NRC FORM 658
(9-1999)

U.S. NUCLEAR REGULATORY COMMISSION

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Do not include proprietary materials.

DATE OF MEETING
06/26/2001

The attached document(s), which was/were handed out in this meeting, is/are to be placed in the public domain as soon as possible. The minutes of the meeting will be issued in the near future. Following are administrative details regarding this meeting:

Docket Number(s)	**50-416, 50-458, 50-293, 50-382**
Plant/Facility Name	**Grand Gulf, River Bend, Waterford, Pilgrim**
TAC Number(s) (if available)	
Reference Meeting Notice	**June 13, 2001**
Purpose of Meeting (copy from meeting notice)	**Entergy Operations, Inc. will discuss the scope of the power uprate requests, overview of Caldon CheckPlus System, and tentative project schedule for the plants.**

NAME OF PERSON WHO ISSUED MEETING NOTICE	TITLE
Nageswaram Kalyanam	**Project Manager**

OFFICE
NRR

DIVISION
DLPM

BRANCH
PDIV-1

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DF 01

Entergy Thermal Power Optimization Program (Appendix "K")

NRC/Entergy Meeting

June 26, 2001

Overview

• Introduction & Objectives	Jerry Burford
• Caldon Presentation	Ernie Hauser
• Plant Presentation	
– River Bend	Amir Shahkarami
– Waterford 3	Timothy Brennan
– Grand Gulf	Mike Withrow
– Pilgrim	Jerry Burford
• Summary	Amir Shahkarami
• Open Discussion	

Meeting Objectives

- Present overview of Caldon Check-Plus System

- Discuss NRC Review Schedules
  - four Entergy submittals over 6 months
  - two for approval by Summer 2002
  - two for approval by Spring 2003

River Bend

- Analyses recently updated for the 5% Power Uprate
- Maintained required 2% rated margin
- Appendix K power uprate evaluation up to 1.7%
- From 3039 to 3091 MWt
- Request uprate from 1.5% up to 1.7% based on tested instrumentation and required modifications
- Generation increase of $\simeq$ 17 MWe

River Bend Strategy

- Leverage experience gained from our recent 5% uprate
- Uprate will be incorporated in Cycle 12 core design and reload safety analysis
- Perform in accordance with GE's Licensing Topical Report NEDC-32938P
- Credit for Caldon LEFM✓+® TR ER-157P
- In-house resources to be utilized for RBS scope.

River Bend Schedule

- Complete analysis by March 2002
- NRC Submittal by April 2002
- NRC Approval by December 2002
- Install hardware by March 2003 (RF11)
- Implementation by April 2003 (RF11)

Waterford 3

- Build on NSSS & BOP work for future 8% uprate (presently on hold)
- Evaluate for Appendix K uprate of 1.7%
- Request uprate level to be 1.5%
- Based on Caldon LEFM✓+® 16-probe feedwater flow measurement device
- From 3390 to 3431 MWt
- Generation increase of 17MWe

Waterford 3 Strategy

- Leverage experience gained from work to date on future uprate
- NSSS evaluations to be performed by Westinghouse
- BOP scope will be done internally

Waterford 3 Schedule

- Complete analysis by August 2001
- NRC Submittal by September 21, 2001
- NRC Approval by March 2002
- Install & Test Hardware in April 2002 (RF11)
- Implementation in April 2002 (RF11)

Grand Gulf

- Reactor thermal power uprate of 1.7%
- From 3833 to 3898 MWt
- Generation increase of 22 MWe
- Based on Caldon LEFM✓+® 16-probe feedwater flow measurement device
- Mid-Cycle 12 implementation with aux. cooling tower to support summer 2002 peak loads

Grand Gulf Strategy

- Analysis & modifications will maintain margins
- Uprate incorporated into Cycle 12 core design and reload safety analysis
- Effort applies in-house engineering resources as much as practicable
- Apply the GE App. K TPO TR and Caldon LEFM✓+® TR ER-157P

