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ComEd

February 6, 1997

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

Subject: LaSalle County Station Units 1 and 2
Request for Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information
NRC Docket Numbers: 50-373 and 50-374

References:
(a) J. M. Taylor letter to J. J. O'Connor dated October 9, 1996, "Request for Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information"

(b) T. J. Maiman letter to A. B. Beach dated November 12, 1996, "Programs to Improve the Quality, Maintenance, and Accessibility of the Design Bases at ComEd Nuclear Stations"

(c) T. J. Maiman letter to A. B. Beach dated January 30, 1997, "ComEd Plan for Upgrading the Quality and Access to Design Information at All Six Nuclear Stations"

(d) W. T. Subalusky letter to A. B. Beach dated January 13, 1997.

This letter transmits LaSalle County Station's response to the Nuclear Regulatory Commission's (NRC's) request for information under 10 CFR 50.54(f) (Reference (a)). For the reasons described in the attachment to this letter, we currently conclude that the existing design and configuration control processes are adequate if implemented effectively. However, our confidence in the effectiveness of past management and implementation of these processes has been reduced by the deficiencies we have encountered through continuing self-assessment, and the potential extent of condition discussed below and in the attachment. We continue to aggressively pursue identification and correction of these deficiencies. The results of these efforts are available for your review. We will be submitting a follow-up letter to report the results of our continuing self-assessments and associated corrective actions as part of our continuing correspondence with NRC Region III.

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The process for developing this response for LaSalle County Station was structured to provide a comprehensive, in-depth look at current processes and programs related to design bases and configuration control. A dedicated response team composed of nine personnel was constituted. It included and reported to a site team leader. Team members were chosen, in part, on the basis of their knowledge of design bases issues and programs. The team leader reported to a corporate leader who provided in-depth reviews for consistency and completeness across the six ComEd nuclear stations.

The process for developing the response was structured to ensure accuracy and completeness. This process included: 1) extensive review of station and corporate procedures, records of historical and recent assessment activities and related documentation; and 2) thorough verification by station and corporate personnel most knowledgeable of each of the subject areas. This verification process included independent confirmation of the inputs, process descriptions and conclusions reached.

Further review of the response was conducted by personnel both inside and outside of the ComEd system, including selected senior station and corporate management. The Plant Operations Review Committee at LaSalle County Station reviewed the response with particular emphasis on the conclusions and bases for those conclusions, and the potential consequences of those conclusions as regards the current status of the LaSalle County Station. In addition, an external review team, consisting of senior, industry-experienced individuals who have extensive experience with the nuclear regulatory process and who are not involved in ComEd's day-to-day activities, was assembled to provide an independent assessment of the quality and responsiveness of the reply.

The response is structured around the five action items in the 50.54(f) request. The attachment to this letter is supplemented with three appendices:

- Appendix I, "ComEd Organizational Restructuring to Improve LaSalle Station's Ownership and Control of the Design Bases," discusses the three-year plan to establish a ComEd design engineering organization, as well as other supporting roles of Corporate and Site Groups that oversee conformance with the design bases.

- Appendix II, "Design Control and Configuration Control Processes," presents a summary of the processes and programs deployed at LaSalle County Station pertinent to Action (a).

- Appendix III, "Nuclear Fuel Services' Design Processes," discusses the important role of the Corporate Nuclear Fuels Group in supporting our six nuclear stations in reload analysis and fuel management.

This response is intended to provide detailed information on the action items requested in Reference (a). It captures and condenses a substantial body of information with additional detailed information available in other correspondence and company documents. Specific commitments related to the programs and processes described herein are contained in other relevant docketed correspondence. To alleviate any ambiguity as to our commitment to future actions regarding quality, maintenance, and accessibility of design bases information, we have provided those commitments under separate cover to the NRC (References (b) and (c)).

Current Status

Both reactor units at LaSalle County Station have been in shutdown status since September 1996. Unit 2 is in a refueling outage and Unit 1 is in a forced outage due to equipment problems. Since the shutdowns in September 1996, through continuing self-assessment and the establishment of higher standards at LaSalle, a number of issues have been identified for resolution. LaSalle management has made the determination to not restart either unit until the issues with system design and testing, material condition, operator performance and engineering support of the plant are resolved as described more fully in Reference (d).

With regard to Actions (a), (b) and (d) in Reference (a), processes and programs are in place at LaSalle County Station designed to ensure that plant configuration and operation are consistent with design bases. These include: engineering design and configuration control processes and programs as described in response to Action (a); operating, maintenance, and testing procedures as discussed in response to Action (b); and corrective action processes summarized in response to Action (d). These processes and programs are designed to ensure that LaSalle County Station is operated and maintained within its design bases, and that any deviations are effectively addressed in a timely manner. Under these programs, changes are controlled and design bases information is maintained current by procedure. Significant changes to the station's configuration and its operating procedures are also subject to Offsite and Onsite reviews. Additionally, periodic surveillance and inservice testing, routine plant walkdowns by operations and engineering personnel, and the results of post-maintenance and post-modification testing are directed toward confirming the plant is configured and performs in accordance with its design bases.

LaSalle County Station's design and configuration control programs, including the availability and accessibility of design information have been improved and upgraded over time. This is the result of LaSalle County Station and ComEd responding to industry and regulatory initiatives and operating experience review.

ComEd's assessment processes and third party reviews have repeatedly probed the status of the plant configuration and procedures, as well as the processes and programs implemented to maintain the plant configuration consistent with its design bases. Where discrepancies have been identified, operability determinations have been made, the causes and extent of occurrence have been determined and the discrepancies have been corrected. However, as discussed below, recent NRC inspections and critical self-assessments indicate that the previous assessment and corrective action processes have not been fully effective.

Regarding Actions (c) and (e) in Reference (a), LaSalle County Station was licensed shortly after the Three Mile Island (TMI) accident. Many of the programmatic NRC bulletins and letters issued after TMI were incorporated into the design and construction in lieu of backfitting during plant operation. Furthermore, several initiatives were undertaken to confirm that the plant was designed in accordance with the design bases and which helped provide a complete set of improved design documents. These initiatives included: reformatting the FSAR to a Regulatory Guide 1.70, Revision 2 format; development of LaSalle Technical Specifications using the standardized Boiling Water Reactor (BWR) format specified in NUREG-0123 (as well as input from General Electric, and Sargent & Lundy); a Statement of Compliance with 10 CFR Parts 20, 50, and 100; certification of Unit 2 Technical Specifications to accurately reflect the physical plant configuration and the FSAR; re-review of Unit 1 Technical Specifications to ensure an equivalent quality level with Unit 2 Technical Specifications; and numerous audits and third-party reviews

Recently, largely because of recent NRC inspections and aggressive and critical self-assessment, ComEd has acknowledged lapses in the implementation of the processes and programs discussed in response to Actions (a), (b), and (d). Examples of such lapses include the following:

- As discussed with the NRC Staff at a pre-decisional enforcement conference on September 27, 1996, injection of substantial quantities of sealant material into the Service Water Tunnel (with the potential consequence that the affected systems may not have been capable of functioning when required);

- Operability, testing and design basis issues, as described in Licensee Event Report 373-96-012 submitted on November 11, 1996, and those identified as a result of our System Functional Performance Review and Design Review effort, concerning the safety-related ventilation systems for the Main Control Room and the Auxiliary Electric Equipment Room, and the essential service water systems. These indicate that operability had not been assured and that the design basis requirements for ventilation flows, differential pressures, heat removal, and environmental conditions had not always been properly implemented, or periodically confirmed;

- Deficiencies, identified during the recent NRC System Operational Performance Inspection, concerning the Core Standby Cooling System and essential service water systems (see letters to NRC dated December 20, 1996, and January 10, 1997, for response to violations and questions identified during this inspection);

- The determination that safety-related control switches (General Electric SBM design) were not replaced in the late 1970s, or subsequently, as recommended by General Electric;

- Weaknesses in our corrective action program and maintenance activities as discussed in Licensee Event Report 374-96-009 submitted on November 15, 1996, reporting the discovery that the Unit 2 suppression pool contained substantial amounts of foreign material within the corrosion product layer on the bottom of the pool that could have resulted in the Emergency Core Cooling System not being capable of performing its safety function when required; and

- Certain weaknesses in design control that resulted in modifications being performed during maintenance activities, outside of design control processes (for example, see letters to NRC dated December 20, 1996, and January 10, 1997, providing responses to the NRC System Operational Performance Inspection).

In consideration of the current status of the LaSalle County Station units, we have completed an assessment to provide additional assurance that the required systems and equipment will function as required to maintain safe shutdown, including shutdown cooling and reactivity management for the Unit 1 reactor and the spent fuel pool for Units 1 and 2. This assessment focused on the required functional capabilities during shutdown conditions; the adequacy of the verification methods for these functions; the readiness of methods for providing backup cooling, reactivity control and monitoring; and planned outage activities which may require additional compensatory measures.

Future Action

Although processes and programs to maintain design control are in place, as described in response to Actions (a), (b), and (d), the circumstances listed above indicate weaknesses in the effectiveness of these processes and programs that need to be rectified.

Activities to identify and correct design control deficiencies and improve the effectiveness of the processes for control of design are currently in progress as part of our ongoing action plans, and include system functional performance reviews for systems important to safe and reliable operation, selected system design reviews,

testing of selected systems and equipment, sampling assessment of configuration control effectiveness, improvements in the corrective action program, work management improvements, and focused improvements in human performance throughout LaSalle County Station.

Longer term improvements include actions to improve the quality, maintenance and accessibility of the design bases as described in Reference (b). At the time of preparation of that letter, we recognized the need to develop a long-term plan at LaSalle County Station to improve the quality and accessibility of design information. As summarized in Reference (c), the plan addresses preparation of a major scope of design basis documents, verification of these design basis documents with other documentation, and plant system validation. This effort is anticipated to entail reconstitution of selected analyses and calculations, improvements in calculation control and UFSAR validation.

We currently conclude that the existing design and configuration control processes are adequate if implemented effectively. Our confidence in the effectiveness of past management and implementation of these processes has been reduced by the deficiencies we have encountered through continuing self-assessment, and the potential extent of condition referred to above. We continue to aggressively pursue identification and correction of deficiencies. The results of these efforts are available for your review. We will be submitting a follow-up letter to Region III to report the results of our continuing self-assessments and associated corrective actions.

Please contact us should you have any questions on this letter or the attached information.

