



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

October 4, 2005

Jeffrey S. Forbes
Vice President Operations
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72801-0967

SUBJECT: CATEGORY 1 PUBLIC MEETING WITH ENTERGY OPERATIONS, INC.

Dear Mr. Forbes:

This refers to the meeting conducted in the Region IV office on September 27, 2005. This meeting related to changes to the licensee's fire protection program and corrective actions related to the emergency cooling pond.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Linda Joy Smith
Chief, Engineering Branch 2
Division of Reactor Safety

Dockets: 50-313; 50-368
Licenses: DPR-51; NPF-6

Enclosures:

1. Attendance List
2. Licensee Presentation

Entergy Operations, Inc.

-2-

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 Branch Chief, DRP/E (**DNG**)
 Senior Project Engineer, DRP/E (**VGG**)
 Team Leader, DRP/TSS (**RLN1**)
 RITS Coordinator (**KEG**)
 Region IV PAO (**VLD**)

SISP Review Completed: __BWT__ADAMS: X Yes ☐ No Initials: _____
 X Publicly Available ☐ Non-Publicly Available ☐ Sensitive X Non-Sensitive

S:\DRS\REPORTS\ANO Meeting Summary.frm

RI:DRS/EB2	C:DRP/E	C:DRS/EB2		
BWTindell	DNGraves	LJSmith		
/RA/	/RA/	/RA/		
10/04/05	10/04/05	10/04/05		

OFFICIAL RECORD COPY

T=Telephone

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ENCLOSURE 1
ATTENDANCE LIST

Attending in the Region IV office in Arlington, TX

Name	Organization
B. S. Mallet	NRC Region IV - Regional Administrator
D. D. Chamberlain	NRC Region IV - Director, Division of Reactor Safety (DRS)
D. N. Graves	NRC Region IV - Chief, Branch E, Division of Reactor Projects (DRP)
N. F. O'Keefe	NRC Region IV - Chief (Acting), Engineering Branch 1, DRS
L. J. Smith	NRC Region IV - Chief, Engineering Branch 2, DRS
R. W. Deese	NRC Region IV - Senior Resident Inspector, DRP
J. Forbes	Entergy - Vice President, Operations
J. Kowalewski	Entergy - Director, Engineering
C. Reasoner	Entergy - Manager, Engineering Programs and Components
B. Eichenberger	Entergy - Manager, Corrective Action and Assessment
D. James	Entergy - Acting Director, Nuclear Safety Assessment

