures of the PRNM system will be referenced.
- Impacts of PRNM failures are confirmed to be within CGS design basis via a comparison of events listed in NEDC-30851P-A as required by the LTR.

## #2 – D3 for Software CCF (cont.)

### ENW Response (cont.)

- Current analog APRM system is a single sensor input into RPS. The new digital APRM system is also a single sensor input into RPS and does not change the diversity and defense in depth requirements of the APRM system.
2. Relevant sections of the GEH LTR that address OPRM common-cause failures to be identified.

# #3 - Data Communications

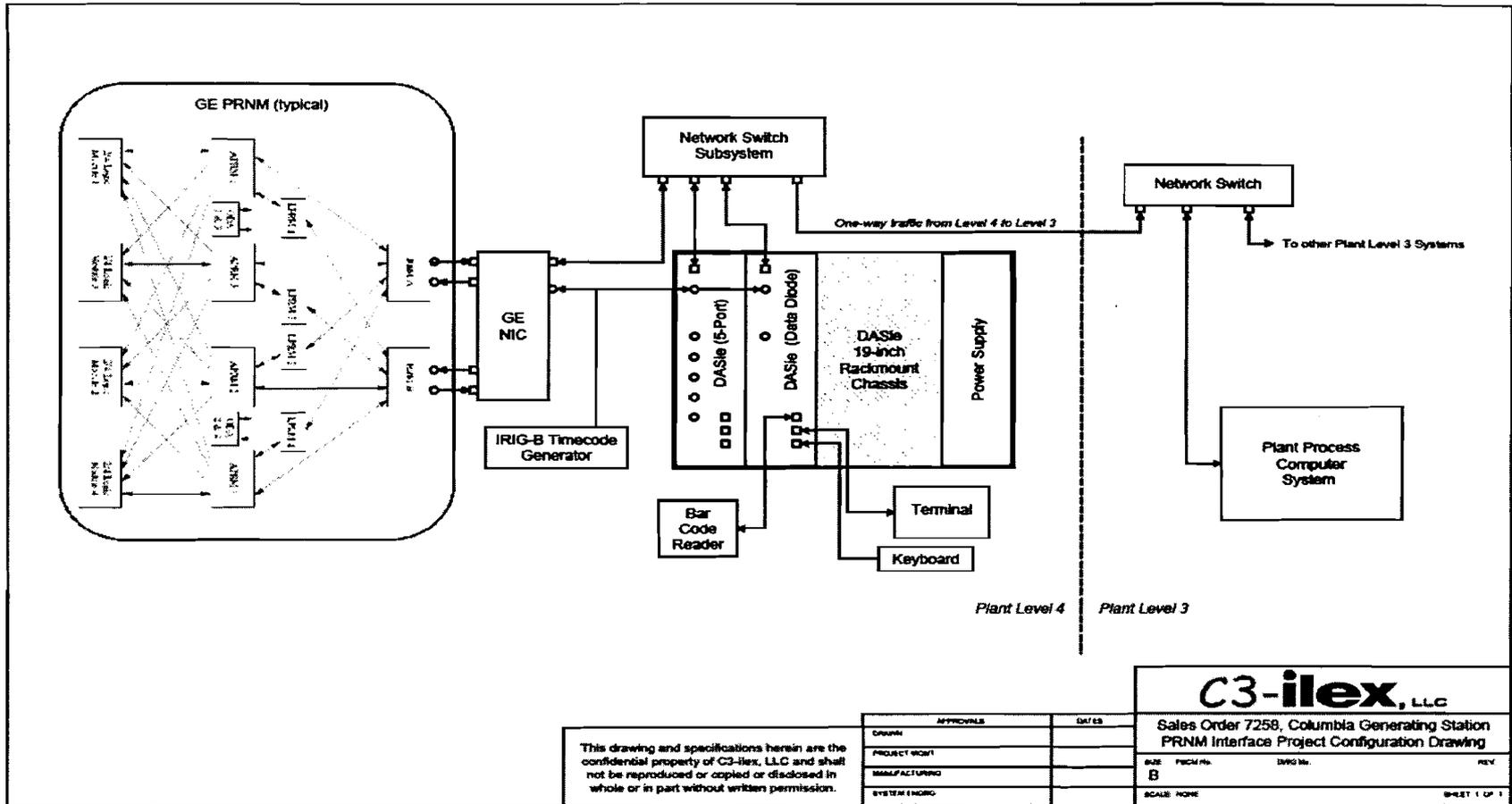
## NRC Request

1. Identify and define all safety to non-safety communications, including data communications between PRNM, Plant Computer (PPC), and within independent PRNM channels.
2. Include a demonstration of compliance to ISG-04 for inter-channel communications.
3. Include demonstration of compliance to ISG-04 for communications between PRNM and PPC, as well as other inter-channel communications.

