Fort Calhoun Station
Steam Generators-Pressurizer-
RV Head Replacement Projects

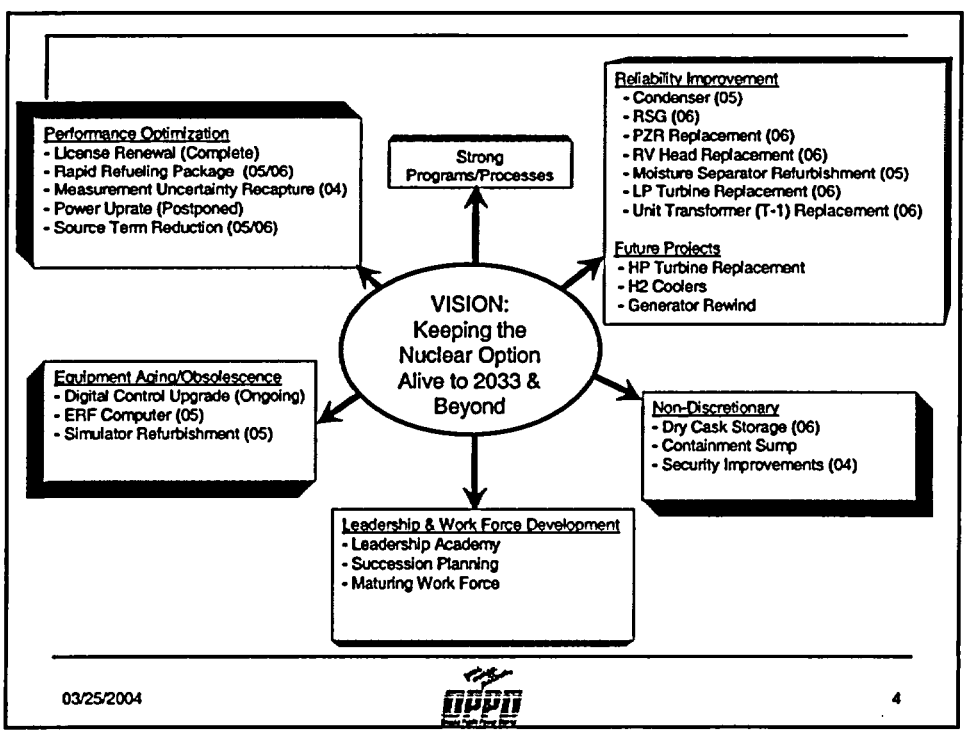
Omaha Public Power District
Presentation to the Nuclear Regulatory Commission
March 25, 2004

Introduction and Overview

Sudesh Gambhir
Division Manager – Nuclear Projects

Meeting Agenda

- Introduction – Sudesh Gambhir
- Project Overview – Ron Short
- Component Design/Fabrication – Jay Cate
- Installation – Ron Bayer
- RRP/RRVH Installation – John Brandeau
- Licensing – Tom Matthews



Project Goals

- Nuclear safety/quality
  - First time quality in everything we do
- Industrial safety
  - No one injured
- Excellent communications
- Improved plant performance
  - Reliability

Power Uprate Plans

- Plans currently indefinitely deferred
- Replacement components sized for up to 17% power uprate

Meeting Objectives and Projects Summary

Ron Short
Manager – NSSS Refurbishment Project

Meeting Objectives

- Introduce project plans and team to NRC staff
- Provide overview of project responsibilities
- Provide overview of replacement component designs
- Provide summary of schedules
- Establish plans for additional meetings/ presentations

Scope

- Replace Steam Generators – 2006 RFO
- Replace Pressurizer – 2006 RFO
- Replace Reactor Vessel Head – 2006 RFO
- Install Rapid Refueling Package
  - New Missile and Neutron Shields in 2005 RFO (Phase 1)
  - Remainder in 2006 RFO (Phase 2)

Vendors Involved

- RSGs
  - Mitsubishi Heavy Industries (MHI): Design, Fabrication, and Delivery
  - Framatome ANP (Areva): Licensing/Safety Analysis
  - Bechtel: Installation
- RRVH
  - MHI: Design, Licensing, Fabrication, and Delivery (Westinghouse is Licensing subcontractor)
  - TBD: Installation

