

APPENDIX

SALP BOARD REPORT

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE

50-341/89001
Inspection Report Nos.

Detroit Edison Company
Name of Licensee

Fermi 2
Name of Facility

April 1, 1988, through December 31, 1988
Assessment Period

Ferri 2

A. Summary of Meeting with Detroit Edison Company on March 29, 1989

The findings and conclusions of the SALP Board are documented in Report No. 50-341/89001 and were discussed with the licensee on March 29, 1989, at the Monroe County Board Chambers.

While the meeting was primarily a discussion between the licensee and NRC, it was open to members of the public as observers.

The following licensee and NRC personnel were in attendance, as well as the noted observers.

Detroit Edison Company

W. McCarthy, Chairman of the Board, Chief Executive Officer
J. Lobbia, President
B. R. Sylvia, Senior Vice President
S. G. Catola, Vice President, Nuclear Engineering and Services
W. S. Orser, Vice President, Nuclear Operations

Nuclear Regulatory Commission

T. E. Murley, Director, Office of Nuclear Reactor Regulation (NRR)
A. B. Davis, Regional Administrator, Region III
E. G. Greenman, Director, Division of Reactor Projects (DRP)
R. C. Knop, Chief, Projects Branch 3, DRP
M. A. Ring, Chief, Projects Section 3B, DRP
W. G. Rogers, Senior Resident Inspector
S. Stasek, Resident Inspector
J. F. Stang, Licensing Project Manager, NRR

Other

Representatives from Monroe County, MI
Representatives from the Canadian government
Representatives from the State of Michigan
Members of the public and press

B. Comments Received from Licensee

Detroit Edison Company's response to the Fermi 2 SALP 10 Board Report dated March 13, 1989, had no comments pertaining to the specific content of the report. Because there are no comments, this Appendix contains no changes to the SALP Report.

C. Regional Administrator's Conclusions Based on Consideration of Licensee Comments

I have concluded that the overall ratings have not changed.

B. Ralph Sylvia
Senior Vice President

Detroit
Edison

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April 28, 1989
NRC-89-0094

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

- References:
- 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
 - 2) NRC Region III Letter to Detroit Edison,
SALP 10 Board Report No. 50-341/89001,
dated March 13, 1989

Subject: Response to SALP 10 Board Report

The details in the report have received thorough review. We are in basic agreement with the report; our self-assessment arrived at similar results.

Many programs and actions directed at improving plant and organizational performance have been implemented over the past 2 years. We are pleased you recognize our improved performance. Though we are not completely satisfied with our performance, we feel we have the right programs in place for continued improvement. We know we have to continue to provide close management attention particularly in the Maintenance and Engineering/Technical Support areas. These areas are individually addressed in the enclosure to this response.

We will be monitoring our performance closely and will take the necessary actions to achieve additional improvements during the SALP 11 period.

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USNRC
April 28, 1989
NRC-89-0094
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If you have any questions, please contact me or Ms. Lynne Goodman at
(313) 586-4211.

Sincerely,

B. Ralph Sylvia

Enclosure

cc: A. B. Davis
R. C. Knop
W. G. Rogers
J. F. Stang
USNRC Region III

MAINTENANCE

Detroit Edison concurs that maintenance is one of two areas where continued substantial improvement is necessary. Detroit Edison recognizes the high level of importance in an effective maintenance program and its effect on reliable plant operation.

Detroit Edison concurs that improvements have been made during the SALP 10 evaluation period. We have strengthened corrective action to technical issues, ensuring that both timely and comprehensive corrective action is taken. Technical and administrative procedures have been improved, resulting in fewer procedural personnel-related errors. Most importantly, the training of first- and second-level supervisors in nuclear supervisory principles has been implemented. Additionally, outage management improved as seen by the performance during the recent motor-operated valve outage.

Several areas in maintenance are receiving a high level of management attention. These are productivity, the preventive maintenance improvement program, and spare parts.

Productivity

This area includes planning and scheduling, utilization of resources, and intra-organizational communication.

We are continuing to improve maintenance planning by placing the primary responsibility for work planning and preparation with first-line supervisors. These supervisors have been enrolled in additional training, and have been assigned the necessary planning resources, in order to carry out these responsibilities. To enhance communications within the organization, and to more clearly emphasize responsibility, the maintenance organization has been realigned to include a mechanical maintenance section, an electrical maintenance section, and an instrument and controls section. The scheduling function has been reassigned to the planning and scheduling department, and the support functions realigned within the functional areas. Additionally, two levels of supervision in each area will be combined such that only a single level of supervision will exist between journeymen and the discipline supervisors described above. This organizational structure was determined following visits to the maintenance organizations at other operating nuclear plants with successful operating records.

