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MINECK,D.L. Iowa Electric Light & Power Co.
RECIP.NAME RECIPIENT AFFILIATION
MURLEY,T.E. Office of Nuclear Reactor Regulation, Director (Post 870411

SUBJECT: Submits semiannual rept for plan for integrated scheduling of plant mods for facility.NRC item on Schedule B, "Vendor Info Project (Generic Ltr 90-03);Phase 1, 'Vendor Info Control Procedure'" completed on 910412.

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RIDS/ADDS

Iowa Electric Light and Power Company

May 3, 1991
NG-91-0966

Dr. Thomas E. Murley
Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Attention: Document Control Desk
Washington, D.C. 20555

Subject: Duane Arnold Energy Center
Docket No.: 50-331
Op. License No.: DPR-49
Semiannual Report for the "Plan for the Integrated Scheduling of Plant Modifications for the Duane Arnold Energy Center"
Reference: D. Mineck letter to T. Murley dated November 5, 1990
NG-90-2457
File: A-278

Dear Dr. Murley:

This letter and attachments provide the semiannual report required by Section V.A. of the "Plan for the Integrated Scheduling of Plant Modifications for the Duane Arnold Energy Center" (the Plan). This report summarizes our progress in implementing Schedule A and B items, identifies the changes since the last report, summarizes the reasons for schedule changes, and provides updated schedules.

Attachment 1 is a summary of progress in implementing the items listed in Schedules A and B. It lists the seven items which have been completed since the last update (Referenced).

Attachment 2 identifies the changes since the last report. These revisions include changes to the Item Descriptions of nine items, the revision of nineteen Schedule commitment dates, the addition of one Schedule A item and two Schedule B items. Two Schedule B items have been deleted since our last report. The reasons for the schedule changes are stated in Attachment 3.

Updated Schedules A and B are included as Attachment 4. For each item listed, the specific implementation date is stated and reference is made to the NRC correspondence supporting this date. When available, references to NRC correspondence are cited for IELP-initiated items listed in Schedule B. Also, brief descriptions of those Schedule B items, which are not specifically described in other correspondence are included as Attachment 5.

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Please note that one NRC item on Schedule B "Vendor Information Project (GL 90-03); Phase 1: Vendor Information Control Procedure" was completed on April 12, 1991. Also, one Iowa Electric (IELP) Initiative Item on Schedule B "Service Water System Enhancements; River Sediment Management System" has been delayed. The reason for the schedule change is explained in Attachment 3. These items were not completed by their scheduled dates. Your staff was notified promptly upon discovery of the overdue items.

Please inform us if you have any questions or comments concerning this submittal.

Very truly yours,

Daniel L. Mineck
Manager, Nuclear Division

DLM/DJM/pjv

Attachments:
1. Summary of Progress in Implementing Schedule A and B Items
2. Changes in Schedules
3. Summary of Reasons for Schedule Changes
4. Updated Schedules A and B
5. Descriptions of Selected Schedule B Items

cc: D. Mienke
L. Liu
L. Root
R. McGaughy
S. P. Sands(NRC-NRR)
A. Bert Davis (Region III)
NRC Resident Office
Commitment Control Nos. 870105, 880169, 890405, 890406, 890408
890409, 890410, 900122, 900123, 900126
900127, 900346, 900347, 900354, 900355
900361

Summary of Progress in Implementing Schedule A and B Items

The following items, as listed on the Schedules A and B transmitted with the November 5, 1990 semiannual report, have been completed during this reporting period:

Schedule A

There were no items listed on Schedule A in the November 5, 1990 Semi-Annual Update.

Schedule B

- Emergency Diesel Generator (EDG) Reliability Program
- Vendor Information Project (GL 90-03)

  Phase 1: Vendor Information Control Procedure
- Implement Bill of Materials (BOM) Program
- Drill/Exercise Utilization of Control Room Simulator

  Permanent Use of Simulator
- Reliability Centered Maintenance (RCM) Pilot Study
- Technical Specifications Improvement

  Short-term Enhancements

  Phase 1
- Spent Fuel Improvements/Study

Changes in Schedules

Changes to the Schedules fall into four categories: revised descriptions of items, revised completion dates, addition of new items and deletion of items.

I. Item Descriptions

Current Item Description	Revised Item Description
Schedule A	
There were no items listed on Schedule A in the November 5, 1990 Semi-Annual Update.	
Schedule B	
• Inservice Testing Program Modifications (GL 89-04)	• Inservice Testing Program Modifications (GL 89-04) Phase 1: Residual Heat Removal (RHR) and River Water Supply (RWS) Valve Modifications Phase 2: Diesel Generator Air-Operated Solenoid Valve Replacement Phase 3: Diesel Fuel Oil Transfer System Modifications
• Safety-Related MOV Operability/Testing GL (89-10)	• Safety-Related MOV Operability/Testing (GL 89-10) Phase 1: Completion of Design Review and Development of Test Plan Phase 2: Completion of Baseline Static Testing Phase 3: Implementation and Continued Use o Testing Program