Vendors Involved

- RPZR
  - MHI: Design, Licensing, Fabrication, and Delivery (Westinghouse is Design and Licensing subcontractor)
  - Bechtel: Installation
- RRP
  - Westinghouse: Phase 1 Design, Fabrication, and Installation
  - TBD: Phase 2 Design, Licensing, Fabrication, and Installation

mitsubishi

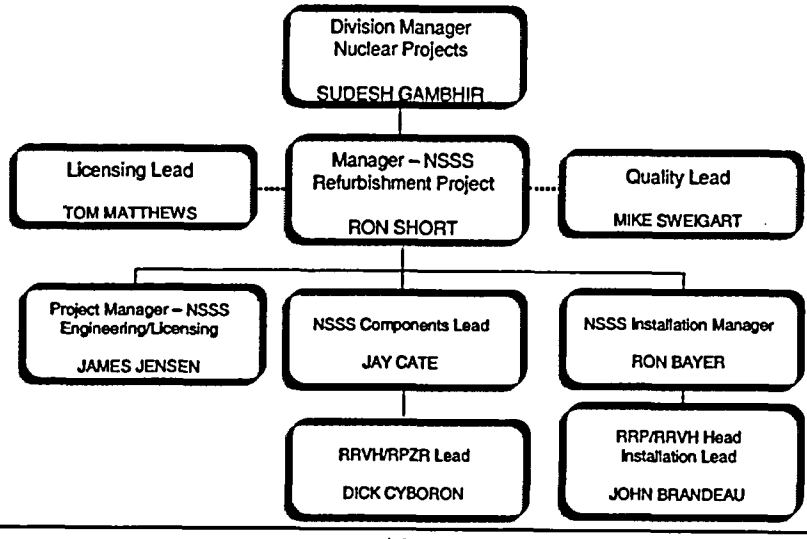
BECHTEL

Westinghouse

Schedule

- N-1 RFO: February 25 - April 21, 2005
- NSSS components delivery to FCS: May 15, 2006
- SGRO: September 8 - December 7, 2006