The level of technical support to the maintenance organization has been improved by the implementation of the system engineer concept in the technical staff, as well as by improved training for technical staff personnel. This will ensure that maintenance activities have a sound technical base. The responsibility for proper management of temporary modifications will also be assigned to the system engineers, thus ensuring sound bases for such modifications as well as minimizing the number outstanding. Full implementation of the system engineer program is scheduled for this spring.

Preventive Maintenance

The second major area of emphasis is the preventive maintenance (PM) program. This program was brought up-to-date by eliminating the backlog of safety-related (category "A") preventive maintenance tasks during the local leak rate testing outage in the spring of 1988. Since then, the program has been maintained current, and deferrals of category A PM tasks were done only on sound technical basis. At the first of 1989, an improvement program was undertaken which is reviewing both category A and B PM tasks against vendor recommendations, failure consequences, industry operating experience, and failure history at Fermi 2 such that PM tasks are provided with a sound technical basis, and consolidated with other activities on common systems and components. Phase 1 of this effort reviewed category A electrical and mechanical PM tasks scheduled for the first half of 1989, and first refuel outage electrical and mechanical PM tasks and was completed on March 31, 1989.

The results of the Phase 1 effort were that a number of unnecessary or duplicative tasks were eliminated and all items reviewed were placed on a sound technical basis against which to evaluate future changes.

Future phases will review category A and B PM tasks scheduled for the second half of 1989 and all remaining category A and B PM tasks. Completion of this effort will ensure that PM tasks are consistent with operating history, as well as vendor recommendations.

Spare Parts

The SALP 10 report described occasional work delays due to inadequate planning for spare parts, as well as inappropriate stocking of the spare parts inventory.

Our current efforts are to minimize work stoppages due to lack of spare parts. This is being accomplished by ensuring that scheduled maintenance activities have parts identified and onsite prior to commencement of work. Additionally, refueling outage work package

planning will require staging of materials and parts required for work during the outage.

Further efforts to improve spare parts availability are underway. A comprehensive plan has been developed by the plant organization and the materials management organization. The objectives of this plan are (1) to improve spare parts availability and (2) conduct spare parts problem resolution in a more timely and comprehensive manner. This plan utilizes other ongoing activities to improve spare parts planning, as well as the initiation of other, new activities to address the problem areas. The plan has several components which are scheduled for completion between the spring of 1989 and early 1990. One task, that of reviewing systems for critical components to be stocked for reliability considerations, will be completed in late 1991. Taken together, these actions will improve the availability of spare parts and improve inventory levels for stocking spares.

Refueling Preparations

In addition to the three items mentioned above, planning and preparation is well underway for the refueling outage scheduled for the fall of this year. Outage plans and schedules have been reviewed with other utilities with good outage experiences. Lessons learned have been incorporated into this refueling outage planning and a milestone schedule has been developed which ensures that preparations remain on schedule.

Detroit Edison corporate resources (other than nuclear) have been dedicated to assisting in the control of both budgeting and contracting for outage support. Monthly senior management meetings are held to review the accomplishment of these planning efforts.

Careful critical-path schedule analyses have been done to provide confidence that industry operating experience is factored into our outage, as well as strict scope control measures to ensure that the outage scope remains manageable within the constraints of good radiological control practices, as well as administrative control requirements.

ENGINEERING/TECHNICAL SUPPORT

In order to make improvements in this area, we've strengthened our Technical Group System Engineers and put our Nuclear Engineering management team in place, building on experienced leadership from outside and on our most promising Detroit Edison Engineers inside. We have stabilized our organization. We have established a Planning and Scheduling organization in Nuclear Engineering to resource load work and to integrate engineering efforts with those of Nuclear Production, Licensing, and Procurement. This will ensure we are working to appropriate priorities while not overloading or over-committing Engineering resources.

We are vigorously pursuing preparations for the first refueling outage. Engineering and Production are working closely to control the outage scope, complete outage preparations, including modification designs, and to ensure all material is available to support Maintenance and Modifications. The plant Management Review Board, which has been in place over the last year, has helped us in this effort. We are also reviewing our commitments to the refueling outage and developing a 5 year plan which will schedule major modifications, projects, and commitments in a manner that will allow realistic programming of work.

SALP Recommendations

The SALP Board noted that strong Management attention needs to continue in order to improve several aspects of Engineering/Technical Support including:

- o The effectiveness of the new Engineering Organization
- o Interface between Engineering and Plant Organizations
- o Material reviews; and thoroughness and depth of Technical Reviews

Detroit Edison Management has taken action to make permanent improvement in those areas identified by the SALP Board as well as other areas.