Current Item Description	Revised Item Description
•Control Building HVAC and Chillers Phase 2: Control Building (Battery Room) HVAC Enhancements	•Control Building HVAC and Chillers (Note: Phase 2 has been cancelled) Phase 3: Chiller Refurbishment
•Verification of Safety-Related HVAC Ductwork	•Operability Determination of Seismically Supported HVAC Ductwork
•Configuration Management	•Configuration Management Program Plan Digital Imagining (DI) Phase 1: Establishment of Operational Drawings on DI platform Phase 2: Establishment of Balance of Plant Drawings of DI platform
•Scram Frequency Reduction	•Scram Frequency Reduction Mechanical Feedwater Modifications Digital Feedwater Control Electro-Hydraulic Control (EHC) System Improvements
•Long-term Instrument and Control Strategy Digital Feedwater Control Analog Trip System Program Study	•Long-term Instrument and Control Strategy Analog Trip System Program Study

Current Item Description	Revised Item Description
•Metrology Lab	•Metrology Lab Phase 1: Construction of Lab Facility Phase 2: Equipment Installation and Lab Operational
•Self-Initiated Safety System Functional Inspection (SSFI)	•Self-Initiated Instrument and Control System Functional Inspection (I&CSFI)

II. Schedule Changes

Description	Current Completion Date	Revised Completion Date
Schedule A		
There were no items listed in Schedule A in the November 5, 1990 Semi-Annual Update.		
Schedule B		
•Security System Upgrades		
Security Computer System Upgrade	December 31, 1992	June 30, 1993
Access Control Upgrade	December 31, 1992	June 30, 1993
•Station Blackout Rule Compliance		
Procedure changes	June 30, 1991	Note 3
•Emergency Response Capabilities (Supplement 1 to NUREG-0737)		
Regulatory Guide 1.97	Schedule not yet certain, evaluation of scope in progress (NG-89-0057)	September 1, 1991/ NG-91-0640
•Inservice Testing Program Modifications (GL 89-04)		
Phase 1: Residual Heat Removal (RHR) And River Water Supply (RWS) Valve Modifications	July 5, 1991	July 5, 1991
Phase 2: Diesel Generator Air-Operated Solenoid Valve Replacement	July 5, 1991	December 31, 1991
Phase 3: Diesel Fuel Oil Transfer Systems Modifications	July 5, 1991	Prior to Cycle 12 Startup

Description	Current Completion Date	Revised Completion Date
•Safety-Related MOV Operability/ Testing (GL 89-10)		
Phase 1: Completion of Design Review and Development of Test Plan	Prior to Cycle 13 Startup	December 31, 1991
Phase 2: Completion of Baseline Static Testing	Prior to Cycle 13 Startup	December 31, 1992
Phase 3: Implementation and Continued Use of Testing Program	Prior to Cycle 13 Startup	June 28, 1994
•Verification of Seismic Adequacy of Mechanical and Electrical Equipment	Prior to Cycle 13 Startup/NG-88-3209 to NRC	Prior to Cycle 14 Startup
•Core Stability Studies (BN-88-07)	June 30, 1991	December 31, 1991
•Emergency Response Data System (GL 89-15)	June 30, 1991	December 31, 1991
•Service Water System Enhancements River Sediment Management System	March 31, 1991	September 30, 1991
•Configuration Management		
Program Plan	Note 2	December 31, 1991
Digital Imaging (DI)		
Phase 1: Establishment Operational Drawings on DI platform	Note 2	March 31, 1992
Phase 2: Establishment of Balance of Plant Drawings on DI Platform	Note 2	September 30, 1992

Description	Current Completion Date	Revised Completion Date
•Scram Frequency Reduction		
Digital Feedwater Control	Prior to Cycle 12	Prior to Cycle 13
•Facility Upgrade Study	Note 2	December 31, 1991

III. New Items

Description	Completion Date
Schedule A	
•Revision to DAEC Radiation Protection Program to reflect new 10 CFR Part 20 Requirements.	January 1, 1993
Schedule B	
IELP Initiative Items	
•Computer Software Quality Assurance	Schedule not yet certain
•Maintenance Self-Assessment	Schedule not yet certain

IV. Items Deleted

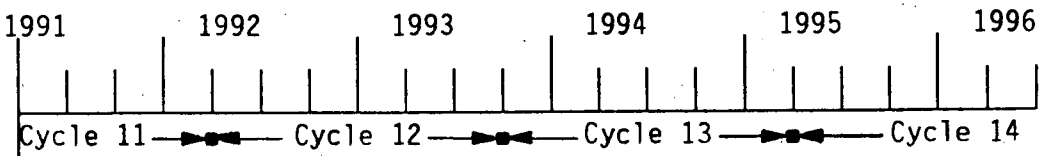
Description	Reason for Deletion
Schedule A	
There were no items listed on Schedule A in the November 5, 1990 Semi-Annual Update.	
Schedule B	
•Steam Leak Detection	
Phase 2: Evaluation of Isolation Setpoints	This project has been included as part of the Design Basis Document program.
•Control Building HVAC and Chillers	
Phase 2: Control Building (Battery Room) HVAC Enhancements	This project has been cancelled. A cost benefit analysis has shown that this project is not cost effective, i.e., it is more economical to replace the batteries periodically than to upgrade the battery room cooling system.