Grand Gulf Schedule

- Hardware installed & tested May 2001 (RF11)
- Cycle 12 core design and reload analysis completed - May, 2001
- Complete system analysis by December 2001
- NRC Submittal by January 2002
- NRC Approval by June 2002
- Implementation in June 2002 (mid-Cycle 12)

Pilgrim

- Pilgrim Station will utilize existing AMAG System (Westinghouse/ABB)
- Same system installed at many sites
- Reactor thermal power uprate of 1.5%
- Request uprate up to 1.5% based on tested AMAG instrumentation and required modifications
- From 1998 to 2027 MWt
- Generation increase of ~10MWe

Pilgrim Strategy

- Application of AMAG system
- Reference topical report CENPD-397-P-A (approved in NRC SER, dated March 20, 2000)
- NSSS evaluation in accordance with NRC-approved GE topical report
- BOP evaluation will be done internally

Pilgrim Schedule

- Hardware installed & tested May 1999 (RF12)
- Complete analysis by March 2002
- NRC Submittal in May 2002
- NRC approval in March 2003
- Implementation in April 2003 (RF14)

Summary

- Analysis Uprate Level
  - GGNS, RBS, W3 at 1.7%
  - Pilgrim at 1.5%
- Submittal Uprate Level
  - GGNS at 1.7%
  - $1.5\% \preceq \text{RBS} \preceq 1.7\%$
  - W3 and Pilgrim 1.5%
- GGNS, RBS, and W3 - Caldon LEFM✓+®
- Pilgrim - AMAG System (Westinghouse/ABB)

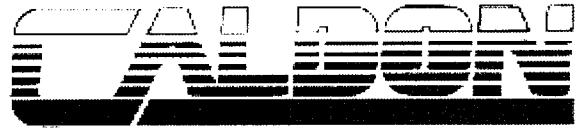
Summary ....

- NRC Submittal Dates
  - W3 September 2001
  - GGNS January 2002
  - Pilgrim March 2002
  - RBS April 2002
- Projected Implementation Dates
  - W3 April 2002
  - GGNS June 2002
  - RBS April 2003
  - Pilgrim April 2003