Very truly yours,

Thomas J. Maiman
Executive Vice President
Chief Nuclear Officer

W. T. Subalusky
Site Vice President
LaSalle County Station

TJM/tb

Attachment

cc: A. B. Beach, Regional Administrator - RIII
J. Callan, Executive Director for Operations
S. Collins, Director - NRR
D. Skay, LaSalle County Station Project Manager - NRR
M. Huber, Senior Resident Inspector - LaSalle County Station
Office of Nuclear Facility Safety - IDNS

COUNTY OF DuPage
STATE OF Illinois

AFFIDAVIT

I, Thomas J. Maiman being first duly sworn, do hereby state and affirm that I am the Chief Nuclear Officer for Commonwealth Edison Company, that I am authorized to submit the attached letter and attachments on behalf of the company, and that the statements in the letter and attachments are true and correct to the best of my information, knowledge, and belief.

Thomas J. Maiman
Executive Vice President
Chief Nuclear Officer

Subscribed and sworn before me on this 6th day of February, 1997.

My commission expires 5-19-98.

"OFFICIAL SEAL"
MICHELLE KOWALKOWSKI
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 5/19/98

Michelle Kowalkowski
Notary Public

EXECUTIVE SUMMARY

The LaSalle County Station is located in LaSalle County, Illinois, approximately 55 direct-line miles southwest of Chicago and 20 miles west of Dresden Nuclear Power Station. The Nuclear Steam Supply System (NSSS) designer and supplier was General Electric (GE) and the plant was designed by Sargent & Lundy (S&L) Engineers. The LaSalle County Station was the fourth dual unit facility to be constructed by Commonwealth Edison.

The station consists of two General Electric Boiling Water Reactors utilizing a "Mark II" containment. The power generation complex consists of two reactor buildings, an auxiliary building, diesel generator buildings, radwaste building, and service buildings. Ancillary buildings such as the lake screen house, river screen house, entrance building, etc., are also located in the general plant area. Cooling water is provided by a cooling lake with makeup from the Illinois River. A submerged pond provides the ultimate heat sink for emergency core cooling which underlies the cooling lake.

The following provides a brief summary of the LaSalle County Station response to the NRC's October 9, 1996 request for information pursuant to 10 CFR 50.54(f) regarding adequacy and availability of design bases information:

Action (a): In response to Action (a), Section 1.0 provides a description of station and corporate engineering design and configuration control processes, including those that implement 10 CFR 50.59, 10 CFR 50.71(e) and Appendix B to 10 CFR Part 50. This description is supplemented by additional details regarding each process in Appendix II. ComEd currently concludes that the existing design and configuration control processes are adequate if implemented effectively. Ongoing assessments of deficiencies in the implementation of these processes, however, are discussed in Sections 3.0 and 5.0.

Action (b): In response to Action (b), Section 2.0 provides the rationale for concluding that design bases requirements are translated into operating, maintenance, and testing procedures. In summary, ComEd has confidence that design bases requirements are translated into maintenance, testing, and operating, procedures. However, some need for enhancement to the procedure initiation and revision process was identified in the preparation of this response. A recently identified concern regarding appropriate development of select surveillance procedures during pre-operational testing at LaSalle County Station is currently being investigated.

Action (c): The response to Action (c) discusses several initiatives which, at the time of licensing and throughout the operating life of the plant, provide confidence that the plant was built and maintained in accordance with the design basis. In addition, configuration and performance of equipment is controlled by the programs and procedures described in response to Actions (a), (b), and (d). However, as discussed in the cover letter, Section 3.0, and Section 5.0, ComEd has identified, and is presently addressing, certain lapses in the implementation of the processes and programs outlined in response to Actions (a), (b), and (d). Further assessments will be conducted to identify the extent of these weaknesses, and corrective actions will be implemented.

Action (d): In response to Action (d), Section 4.0 provides a description of the processes for identification of problems and implementation of corrective actions at LaSalle County Station. These processes include actions to determine the extent of problems, actions to prevent recurrence, and reporting to NRC. Although the processes are different in detail from other ComEd plants, they embody the functional elements required for the corrective action process. As in response to Action (a), the results of this review support a finding that the scope and extent of these processes are generally adequate to ensure that problems are identified and timely corrective actions determined. However, audits, surveillances, inspections, and self-assessments have identified weaknesses in effective implementation of certain elements of the program. Long-standing, as well as recently identified, deficiencies are currently being assessed to determine the extent of program implementation weaknesses. If, in the review process, elements of the program are found to be deficient, they will be corrected.

Action (e): In response to Action (e), Section 5.0 describes our assessment of the overall effectiveness of current processes and programs in concluding that the configuration of LaSalle County Station is consistent with the design bases. With regard to accessibility and quality of design bases information, as detailed further in this response, LaSalle County Station has generated a limited number of Design Basis Documents (DBDs). A program to develop additional DBDs will be detailed in separate correspondence.

In addition, the assessment and improvement efforts underway will bolster the confidence that plant configuration is consistent with the design bases. We will be submitting a follow-up letter to report the results of our continuing self-assessments and associated corrective actions as part of our continuing correspondence with NRC Region III.

Pending the development and implementation of these assessment and improvement initiatives, we have conducted an assessment to provide confidence that the systems relied upon to maintain the units in the safe shutdown mode are configured and are performing consistent with the design functional requirements. The nature and results of this assessment are described in the response to Action (c).

Appendix I: This appendix provides a summary of the ComEd organizational structure / restructuring and generally describes the configuration management philosophy.

Appendix II: This appendix provides flowcharts and descriptions of the processes described in response to Action (a). The process number referenced in Action (a) corresponds to the flowchart number in Appendix II.

Appendix III: This appendix provides a description of the ComEd nuclear fuel services processes.

LaSalle Response to 10 CFR 50.54(f)

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LaSalle Response to 10 CFR 50.54(f)

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1.0 Action (a)

Description of engineering design and configuration control processes, including those that implement 10 CFR 50.59, 10 CFR 50.71(e), and Appendix B to 10 CFR Part 50.

1.1 Introduction

ComEd's processes for configuration management, including those that implement engineering design and configuration control related to 10 CFR 50.59, 10 CFR 50.71(e), and Appendix B to 10 CFR Part 50, are described in this section. These processes implement ComEd's configuration management model, which is implemented at both the corporate office and LaSalle County Station.

1.1.1 ComEd Configuration Management Model

The responsibility for the ComEd configuration management program, as discussed in Appendix I, is shared by both the corporate office and the sites. The overall responsibility for the corporate configuration management program resides with the Chief Engineer for Configuration Management, who reports directly to the Engineering Vice President. The Chief Engineer is responsible for setting policy for implementation of the configuration management model (refer to Appendix I) by developing corporate procedures and policies. The sites are responsible for developing site administrative procedures. Implementation of the principles and practices of configuration management at the sites is accomplished through use of corporate and site procedures in: (1) the Engineering group for design controls, (2) the Maintenance groups for work controls, and (3) the Operations group for operational configuration controls.

Corporate procedures, such as Nuclear Engineering Procedures (NEP) and Nuclear Station Work Procedures (NSWP), are developed by the corporate office and provide the sites with guidance on corporate expectations for configuration control processes. Site administrative procedures complement or supplement the corporate procedures. Their major elements relevant to engineering design and configuration control are summarized below and supplemented by additional detailed information in Appendix II. A matrix is also provided in Appendix II that illustrates how the various processes relate to the configuration model and summarizes the processes for implementing 10 CFR 50.59 and 10 CFR 50.71(e). An overall Quality Assurance program implements 10 CFR 50 Appendix B. Configuration management with respect to core design and fuel management is discussed in the corporate Nuclear Fuels Design Process which is discussed in Appendix III.

1.1.2 Configuration Management Objectives

Station Administrative Procedures, and corporate NEPs, and NSWPs used at LaSalle County Station provide the details for implementing the elements of the ComEd configuration management philosophy. These procedures specify how work is to be performed and how the station is to be operated to assure consistency with the design bases. Procedural adherence is a

clearly communicated management expectation. The site and corporate procedures are structured to achieve the following objectives:

- Assure the establishment of adequate design controls that implement the quality assurance requirements in Appendix B to 10 CFR Part 50 as applied to design changes.
- Assure that design changes continue to satisfy design bases requirements through controlled processes for review and approval of the design change, as well as installation, testing, and operation.
- Assure compliance with 10 CFR 50.59.
- Assure implementation of the Final Safety Analysis Report (FSAR) update requirements in 10 CFR 50.71(e).
- Assure that QC inspections and post-modification tests are conducted for design changes.
- Assure the timely updating of documents, databases, and drawings that are affected by design changes.
- Assure that field changes to a design change are subject to engineering approval.
- Enable procedure preparers and reviewers to have ready access to design bases information and ensure that they are familiar with the design bases.
- Assure that personnel are trained in the areas of engineering design and configuration control.

The remainder of the discussion in this Section describes the process descriptions for engineering design and configuration control as supplemented by Appendix II. In addition, pertinent strengths and weaknesses of the processes identified in audits, inspections, and self-assessments is also provided.

1.2 Processes and Procedures Which Control Engineering Design and Configuration of the Plant

LaSalle County Station's processes and procedures for implementing the ComEd configuration management philosophy as described in Section 1.3 of Appendix I include three broad categories: (1) work control; (2) design control; and (3) operational configuration control. Work control includes Action Request (AR) initiation, AR screening, work package preparation, parts and material procurement, and implementation. Design control includes design change processes,

safety evaluations, UFSAR changes, document change requests, engineering change notices, calculations, vendor manual updates, design basis document development and update, and engineering software control. Operational configuration control, with respect to Action (a), includes procedure preparation and revision, operability assessments, temporary alterations, and equipment-out-of-service processes.

The following overview describes the important elements in place at LaSalle County Station to maintain configuration and operation consistent with its design bases:

1.2.1 Elements of the Work Control Process that implement 10 CFR 50.59, 10 CFR 50.71(e), and 10 CFR 50 Appendix B

- Work request procedure for identifying and documenting work to be done on the plant using the Action Request (AR) process;
- Screening procedure for ensuring proper prioritization and review for potential design basis impact;
- Engineering Request (ER) process for requesting assistance if the plant design basis is involved;
- Work package preparation procedures containing definitive instructions for assembling work control packages;
- Review and approval process of work packages prior to implementation;
- Specification of post maintenance / modification testing requirements as part of the work package;
- Procedures for parts and material evaluations; and
- Training for personnel utilizing the above procedures.