Effectiveness of the New Engineering Organization

The SALP 10 report noted that continuous changes within the Engineering Organization have caused some uncertainties relative to the authority and responsibility of some key positions. The report also stated that overtime was caused by improper use of manpower resources. Positions in the Nuclear Engineering Organization which were "acting" have now been stabilized and made "permanent"; stability has been achieved. An integrated Nuclear Material Management Organization has been established by consolidating Material Engineering, Procurement and Warehousing functions into one organization under a maintenance experienced supervisor. This change will provide for more effective support of operations, maintenance and modification activities. Personnel additions have been made to the Engineering and Technical Support Organizations which contribute significantly to the commercial nuclear operations experience base at Fermi. Overtime is being managed and the work is being resource loaded. Technical Group System Engineers now provide the day to day reactive support to Operations and Maintenance, and Nuclear Engineering provides longer term and proactive support.

We have strengthened the Technical Group System Engineers by more than doubling their complement, by defining their role, and by establishing a demanding training and qualification program for them. The System Engineers have been trained on the procedures pertinent to their duties, except for those engineers who are currently undergoing training. A Technical Engineer System Qualification course is now commencing to provide formal training on their assigned systems. Additionally, each System Engineer will complete the Technical Staff and Manager training program. This program, accredited by INPO, consists of a 12 week course covering twenty (20) subject areas ranging from basic nuclear physics to Fermi 2 systems and plant operations.

Training is receiving considerable emphasis throughout the Engineering Organizations. This is the area we feel will provide us the greatest impact in our improvement efforts. In Nuclear Engineering and Technical Engineering this training includes, among other things, SRO certification, root cause analysis training, supervisor leadership training, safety evaluation training, and Tech Staff and Managers training. Training has also been conducted on the rewritten procedures from our directives rewrite program, on communication skills, and on technical specifications.

In January 1989, the responsibility for dispositioning plant problems and requests for potential plant design changes was transferred from Nuclear Engineering to the System Engineering Group. A Fermi Interface Procedure implements this change and training has been given to Nuclear Engineering and the System Engineers. This transfer of responsibility has strengthened the leadership role and authority

of the System Engineering function and supports our goal of having this group serve as the focal point between Engineering and the Plant.

Starting in April 1989, the System Engineering Group will have the authority to generate Balance-of-Plant Minor Modifications. This responsibility will strengthen the effectiveness of System Engineering in responding to everyday Operations/Maintenance needs and foster improved interface between the various plant organizations.

Interface Between Engineering and Plant Organizations

The interfaces between the Technical Engineering Group System Engineers and Nuclear Engineering, and where applicable, other organizations such as Nuclear Materials Management and Maintenance have been defined in detail, formalized, and discussed at both the working and management levels. This interface definition provides for day to day support of Maintenance and Operations to be given by the System Engineers thereby freeing Nuclear Engineering to concentrate on longer range and proactive efforts. We see this as the best way to provide the most effective support to Operations and Maintenance in improving plant availability.

A joint Nuclear Engineering and Nuclear Production Task Force was established to address and correct fragmented and overlapping Engineering Support responsibilities. One of the Task Force objectives centered around establishing a clear definition of Nuclear Engineering/Nuclear Production Technical Engineering Group interface responsibilities. The Task Force examined responsibilities of a System Engineer as defined by an INPO Good Practice. A list of typical responsibilities, functions, and duties was developed from the INPO document. The list was expanded to cover other engineering interface responsibilities that were outlined in the existing Nuclear Production and Nuclear Engineering Organizational procedures. In addition, procedures from two other utilities with System Engineering functions were reviewed. The responsibilities identified in the two utilities' procedures were compared and the list was expanded to include missing functions. The Task Force evaluated each responsibility, line item by line item. The role and function of each principle group and the sequence of their involvement was determined. The interface between groups and organizations was thus improved.

The issuance of a Fermi Interface Order which describes the overall engineering interface and the strengthening of the System Engineering role and authority in dispositioning plant problems have been key steps in purging corruption of the fragmented and overlapping engineering support issue raised by the Diagnostic Evaluation Team.