Open Discussion

- Q & A ???
- Follow-up Actions

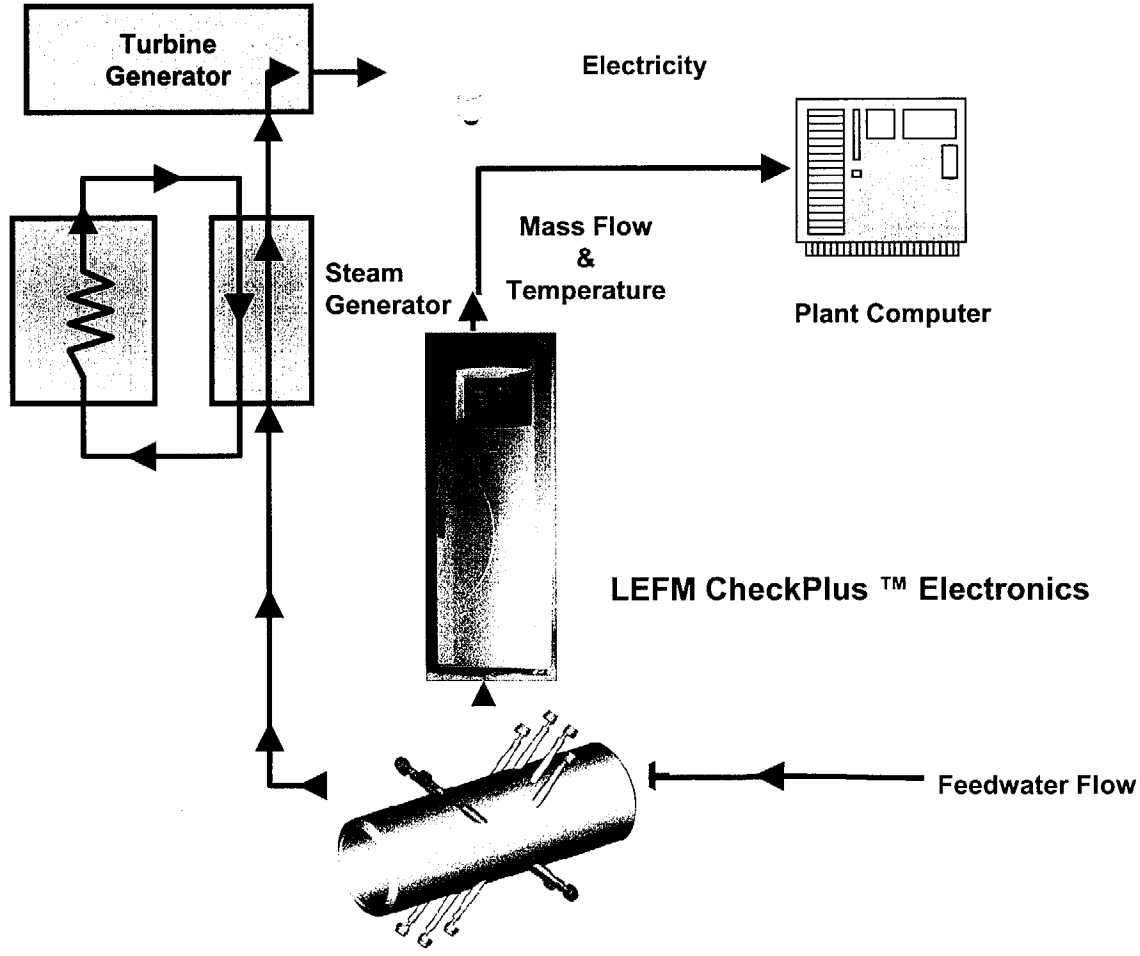
Entergy Operations, Inc.