1.2.2 Elements of the Design Control Process that implement 10 CFR 50.59, 10 CFR 50.71(e), and 10 CFR 50 Appendix B

- Procedures for design changes for safety-related and non-safety-related SSCs;
- Design change reviews for conformance with design/licensing bases (or appropriate changes are implemented in the design/licensing bases);
- Procedures for documentation of the technical bases for design changes in calculations, analyses, specifications, drawings, or other controlled documents;
- Third party verifications for selected designs;
- Review and approval process by management;
- Procedures for reflecting design changes in station procedures and other design related documents;
- Review of design changes for conformance with design bases prior to approval;
- Review of design changes for existing UFSAR Systems, Structures, and Components (SSC) description and updates where required in accordance with 10 CFR 50.71(e);
- Review of design changes for compliance with 10 CFR 50.59 prior to approval;
- Review of design changes for impact on plant operating, maintenance, and testing procedures prior to approval;

- Review of design changes for impact on training programs;
- Review of Safety Evaluations by supervisors, and on a selected basis, the Plant Operation Review Committee (PORC);
- Procedures for safety evaluation process to identify Unreviewed Safety Questions (USQ) and changes to the Technical Specifications that are required to be submitted to the NRC for approval as part of a license amendment application;
- Procedures for implementation of approved design changes in accordance with controlled documents (e.g., work packages, work procedures or specifications);
- Review of safety analyses for FSAR update requirements;
- Procedures for Quality Control (QC) inspections and post-modification tests; and
- Training for personnel utilizing the above procedures.

1.2.3 Elements of the Operational Configuration Control Process that implement 10 CFR 50.59, 10 CFR 50.71(e), and 10 CFR 50 Appendix B

- Procedures for engineering evaluation of temporary plant configuration changes (e.g., temporary alterations);
- Review of changes to operating, maintenance, and testing procedures to determine their conformance with design bases and other design documents;
- Procedures for evaluation of operation with degraded and nonconforming conditions;
- Accessibility of pending UFSAR changes (i.e., approved and awaiting incorporation into the next UFSAR Revision) for use by plant personnel in developing design changes; and
- Training for personnel utilizing the above procedures.

1.3 Work Control Process

The work control process at LaSalle County Station is designed to allow the plant to be operated and maintained while controlling and maintaining the design bases. A combination of station and corporate procedures are in place to control the work process. The work control process includes: (1) Action Request initiation; (2) AR screening; (3) work package preparation; (4) parts and material procurement / replacement; (5) work implementation; and (6) interim plant configuration actions. The elements of the work control processes are described further below.

1.3.1 Action Request Initiation

Physical work to be done at LaSalle County Station is typically initiated through the Action Request (AR) process. The AR process is used to identify degrading conditions with structures, systems and components (SSCs) in the plant and initiate corrective action. Operating and System Engineering personnel initiate a majority of the ARs, but anyone in the plant who observes a degrading equipment condition has the responsibility to initiate an AR (or PIF). The Electronic Work Control System (EWCS) is used for most aspects of the work control system. Refer to Appendix II, Process 15 for information concerning EWCS.

1.3.2 AR Screening

Following the normal AR resolution process, new ARs are reviewed each normal work day by a screening committee. This committee, administrated by a procedure recently approved by the Corporate office, is responsible for prioritizing and assigning work, as well as identifying any design bases issues. The AR screening committee makeup and responsibilities are discussed in Appendix II, Process .. If the screening committee identifies a potential change to the design basis of the plant, an ER is written to obtain Engineering input. Work is not performed until the Engineering (design bases) issue is resolved. The resolution of these ERs by Engineering could result in issuing a design change, a temporary alteration, etc., or it could be a simple clarification response.

The screening committee was an improvement initiative to better control the work that may affect the design bases. The screening committee is comprised of knowledgeable individuals from several disciplines. Based on their collective knowledge, the expectation is that the design basis issues will be identified up-front in the screening process. Once the committee has prioritized the AR, it is assigned to the proper group for implementation. The Maintenance Department at LaSalle County Station has procedures to control how they perform work.

Procedures require that the Shift Manager be contacted immediately if the AR originator believes the condition observed could impact plant operations or equipment operability. Operations ensures that Technical Specifications are met and performs operability evaluations, with engineering support as required.

Some identified degrading equipment conditions may be classified as "operator workarounds." If a degrading equipment condition is identified as an operator workaround, then ownership is normally assigned to the applicable System Engineer. The System Engineering point-of-contact is utilized to ensure that the correct owner is assigned.

Technical Specification surveillances, which verify design requirements, also are controlled through the work control process using controlled procedures. Discrepancies are required to be reported on a Problem Identification Form (PIF). Refer to response to Action (d) for a detailed discussion of the PIF process.

1.3.3 Work Package Preparation

Work is planned and work request (WR) packages are prepared using the work control process. The work package provides step by step instructions which define how the work is to be implemented.

The development of a work package requires consideration of design bases information, application of the materials and parts procurement process, and the incorporation of post-maintenance / modification testing (PMT). Post maintenance / modification testing is intended to ensure that the work is done properly, that the equipment conforms to applicable design

requirements, and that the equipment or system can be returned to service. If a special test is required, it is prepared in accordance with the procedure(s) controlling special tests.

Some work may require a design change, use of other than like-for-like replacement items, or setpoint change. In those cases, the change is implemented using the design change process (Section 1.4). Work activities that could change or affect the configuration of power block SSCs are controlled by work packages or procedures. For the purposes of work control / design control, "a Non-Power Block SSC is a structure, system, or component that has no impact on nuclear safety, is not subject to NRC regulatory requirements or adversely impacts the capability to generate electric power. Permanent changes involving these non-power block SSCs may be done in accordance with standard industrial practices".

Part of the work package preparation includes a pre-job walkdown. This is normally done to ensure that the work package can be implemented (walkdowns are required unless waived by the lead work analyst). These walkdowns, although limited in scope to the maintenance activity being accomplished, in the aggregate help confirm that the configuration of the plant is consistent with design documents. Any discrepancies between the plant configuration and the design documents are identified and brought to the attention of the Engineering department. The discrepancy will be resolved via the design change process by either revising the document to match the as-built configuration or by revising the plant configuration to match the design document.

1.3.4 Parts and Material Procurement/Replacement Process

The process for the replacement of safety-related parts and materials at LaSalle County Station is conducted in accordance with the process described in Appendix II, Process 8. A "like-for-like" replacement can be used without further evaluation and is specified in the work package by the work analyst. If minor discrepancies are identified between the requirements specified on the procurement document and what the supplier can provide (i.e. supplier exception to a purchase order requirement) or what the supplier has provided (receipt inspection discrepancy), then the discrepancies are evaluated on a technical evaluation checklist by the procurement group in accordance with corporate procedures.

An "alternate replacement" may be substituted for a like-for-like part, piece of material, or component using corporate evaluation procedures. Procedures for safety- related procurement provide a checklist to determine acceptability of the alternate replacement. Acceptability is considered when the part, material, or component is sufficiently equivalent to the original item such that its application, specific design function, component / system interaction, qualification, and licensing requirements are maintained. The corporate procedures can also be used for non-safety-related procurement. If a part, piece of material, or component does not meet the requirements of an alternate replacement as specified in procedures, then a design change is required, and the Materials Engineering procurement process cannot be used.

Presently, specification of like-for-like parts is done by the work analyst. Typically, minor discrepancies are those issues identified during the procurement process (i.e., vendor replies that a model number has changed or an attribute is slightly different) and are usually resolved by the

Corporate Materials Engineering group (CTEAM). Alternate replacement evaluations are generally done by the On-Site Materials Engineering Group. The on-site group presently reports to the services director and works closely with Engineering to help ensure that design changes are recognized. To strengthen the working relationship with Engineering, there is currently an initiative to move the on-site materials group into Engineering and report to the Site Engineering Manager.

1.3.5 Work Implementation

Work that can affect the configuration of power-block SSC's (in the form of maintenance, surveillances, design changes, etc.) is implemented in accordance with instructions provided in procedures and/or instructions provided in a work package prepared under the work control process. If minor deviations (as described in procedures) are required to implement a maintenance activity, such deviations are documented on a minor change form. If a deviation to a work package does not meet the definition of "minor" in station procedures, the work package must be returned to the work analyst and a revision processed. A package revision is processed with the same level of review as the original package. Similarly, if minor deviations are required to implement a design change, such deviations are documented on a field change request and reviewed by Engineering. If major changes to a design change package are required, a design change addendum is processed with the same level of review as the original design change package.

Safety-related work packages go through a review process to assure that all work, including testing, is completed satisfactorily. Administrative controls in the form of route lists assure that these reviews are conducted by the proper personnel. There are different "route lists" for different types of work requests.

Post-Maintenance Testing (or Post-Modification Testing for design changes) helps ensure that the work is done properly and that the equipment conforms to applicable design requirements and can be returned to service. If a special test is required, it is prepared in accordance with the procedure controlling special tests.

1.3.6 Interim Actions

At times it is necessary to take interim action to correct a potential or actual equipment problems, pending the completion of permanent corrective action or a design change. In such cases, operability evaluations are performed to assess whether an SSC is capable of performing its specified function in its present condition and what, if any, compensatory action is required. Safety evaluations may be required depending on safety significance and time required to take the permanent corrective action (the operability evaluation process is discussed further in Section 1.5.2).

1.3.7 Strengths And Weaknesses In The Work Control Process

The AR/WR system utilizes the Electronic Work Control System (EWCS) for administrative purposes to initiate, route, control, obtain approvals, and track work packages. This system provides an effective overall control mechanism for managing the documents required for work controls and provides ready access to the data by many people while limiting who has write access capabilities. The EWCS process is described further in Appendix II. There is currently a backlog of AR/WR outage and non-outage related, planned, and corrective maintenance tasks to be performed (approximately 4,700). However, as part of the screening process described in Appendix II Process 1, a priority code is assigned, and one of the goals of the screening and priority process is to identify high priority requests and expedite those work packages.

The screening process, previously described, has been substantially improved as a result of the corrective actions from the 1996 LaSalle County Station Service Water event. In June 1996, foreign material was injected into the safety-related service water tunnel. The inadequately controlled injections resulted in foreign material intrusion into safety-related service water systems causing partial clogging of strainers. This event was significant because of the potential loss of the ultimate heat sink should the strainers become completely plugged. This resulted in a forced shutdown, an inspection by the NRC Augmented Inspection Team (AIT), and a civil penalty. The root cause evaluation of the event identified weaknesses in the work control process as a significant contributing factor. Specifically, the screening process incorrectly classified the sealant work as "minor" and the work was performed without a Work Request. Also, the root cause evaluation identified several actions needed to restore the necessary checks and balances to properly control work at LaSalle County Station. As a result, plant management responded with a significant number of corrective actions, both short-and long-term. In addition to the activities necessary to return the Service Water Systems to service, corrective actions (completed or in progress) involving the work control process include:

- Update of documents to indicate that the safety classification of the Lake Screen House lower level is safety-related;
- Revision to the LaSalle County Station work control procedure requiring the multi-discipline review process to include Engineering personnel (see Appendix II Process 1);
- Development of a six station NSWP for AR screening (issued 11/96);
- Assignment of EPN numbers to structures in order to define their safety and seismic classification in EWCS;
- Review of existing ARs/ERs to ensure that similar type requests were not in process;
- Additional training provided;
- Managers and supervision have alerted personnel to be aware of the potential for undocumented design changes to the plant; and
- An assessment of the work control process procedures in place at the time of the Service Water event determined that, although complex and cumbersome, the processes provided barriers to prevent unauthorized plant design changes. It is

noted, however, that like any acceptable process, the established barriers can't be effective if improperly implemented.