Summary of Reasons for Schedule Changes

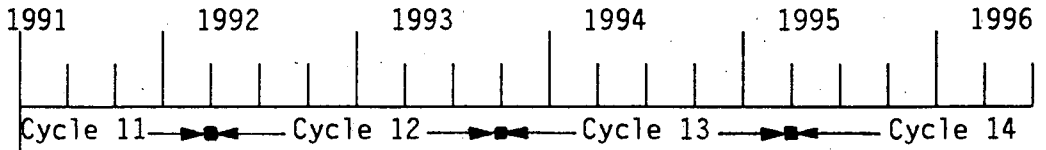
Item Description	Change	Explanation
Schedule A		
There were no items on Schedule A in the November 5, 1990 Semi-Annual Update.		
Schedule B		
•Security System Upgrades		
Security Computer System Upgrade	December 31, 1992 to June 30, 1993	The schedule has been revised to avoid performing security system modifications during the cycle 12 refueling outage.
Access Control Upgrade	December 31, 1992 to June 30, 1993	
•Station Blackout Rule Compliance		
Procedure changes	June 30, 1991 to Note 3	Schedule for Procedural Changes required by 10 CFR 50.63(c)(3) will be determined 30 days after issuance of NRC Safety Evaluation Report (SER).
•Emergency Response Capabilities (Supplement 1 to NUREG-0737)		
Regulatory Guide 1.97	Schedule not yet certain, evaluation of scope in progress (NG-89-0057).	These schedules have been revised to reflect project milestones that were provided in a letter from D. Mineck(IELP)to Dr. Murley (NRC) on April 12, 1991 (NG-91-0640).
•Inservice Testing Program Modifications (GL 89-04)	July 5, 1991 to the following milestones Phase 1: July 5, 1991 Phase 2: December 31, 1991 Phase 3: Prior to Cycle 12 Startup	The schedule has been revised to reflect project milestones that were provided in a letter from D. Mineck (IELP) to Dr. Murley (NRC) on January 5, 1991 (NG-90-0030).

Item Description	Change	Explanation
•Safety-Related MOV/ Operability Testing (GL 89-10)	Prior to Cycle 13 startup to the following milestones Phase 1: December 31, 1991 Phase 2: December 31, 1992 Phase 3: June 28, 1994	The schedule has been revised to to incorporate specific project milestones that have been identified since the last update of the integrated plan.
•Verification of Seismic Adequacy of Mechanical and Electrical Equipment (USI A-46, GL 87-02)	Prior to Cycle 13 Startup to Prior to Cycle 14 Startup	We have changed the completion date of this project due to delays in the issuance of the Generic Implementation Procedure (GIP), Revision 2, Safety Evaluation Report (SER).
•Core Stability Studies	June 30, 1991 to December 31, 1991	The schedule has been revised to reflect delays in issuance of the BWR Owners' Group specific Licensing Topical Report.
•Emergency Response Data System (GL 89-15)	June 30, 1991 to December 31, 1991	The schedule has been revised to reflect unforeseen technical difficulties in establishing the computer link between our computers and NRC computers.
•Service Water System Enhancements		
River Sediment Management System	March 31, 1991 to September 30 1991	Weather-related construction delays and unforeseen design issues have been encountered.

Item Description	Change	Explanation
•Configuration Management		
Program Plan	Note 2 to December 31, 1991	The schedule has been revised to incorporate specific project milestones that have been indentified since the last update of the integrated plan.
Digital Imaging (DI)		
Phase 1: Establishment of Balance of Plant Drawings on DI Platform	Note 2 to March 31, 1992	
Phase 2: Establishment of Balance of Plant Drawings on DI Platform	Note 2 to September 30, 1992	
•Scram Frequency Reduction		The schedule has been revised to allow further study of the feedwater system to determine if installation of digital feedwater control would be cost effective.
Digital Feedwater Control	Prior to Cycle 12 startup to Prior to Cycle 13 startup	
•Facility Upgrade Study	Note 2 to December 31, 1991	The project schedule has been established.



SCHEDULE A	
• Revision to DAEC Radiation Protection Program to reflect new 10 CFR 20 Requirements	----------•January 1, 1993
SCHEDULE B	
NRC Items	
• Security System Upgrades	
Security Computer System Upgrade	----------•June 30, 1993
Access Control Upgrade	----------•June 30, 1993
• Station Blackout Rule Compliance	
Schedule Submittal required by 10 CFR 50.63(c)(4)	(Note 3)
RCIC Turbine Insulation	----------•Prior to Cycle 12 Startup/NG-90-0757 to NRC
Control Room Lighting Improvements	----------•Prior to Cycle 12 Startup/NG-90-0757 to NRC
Procedure Changes	(Note 3)
• Containment Performance Improvements	
Hardened Wetwell Vent (GL 89-16)	----------•December 31, 1992/ NG-89-2886 to NRC
Other Containment Performance Improvements	(Note 4)



SCHEDULE B (Continued)

- Emergency Response Capabilities (Supplement 1 to NUREG-0737)

  Detailed (Supplement 1) CRDR

    Phase 4 Long Term Enhancements ----------•Prior to Cycle 12 Startup/ NG-86-4251 to NRC