June 26, 2001

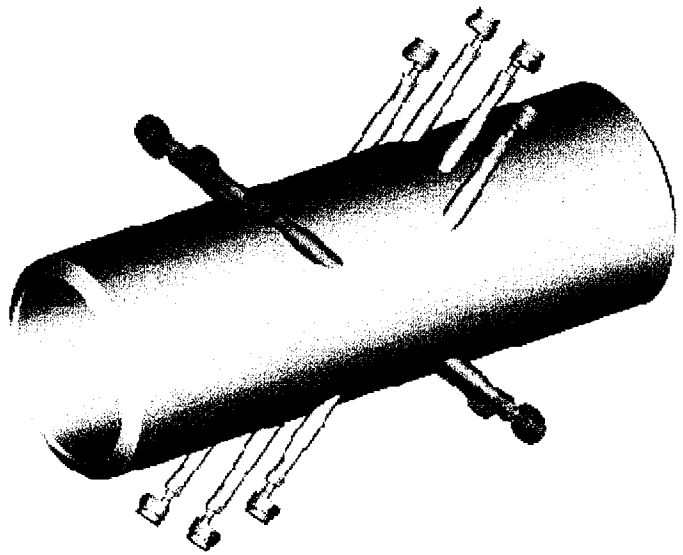
Non-Proprietary Version

LEFM CheckPlus for Entergy Plants



LEFM CheckPlus Metering Section

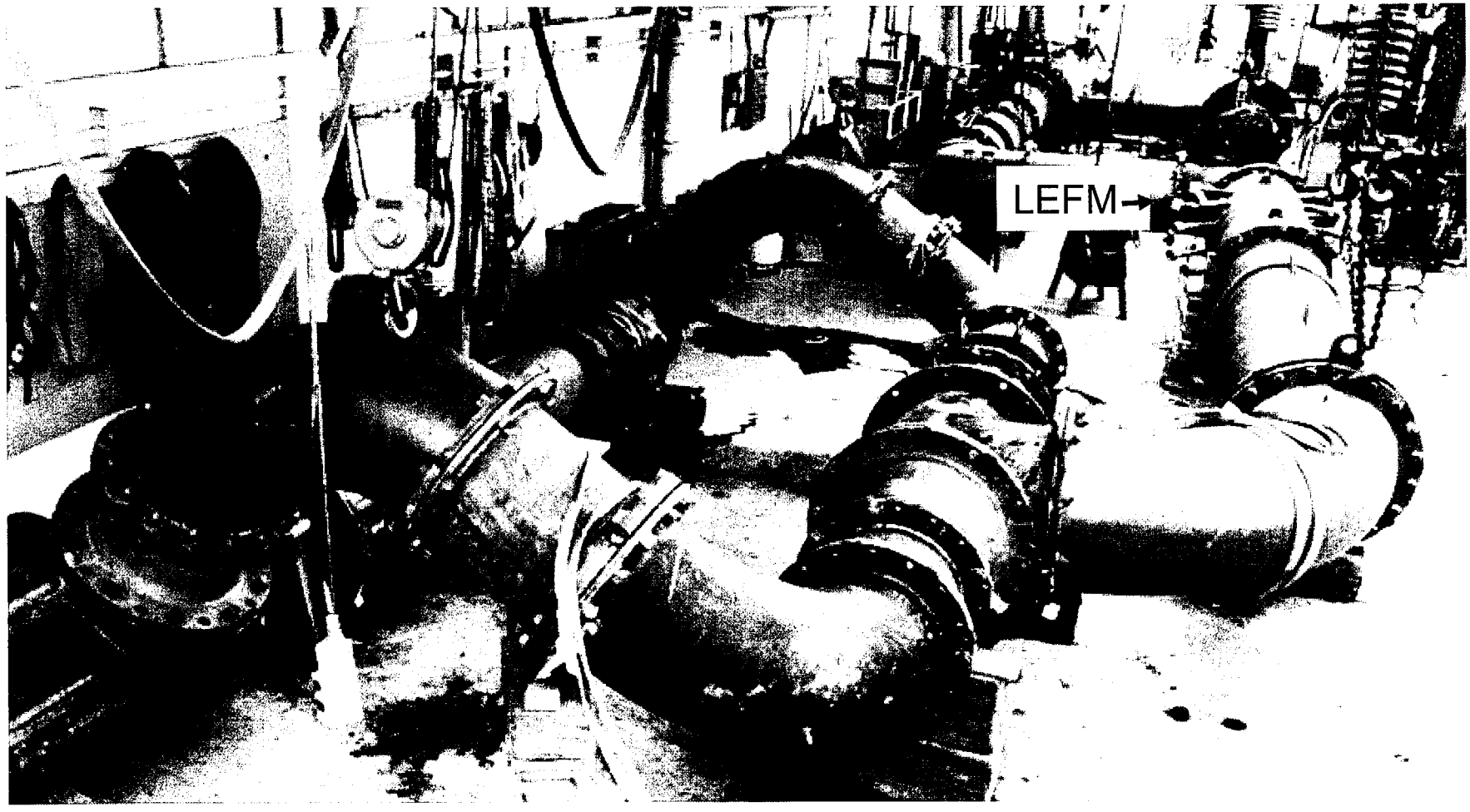
- Spool piece configuration has 8 acoustic paths; identical to Beaver Valley Unit 2:
  - Spool piece calibrated in site specific pipe model
  - Automatically cancels cross flow and swirl effects
  - Two planes of measurement permit redundancy
  - Taking advantage of improved hydraulic lab facility uncertainty