Concerns on the work control process have been identified in NRC Inspection Reports and SQV Audit Reports. In a recent SALP Inspection Report, the NRC recognized initiatives to improve work control, and planning. However, LaSalle County Station had not yet reached the point of providing measurable results by the end of the assessment period. SQV recently issued two Level II findings regarding implementation of Parts Replacement and Post Maintenance Testing procedures. The findings are currently being investigated to determine the extent of the weakness and necessary corrective actions.

1.4 Design Control

The Design Change Process at LaSalle County Station is controlled through corporate and station procedures which are described in Appendix II, Processes 2, 3, 4, and 5. The objective of these procedures is to ensure that changes to safety-related, as well as non-safety-related, SSCs are consistent with the plant's design and licensing bases, 10 CFR 50 Appendix B (specifically Criteria III for Design Control), 10 CFR 50.59 for facility changes, and the ComEd Quality Assurance Program. Design changes that necessitate a change to the UFSAR, Technical Specifications, or involve an Unreviewed Safety Question as defined by 10 CFR 50.59, require the involvement of the Regulatory Assurance Department to address compliance with Federal, State, and Corporate requirements.

Design change procedures at LaSalle County Station currently provide four methods of processing permanent facility changes: a) alternate replacement evaluation, b) exempt change; c) non-power block; and d) full modification. The determination of which process is used is based upon the content and complexity of the required design change and is made or concurred with by Engineering supervision.

- If a part or piece of material is not "life-for-like", its suitability is evaluated using corporate procedures. Alternate replacement evaluations were discussed previously in Section 1.3.4.

- If the design change requires minimal engineering effort, has a low potential for significantly reducing the safety margin, and does not change the function of a safety-related system, an abbreviated process or "exempt change" process can be used. This process can also be used for non-safety systems in non-seismic areas regardless of engineering scope of work, provided that the systems and areas do not impact plant safety.

- Facility changes that do not have the potential to impact nuclear safety, are not subject to NRC regulatory requirements and commitments, or adversely impact the plant's capability to generate electricity may be implemented using an additional abbreviated process, the "non-power-block" plant change process (the term "power block" is defined in terms of the work control process and differs in meaning from the industry term that applies to original plant design - see Section 1.3.3). Procedures provide checklists and requirements

to determine if the proposed work scope meets the minimum requirements for the classification of non-power block.

- Design changes that do not meet the specific limitations of the "alternate replacement", "exempt change", or "non-power block" process, must be processed as a full modification. Both the "exempt change" and the "full modification" processes follow the description provided in Appendix II, Process 4.

- Two processes, the "Minor Modification" process and the "Components Replacement" process that had been in use, are no longer being used for any new design changes and will be deleted once existing packages are implemented.

Two additional design change processes are available for administrative-only changes. These are the As-Built Document Change Request (DCR) and UFSAR Change Package processes and require, as a minimum a 50.59 screening:

- The As-Built DCR process provides a mechanism for revising plant documentation based on an existing condition, where no field work is required.

- The UFSAR change process can be used in conjunction with a 50.59 Safety Evaluation to revise the UFSAR. This is the same process that is used in the modification process.

Design Changes are scoped, proposed solutions are developed, the appropriate change process determined, and necessary management approvals are obtained by engineering. Once the request is approved, then the package is developed, coordinated, reviewed, approved, and implemented. If, during the implementation of any of these processes, it is determined that an Unreviewed Safety Question (USQ) exists or a revision to the Technical Specifications is required, then the design change is not approved or implemented. Instead a License Amendment is pursued through Regulatory Assurance prior to proceeding with approval and implementation. As part of the INPO accredited training program, design engineers receive training in the design change process and the appropriate procedures.

The processes used in controlling station design include: 1) safety evaluation; 2) UFSAR change; 3) Document Change Request; 4) Engineering Change Notice; 5) Calculation; 6) Setpoint; 7) Vendor Manual; and 8) Design Basis Document. These processes are described in more detail in the following sections:

1.4.1 Safety Evaluation Process

An integral part of the design change process is the preparation of Safety Evaluations in accordance with 10 CFR 50.59. The Safety Evaluation Process at LaSalle County Station is controlled by site and corporate procedures.

The current Safety Evaluation process is implemented in accordance with an NEP for the design engineering group and a site administrative procedure for all other departments. This dual

standard should be eliminated early in 1997. The NEP was an initial attempt to standardize the process throughout the company for design engineering, and recently a new NSWP was developed for safety evaluations for all departments at all ComEd nuclear sites. The new corporate common procedure is described in Process 13 in Appendix II. This procedure includes specific steps to be followed for concluding whether an unreviewed safety question exists due to a change, test, or experiment and whether the change can directly or indirectly affect any requirements in the UFSAR, Technical Specifications, or other licensing basis information. The procedure also includes requirements for the training and qualification of both the preparers and the reviewers prior to performing screening determinations and safety evaluations.

The existing site safety evaluation procedures parallel the contents of the common corporate procedure described in Process 13 of Appendix II (with minor deviations as noted). Safety Evaluations are prepared and approved by personnel knowledgeable in the process as well as the station. Preparers and reviewers must meet the training and experience requirements to be considered qualified. The safety evaluation process has come under scrutiny in NRC Inspections and SQV Audits. Several initiatives have been undertaken to strengthen the process as will be discussed in Section 1.4.10.

1.4.2 UFSAR Change Review Process

The purpose of the UFSAR update process is to assure that the UFSAR accurately reflects the current plant configuration. Station procedures provide guidelines for anyone to identify potential discrepancies or needed UFSAR changes. All proposed UFSAR changes are processed through the UFSAR coordinator. The UFSAR coordinator has the responsibility to ensure that: (1) the update package is complete including preparation of a 10 CFR 50.59 safety evaluation (a screening may be used for editorial changes); (2) marked-up UFSAR pages, drawings, and other applicable documents are provided; and (3) that pending UFSAR changes are available to the personnel performing safety evaluations. The coordinator ensures the proper reviews and approvals are complete and that the change is tracked via the NTS system until they are incorporated into the UFSAR.

The UFSAR change process includes steps concerning the change preparation, the 10 CFR 50.59 safety evaluation, the technical and on-site review, and the research of the documents to determine the classification of the change. To assist in this research, the UFSAR along with other licensing documents are available in electronic format with search capabilities. The electronic format is used for search and reference; hard copies of the UFSAR are used in the change package preparation.

Submittals of UFSAR updates are made to the NRC no later than every 24 months from the previous submittal, and include changes made up to a maximum of 6 months prior to the date of filing. (See Appendix II, Process 19). This represents an approved exemption to the frequency stated in 10 CFR 50.71(e).

1.4.3 Document Change Request (DCR) / Design Change Close-Out

Station Procedures control the document change process at LaSalle County Station as described in Appendix II, Process 7. The DCR process includes both "As-Built" DCRs (i.e., document revisions to resolve non-technical discrepancies between plant documentation and the as-built plant, and "Turnover" DCRs (i.e., document revisions necessitated by a design change).

Since 1994, LaSalle County Station has converted most ComEd (i.e., non-vendor) drawings to electronic format to reduce the time involved in updating drawings after a design change is completed. Current procedures require that drawings be updated no later than 60 days after a Turnover (close-out) DCR is engineering approved.

In late 1995 and early 1996, a concentrated six-month drawing update effort reduced the backlog such that no changes were older than 60 days (beyond turnover). Plant drawings have been segregated into Critical Control Room Drawings (CCRD) and Non-Critical Control Room Drawings (NCCRD). CCRDs are the drawings used in the Control Room. Corporate procedures require that these CCRDs be updated within 30 days. LaSalle County Station procedures require that this update be done in three days (or a redline provided) to ensure the control room operators have the best drawings available showing plant as-built information.

Training concerning the work flow for drawing changes is part of the general engineering orientation training.

1.4.4 Engineering Change Notices

The Engineering Change Notice (ECN) is a mechanism used to communicate design changes which are included in a design change package. (Refer to Appendix II, Process 12) The ECN identifies the design documents (e.g. drawings, specifications, data sheets, lists) and calculations that are affected by the design change. ECNs provide a formalized control over the preparation, verification, and approval of the design documents that are required to implement the design change or are affected by the design change. Once a design change is implemented, a "Turnover" Document Change Request (DCR) is used to provide a formalized control of the plant drawing revision, verification, and approval.

ECNs are part of the design process as described in Processes 4 and 7 (Appendix II). The ECN process is described in Process 12 of Appendix II. The ECN process provides a systematic approach for preparation, review, and approval and is typically initiated through EWCS.

1.4.5 Calculations

New or revised calculations may be required at various stages of the design basis change or update processes. Any calculations required to be generated or revised, are done in accordance with existing corporate procedures as described in Appendix II, Process 17. This process covers the preparation, review, and approval requirements for calculations that support engineering design and analysis.

1.4.6 Setpoint Change Control Process

The setpoint change process at LaSalle County Station is currently accomplished via the design change process. Calculations define the bases for the setpoints associated with safety-related and Technical Specification instrumentation.

In 1987, an independent audit identified weaknesses in ComEd's control of setpoint data with respect to instrumentation. The NRC had also identified setpoint control as a general industry weakness. In response, ComEd established a program to document the design basis for important instruments and their associated setpoints. The program intent was to establish a standardized computer instrument database, develop procedures and guidelines to control the information, and document setpoints and channel accuracy in calculations. The overall approach of the setpoint methodology has been upgraded to the methods described in ISA Standard 67.04 which is endorsed by Reg. Guide 1.105 Rev 2 1986 (Note: LaSalle is not committed to this Reg. Guide or ISA 67.04). The instrument database and associated procedures have been established. The upgrading of calculations has been slow and the topic of a recent SQV audit as well as a recent self-assessment. Approximately ten percent of the necessary calculations have been completed and a plan for completing them is currently being developed. In general, the differences between existing calculations and the requirements of the ISA standard relate to the uncertainties considered and how these uncertainties are combined.