  Regulatory Guide 1.97 -----•September 1, 1991/NG-91-0640 to NRC

- Individual Plant Examination

  Initial Level I PRA --•June 30, 1991/NG-89-3096 to NRC

  Containment Performance Analysis ----------•June 30, 1992/ NG-89-3096 to NRC

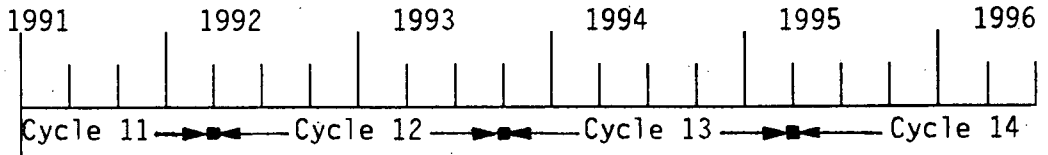
  Report Submittal ----------•August 31, 1992/ NG-89-3096 to NRC

- Inservice Testing Program Modifications (GL 89-04)

  Phase 1: Residual Heat Removal (RHR) and River Water Supply (RWS) Valve Replacement --•July 5, 1991/NG-90-0030 to NRC

  Phase 2: Diesel Generator Air-Operated Selnoid Valve Replacement ---------•December 31, 1991/NG-90-0030 to NRC

  Phase 3: Diesel Fuel Oil Transfer System Modifications ----------•Prior to Cycle 12 Startup/NG-90-0030 to NRC



SCHEDULE B (Continued)

- Safety-Related MOV Operability/Testing (GL 89-10)

  Phase 1: Completion of Design Review and Development of Test Plan — December 31, 1991

  Phase 2: Completion of Baseline Static Testing — December 31, 1992

  Phase 3: Implementation and Continued use of Testing Program — June 28, 1994

- Verification of Seismic Adequacy of Mechanical and Electrical Equipment (USI A-46, GL 87-02) — Prior to Cycle 14 Startup

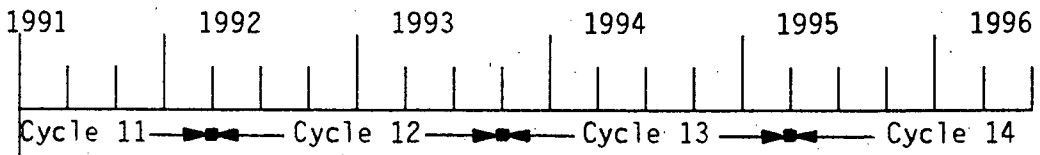
- Off-site Dose Assessment Manual (ODAM) Revision Schedule — June 30, 1992

- Core Stability Studies (BN 88-07) — December 31, 1991

- Vendor Information Project (GL 90-03)

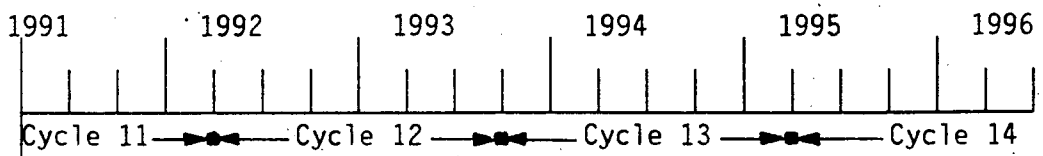
  Phase 2: Verification of Safety-Related Equipment Vendor Manuals — June 15, 1991/NG-90-2289

  Phase 3: Verification of Non-Safety-Related Equipment Vendor Manuals — December 21, 1991



SCHEDULE B (Continued)

IELP Initiative Items	
• Additional 161kV Service Breaker	----------•Prior to Cycle 12 Startup
• Control Building HVAC and Chillers	
Phase 3: Chiller Refurishment	---------•December 31, 1991
• Operability Determination of Seismically Supported HVAC Ductwork	--•June 30, 1991/NG-90-0318
• Design Basis Program Phase I - ECCS and Selected Safety-Related Systems	----------•September 30, 1993
• Emergency Response Data System (GL 89-15)	---------•December 31, 1991
• Shielding Study for Revised Hydrogen Water Chemistry Program	----------•Prior to Cycle 12 Startup
• Hydrogen Water Chemistry Oxygen/Hydrogen Generator	(Note 2)
• Plant Life Extension	(Note 2)
• Power Systems Analysis	---------•December 31, 1991
• Severe Accident Management	(Note 1)
• Technical Specifications Improvement	
Short-term Enhancements	
Phase 2:	---------•December 31, 1991
Long-term Improvements	(Note 1)



SCHEDULE B (Continued)

- Ultrasonic Examination of Reactor Vessel Beltline Region Welds

  Phase 2: Feasibility Study, Position Paper and Drawing Development --• June 30, 1991

  Phase 3: Vessel Weld Examination (Note 2)

- Telemetry for Emergency Sirens ----------• December 31, 1993

- Comprehensive Procurement Initiative

  Evaluation --• July 1, 1991
  Implmentation ----------• July 1, 1992

- Service Water System Enhancements

  River Water Supply Pumps ----------• December 31, 1993
  River Sediment Management System -----• September 30, 1991

- Replace Two Electro-Hydraulic Control (EHC) Pumps ----------• Prior to Cycle 12 Startup