8 Path Meter Handles Challenging Pipe Geometry

- Examples:
  - Beaver Valley
  - Grand Gulf
  - Waterford

8 Path Meter at Alden - Beaver Valley Model



Grand Gulf Configuration Modeled

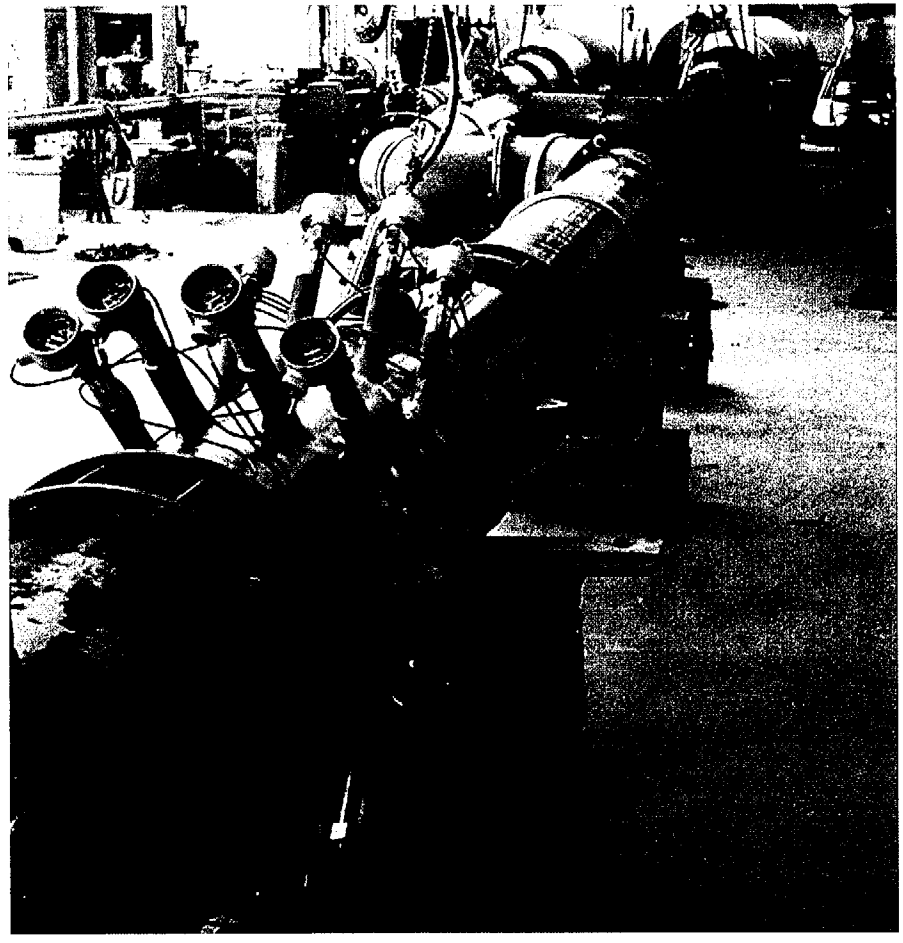
- 2 LEFM CheckPlus spool pieces
- Each is installed directly downstream of venturi
- Alden models incorporated Grand Gulf - specific venturi

Waterford Configuration Modeled

- 2 LEFM CheckPlus spool pieces
- Loop A 14.4 dia. (24 ft.) downstream of single LR elbow
- Loop B 14.4 dia. (24 ft.) downstream of combination planar elbows

Waterford Loop A Model

Waterford Loop B Model



Caldon ER-157P Compared to ER-80P

- ER-157P uses exactly the same uncertainty analysis approach as ER-80P
- ER-80P analyzes the LEFM Check System, shows power accuracy bounded by +/- 0.6%, requests 1% uprate
- ER-157P responds to Appendix K Rulemaking:
  - Shows LEFM Check System within 0.5%, corresponds to 1.5% uprate
  - Shows LEFM CheckPlus System within between 0.4% and 0.3%, corresponds to 1.6% to 1.7% uprate
  - LEFM CheckPlus range due to differing steam moisture uncertainty assumptions