1.4.7 Vendor Manual Process

The Vendor Equipment Technical Information Program (VETIP) is controlled at the LaSalle County Station by a station procedure which follows the corporate process 14 as described in Appendix II. This process provides a proceduralized method of tracking vendor information for plant equipment. The intent of the program is to provide all vendor information regarding the installation, operation, and maintenance of a particular piece of equipment in a single, consolidated binder. Binders are updated in accordance with corporate and site procedures. In addition to processing information voluntarily supplied by the vendor, each safety-related equipment vendor is contacted (when possible) at least once every three years to verify that the information which applies to LaSalle County Station, is on file, current, and complete.

1.4.8 Design Bases Document (DBD) Development and Update Process

As discussed in Section 5.3.1 of this response, a few Design Bases Documents (DBD) for LaSalle County Station have been prepared. Corporate as well as site specific procedures are in place to govern the development and revision of DBDs. Recently, ComEd recognized the need for DBDs at LaSalle County Station as well as other ComEd Stations and a comprehensive corporate plan has been developed to improve the quality of and access to design information. Development of DBDs is discussed further in Section 5.3.1.

1.4.9 Engineering Software Development and Revision Process

Engineering software development and revision is a corporate engineering responsibility. The applicable process is described in Appendix II, Process 11. The process refers to the safety-related software programs used to perform controlled work, to verify Technical Specification compliance, or compliance with regulatory requirements not included in the Technical Specifications.

1.4.10 Strengths and Weaknesses of Design Basis Control

A significant initiative to improve the retrievability and maintenance of the design basis documentation was the transfer of drawings, calculations, and engineering from Sargent & Lundy (and other vendors) to the LaSalle County Station site. This effort, which strengthens the design basis processes, included the scanning of a large number of drawings into electronic format, the introduction of the calculation indexes into the EWCS, and the ongoing effort to perform similar transfers for other engineering data bases.

An extensive effort was undertaken in 1995 to address the concerns raised in an engineering self-assessment, regarding the backlog in processing new vendor information. This extensive effort eliminated the backlog and was completed in July 1996.

Other NRC inspections, self-assessments, and SQV audits have identified weaknesses involving the backlog of drawing updates, design package close-outs, personnel misunderstanding the difference between design change and normal maintenance, deficient safety evaluations due to lack of thoroughness and safety perspective, and lack of clear guidance in safety evaluation training and training lesson plans.

In response to these weaknesses and others, several Station and Corporate initiatives were undertaken (or are in process):

- An Independent Safety Review Group (ISRG), comprised of senior level engineers who have significant nuclear experience, was initiated. The Site Engineering Manager designates those assigned to the ISRG. The intent of the group is to: 1) ensure the completeness and technical adequacy of safety evaluations prepared by LaSalle County Station personnel, 2) improve the quality of safety evaluations being prepared by tutoring preparers and approvers and 3) monitoring improvement. The plan is to keep this group in place until the quality of safety evaluations has improved and the improvement has been demonstrated to be capable of being maintained.

- Additional training requirements and certification, of personnel to perform and approve safety evaluations, was provided. In general, the training requires knowledge of: (1) electrical and mechanical design issues; (2) plant systems and integrated plant operations; (3) accident fundamentals; (4) 10 CFR 50.59; and (5) guidance for plant licensing fundamentals, as well as nuclear experience.

- A new common NSWP for safety evaluations was developed, and is expected to be implemented in 1997. The intent of the corporate procedure is to standardize the safety evaluation process across the six sites. This is discussed further in Appendix II, Process 13.

- Recently a new Engineering Assurance Group has been formed which will encompass the existing Independent Safety Review Group and implement various other improvements to the engineering process. In addition, the station's strong emphasis on higher standards and expectations has provided an additional strength to the process.

1.5 Operational Configuration Control

A number of processes control the plant operational configuration in the operating, maintenance, and engineering areas. The processes that relate to operational control include: (1) station procedure update; (2) operability assessment; (3) temporary alteration; and (4) equipment-out-of-service processes. These processes are described in further detail below.

1.5.1 Procedure Preparation/Revision Process

The current procedure preparation and revision process requires multiple plant reviews and checks to provide added assurance that design requirements and design bases are correctly translated into procedures. New procedures and procedure changes, except minor changes that are editorial, are required to undergo a 10 CFR 50.59 screening and review (Technical Review or On-Site Review) prior to approval. This process is described further in response to Action (b).

1.5.2 Operability Assessment Process

The Operability Assessment Process is described in Appendix II, Process 18. Operability assessments are required when the capability of a SSC to perform its intended function is in question. Operability assessments are made by operating personnel. The results of the operability determination are that the affected SSC is either "Operable" or "Inoperable." If the determination was based upon judgment that requires engineering substantiation, then a "Concern Screening" is initiated. The "Concern Screening" is generally completed within three business days. In some cases substantiation necessitates a more detailed evaluation by engineering. If there is reasonable assurance that operability will be assured as a result of a more detailed evaluation, an "Operability Assessment Process Form" is initiated.

1.5.3 Temporary Alteration Process

The Temporary Alteration (Temp-Alt) Process at LaSalle County Station is controlled by a station procedure. The Temp-Alt process is intended to provide assurance that temporary modifications to plant equipment do not degrade plant safety / reliability or do not result in unacceptable alteration of the approved design configuration. The Temp-Alt process is described in Appendix II, Process 6.

1.5.4 Equipment-Out-Of-Service Process

The Equipment-Out-of-Service (EOOS) Process used at LaSalle County Station is described in Appendix II, Process 20. The EOOS process provides a safe and controlled method of removing equipment from, and returning it to, service. It is designed to ensure personnel safety and provide operational plant configuration control during the various plant activities. ComEd has initiated a six station, including LaSalle County Station, effort to standardize the EOOS process. This new process is being designed to eliminate many issues common to all of the sites such as, clarifying the requirements and responsibilities of various personnel involved in the process, and will include a new EOOS program.

Training for each work group that interfaces with the EOOS process is required as part of their basic procedures training. Follow-up training is provided as deemed necessary by the Department Training Coordinator

1.5.5 Strengths and Weaknesses of Operational Configuration Control

A review of past SQV audits and surveillances have identified some weaknesses in the Op-Eval process including: ineffective corrective actions to resolve operability determination documentation, and two examples of inadequate operability evaluations during the service water system event in June 1996.

Weaknesses identified by the NRC in the operability evaluation process include: non-conservative and inaccurate operability evaluations, inconsistency in requesting engineering assistance in operability evaluations, and timeliness of engineering substantiation of initial operability evaluations.

In response to these items, Engineering has identified a single point of contact to help assure consistency in the process between Operations and Engineering. Procedures were also recently updated to enhance the guidance to preparers, and cognizant personnel tasked with tracking of operability evaluations. Findings associated with the Service Water event were addressed and discussed in Section 1.3.7 above. Some of the SQV Corrective Actions are currently open and being processed. Based on the interaction and/or similarity of operability evaluations and safety evaluations, the recent focus on training, rigor, and reviews of safety evaluations also benefits the preparers of operability evaluations.

Several issues related to implementation of the Temp-Alt process at LaSalle County Station have been identified by internal audits, and NRC inspections. For example, SQV audits have noted repeat violations in the administrative implementation of the Temp-Alt program (i.e., missed signatures, missed steps, clerical errors, etc.). The NRC issued a Notice of Violation on "Untimely Corrective Actions relative to a Temp-Alt for the 2B Diesel Generator", because the Temp-Alt had been installed for greater than 5 years.

In order to improve implementation of the Temp-Alt program, a number of actions have been undertaken, including appointment of a Temp-Alt coordinator to track and assist in the reduction in the number of Temp-Alts. The coordinator acts as a single point of contact and is instrumental in determining when a design change is needed. The coordinator also assists in reducing long-term outstanding Temp-Alts.

Another Temp-Alt improvement initiative is the LaSalle County Station management improvement initiative to have no Temp-Alts older than one refueling cycle installed without the concurrence of the Station Manager and the Site Vice President by the end of the LaSalle County Station's ninth Unit 1 refueling outage (L1R09) and eighth Unit 2 refueling outage (L2R08). Currently, LaSalle County Station has eight Temp-Alts that have been in service for greater than one fuel cycle.

Reduction of the number of Temp-Alts is also the focus of an Action Item within the LaSalle County Station Operational Plan. To support the management initiative to reduce the number of Temp-Alts, the existing Temp-Alts are currently being reviewed and assigned to Maintenance or Engineering for resolution.

Weaknesses related to the Equipment Out of Service (EOOS) process have been reported via the PIF process. Problems this past year include errors in the proper control and timeliness of removing equipment from service and inadequate outage boundary controls. As a result, a trend PIF was initiated and a Root Cause Investigation is in progress.

Closure of operator workarounds has been a weakness at LaSalle County Station. Senior management has placed additional attention on the closure of these workarounds and has raised the priority of this work, since operator workarounds increase the number of barriers confronting the operators in performing their duties.

1.6 Summary

The programs and processes used at LaSalle County Station to maintain design and configuration control are developed in a manner consistent with industry standards and commitments. As will be discussed in response to Action (c) and (e), lapses in the implementation of the processes have occurred at LaSalle County Station. The nature and extent of these lapses is currently being investigated through aggressive self-assessment, and any weaknesses identified will be addressed.

2.0 Action (b)

Rationale for concluding that design basis requirements are translated into operating, maintenance, and testing procedures.

2.1 Introduction

The Station implements a comprehensive procedure preparation and revision process, in accordance with applicable license and Quality Assurance (QA) requirements, to assure that design bases requirements are translated into new and revised operating (normal, abnormal, and annunciator response procedures), maintenance, and test procedures at LaSalle County Station. Many elements of the current procedure preparation and revision process have been in place since initial operation as required by Technical Specifications. Some weaknesses in surveillance and original preoperational tests were recently identified on specific plant systems as part of a continuing system-based self-assessment of design control at LaSalle County Station. Additional reviews are underway that will be completed prior to restart of either unit to determine the extent of these weaknesses.

In summary, our rationale in response to Action (b) is based on the following:

- Original Station procedures were developed using the combined construction and operating knowledge of the NSSS vendor, Architect Engineer (AE), and ComEd. In many cases, these procedures were tested on actual Station hardware prior to startup. Recently, some weaknesses were identified in certain original preoperational test activities that were intended to confirm design adequacy of safety related Heating, Ventilation, and Air Conditioning (HVAC) systems. Ongoing reviews of other key plant systems prior to start up of either unit will determine the significance of these weaknesses.

- Subsequent to startup, some procedures have been revised and new procedures have been prepared in accordance with applicable Station Administrative Procedures that implement QA requirements. Station Administrative Procedures incorporate reviews (checks and balances) which are intended to assure that procedure changes are consistent with applicable design bases requirements prior to approval.

- Operating, maintenance, and testing procedures have been implemented at the Station for many years. In general, the resulting consistency between expected and actual Station responses indicates that design bases information has been translated into these procedures.