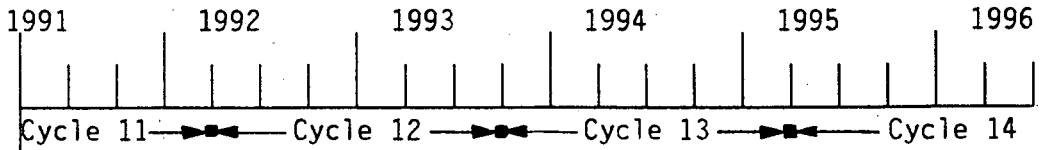
- Configuration Management Plan

  Program Plan ---------• December 31, 1991

  Digital Imaging

  Phase 1: Establish of Operational Drawings on DI platform ----------• March 31, 1992

  Phase 2: Establishment of Balance of Plant Drawings on DI Platform ----------• September 30, 1992



SCHEDULE B (Continued)

• Scram Frequency Reduction	
Mechanical Feedwater Modifications	----------•Prior to Cycle 12 Startup
Digital Feedwater Control	----------•Prior to Cycle 13 Startup
Turbine Electro-Hydraulic Control (EHC) System Improvements	----------•Prior to Cycle 14 Startup
• Long-term Instrument & Control Strategy	
Analog Trip System Program Study	(Note 2)
• Metrology Lab	
Phase 1: Construction of Lab Facility	(Note 2)
Phase 2: Equipment Installation and Lab Operational	(Note 2)
• Facility Upgrade Study	----------•December 31, 1991
• Self-initiated Instrument & Control System Functional Inspection (I&CSFI)	(Note 2)
• Computer Software Quality Assurance	(Note 2)
• Maintenance Self-Assessment	(Note 2)

Note 1: Schedule not yet certain, awaiting promulgation of NRC requirements/guidance.
Note 2: Schedule not yet certain, potential IELP initiative item.
Note 3: Schedule not yet certain. Schedule due within 30 days of the notification provided in accordance with 10 CFR 50.63(c)(3).
Note 4: Schedule not yet certain. Potential improvements to be evaluated during Individual Plant Evaluation as requested by Generic Letter 89-16.

Description of Selected Schedule B Items

I. NRC Items

- Security System Upgrades

  Security Computer System and Access Control Update

  The Physical Security Computer System (PSCS) project consists of upgrading the main security computer hardware, the Central Alarm Station/Secondary Alarm Station (CAS/SAS) operator's consoles, access control, and the Video Switching Sub-system (VSS). The major functions provided by the PSCS will be access control, alarm monitoring and annunciation, security record storage and report generation, security material issue control, and simulator/training.

  The PSCS will be a real time, database management system utilizing distributed intelligent processing at both multiplexers and remote control panels.

  A new video switching and control system will be provided and will interface with existing fixed and pan/tilt/zoom (PTZ) cameras. The video switching system will become a subsystem to the PSCS and will receive inputs from the host security computers. These inputs will be processed into the proper form for alarm camera/monitor call-up, Close-Circuit Television Camera (CCTV) sequencing, and provide control outputs as required to operate camera equipment and auxiliary functions.

- Station Blackout Rule Compliance

  RCIC Turbine Insulation

  The RCIC Turbine is being insulated in order to maintain the RCIC room temperature at or below acceptable levels during a Station Blackout event.

  Control Room Lighting Improvements

  This project involves upgrading DC-powered overhead lighting in order to improve Control Room illumination during a Station Blackout.

  Procedure Changes

  The project involves reviewing and revising our Station Blackout Procedures to provide operators with better guidance during a Station Blackout event. Additionally, System Control Center Procedures are being reviewed and revised to ensure that they are in agreement with changes in the operations procedures to ensure that site power is restored as quickly as possible.

- Emergency Response Capabilities

  Phase 4

  Completion of Phase 3 resolved all safety significant Human Engineering Deficiencies (HEDs). Phase 4 will incorporate human factor considerations in areas such as:

  1. Rod Block Monitors and Recorders
  2. Condenser vacuum breakers
  3. Lighting and Switch locations
  4. Indicator scales
  5. Control room atmospheric monitoring
  6. Control room annunciator panels

- Inservice Testing Program Modifications

  Phase 1: Residual Heat Removal (RHR) and River Water Supply (RWS) Valve Replacement

  The piping and associated isolation valves between the Residual Heat Removal (RHR) system and the High Pressure coolant Injection (HPCI) system which make-up the steam-condensing mode of RHR are currently "abandoned-in-place." Although these isolation valves have been electrically-disabled in the isolated position, they must still be periodically stroke-time and leakage rate tested. This proposed modification will remove these valves and connecting piping and blank flange the remaining connections, thereby, eliminating the need to stroke-time and leak rate test the isolation valves.

  The valve control logic for two solenoid valves (SV-4934 and SV-4935) in the River Water Supply system will be modified so that the the valves can be individually stroke tested, as required, without temporarily disabling the valve logic.

  Phase 2: Diesel Generator Air-Operated Solenoid Valve Replacement

  This project involves the periodic replacement or refurbishment of these solenoid valves under the DAEC's Maintenance Program for solenoid valves.

  Phase 3: Diesel Fuel Oil Transfer System Modifications

  The piping for the diesel fuel oil transfer system will be modified to permit full-flow testing of the diesel fuel oil transfer pump discharge check valves. This modification will provide instrument taps downstream of the check valves to permit flow measurement through the check valves.

- Off-Site Dose Assessment Manual (ODAM) Revision Schedule

  The purpose of this project is to address discrepancies and implement improvements to the ODAM that were identified in the NRC Safety Evaluation of the ODAM (reference: Letter J. Hall (NRC) to L. Liu (IELP) dated August 17, 1990).

