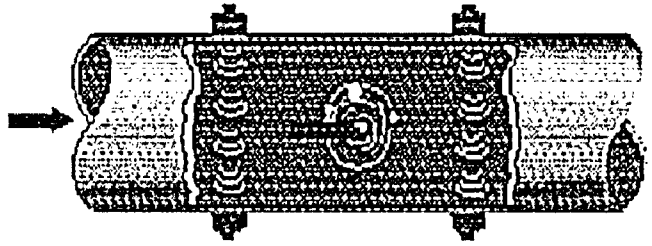
Enclosure 2

Non-Proprietary Version

Supporting Material for NRC Meeting Regarding CROSSFLOW Ultrasonic Flow Measurement System Status



CROSSFLOW Ultrasonic Flow Measurement System

CROSSFLOW Status Update

September 12, 2005

CROSSFLOW Status Update

- Meeting Objectives:
  - Address Reactor Systems Branch questions to facilitate review and approval of pending plant-specific LARs
  - Discuss guidance to achieve acceptable plant-specific implementation
  - Concur on CROSSFLOW X-Beam topical report review activities
  - Update the NRC on the status of CROSSFLOW Generic Action Plan (GAP) initiatives

CROSSFLOW Status Update

- Agenda
  - History/Background — Non-proprietary
  - Overview of CROSSFLOW — Proprietary
  - Reactor Systems Branch Questions — Proprietary
  - WOG CROSSFLOW Task Force User Guidelines — Proprietary
  - Status of CROSSFLOW Phase 2 GAP Initiatives — Proprietary
  - Phase 3 GAP Initiatives — Proprietary

History/Background

CROSSFLOW Status Update

- CROSSFLOW Topical Reports
  - CENPD-397-P-A, Rev. 1, "Improved Flow Measurement Accuracy Using CROSSFLOW Ultrasonic Flow Measurement Technology", May 2000
    - This is the licensing basis document for CROSSFLOW technology.
  - WCAP-15689-P, Rev. 1, "Evaluation of Transit-Time and Cross-Correlation Ultrasonic Flow Measurement Experience with Nuclear Plant Feedwater Flow Measurement", September 2002
    - Submitted at the request of the NRC to provide information relative to Caldon Report ER-262, "Effects of Velocity Profile Changes Measured In-Plant on Feedwater Flow Measurement Systems ".
  - WCAP-16163-P, Rev. 0, "CROSSFLOW Ultrasonic Flow Measurement System, X-Beam Modification", February 2005
    - Currently under NRC review.

CROSSFLOW Status Update

- Recent CROSSFLOW Vendor Communications
  - Signal Interference
    - TB-03-6, "CROSSFLOW Ultrasonic Flow Measurement System Signal Issues", September 5, 2003.
    - NSAL-03-12, "CROSSFLOW Ultrasonic Flow Measurement System Flow Signal Interference Issues", December 5, 2003.
  - Configuration/Alignment Sensitivity Observations
    - TB-04-4, "Information Regarding Recent CROSSFLOW Ultrasonic Flow Measurement System Performance Observations", February 12, 2004

Start of Proprietary Meeting

Proprietary CROSSFLOW Discussions

Overview of CROSSFLOW

CROSSFLOW System

- Ultrasonic flow measurement based on cross correlation technology
- Provides an independent feed water flow measurement
  - Does not replace existing plant instrumentation
  - Used in conjunction with other plant instrumentation
- 40 CROSSFLOW systems for feed water flow measurement are in operation globally by 20 utilities
  - MUR Appendix K power uprate installations (11 in the USA)
  - Venturi power recovery installations (6 in the USA)
  - Over 100 plant-years of service experience

CROSSFLOW Implementation and Operation

- Establish plant baseline
  - Installation procedures provide rigorous approach for establishing installation baseline
- System operation – alarms and diagnostics
  - Continuous monitoring of system performance
  - System is designed to recognize unacceptable performance and alert users through system alarms
- Periodic surveillance and maintenance
  - Provided in vendor documentation and summarized in WOG CTF guidelines
- Operating experience
  - CROSSFLOW performance is consistent with the design and licensing basis

Reactor Systems Branch Questions

Stable Flow measurement

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WOG CROSSFLOW Task Force User Guidelines

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Status of CROSSFLOW Phase 2 GAP Initiatives

CROSSFLOW Status Update

- The following Generic Action Plan (GAP) Phase 2 Initiatives were established:

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Phase 3 GAP Initiatives

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- Phase 3 GAP Initiatives

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Summary

CROSSFLOW Status Update

- Summary
  - The combined efforts of the WOG CTF and W/AMAG have improved processes for implementing and operating the CROSSFLOW system in plant-specific installations
    - These efforts continue to ensure that CROSSFLOW systems are operating consistent with their licensing and design basis
  - Plant-specific LARs for Fort Calhoun and Calvert Cliffs are consistent with the approved CROSSFLOW base topical/SER and there are no open issues that should delay the approvals