Enclosure

ENCLOSURE 2
LICENSEE'S PRESENTATION

Enclosure

Entergy Meeting with NRC Region IV

September 27, 2005

Status

Emergency Cooling Pond

Fire Protection Improvement Plan

Agenda

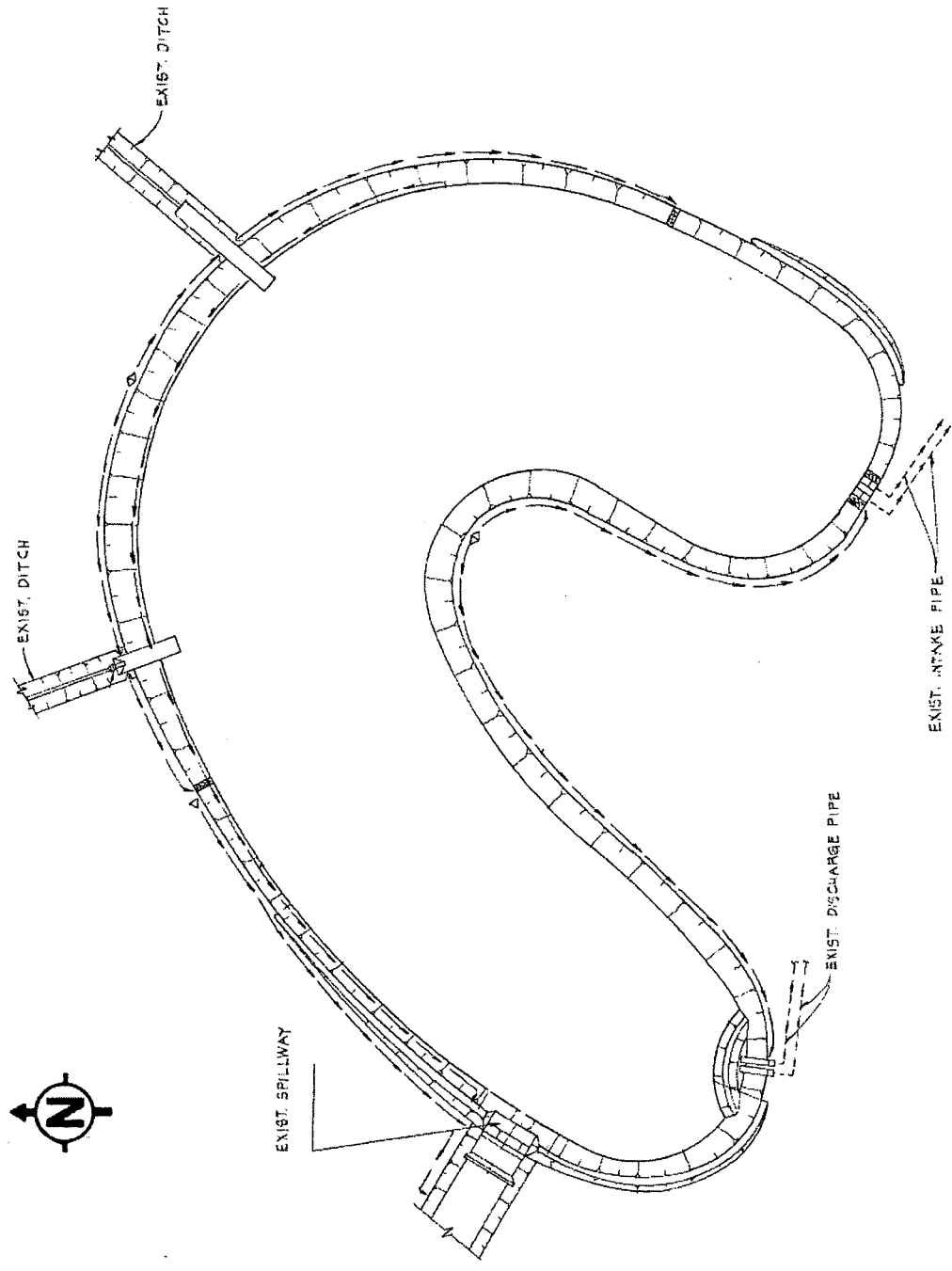
- Emergency Cooling Pond (ECP)
 - Design Basis
 - Degradation
 - Cause/Corrective Actions
- Assessment of Corrective Action Program (CAP)
- Fire Protection Improvement Program