- Several procedure reviews and enhancements have been conducted and have resulted in either corroboration of the translation of design bases information or in the enhancement of procedures in this regard.

- Some configuration documentation improvement programs included conformance checks against operating and/or maintenance/test procedures.

- Audits and inspections by both ComEd and external agencies have shown, based on their broad, generally-applicable findings, that the procedure control and revision processes are structured to provide reasonable assurance that design bases is translated into operating, maintenance, and testing procedures. In the cases where deficiencies were identified, appropriate corrective actions were implemented.

Each of these elements is discussed in more detail below.

2.2 Consistency of Original Station Procedures with Plant Design Bases

Original Station procedures prepared prior to startup were developed by the Nuclear Steam Supply System (NSSS) vendor, AE, and ComEd. Operating experience at other Stations, vendor equipment requirements, and design bases were all considered in the preparation of these procedures. As part of the Station pre-operational testing program, "tests" were developed for safety-related systems, and "demonstrations" were developed for non-safety-related systems. Operating and test procedures were developed as an integral part of the pre-operational process.

One of the objectives of the test program was to provide assurance, to the extent possible, that plant operating procedures support operation of the plant in a safe manner. NSSS system operating procedures were reviewed by the NSSS vendor, GE, prior to the test and reviewed after the test to provide feedback and comments. The overall intent of the program was to integrally test the system and the operating procedures.

A recent system-based design control self-assessment at LaSalle County Station identified weaknesses in adequacy of preoperational testing and resolution of test findings on some safety-related HVAC systems. Ongoing activities prior to restart of either unit will determine if these weaknesses are programmatic in nature.

2.3 Procedure Preparation and Revision Processes

The current procedure preparation and revision process requires multiple plant reviews and checks to provide added assurance that design requirements and design bases are correctly translated into procedures. This process is represented pictorially in a flowchart (Figure 2-1).

Procedure preparers and reviewers have access to needed design bases source documents (UFSAR, Technical Specifications, calculations, etc.) and, through training and experience, are cognizant of design bases information required for procedure development. Current Administrative Procedures and the writers guide outline basic procedure content requirements and define the method for flagging commitments contained in procedures for future control and compliance.

Site Administrative Procedures specify which procedures require an Onsite Review or Technical

Review as well as the level of management approval needed prior to issuance. Procedure Change Requests (PCRs) are screened for significance to assure adequate priority and timely updating.

There is a station-wide backlog of approximately 3,200 PCRs in all procedure areas, including operating, maintenance, and testing. Though not a proceduralized process, this backlog is prioritized such that those changes most critical to plant operation and safety receive higher priority for resolution. Additionally, immediate procedural requirements can be addressed either by an accelerated revision or a temporary procedure change as formally included in the plant procedure change process.

The following reviews, as applicable, are included in the procedure preparation and update process:

- 10 CFR 50.59 Screening and Safety Evaluation
- Technical Review or Onsite Review
- Cross Discipline Review
- Validation
- Offsite Review
- Commitment Preservation

All new procedures and procedure changes, except minor changes that are editorial, are required to undergo a 10 CFR 50.59 screening and review (Technical Review or Onsite Review) prior to approval. Plant Technical Specifications identify the types of procedures which require Onsite Review.

The Station also implements a temporary procedure change process as needed. The overall process is presented pictorially in Figure 2-2 and described in Section 2.3.10. This process allows for quick procedure changes when such need is required and only when there is no procedure "change of intent".

2.3.1 10 CFR 50.59 Screening and Safety Evaluation

A screening is performed on new or revised testing, maintenance, and operating procedures to determine whether the provisions of 10 CFR 50.59 apply. The screening checks the procedure change against license requirements including the design bases. Guidance on numerous design issues to consider when characterizing the change is provided procedurally. Personnel who perform this screening must meet the qualification requirements specified in Station procedures for minimum training and power plant experience required to function in this role. If it is determined a Safety Evaluation is required, the Safety Evaluation is performed to determine whether the proposed change could involve an Unreviewed Safety Question (USQ) or a change to the Technical Specifications. Additionally, if the proposed change impacts the UFSAR (other than editorially) or reflects tests or changes that affect nuclear safety, an Onsite Review is also required.

To help assure adequate safety evaluation quality, Engineering established an interim Independent

Review Group (IRG) in 1996 to review safety evaluations and help ensure acceptable quality. The IRG has provided additional training to safety evaluation preparers and reviewers drawing upon the results of their reviews to better inform preparers and reviewers how to consider and address design bases in the safety evaluation process.

2.3.2 Technical Review

A Technical Review is performed on revised testing, maintenance, and operating procedures as required by Technical Specifications, unless a minor change, to confirm the procedure is technically sound. A minor change is an editorial change; i.e., a non-substantive change that either clarifies or improves the readability of text. Per Station procedures, Technical Reviews are performed by personnel who are technically qualified and meet applicable experience requirements. Although the procedure writers and supervisors are competent and dedicated to preparing a good product, limited guidance is provided procedurally. Guidance to procedure reviewers will be issued which will more explicitly emphasize design bases conformance aspects of the review.

2.3.3 Cross Discipline Review

Cross Discipline Review may be performed on new procedures and procedure changes, with the exception of minor changes. These reviews are performed by personnel qualified in a specific technical area(s) to review a procedure for a specific reason(s). For example, the MOV Coordinator may review a procedure affecting valve motors. More than one reviewer may be assigned to these reviews. Required cross discipline reviews are specified in Station procedures. For new procedures, the Department Head determines if cross discipline review(s) are required. Additionally, the assigned technical or cross discipline reviewer(s) are required to notify the Department Head if additional reviews are required. Use of specific technical experts in cross-discipline reviews provides added assurance design bases conformance of procedures is checked.

2.3.4 Onsite Review (OSR)

All new procedures require an Onsite Review (OSR). Additionally, procedure changes that are not minor changes require a Technical Review or OSR. The required type of review is specified by procedure. The OSR and investigative function is governed by site procedures and implements the requirements of the QA manual. Senior OSR participants assign reviewers from the required disciplines. Use of qualified reviewers provides added assurance design bases conformance of procedures is checked.

A weakness in the OSR process was recently identified as a result of the investigation associated with LER-96-010 regarding inappropriate Technical Specification interpretations. Regulatory Assurance determined that expectations of OSR were not clearly communicated nor procedurally documented, although OSR participants are carefully selected based on their knowledge, experience, and qualifications. The OSR process will be enhanced by providing additional review guidance. Corrective actions for this incident are being tracked in response to LER-96-010.

2.3.5 Validation

Other than for minor changes, new procedures or revised procedures may be validated as determined by the Department Head. Validation assures that new/revised procedures provide clear and accurate guidance for performing a task. Validation may be performed on a simulator, by a walkdown of plant equipment, or by comprehensive table top review to ensure the procedure can be performed as written. It should be done by personnel (Subject Matter Experts) who use and are familiar with the procedure. Validation provides added assurance equipment is/can be operated as layed out by procedure and within design capability.

2.3.6 Offsite Review

Offsite Review provides an additional check on procedures. Offsite Review is performed by personnel experienced in the nuclear industry and plant operations. It is required for safety evaluations involving changes to procedures that affect the description in the safety analysis report, changes to procedures which involve a USQ, or result in proposed changes to Station Technical Specifications.

2.3.7 Commitment Preservation

Commitments are identified in procedures by annotation and/or footnote, or a statement that an entire procedure satisfies a commitment, and, before the procedure is revised, the commitment should be reviewed to ensure it will not be compromised.

In 1996, SQV conducted a review of NRC commitments in plant procedures. No instances were found where commitments were inadvertently deleted. However, 13 of 16 items reviewed were identified by SQV as deficient as some commitments were not flagged and/or referenced within appropriate Station procedures. The majority of these deficiencies occurred prior to the 1990s. The current procedure writers guide (described below) defines how to identify commitments in new procedures. This was noted in the SQV finding. In response to this finding, PCRs were issued to address the specific items identified and an additional step was added to the procedure on writing procedures to confirm commitments are not inadvertently deleted when a procedure is deleted. For procedures undergoing revision, a 50.59 screening, as a minimum, is required. Per procedure, this screening requires a review of the Safety Analysis Report (SAR) which includes, in addition to the UFSAR, standing commitments used to review and approve operation of the facility. The SQV finding is still open pending issue of all required enhancements to the procedure revision process.

An additional tool used to assist in maintaining design bases configuration at the Station is a Technical Specification Matrix. This matrix helps identify which procedures implement required Technical Specification Surveillances. The matrix helps ensure consistency between the Technical Specifications and Station procedures, as well as alert the procedure writer to potential impacts on Technical Specifications. The procedure revision process includes a mechanism for maintaining this matrix current. This matrix provides an accessible cross-reference tool for procedure writers and serves as an aid in maintaining Technical Specification conformance.

2.3.8 Procedure Writers Guide

Human factors and other key considerations are built into new Station procedures through use of a Writers Guide. The guide, as implemented by procedure, helps provide assurance that: (1) procedure format was as described in the Writers Guide; (2) commitments were properly annotated; (3) nomenclature is consistent; (4) Notes, Warnings, and Cautions preceded their applicable step; (5) the procedure defined what data were to be entered in blanks (e.g., sign-offs, instrument readings, etc.); and (6) instructional steps contained only one action.

2.3.9 External Information

In addition to the specific operating, maintenance, and testing procedure controls, the following are Station procedurally-controlled processes that may result in the need for a new procedure or a procedure change:

- Design Change Package (DCP)
- Instrument Setpoint Changes
- Operating Experience (OPEX) Program
- Vendor Equipment Technical Information Program (VETIP)
- Technical Specification Change

Through these processes, applicable industry, vendor, regulatory, and other information is reviewed and incorporated into applicable plant procedures. Some of these processes are described in Action (a) of this response.

2.3.10 Temporary Procedure Changes

Temporary procedure changes are allowed, as required, to support the immediate needs of the Station only if there is no "change of intent." A temporary change is considered a "change of intent" and not allowed if the change would: (1) modify the original purpose of the procedure as described in the procedure; (2) less conservatively modify a prerequisite, precaution or limitation and action; (3) remove or modify acceptance criteria, setpoints or tolerances that affect equipment operability; or (4) modify any portion of a known commitment or regulatory requirement. The process is depicted in Figure 2-2, and includes review and approval by any Senior Reactor Operator (SRO), Shift Manager, and Department Head (for non Operations Department procedures).

The number of temporary procedure changes has recently increased as a result of site management reinforcement of procedure compliance. However, these issues are not an indicator of design bases nonconformances as the temporary procedure change process cannot be used to correct such deficiencies.