## **#3 - Data Communications (cont.)**

### **ENW Response**

1. Communication paths to be identified. Pictorial representation of communications provided on next slide.
2. Compliance matrix with ISG-04 to be provided.
3. All safety related communications are internal to PRNM system and comply with ISG-04 requirements. Non-safety communications are limited (see next slide).



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APPROVALS		DATES	
DRAWN			
PROJECT MGMT			
MANUFACTURING			
SYSTEM ENGINEER			

<b>C3-ilex, LLC</b>			
Sales Order 7258, Columbia Generating Station PRNM Interface Project Configuration Drawing			
SIZE	FORM No.	DRWG No.	REV
B			
SCALE: NONE			SHEET 1 OF 1

# #4 - RG 1.152 Compliance

## NRC Request

- Provide appropriate documents for comparison to Regulatory Guide 1.152, Rev. 3, regulatory positions 2.1 through 2.5, for all software changes and updates.

## ENW Response

- Comparison to RG 1.152, Rev. 2 covered in response to Q1. RG 1.152, Rev. 2 comparison encompasses requested Rev. 3 comparisons.

# #5 – *Environmental Qual*

## **NRC Request**

1. Confirm worst-case temperature including the mounting panel temperature rise is encompassed by generic qualification temperature envelope.
2. Confirm maximum humidity under all conditions that equipment functionality is required.
3. Identify actions taken to confirm electromagnetic interference emission levels.
4. Provide analyses or reference documents that demonstrate CGS PRNM system meets required environmental qualifications.

## **#5 – Environmental Qual (cont.)**

### **ENW Response**

- 1-3 A summary of the testing and analysis of the PRNM system and confirmation that the system is functional during normal and accident conditions in the CGS control room for temperature, humidity, and EMI will be provided.
4. A summary of the environmental qualification analyses will be provided.

# #6 – *Human Factors Eval*

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## **NRC Request**

1. Provide information to demonstrate changes to operator panel have received human factors review.
2. Provide information to support NRC confirmation that human factors guidance has been met.
3. Provide human factors evaluation (HFE) information for staff review.

## #6 – *Human Factors Eval (cont.)*

### **ENW Response**

- The HFE at CGS was conducted in accordance with NUREG 0700 and CGS Design Specification 204. The results of the HFE, which indicate compliance with the applicable sections of NUREG 0700 and the points indicated above, will be provided in the response.

# #7 - Administrative Controls

## NRC Request

1. Identify the administrative controls to be provided for manually bypassing the APRM/OPRM channels, or protective functions.
2. Include the administrative controls that limit access to the PRNM system panel and bypass switches.
3. Identify administrative controls requiring operator involvement in the generation, review, and use of LPRM and CTP gains.

# #7 - Administrative Controls (cont.)

## ENW Response

- Access to CGS Control Room granted via keycard
- Procedures will be employed to address access to PRNM system and controls, including operator involvement with implementation of gains.
- The response includes a new commitment to ensure procedures and training are in place prior to starting up from outage that PRNM is installed.

# #8 – Setpoint Methodology

## NRC Request

1. Provide documentation of setpoint methodology used for establishing the limiting, as-found, and as-left setpoints.
2. Demonstrate acceptable values for new OPRM Upscale setpoint
3. Confirm existing setpoints and representative calculations reflect the upgraded equipment
4. Identify the setpoint methodology(ies) and confirm whether they utilize the single-sided method of calculation.
5. Identify how cycle specific setpoints are controlled.

## #8 – Setpoint Methodology (cont.)

### ENW Response

1. A summary of the setpoint methodology will be provided.
2. The OPRM setpoints are consistent with NRC approved analysis and are not considered LSSS.
3. Existing setpoints for analog equipment have been confirmed as acceptable for use with the digital PRNM system.
4. NRC approved GEH methodology is employed, which uses single-sided methodology approach.

## #8 – Setpoint Methodology (cont.)

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### ENW Response (cont.)

5. Cycle Specific setpoints (OPRM) are controlled as required by TS via the Core Operating Limits Report (COLR). This is consistent with current OPRM system controls employed at CGS.

# *Conclusion*

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- NRC Feedback
- Review Action Items