Project Team



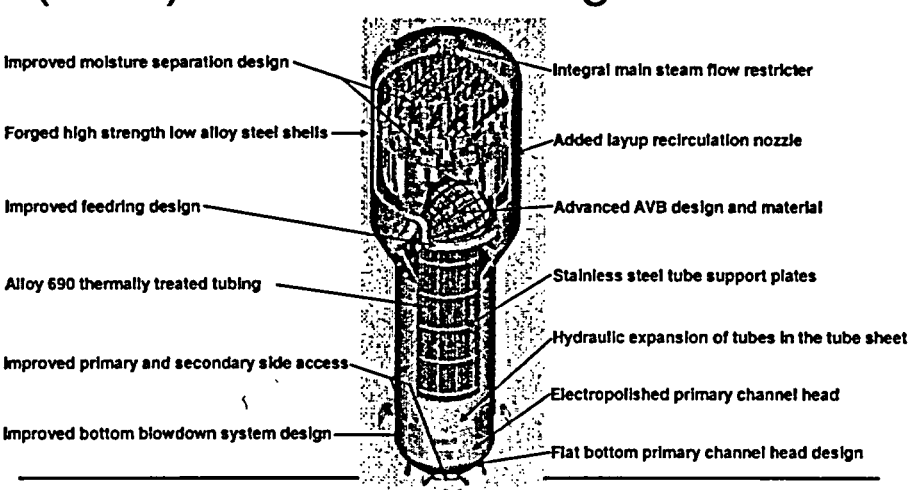
Component Design and Fabrication

Jay Cate
NSSS Component Lead

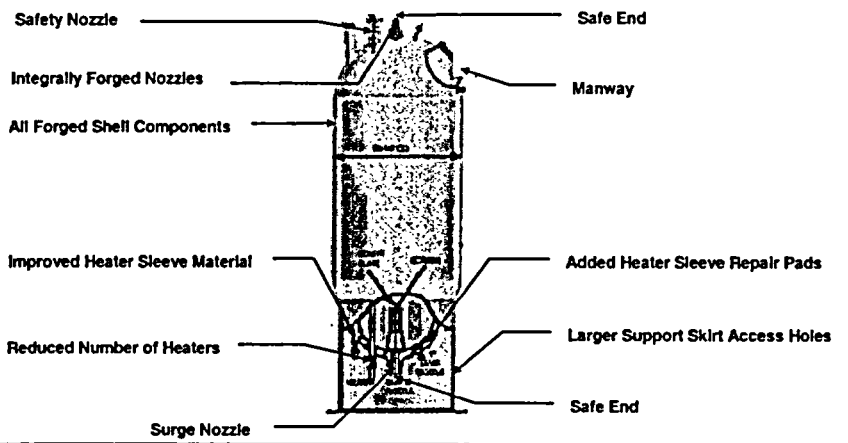
NSSS Components - General

- Designed to ASME III, 1989 edition, no addenda
- Power uprate capable
- Design and material enhancements

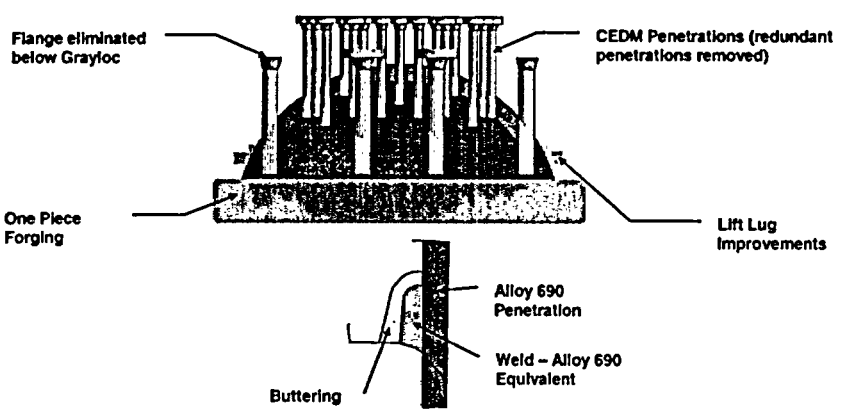
Replacement Steam Generators (RSG) Fabrication/Design Features



Replacement Pressurizer (RPZR) Fabrication/Design Features



Replacement RV Head (RRVH) Fabrication/Design Features



NSSS Component Supplier Responsibilities

- Mitsubishi Heavy Industries (MHI) contracted to supply RSGs, RPZR, RRVH
  - ♦ Design
  - ♦ Material procurement
  - ♦ Component fabrication
  - ♦ Delivery to Fort Calhoun

Major Sub-suppliers of MHI

- RPZR Design – Westinghouse
- Heavy Forgings – Japan Steel Works
- RSG Tubing – Sumitomo Metals Industries
- Various other forging/material/services sub-suppliers – all accepted under MHI Quality Assurance Program

Component Installation

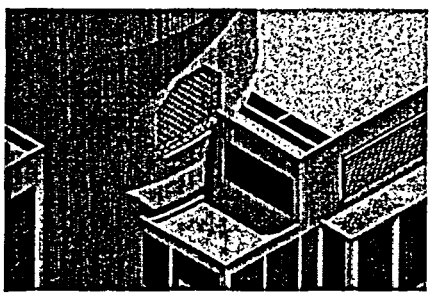
Ron Bayer
NSSS Installation Manager

Component Installation 2 Phase Approach

- Phase 1
  - Perform engineering studies to determine optimum installation method
  - Identify risks and propose mitigation
  - Identify "first of a kind" evolutions for further action
- Phase 2
  - Perform detailed installation engineering
  - Perform detailed planning

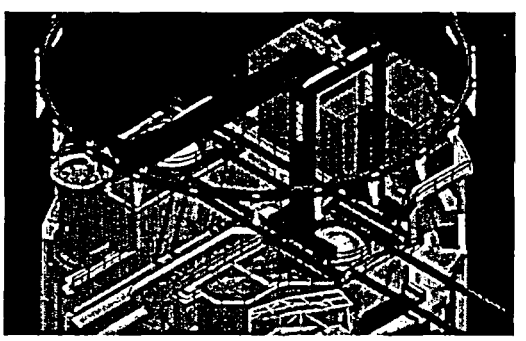
Component Installation

- Maintenance Rule evaluations as appropriate
- Containment Opening
  - Similar to other plants
  - Complex process due to the helical tendon design and number of tendons
  - Octagon opening allows removal of the fewest tendons