2.3.11 Emergency Operating Procedures (EOPs)

EOPs are developed in accordance with the EOP program. The program incorporates a multi-discipline approach to the development and maintenance of the EOPs, which provides reasonable assurance of conformance with the design bases as applicable and ensures equipment relied upon for beyond design basis events is operated within design capability.

Guidance on the content of EOPs at LaSalle County Station was obtained from generic guidelines that were developed by the BWR Owners Group. After EOPs were initially developed, their consistency with the actual plant components, controls, labeling and indications that would be used to implement the procedure steps were verified through control room/plant walkdowns. Procedure adequacy was also verified by a tabletop review that employed a procedure user group discussion format. Validation verified the usability (sufficient understandable information is provided) and operational correctness (compatible with plant responses, hardware, and manpower) of the EOPs.

Management oversight of the EOP program is provided by the Operations Manager as implemented by the Emergency Operating Procedure Committee. Committee members have background in EOPs, Training, Engineering, Operations, and Human Factors. A representative of this committee is required to perform a Cross Discipline Review.

To avoid inadvertent inconsistency between the EOPs and the plant's design capability that could result from changes in the plant, design changes are reviewed for impact on the EOPs.

These processes help provide reasonable assurance that the EOPs rely on equipment performance within design capabilities.

2.4 Experience with Procedures

Procedures have been implemented at the Station and their effectiveness has been proven through many years of experience. Some examples of plant evolutions which confirm the adequacy of procedures include routine startup, shutdown, and refueling operations, and surveillance testing. In addition, the successful response of the plant to abnormal events and transients, such as reactor trips, provides further assurance of the consistency of plant procedures with design bases.

2.5 Procedure Upgrade Program

2.5.1 Operating Procedures Upgrade

An Operating Procedure Upgrade Program was initiated in August of 1995 by Station management, and is anticipated to be complete in late 1998. This program will address the procedure backlog (approximately 1,600 PCRs), revise additional procedures with no outstanding PCRs, and improve procedure quality. A new Procedure Writer's Guide was developed to provide guidance for ensuring consistency in preparing and maintaining high quality procedures. The Operations Upgrade Program utilizes the process as described above for the revision and

initiation of new procedures. The scope of the program includes review/consolidation/re-writes for:

- Operating Abnormal Procedures (Completed 1996)
- Surveillance Procedures (Scheduled for 1997/1998)
- Normal Operating Procedures (Scheduled for 1997/1998)

Operating Procedure Upgrades include:

- Conformance to Writer's Guide;
- Resolution of all PCRs;
- Review of specified references for precautions, prerequisites, and limitations and actions for conformance to the Writers Guide;
- Review of referenced NTS items for continued applicability;
- Verification of mechanical noun names with label files;
- Verification that each Technical Specification clarification and Special Operating order is reviewed for inclusion in the appropriate procedure and then deleted;
- Validation of each LOP and LOS; and
- Review of each LOP and LOS for operator workarounds.

Completion of these activities as part of the upgrade program further ensures design bases consistency through the review of design and license information.

2.5.2 Maintenance Procedures Upgrade

Maintenance procedures initiatives are in progress to address the large backlog of procedure revisions (approximately 1,100 PCRs). The backlog has been affected by recent equipment problems, unit outages, and reinforcement of management expectations for verbatim procedural compliance and identification of all procedure problems.

The Maintenance Procedure Upgrade Project is adding significant resources to reduce backlog and improve the quality of Maintenance procedures including the addition of experienced procedure writers. Both surveillances and normal maintenance procedures are being revised. Initiated in November 1996 and planned to continue through 1998, this project will also implement the new Writer's Guide format for new and revised procedures to improve human factors consistency and improve electronic accessibility by upgrading old Wang formatted procedures. The project will also assist Corporate with development of Nuclear Station Work Procedures (NSWPs) for use at all ComEd Stations. This project includes key steps similar to those previously described in the Operating Procedure Upgrade Program thus providing added assurance of design bases conformance through programmatic review of design and license information.

2.6 Other Programs that Verify Procedure Consistency

There have been several programs which have verified consistency of operating and/or

maintenance procedures with other configuration controlled documentation. These programs are discussed below and include:

- UFSAR Reviews;
- Technical Specification Review;
- Improved Technical Specification Program (on-going); and
- Procedure Upgrades (described above).

2.6.1 UFSAR Review

The UFSAR Review Program was initiated by ComEd to review select portions of the UFSAR for operational requirements, limitations, and specifications and ensure that established operating procedures and surveillances are consistent with UFSAR statements. This program is on-going. Four chapters of the UFSAR have been reviewed and some discrepancies between the UFSAR and plant operating, maintenance, and test procedures have been identified. The review and confirmation of the discrepancies is on-going at this time.

The UFSAR reviews were done by personnel from Engineering, with assistance from Operations and Maintenance. The reviewers were cognizant of the particular system and procedure/surveillance and evaluated the procedure/surveillance against related UFSAR statements. The reviews performed individual procedure/surveillance evaluations and generated PIFs where discrepancies were found. Although the number of discrepancies is higher than expected (approximately 10% of the attributes verified), with one exception, all have been screened as "not significant" in terms of operational status. The one exception (service water screen mesh size) was actually identified just prior to the UFSAR reviews as part of the service water corrective actions by one of the assigned reviewers and was design, not operational procedure, related.

2.6.2 Technical Specification Reviews

As a result of some missed and inappropriate surveillance tests that did not adequately confirm Technical Specification requirements, in 1995 Station personnel conducted a review of the Station Technical Specifications to determine if a procedure existed for each Technical Specification surveillance requirement. Numerous procedure changes were required, some new procedures to cover Technical Specification requirements were required, and one LER was initiated associated with fire protection surveillance/hardware. Although numerous findings occurred, the end result will be an improved, more complete set of plant procedures consistent with design bases requirements upon completion of required corrective actions.

2.6.3 Improved Technical Specifications

The Station is in the process of implementing new standardized Technical Specifications and has targeted 1997 to submit new improved Technical Specifications. The improved Technical Specifications will follow the NRC NUREG-1433/1434 guidance and, with respect to the design bases, will improve operational safety and provide a clearer understanding of Technical Specification

requirements. An implementation plan is being developed to ensure that procedures are appropriately revised to utilize the new Technical Specifications.

2.7 PIF Trends and Data Analysis

Increased PIFs Related to Procedures: A review of PIFs indicates an increase in procedure-related discrepancies in recent months. This is largely because of the recent management initiative for Station personnel to report procedural discrepancies, the heightened management insistence on verbatim compliance, and the on-going UFSAR review. Based on these initiatives, together with the current dual unit outage, the number of PIFs related to procedures is large. However, the number of significant PIFs was relatively low and not all PIFs directly relate to procedure discrepancies. Additionally, not all significant PIFs are indicative of design bases nonconformances. Both the Maintenance and Operations Departments are aggressively working at backlog reduction.

PCR Backlog: The Station currently has a large backlog of PCRs (approximately 3,200). However, initial screening is performed to identify those that need immediate attention, and the remainder are worked based on work backlog and staffing. Procedures requiring immediate action are revised using the accelerated change process or temporary procedure change process. A temporary procedure change can only be used when the intent of the procedure is not affected as described previously.

PIF-Assessments: In an effort to continually improve the process, both the Maintenance and Operations Departments review PIFs related to procedures to develop an awareness of common problems and strengthen or improve the process where necessary.

2.8 Inspection and Audit Results

Several audits and inspections by ComEd, the NRC, and other external agencies have been performed over the years which related to the procedure update and revision process. Vertical slice audits have also been performed on select plant systems. In general, these audits did not identify large scale programmatic weaknesses, nor procedure design bases nonconformances on a generic basis. A brief summary of the audit scopes and results, in the area of procedures, is provided below.

2.8.1 ComEd SQV Audits

A review of SQV audits for the past six years indicates few instances of specific procedure deficiencies with respect to design bases conformance. These problems were resolved and were singular in nature. With the exception of clarifying the requirement of commitment review, programmatic issues were not identified that are not addressed in the current procedure revision and preparation process.

From October through November of 1996, the Independent Safety Engineering Group (ISEG) reviewed and observed 23 surveillances at the Station. Some procedure deficiencies and an

enhancement to the procedure upgrade process were noted which will be addressed. Overall, it was noted that the written surveillance procedures satisfied Technical Specification requirements.

2.8.2 NRC Inspections

Specific procedure deficiencies have been identified in audits and inspections. Where found, they have been corrected. Large scale programmatic concerns with the procedure update process were not noted. Also, weaknesses in safety evaluations have been identified in audits and inspections. As discussed previously, actions have been taken to improve the quality of safety evaluations.

A review of Regulatory Assurance files for the last four years identified two root cause reports (RCR) associated with procedures. One involved a contamination in the Reactor Building due to drain valve lineup of HCUs during vessel fill in 1995. The second involved intrusion of foreign material into the Service Water System in 1996. The HCU procedure reflected a deficiency in a specific procedure sequence and the service water event reflected a deficiency in the work control process. The corrective actions for both of these incidents, particularly the service water intrusion event, resulted in strengthening the specific procedures.

A review of LERs from 1984 to 1996 identified several LERs resulting in the need to revise procedures. Corrective Actions were taken to address the specific concerns. Other related corrective actions, such as procedure upgrade efforts and the Technical Specification reviews discussed previously, have also been taken.

The NRC has discussed procedure quality in the last two SALP inspection periods (SALP 12 and 13). In general, the quality of Operating procedures has been criticized. The recent SALP 13 report made favorable remarks about the Operating Procedure Upgrade Program being elevated in priority as a result of self-assessment. Additionally, SALP 12 noted Operating Procedures were good but cumbersome and efforts were underway to consolidate and simplify them. EOPs have improved due to procedure upgrade initiatives during 1996. Further improvement of Operating Procedures will result from the ongoing Procedure Upgrade Program.

Maintenance procedures have also been criticized. The SALP 13 report described inadequate guidance or lack of clarity in Maintenance procedures as contributing factors to four Engineered Safety Feature (ESF) actuations and a scram. The report went on to describe initiatives to improve surveillance procedure quality as "positive." LaSalle County Station has responded with an aggressive Maintenance Procedure Upgrade Project to improve Maintenance procedure quality as described above.

2.8.3 Vertical Slice Audits

Vertical Slice audits conducted at the Station in the past ten years are discussed in response to Action (d). No programmatic or generic design basis issues associated with procedures were identified in these audits. However, the ongoing system based self-assessment of design control has identified cases of preoperational and surveillance testing weaknesses. The extent of these weaknesses will be addressed pending completion of additional reviews required to be done prior

to startup of either unit.