Emergency Cooling Pond

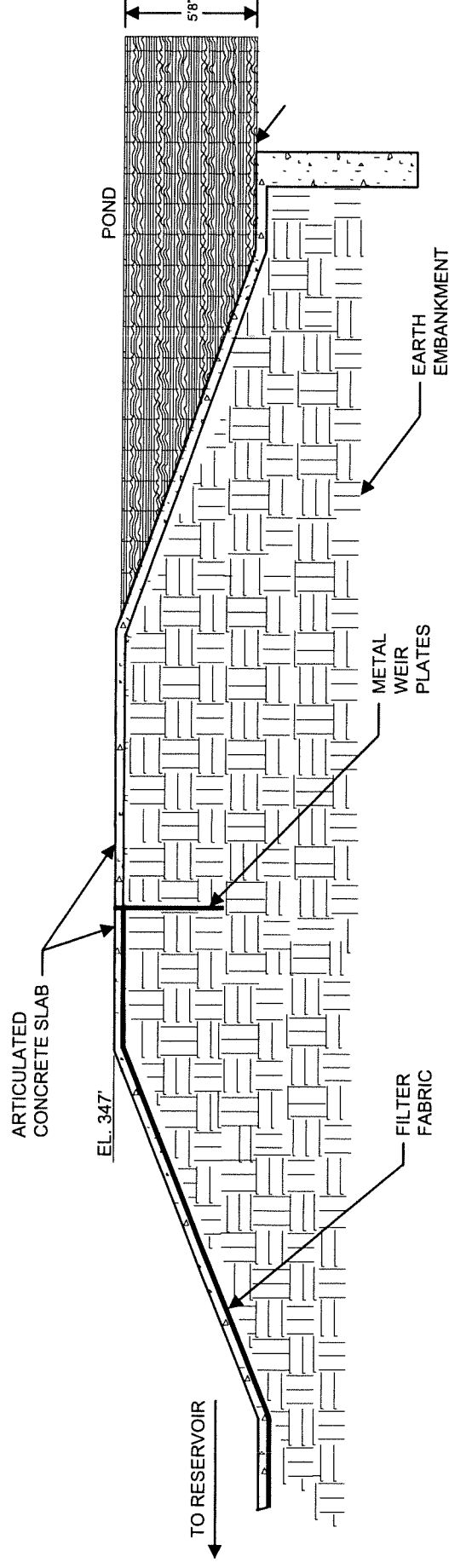
Design

- ECP Design Basis
 - Part of ultimate heat sink complex
 - Closed loop source of service water should Lake Dardanelle become unavailable
 - Seismic Class 1 structure
 - Designed for safe shutdown of both units assuming accident on ANO-2
 - Conservative 30 day inventory