- Core Stability Studies (BN#88-07)

  We are pursuing a plant-specific study on core thermal-hydraulic stability in conjunction with two other BWRs of comparable core size. The purpose of this study is to demonstrate that, due to the relatively small size of the DAEC core, unique options are available for addressing the NRC Bulletin. Additionally, we are following developments in the BWR Owners' Group (BWROG) study of this subject.

- Vendor Information Project (GL 90-03)

  Phase 2: Verification of Safety-Related Equipment Vendor Manuals

  A review will be conducted to assure that up-to-date vendor manuals are available for safety-related equipment. The manual for each item of safety-related equipment will be identified and recorded in a computer data base. The vendor will be contacted, where possible, to either verify that our library has the current revision of that manual or to obtain the correct revision.

  Phase 3: Verification of Non-Safety-Related Equipment Vendor Manuals

  The same effort described in Phase 2 for safety-related equipment will be completed for non-safety-related equipment.

II. IELP INITIATIVE ITEMS

- Additional 161KV Service Breaker

  The purpose of this project is to:

  1. Eliminate a single-failure which results in a Loss Of Off-Site Power (LOOP).

  2. Reduce maintenance and repair restrictions on the East 161KV bus and startup transformer feeder breaker.

  3. Increase reliability of the startup transformer feed to a breaker-and-a-half* scheme which is consistent with all the other 161 KV loads and lines.

     *A breaker-and-a-half scheme consists of three breakers in series between two main buses with two circuits connected between the three breakers. This arrangement allows for a circuit to be taken out of service for maintenance purposes while still supplying power to the other circuit. In normal operation both circuits are energized.

- Control Building HVAC and Chillers

  Phase 3: Chiller Refurbishment

  This project involves the rebuilding of the Control Building Chillers (A & B). The refurbishment is being done to improve the chillers' reliability and to facilitate ease of maintenance functions. This includes the retubing of the evaporator and condenser, installation of a new compressor and upgrading of associated electrical equipment and piping, as required.

- Operability Determination of Seismically Supported HVAC Ductwork

  This project is a visual examination of seismically mounted HVAC ductwork. Based on data gathered during a visual inspection of the ductwork, an operability assessment of the ductwork supports will be completed to document the ductworks ability to function.

- Design Basis Program

  Phase I-ECCS and Selected Safety Systems

  The intent of establishing a Design Basis Program is to organize and collate the design bases information with supporting design information that provides for each system, structure, or component the rationale or "whys" for their functional requirements and controlling parameters. The design bases include assumptions, numerical values and other information used in the design of any system, structure, or component to assure that functional and regulatory goals are met. Design bases will be stated in concise terms and will focus on the specific functions or bounding parameters of each system, structure, or component. To this end, the objectives of the Design Basis Program are to assemble information concerning structures, systems, and components which are important to safety through:

  1. an organized review of functional requirements and controlling (bounding) parameters for each structure, system, or component.

  2. a comprehensive list of references that support the DAEC's functional requirements and controlling (bounding) parameters.

- Emergency Response Data System (GL 89-15)

  The Emergency Response Data System (ERDS) is being established to provide data from the DAEC to the NRC through a direct link with the plant's computers. ERDS will permit a direct, real-time transfer of data from the DAEC plant computers to the NRC Operations Center. The system will be designed to be activated at the plant during an emergency which has been classified at an ALERT or higher level. The NRC portion of ERDS will receive, sort and file the data. The users will include the NRC Operations Center, the NRC Region III Office, and, if requested, the State of Iowa. The currently-installed Emergency Notification System will be used to supplement ERDS data.

- Shielding Study for Revised Hydrogen Water Chemistry Program

  This project's goal is to determine the feasibility of increasing hydrogen injection rates into the primary system coolant. A demonstration test was performed which determined the amount of additional hydrogen which would have to be injected into the primary coolant system to protect certain reactor vessel internals from the effects of Intergranular Stress Corrosion Cracking (IGSCC). The results of this demonstration test indicated the need for additional plant shielding due to the increased radiation levels from the additional hydrogen injection. This study will:

  1. Determine the additional shielding requirements at various injection rates, such that the zone limits per UFSAR 12.3.1 are met, and perform a cost estimate of the design and construction costs associated with the additional shielding requirements.

  2. Evaluate plant radiation levels due to the effects of component shielding as well as bulk shielding.

  3. Determine the effects of additional hydrogen injection at the site boundary via skyshine measurements.

- Hydrogen Water Chemistry Oxygen/Hydrogen Generator

  The oxygen/hydrogen generators main purpose will be to produce hydrogen for the Hydrogen Water Chemistry Program at the plant. Producing hydrogen on-site will reduce the amount of hydrogen which is presently being delivered to the site. Development of this project is dependent upon the results of the Shielding Study for Revised Hydrogen Water Chemistry. If the decision is made to increase the hydrogen injection rates, installation of an oxygen/hydrogen generator will be considered.