Component Installation

- Inside Lift System (ILS)
  - Used for SG movements
- Double Runway System
  - Outside rails supports ILS
  - Inside rails used to transport components out of and in to Containment



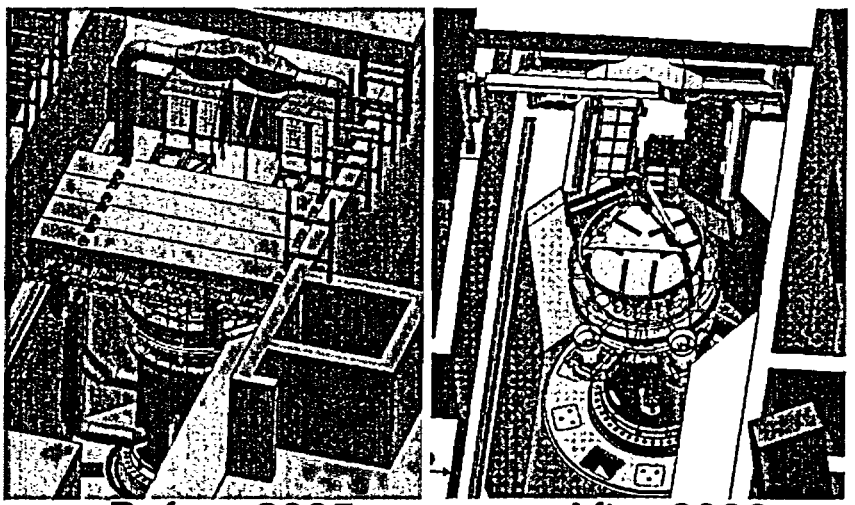
Closing Containment Opening

- Reinstall Containment Liner
- Reinstall Tendon Sheathing
- Reinstall Rebar
- Pour Concrete to Close Opening
- Retension Tendons
- Code pressure testing

RRP/RRVH Installation

John Brandeau
RRP/RRVH Installation Lead

RRP/RRVH Installation



Before 2005 After 2006

RRP/RRVH Installation

- RRVH installed with rapid refueling enhancements
  - Retractable utility bridges, integral fans
  - Missile & neutron shield installation 2005 RFO
  - Concept similar to Seabrook, Wolf Creek, others
- RRVH largely assembled prior to 2006 RFO
  - Limited laydown space in Containment
  - Difficult to reuse old components
  - Unique CEDM design (rack & pinion)
- OEM vendor (Westinghouse) as technical lead

Licensing Approach

Tom Matthews
Projects Licensing Lead

Licensing Strategy

- Benchmarked with other licensees
- 10 CFR 50.59 Evaluation approach for component replacements
  - Framatome-ANP (Areva), Westinghouse
  - Interface meetings
- Coordination with NRC
  - Frequent communications with NRC/NRR Project Manager
  - Schedule meetings with NRC
  - Allow time for licensing actions review
- Minor relief request(s) and TS changes anticipated

License Amendment Requests

- Non-TS changes requiring NRC approval (per 50.59) have not been identified to date
- Technical Specifications Changes
  - Table 1-1, Item 3 (Low Steam Generator Water Level RPS Trip Setpoint description)
  - 3.17 (SG tube inspection requirements)
    - Waiver for 2006 outage
    - Revised requirements for new SGs
  - 4.3.1 (RCS volume)

Relief Requests

- ASME Section XI leak rate testing for Containment following restoration of opening
  - Type B local leak rate testing of liner plate welds vs. Type A integrated leak rate testing of Containment Building
  - Precedents are North Anna and Surry RV Head replacements

Licensing Actions Schedule

- License Amendment Requests (TS changes) and any Code Relief Requests submitted to NRC for review no later than March 1, 2005
- NRC approvals by no later than July 1, 2006
- Individual vs. batch submittals

Conclusion

- Questions
- Plans for next meeting