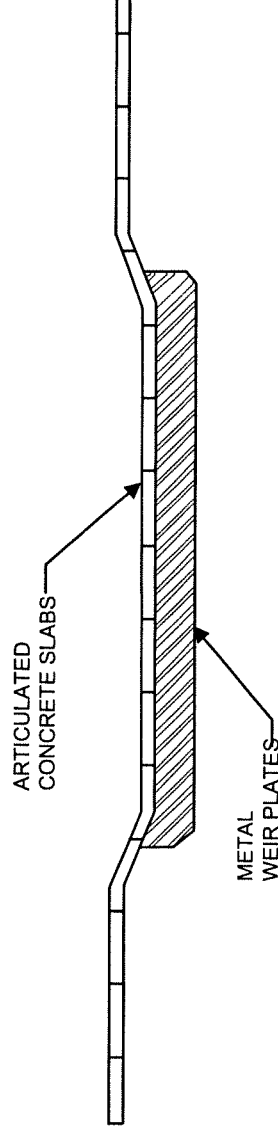
Emergency Cooling Pond



Spillway Cross Section



Lake View Detail



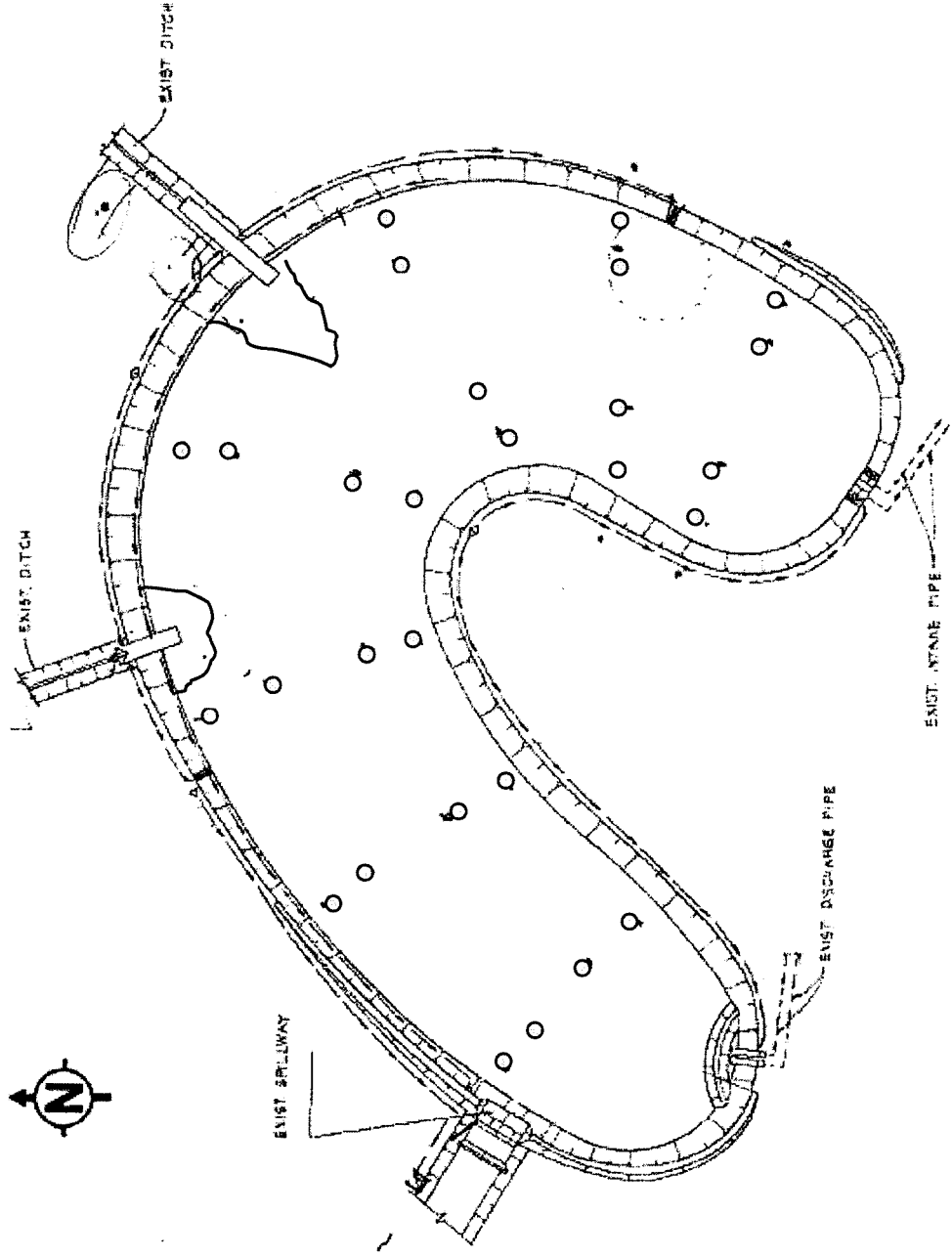
Emergency Cooling Pond

Degradation

- Unrecognized Conditions
 - ECP volume impacts
 - Rip rap addition (1978)
 - Silting at drainage ditch entry points
- Longstanding Conditions
 - Spillway Erosion/Leakage