- Plant Life Extension

  The Plant Life Extension (PLEX) project at the DAEC is aimed at obtaining an extended operating life for the plant. To accomplish this goal, the project will identify those Systems, Structures and Components (SSC) susceptible to age-related degradation and develop strategies to counter those effects. The project consists of three phases: 1) Planning - development of a project plan and screening for SSC that warrant detailed life extension analyses; 2) Evaluation - detailed analyses of SSC subject to age-related degradation and implementation of aging management programs; 3) Application - preparation of the NRC submittal for license renewal.

  The DAEC PLEX program is in Phase 1. We plan to issue the DAEC PLEX Program Plan and initiate a material sampling program to assess the condition of age susceptible SSC and screen those SSC for the Evaluation Phase.

- Power Systems Analysis

  The project scope consists of the DAEC's safety and non-safety-related AC and DC electrical distribution systems. The project scope overview includes:

  1. Performing an initial AC power distribution system analysis, performing a DC power distribution system analysis and implementing the Emergency Diesel Generator (EDG) transient analysis. A computerized model of the plant's electrical distribution system will be developed from these analyses. The initial model will focus on the main electrical distribution system and major loads.

  2. Implementing short-term programmatic controls to maintain the electrical equipment data base developed in item 1 until the full program is completed.

  3. Developing a new data base on the Computerized History and Maintenance Planning System (CHAMPS) which combines the existing data with the electrical equipment data base generated in items 1 and 2. The new data base will be called the Site Power Utilization Records (SPUR). Implementing the development of the required SPUR software.

  4. Expanding the computer model to include the remaining lower-voltage AC circuits, motor overloads, and breaker and fuse coordination schemes.

  5. Implementing the long term programmatic controls, and initiating the replacement of existing plant documents with the SPUR data base.

- Severe Accident Management

  We are currently following industry and regulatory developments for direction in outlining a Severe Accident Management Program. We recognize that the Individual Plant Examination (IPE) will provide guidance in developing a program to manage severe accidents, i.e., those beyond the plant's design basis.

  Consequently, this program is dependant upon completion of the IPE, as well as other industry initiatives such as those being done by EPRI, NUMARC, etc.

- Technical Specification Improvement Program

  Short-Term Enhancements

  The short-term enhancements of the Technical Specifications Program is divided into two phases that consists of preparation of Technical Specification (TS) amendment requests derived from a combination of the NRC line-item Improvement in Technical Specification Generic Letters (GL) and Iowa Electric-identified improvements. The identified changes for Phase 2 are as follows.

Phase 2:

GL 89-01: Removal of Radiological Effluent TS (RETS)

RTS-186: Reverification and reformatting of Instrumentation Tables and Implementation of the BWR Owners' Group topical reports on extending surveillance intervals and allowed outage time for RPS, ECCS, Control Rod Block and PCIS instrumentation.

RTS-218: Elimination of the Primary Containment Isolation signal on Main Steamline High Radiation. The justification for this change has been submitted as a Licensing Topical Report by the BWR Owners' Group and is currently under review by the NRC staff.

RTS-232: Increase the allowable leakage rate limit for the Main Steamline Isolation Valves (MSIV) during the performance of 10 CFR Part 50, Appendix J testing and eliminate the requirement for the MSIV-Leakage Control System. The justification for this change has been submitted as a Licensing Topical Report by the BWR Owners' Group and is currently under review by the NRC staff.

Long-Term Improvements

The long-term program consists of a comprehensive program to rewrite TS based upon the NRC Interim Policy Statement on TS Improvements. The program will utilize the guidance from the final NRC-approved version of the BWR Owners' Group Improved TS topical report. IELP's decision to commit to this long-term improvement program is dependent upon our review of the final version of the recently-issued draft BWR/4TS (NUREG-1344).

- Ultrasonic Examination of Reactor Vessel Beltline Region Welds

  Feasibility Study, Position Paper and Drawing Development

  Phase 2: The Feasibility Study, Position Paper and Drawing Development has been initiated. We are reviewing Reactor Pressure Vessel (RPV) records, determining governing requirements and regulations (required by ASME Section XI 1989 Edition and Proposed Rule 10 CFR 50.55(a)), and developing an examination program in preparation for conducting a 10 year ISI examination of the RPV.
  Phase 3: Performance of Vessel Examination.

- Telemetry for Emergency Sirens

  The addition of telemetry to the Emergency Planning Public Notification System sirens will provide several benefits and increase the level of system control. Some of the benefits are:

  1. The status of the siren system at any time.

  2. Determination that a particular siren has been activated.

  3. Identity of a loss of AC power to a system sector.

  In addition, this system will assist us in minimizing or preventing problems similar to those described in NRC IN 90-34.

- Comprehensive Procurement Initiative

  The purpose of implementing this program is to minimize the impact of fraudulent activities by an equipment supplier and to provide long-term resolution to plant and NRC concerns relating to procurement activities. In order to meet these objectives we are developing and implementing a program that encompasses the NUMARC and GL 91-05 guidelines.

  Evaluation

  Our current procurement program will be evaluated to identify where improvements can be made by implementing the NUMARC and GL 91-05 guidelines.

  Implementation

  Upon completion of the Evaluation phase, we will implement the recommendations into our procurement process and procedures.

- Service Water System Enhancements

  River Water Supply Pumps

  The purpose of this project is to procure a replacement River Water Pump to allow on-line rebuilding of the River Water Pumps.