We are already seeing improvements in Engineering and Technical support interface. The organizations are working better together and teamwork is improving. We are also refining the Design Control

Process to make it more efficient and to include the System Engineer and Architect Engineer functions. Design Control improvements include such things as:

- o The formation of a Plant Modification Review Group (PMRG) for selected design modifications. The primary purpose of this group is to follow development of the plant modification from conceptual design through the detailed design stage and assist, as requested, in resolution of field implementation problems. The PMRG process is functional now and will be integrated into the Design Change process. Plant Operations, Maintenance, the System Engineer, Nuclear Engineering, and the Architect Engineer as well as other concerned parties perform the PMRG function as needed.
- o The initiation of the Safety Evaluation function during the conceptual design stage. This is currently being accomplished at the detailed design stage.
- o Checks and balances to gage individual performance and accountability. Several reviews are applied during the process, such as the PMRG review of the initial design concept, the Technical review of the design criteria and assumptions and a Supervisory review of the conceptual design, and an Installer's & User's review.
- o Definition of Post-Modification testing requirements. An Engineering Design Package (EDP) Testing Requirements Checklist is being introduced. The EDP will contain post modification testing requirements.
- o A Designer's, Installer's & User's Walkdown Checklist concept is being developed. This should improve communication between the Craft personnel, Maintenance and Modifications, Q.A., Operations, and Engineering.

Implementation of the improvements will address concerns expressed in the Diagnostic Evaluation Team Report and SALP 10 regarding: fragmented/overlapping Engineering Support responsibilities; the role of outside consultants in the Design Change process; poorly defined Engineering Support functions; and, thoroughness and depth of technical reviews. It should be noted that the majority of Engineering Design Modifications are not performed by outside consultants. Most EDPs are produced by the Nuclear Engineering Department on site which includes Stone & Webster. Stone and Webster supports Nuclear Engineering in the development of Plant Modifications and has been functioning as our On-Site Architect/Engineer for over three and one half years.

Material Reviews and Thoroughness and Depth of Technical Reviews

Material Reviews

Procurement, Material Engineering and Warehousing functions have been consolidated into one Nuclear Materials Management organization under a senior maintenance experienced supervisor reporting directly to the Vice President, Nuclear Engineering and Services. Under this organization, we are improving the Material Management process. This organization is working closely with Maintenance, the System Engineers and the Plant Manager to improve efficiency in the spare parts determination and procurement process.

The SALP report expressed concerns regarding parts availability being occasionally deficient and that a key program to identify obsolete components/equipment for replacement was not established. Improvements in inventory management, inventory location inside the protected area, and reduction in Q.C. holds, material return to warehouse, and "request to stock" backlogs have already been made. Additional improvements in Parts Planning and Purchase Technical reviews, including System Engineer reviews for spare parts/reliability equipment concerns, and job pre-planning by Maintenance will support increased parts availability. An Obsolete-Equipment Task Force, in place since October 1988, has already established an obsolete parts/equipment database to identify and document status of known obsolete parts.

Nuclear Materials Management took steps in the Fall of 1988 to eliminate Material Engineering policies by the use of memoranda. The memoranda were incorporated into procedures. The SALP report stated that Engineering evaluations for commercial grade procurements were frequently inadequate and were not appropriately maintained as Q.A. records. The commercial quality evaluation process has now been proceduralized and is based upon EPRI guidelines. The Engineering evaluations are now being treated as QA records and this area is proceduralized as well.

Concerns regarding Shelf-life program implementation problems were addressed and by the end of 1988, the Shelf-life program was under control and proceduralized. Strong management attention will continue in these areas.

Thoroughness and Depth of Technical Reviews

The SALP pointed out that Engineering's approach to resolution of technical issues from a safety standpoint was mixed, that approaches were often viable but sometimes lacked thoroughness and depth and that excessive amounts of time were being taken to resolve and close out deficiencies. Action is being taken to improve performance in these areas.

The NRC sighted a lack of thoroughness and depth in the technical input to operating procedures. References were made to Containment venting, CRD venting and Modular Power Unit Load lists. Regarding Containment Venting, Engineering and Operations are evaluating the issue to preclude damage to the Standby Gas Treatment System and possible unmonitored release during an Emergency Operating Procedure event. A draft procedure for emergency venting has been prepared. Parameter allowable values were used for EOP entry conditions at the time of the NRC inspection. The procedures were revised during the NRC inspection to agree with Owners Group guidance and approved for use in July 1988. Regarding the use of tygon tubing for EOP Venting of Control Rod drives, Engineering has since reviewed the CRD venting method and has provided recommendations for improvements to the Production Department. Nuclear Engineering has been put into the review cycle for the review of "Plant Specific Technical Guidelines" (PSTGs) used to develop EOPs. This will help to improve the thoroughness and depth of technical reviews applied to Emergency Operating Procedures. Regarding Modular Power Units (MPU), Engineering has finalized the scope of the MPU load lists, and documentation is being prepared to describe significant consequences, in Operator terms, when power is removed from the MPU loads.