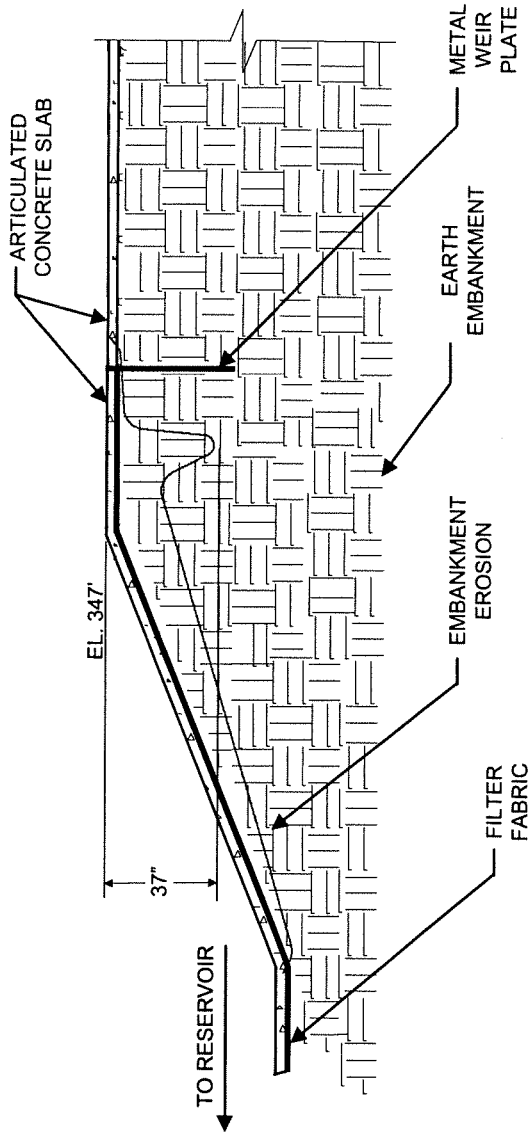
Emergency Cooling Pond

Volume Impacts

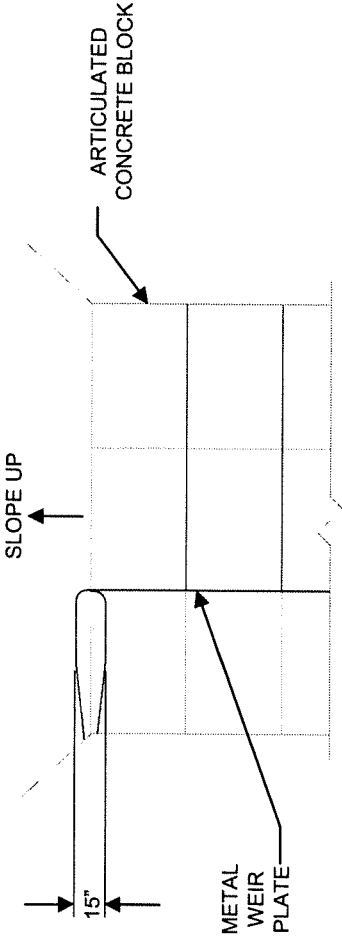


Emergency Cooling Pond

Erosion Degradation



NORTH END PLAN VIEW



Emergency Cooling Pond

Spillway



Emergency Cooling Pond

Primary Causes

- Inadequate design change for rip rap addition
- Inadequate Surveillance test and PM
- Errors and lack of technical rigor
- Corrective action program did not provide defense in depth

Emergency Cooling Pond

Completed Actions

- Temporary repairs implemented to stop spillway leakage and validate leakage path
- Extensive walkdowns of the ECP and surrounding area performed
- Spillway tarp permanently removed
- Plant growth around ECP cleared
- Grout repair of spillway
- Operational Decision-Making Issue (ODMI)
- Calculations performed to validate seismic qualification of spillway
- Soil samples and ground radar used to validate condition of soil and spillway leakage paths
- ECP hydrological survey validated adequate volume
- Lessons learned training provided for operations and engineering

Emergency Cooling Pond

Near Term Actions

- Revised inventory calculation based on hydrologic survey in review
- Finite element analysis of spillway in review
- Validation of most recent surveillance in progress
 - Including re-performance of any necessary sections by 10/03/05

Emergency Cooling Pond

Long term Actions

- Develop detailed design documents for the ECP
- Revise Licensing Basis Documents
- Revise annual surveillance procedure
- Develop preventive maintenance tasks
- Improvements to environmental program
- Improvements to operating procedures
- Training of operations, maintenance, and engineering personnel
- Modify/replace ECP spillway to provide enhanced erosion resistance

Emergency Cooling Pond

Safety Significance

- Spillway while degraded remained operable and seismically qualified
- Safety Analysis volume requirements maintained

Emergency Cooling Pond

Organization Improvements

- System Engineering Improvement Plan
 - Re-affirm roles and expectations (technical rigor, advocacy, engagement)
 - Improved supervisory oversight
 - Assure the right people are in the right roles
 - Accountability and feedback
 - Training to address gaps (funding process, conservative decision making, SCWE, Oz Principles)
 - Structured oversight by Management
- Other improvement actions
 - Review passive design feature for surveillances, preventive maintenance, and maintenance rule
 - Implement an operability qualification card
 - Focus on technical rigor in oversight & training

Emergency Cooling Pond

Corrective Action Program

- Interim Actions
 - Condition Report Review
 - Review guidelines established
 - Open CRs > 1 year old
 - Open work orders > 1 year old
 - Operations walkdown of safety systems

Emergency Cooling Pond

Corrective Action Program

- Improvements
 - Improve “Operable but Degraded” process
 - Management review of condition reports at 6 month age
 - Age trending and management review of older CRs
 - Unit reliability team review of corrective action program issues
 - Formalize annual “issue identification” efforts
 - Fleet program changes

Corrective Actions Program

Assessment

- Status of corrective action program improvements
 - CR initiation rate remains elevated
 - Quality of CRs improved
 - Improved quality of root and cause determinations
 - Expanded use of effectiveness reviews in significant and non-significant CRs
 - CAP has been effectively used to corrected numerous degraded and non-conforming conditions