  The spare pump will allow for systematic refurbishment of the four installed pumps on an individual basis. For example: the spare pump will replace one of the installed pumps; the pump that was replaced by the spare will be refurbished; the refurbished pump will then replace the next installed pump requiring refurbishment; this sequence of events will continue until all pumps including the spare are refurbished. This method of refurbishment will minimize the time a pump is removed from service.

River Sediment Management System

The purpose of the project is to reduce the maintenance costs associated with sediment intrusion into the service water systems by installing flow-direction vanes (Iowa Vanes) and a retaining wall in the Cedar River at our intake structure. Completion of this project is dependent on the water level of the Cedar River, i.e., the river water level has to be low enough for installation of the vanes. This project has experienced recent delays because of inclement weather, in particular, harsh winter conditions delayed construction, early spring rainfall has resulted in river water levels sufficiently high to prevent construction and unforeseen design issues.

- Replace Two Electro-Hydraulic Control (EHC) Pumps

  Replacement parts for the current pumps are becoming increasingly difficult to obtain. Therefore, we are considering replacing the pumps with those from another vendor for which replacement parts and pumps are readily available.

- Configuration Management Plan

  The purpose of this project is to design and implement a program to achieve comprehensive control of the updating and maintenance of plant documents. The number of changes in regulations, design, and procedures that occur for a nuclear plant over a period of time presents a difficult task to ensure that all affected procedures, drawings, equipment specifications and other controlled documents are updated to reflect the change. As part of this project a configuration management program plan is to be developed that will serve as a guide for document control and document change management. Digital imaging technology will be used to improve our ability to control the management of plant documents. This technology will be used to provide control, access and timely revision processes for documents. Initial efforts are focused on placing the plant drawings on this technology platform. The project has been divided into two major objectives: Program Plan and Digital Imaging.

- Scram Frequency Reduction

  The purpose of this project is to examine and implement improvements to lower the scram rate of our plant. In 1989, we formed a Scram Frequency Reduction group to review plant operating experience and industry reports to identify improvements in equipment, communications, procedures, and personnel training that can be made to reduce our scram rate in order to be consistent with industry goals. Examples of improvements that have been implemented are the conversion of some turbine trip logic from single incidence to coincident logic (e.g. two-out-of-three logic) and installation of solenoid failure detection for MSIVs and turbine master trip solenoids. Additionally, the following modifications are planned.

Mechanical Feedwater Modifications

This modification involves installation of air accumulators on feedwater regulating valves and the modification of the feedwater pump recirculation valves to fail "as is" upon a loss of air to reduce reactor scrams due plant air transients. Also, the air system isolation/control valves are being evaluated for failure modes which result in reactor scrams in order to determine if modifications can be made to prevent reactor scrams.

Digital Feedwater Control

The purpose of this project is to upgrade the present feedwater control system to a new digital control system or modify the existing control system to be an "intermediate valve selection" logic. Digital control will allow us to incorporate new technological improvements in instrumentation and computerized system control, thereby improving the system's reliability.

Turbine Electro-Hydraulic Control (EHC) System Improvements

A review of DAEC scram history (1979 - 1990) shows that over 30% of the reactor scrams have been initiated by the turbine/generator systems. The purpose of these modifications is to reduce reactor scrams due single failure within the EHC system electronics.

- Long-term Instrument and Control Strategy

  Analog Trip System Program Study

  The purpose of this project is to determine whether installation of an analog trip system will provide an effective way to reduce scrams, particularly those which occur during Surveillance Testing. The installation of an Analog Trip System will require a substantial amount of resources; therefore, we will be closely examining industry reports and plant operating experience regarding this subject. The conclusion of this study is dependent upon the experience gained from installing the digital feedwater control system.

- Metrology Lab

  The purpose of this project is to establish a laboratory for calibrating our measuring and test equipment (M&TE) with control over the ambient conditions, such as temperature and relative humidity. Currently, the calibration of M&TE is performed in areas where it is difficult to repeat calibration results on a regular basis, due to less than ideal control of temperature and relative humidity.

  The project has been divided into two phases which are as follows:

  Phase 1: Construction of Lab Facility

  Phase 2: Equipment Installation and Lab Operational

- Facility Upgrade Study

  This study will be conducted to determine the alternatives for increasing on-site facility space for plant, engineering and support staff.

- Self-Initiated Instrument & Control System Functional Inspection (I&CSFI)

  A self-initiated I&CSFI, using inspection techniques similar to the NRC I&CSFI inspection module, will be conducted. This inspection involves reviewing the design and implementation of a plant Instrument and Control System, which has yet to be determined, and the adequacy of associated engineering and technical support.

- Computer Software Quality Assurance

  The purpose of this program is to ensure the quality and integrity of all computer software which can impact safety-related systems, components, and structures at the Duane Arnold energy Center. Specifically, the program objectives are: defining specific requirements and standards for the development and use of software; providing the information and guidance necessary to identify, evaluate, and classify all software; establishing the method and requirements for maintaining the configuration of all nuclear-related software systems; instilling a high degree of confidence in the integrity and reliability of software systems utilized at IELP; minimizing software maintenance costs and ensuring that the use of software does not adversely affect the safe and reliable operation of the DAEC.

- Maintenance Self-Assessment

  This project will be performed in accordance with NUMARC initiative guidelines. The project involves a series of audits, evaluations, and reviews aimed at providing integrated improvements to the maintenance process.