The Diagnostic Evaluation Team's concern with Configuration Control inadequacies has been investigated by Nuclear Engineering. The DET report indicated that in a number of cases, critical drawings did not completely reflect the as-built condition of the plant because of the existence of unauthorized modifications and inadequate or inaccurate drawings. The Nuclear Engineering review concluded that the majority of the 20 DERs identified in the DET report did not impact the as-built condition of drawings considered critical to plant safety. The balance of those DERs were the result of isolated procedural violations and should not be characterized as inadequate configuration control. We have confidence that our existing configuration control program is adequate, and that the DER program itself strives to make the overall configuration control program better. A Deviation Event Report is being used to address and track to resolution a NRC unresolved item (88-037-12) related to the DET concern.

The SALP sighted the MOV torque switch setting level III violation as an example where Engineering support could be greatly improved. The SALP also noted that prompt and extensive corrective action was effected once the generic implications of the issue were identified. Steps to improve the overall effectiveness of the motor operated valve program have been taken.

Comprehensive plans have been established to incorporate industry experience and NRC generic letters and bulletins into the methods by which valve issues are addressed. Management continues to monitor the longer range actions generated from the overall MOV program to ensure continued improvement in this area.

Regarding the ATWS design concern given in the SALP Report, it should be pointed out that Detroit Edison took an early and proactive role in providing and implementing an ATWS mitigation system for Alternate Rod Insertion (ARI). Detroit Edison participated in the utility group that helped establish the ATWS Rule (10CFR50.62) and used that experience to provide and implement an ARI design prior to the Final Rule becoming effective. Issues of diversity, manual actuation, and maintenance bypasses were raised between the NRC and BWROG members after Detroit Edison had already implemented its design. Based on discussions with the NRC to resolve these issues, changes to the ARI system are being designed to make it consistent with the design currently endorsed by the BWROG and NRC. These are planned for incorporation during the upcoming refueling outage.

The SALP stated that reviews were not adequately performed regarding whether modifications should be implemented. During 1988, design modifications were prioritized based on plant needs and regulatory commitments. Priority was determined by the Management Review Board (MRB). A priority matrix which will be used by Engineering and Production has been developed and is now being used as a primary tool for planning work.

Management has implemented several activities that will support improvements in the timeliness, depth, and thoroughness of technical reviews. A strong System Engineering function has been established within the plant. The STEPS supervisory training program has been implemented. While some benefit of the STEPS program is already evident, the full effects are expected to be realized as the learned skills and principles are put into practice.

Plant Modification Review Groups (PMRGs) provide a cross-organizational review of modifications and will foster an increased depth of review applied to the design to ensure that both the problem and resolution are fully understood and agreed to prior to design package preparation. This will improve the effectiveness of the team and thoroughness of the end product itself.

Accountability meetings are held in conjunction with selected DERs, LERs, or other events. The primary objective of these meetings is to prevent recurrence of the causes of the event and hold individuals accountable for their performance. The feedback that occurs during these meetings helps to better understand the issues, and improvement is made by lessons learned.

Management attention continues in the area of Safety Evaluations in an effort to further improve quality. Safety Evaluation training was completed by twenty (20) of the System Engineers in the New System Engineering group. Management level review has continued on Safety Evaluations. The 1989 Nuclear Engineering Business Plan contains an action and goal measure that will help Management monitor the overall quality of Safety Evaluations being produced.

Business plan measures have been established that directly correspond to improving the timeliness in resolution of Deviation Event Reports and delinquent QA findings. Each of these areas is being monitored by Management. Furthermore, strong management attention continues to be placed in existing areas to ensure that sustained improvements are taking place. For example, approximately one hundred (100) site personnel have already taken Root Cause Analysis/DER Evaluation training. The training started last Fall (1988) and is planned throughout 1989. Nuclear Engineering and Technical Engineering Staff Engineers are taking this course.

A second self-initiated Safety System Functional Inspection (SSFI) has been completed. The SSFI report recognized significant improvements over the first SSFI conducted just the year before.

To make design information more accessible, Management has authorized continued development of a Design Base Document Program and the first Design Base Documents are expected this year.

Summary

Improvement steps have been taken in Engineering and Technical Support. We recognize that our improvement efforts must continue unabated to provide the best support to Nuclear Production, to ensure a successful refueling outage, and to be proactive in resolving technical issues. We are confident that we have the right programs in place, that we have a good Engineering/Technical Support Organization, and that our improvement effort will result in a better Engineering product in the future.