2005 Non-Outage Equipment Reliability Commitment List

Item Description	C/R Number
U1 P-34 Spare LPI Motor Purchase	N/A
U1 P-36 Spare HPI Motor Purchase	CR-ANO-1-2003-00796
U1 VUC-5 Computer Room Cooler Replacements	CR-ANO-1-2004-00462
U1 VUC-1D Decay Heat Vault Cooler Coil Replacement	CR-ANO-1-2002-01371
U1 P-36A HPI Makeup Pump Rebuild	CR-ANO-1-2004-00329
U1 VUC-9 Emergency Control Room Chiller Compressor Replacement and Long Term Health Plan	CR-ANO-1-2004-01610
U1 VUC-7A HPI Room Cooler Coil Replacement	CR-ANO-1-2004-00329
U1 CWP Cooling Water Line Upgrades to Stainless Steel – Installation to Continue in 2006	CR-ALO-2004-00159
U1 CV-2111 Penetration Rm Damper Operator - Modifications to Access Valve for PM's	CR-ANO-1-2004-02027
U1 Replace FC-7464, Rx Bldg Atmospheric Monitor Flow Controller	CR-ANO-1-2003-00125
U1 CV-1251, Condensate to Batch Controller – Replace with Limitorque	N/A
U1 "A" Service Water Bay Strainer Repair of Screen Holes	Complete
U1 Air to Turbine Bearing Oil Seals Temporary Alteration	CR-ANO-1-2005-00569
U1 P-3C Circulating Water Pump Motor Rewind	CR-ANO-1-2003-00796 CR-ANO-1-2005-00020
U2 2P-3B Circulating Water Motor Refurbishment	CR-ANO-1-2003-00796
U2 Spare 18" Clow Valve Purchase	N/A
U2 Spent Fuel Transfer Carriage Repairs CPT	CR-ANO-2-2003-01443
U2 Inverter Frequency Drift Resolution	CR-ANO-C-2003-00622
U2 Hydrazine Pump and Controller Replacements	CR-ANO-1-2003-00125
U2 CAMS Filter Paper Issues Resolution	CR-ANO-2-2002-00043
U2 Pressure Control Valve Operator Replacements	CR-ALO-2005-00004
U2 CAMS Sample Pump Trip Resolution	CR-ANO-2-2004-00456
U2 2P-60 Spare LPSI Motor Purchase	N/A
U2 2P-60A LPSI Motor Replacement	N/A
U2 CPC/CEAC Display Interface Module Upgrades	N/A
Cathodic Protection System Degradation Upgrades – Diesel Fuel Vault Area	N/A
Contingency Response Plan for Buried Piping Leaks	CR-ANO-1-2004-02196
Instrument Air Reliability Improvement Plan	N/A

1R19 Equipment Reliability Commitment List

Item Description	C/R Number
Replace Steam Generators	N/A
Replace Reactor Vessel Head and CRD PI Tubes	N/A
Replace All 68 CRDMs - Leadscrew Embrittlement Issue	CR-ANO-1-2004-02313
Resolve Failed Fuel Concerns with Identified Leakers	CR-ANO-1-2004-01663
High Pressure Turbine Gland Refurbishment	N/A
High Pressure Turbine 1st Row Blade (1RB) Improvement	CR-ANO-1-2004-01836
High Pressure Turbine Horizontal Joint Bolting Replacement	N/A
High Pressure Turbine Horizontal Joint Repair	N/A
Refurbish 4 Main Turbine Valves (1 Throttle, 1 Governor, 1 Intercept)	N/A
Implement Main Turbine Gland Seal Steam Moisture Removal Design Improvements	CR-1-ANO-2002-01144
Perform Main Turbine Generator Rotor-Out Inspection and Partial Stator Rewedge	N/A
Replace Main Turbine Generator Hydrogen Seals and Repair Main Turbine Generator Hydrogen Seal Leakage (Bearing #7)	CR-ANO-1-2004-01801
Resolve Main Turbine Generator Bearing #9 Vibrations	CR-ANO-1-2003-00613
Implement Main Generator Hydrogen Seal Oil Filtration Design Improvements with New Duplex Filters (Air Side Only)	CR-ANO-1-2002-01144
Install Manual Bypass Valve Around Air Side Seal Oil Cooler Valve ACW-42	N/A
Replace LP Turbine #5 Bearing Gland Seal to Resolve Leakage Issue	CR-ANO-1-2005-00569
Repair Generator Hydrogen Temperature Indications for Recorder TR-9001	N/A
Repair Seat Leakage for Reactor Building Sump Isolation Valve CV-1406	CR-ANO-1-2003-00526
Improve RCP P-32A Vibrations to Pre-1R18 Values	CR-1-ANO-2004-01337
Locate and Repair RCP P-32C Motor Upper Oil Reservoir Leak	CR-1-ANO-2004-01521
Resolve RCP P-32C Motor Low Megger Readings	CR-1-ANO-2004-01072
Locate and Repair Lower Reservoir Leakage on RCP Motors P-32A and P-32D	CR-ANO-1-2005-00939
Complete Restoration and Testing of HPI/MU Pump P-36A	CR-ANO-1-2004-00329
Complete Restoration and Testing of VUC-1D, Decay Heat Vault Cooler Coil	CR-ANO-1-2004-00329
Remove 8 LPI/DHR Venturi Drains to Preclude Vibration Induced Failure	CR-ANO-1-2004-01481
Install Refurbed Motor for Containment Cooler VSF-1D	CR-ANO-1-2005-00694
Replace Leaking High Point Vent Valves	N/A
Rewind Condensate Pump P-2A Motor	CR-ANO-1-2003-01228
Install SS Upper Reservoir Cooling Coil for Condensate Pump P-2B Motor	CR-1-ANO-2003-01228
Replace Heater Drain Pump P-8A with Rebuilt Spare	N/A
Install Heater Drain Pump Motor Oil Demisters	N/A
Correct MFW Pump P-1B Leakage	N/A
Overhaul MFW Pump Turbine K-2A	N/A
Perform PMs on MFW Pump Turbines K-2A and K-2B LP Governor Valve Servo Valves to Resolve MFW Pump Oscillations	N/A
Repair Lube Oil Leak on MFW Pump Turbine K-2A High Pressure Stop Valve	N/A
Inspect and Overhaul P-75 Auxiliary FW Pump – Install New Rotating Element	N/A
Install Outage Portion of Feedpump Controls Operator Interface Terminals (OITs) to Allow Non-Outage Completion of Project	N/A

2R17 Equipment Reliability Commitment List

Item Description
Replace "B" Condenser Dogbone
Replace HPSI Injection Valves 2CV-5016-2 and 2CV-5056-2 to address valve binding
Measure Incore Thimble Tube Growth
Overhaul Actuator for MSIV 2CV-1060-2
Replace "C" Reactor Coolant Pump Motor
Realign "A" Reactor Coolant Pump Motor
Recover Service Water Flow Margin
Removal of Auto Closure Interlock (ACI) from Shutdown Cooling
Install Reactor Coolant Pump Oil Collection Modification
Implement Heat Shroud Modification
Install Stainless Steel Piping in Exciter Air ACW Piping
EHC Power Supply Replacements
2P-8B Heater Drain Pump Seal O-Ring Material Change
Stator Water Cooling Strainer Modification
2D-11 Battery Bank Replacement
Install Modified SS Packing Followers on Remaining 6 SW Clow Valves
EVQ Transmitter Replacement
2VUC-6A & B EFW Room Cooler Replacements
MUX Software Changeout
Target Rock Valve Replacements with Direct Acting Valves
Isophase Bus Cooling Damper Repairs
FAC Piping Replacement
FW Reg Valve Inspection/Repair
Perform Bare Metal Inspection of CEDM Nozzles
CVCS Letdown Valve 2CV-4816 Replacement
Stator Cooling Reverse Flush
EHC Meter/Relay Replacements
Isophase Bus Cooling Damper Repairs
MCCB Replacements
Pressurizer Proportional Heater Breaker Panel Replacements
Modify Internals of 2MS-39A and B, Main Steam to EFW Check Valves
2P-2B Condensate Motor Rewind

1R18 Equipment Reliability Commitment List

Item Description
Replace "A" and "B" Reactor Coolant Pump Seals
Correct "B" Reactor Coolant Pump Vibrations
Enhance Reactor Coolant System Vents and Drains from Vibration Induced Failure
Repair Reactor Coolant System Loop "B" Flow Transmitter Equalizing Valve
Correct Quench Tank Level Indication
Line Reactor Building Sump with Stainless Steel to Prevent Concrete Degradation
Complete Structural Repairs to Reactor Building Coolers, VSF-1C and D
Replace VSF-1C Motor Bearings
Replace "B" Decay Heat Removal Pump Seals and Center Pump Rotating Assembly
EFW Pumps Recirc Line Modification for SW Supply
Turbine Front Standard Modifications
Correct Main Feedwater Pump Turbine K-2A Oscillations
Overhaul "B" Main Feedwater Pump
Inspect/Repair MSR E-12A Bypass Flow
Correct "A" Heater Drain Pump Performance Degradation
Repair T-40A/B High Level Dump Controllers to Eliminate Vibration Failures
Replace 4 MSSVs
ICS STAR Module
Repair Main Generator Hydrogen Purity Meter Instrument String
Replace SBM Switches
Plant Computer Network Upgrade

Fire Protection Improvement Project Update

Fire Protection Design

Basis Reconstitution

- Appendix R Manual Action Review Project complete
- Manual Action Feasibility Study Revision complete
- Operations procedures revision complete
- Safe Shutdown Equipment List (SSEL) methodology
 - Unit 2 SSEL - complete
 - Unit 1 SSEL – 90% complete
- Logics for Safe Shutdown Capability Assessment (SSCA) using Computer Aided Fault Tree Analysis (CAFTA)
 - Unit 2 - complete
 - Unit 1 – 90% complete

Fire Protection Design

Basis Reconstitution

- Circuit analysis scope expansion based on sample
 - 100% Unit 2 - complete
 - 100% Unit 1 - 10% complete
- PDMS populated with circuit analysis and SSEL
- Fire Induced Circuit Failure Methodology complete
 - Self assessment before 12/31/2005
- ARC™ software complete and utilized in compliance assessment

Fire Protection Design

Basis Reconstitution

- Fire Area Compliance Strategies
 - Unit 2 – November 2005 (scheduled 9/30/05)
 - Unit 1 – June 2006
- Appendix R Plant Transient Analysis
 - Scheduled for 2006
 - Issues
 - Pressurizer level acceptance criteria
 - Final direction on multiple spurious hot shorts

Plant Modifications

- Completed by 2R17
 - Letdown isolation valve control cable re-route
 - EDG room exhaust ventilation logic change
- Planned by 1R19
 - BWST outlet valve cable fire wrap
 - ERV cable re-route/fire wrap
- Projected by 2R18
 - Letdown isolation valve power and control cable separation
 - ACW loop isolation cable separation
 - Control room emergency chiller cable separation
 - ECCS vent valve cable separation
- Projected by 1R20
 - Make-up pump recirc valve cable separation
 - Make-up tank outlet valve cable separation
 - B512 control cable protection
 - Others as determined

NFPA 805 Transition

- Focuses resources on safety
- Provides an acceptable risk-informed, performance-based (RI-PB) means to resolve open industry issues
 - Manual actions
 - Circuit analysis
 - HEMYC
- NFPA 805 License Amendment Request (LAR) provides opportunity to clarify Licensing Basis

Assessment of Planned Modifications

- Utilize NEI 04-02 change process to evaluate 2R18 planned modifications
 - Identify targets
 - Identify ignition sources and hazards
 - Assess risk significance of losses
- Utilize expert team approach
 - November 2005

NFPA 805 Transition Tasks

- Confirm compliance to NFPA 805 Chapter 3 Fire Protection Program and Design Elements
- Transition Appendix R analysis to new Nuclear Safety Analysis
 - Perform new evaluation of non-power operations
- Complete fire PRA
- Perform new evaluation of radioactive release criteria
- Programmatic controls for new RI-PB change process for plant changes

NFPA 805 Transition

- Transition starts the date the letter of intent is submitted
 - October 2005