2.8.4 Self Assessments

In addition to assessments described previously, ComEd completed a self-assessment of the In-Service Testing (IST) Program using a team led by Corporate Engineering which included ComEd IST peers and contractors. This assessment was completed in response to recent IST incidents. The IST Program establishes the scope and frequency of system and component testing to confirm on an ongoing basis that key Technical Specification requirements are met. The purpose of this self assessment was to validate that the IST program components will perform their design function by meeting UFSAR and Technical Specification requirements. The IST Program was found to be healthy. The review did identify several areas for program improvements but also identified several good practices.

2.9 Summary

As summarized above, some enhancements to the procedure preparation and revision process have been identified and are being addressed. These are:

- Documenting in more detail OSR review responsibilities (resulting from the investigation of LER-96-010);
- Further emphasizing the importance of reviewing procedure step deletions and other revisions for impact on NRC commitments (response to SQV audit); and,
- Developing additional review guidance for performing procedure reviews.

Addressing these weaknesses will enhance the procedure preparation process and provide additional assurance that new procedures and procedure revisions remain consistent with design bases. Detailed design review guidance is contained in the 50.59 evaluation process and qualified reviewers are utilized.

Based on the checks and balances in the procedure revision process, required procedure reviewer qualifications, and results of past audits and inspections, including the resolution of identified problems, ComEd has confidence that design bases requirements are translated into maintenance, operating, and test procedures. Ongoing system-based design control audits, that will be completed prior to startup of either unit, will determine the extent of recently identified preoperational and surveillance test weaknesses.

FIGURE 2-1
NEW PROCEDURE / REVISION PROCESS

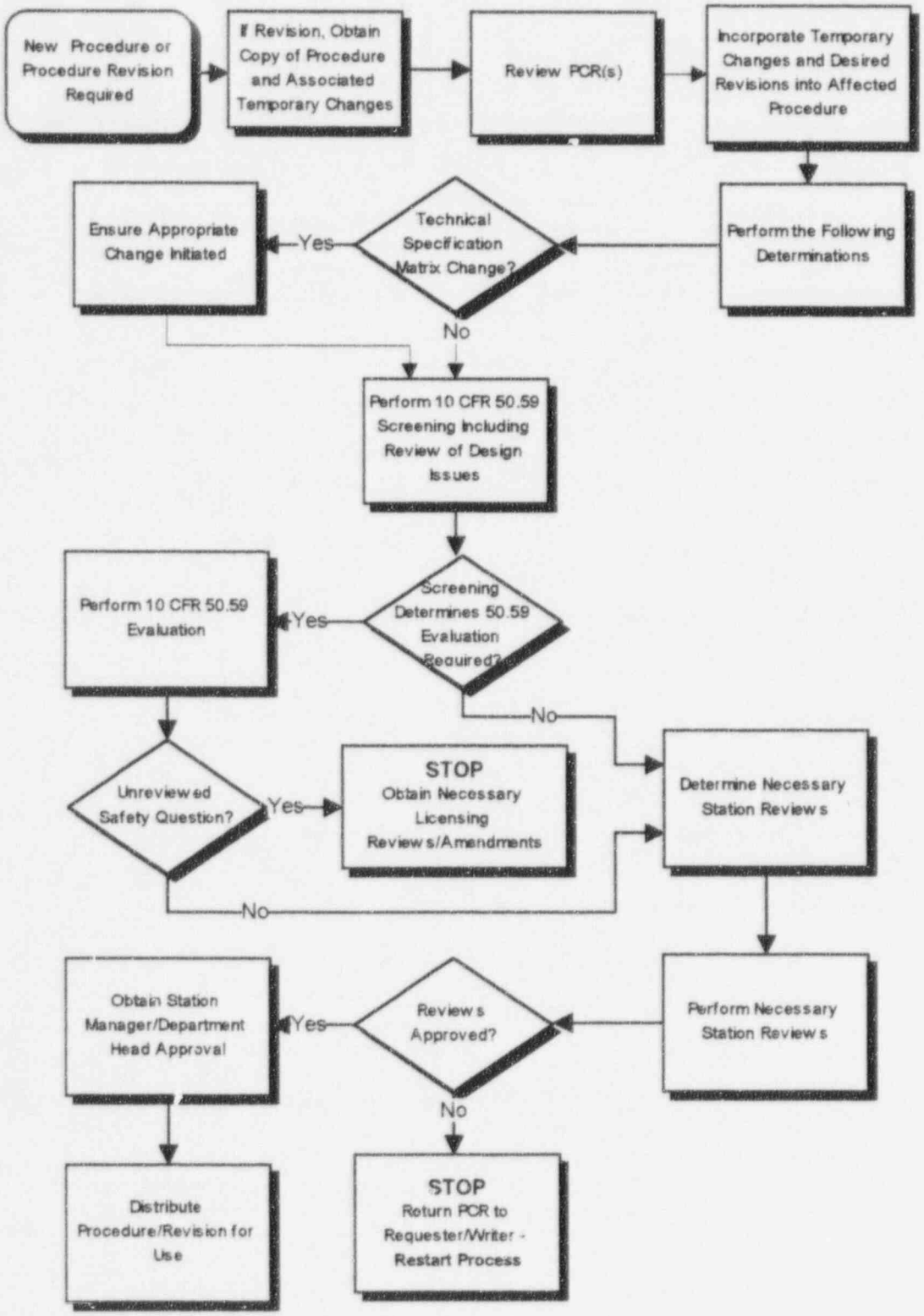
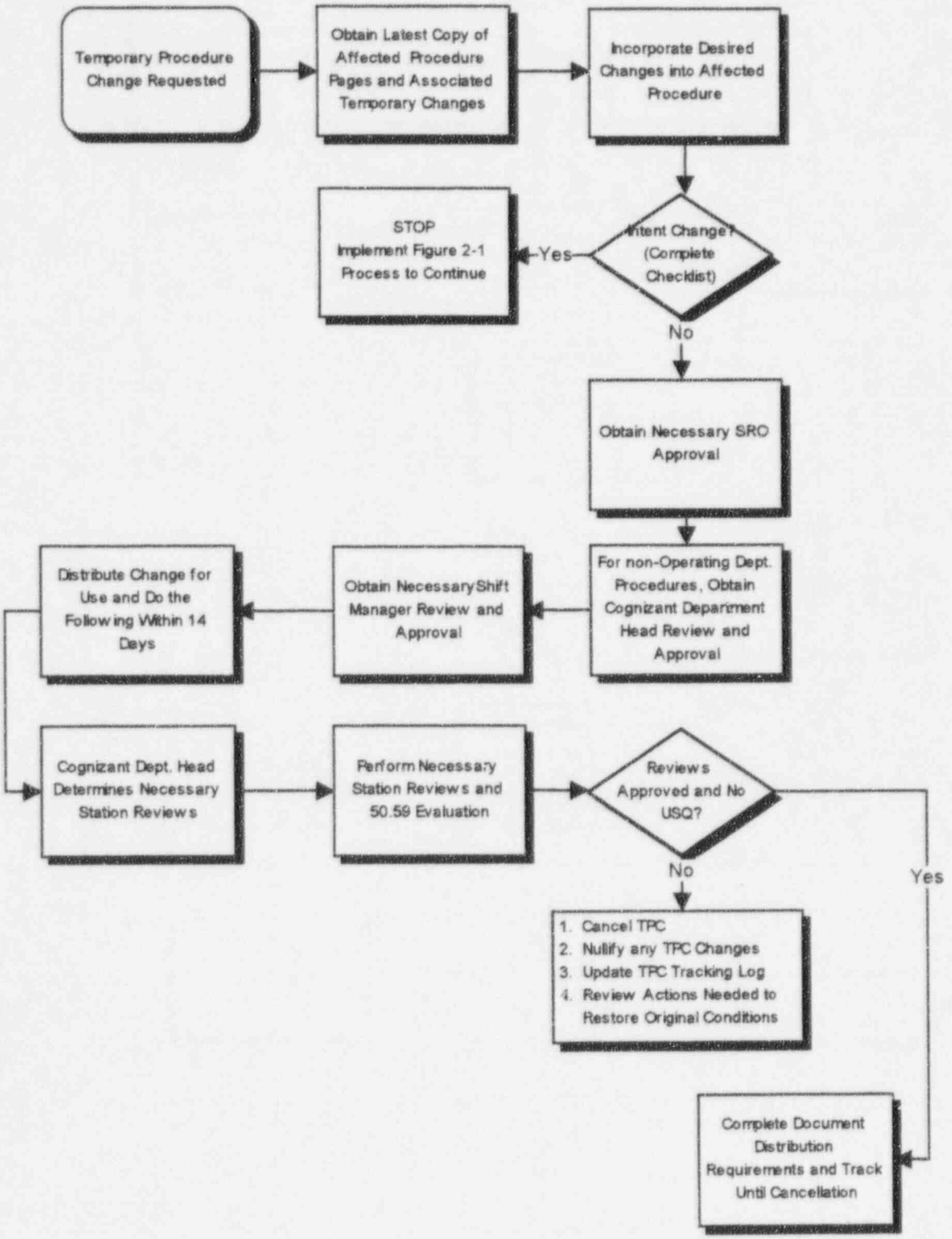


FIGURE 2-2
TEMPORARY PROCEDURE CHANGE (TPC) PROCESS



3.0 Action (c)

Rationale for concluding that system, structure, and component configuration and performance are consistent with the design bases.

3.1 Introduction

LaSalle County Station Unit 2 was shut down on September 20, 1996, for its seventh scheduled refueling outage. On September 22, 1996, Unit 1 experienced a turbine control valve servo failure. Rather than attempt to resolve the servo failure while the plant was operating, LaSalle County Station Management, under the leadership of the new Site Vice President, made a conservative decision to shut down Unit 1 for repairs. Subsequently, on September 24, 1996, the NRC inspection of LaSalle County Station's Service Water System raised concerns regarding the operability of essential service water cooling for the Residual Heat Removal (RHR) Heat Exchangers. Based on a LaSalle County Station preliminary review, LaSalle County Station Management placed Unit 1 in cold shutdown on September 26, 1996.

Thus, both reactor units at LaSalle County Station have been in shutdown status since September 1996. Since that time, a number of additional issues have been identified through continuing self-assessment and the establishment of higher management expectations at LaSalle County Station. As a result, LaSalle County Station Management has made the determination not to restart either unit pending further reviews to discover the extent of weaknesses and effective resolution of identified issues regarding material condition, operator performance, and engineering support. Examples of the issues are discussed in Section 3.4.

The assessment and audit processes on which LaSalle County Station relies to periodically confirm that implementation of configuration control processes are effective in maintaining the plant configuration consistent with the design bases did not prevent the circumstances discussed above. Therefore, although processes and programs to maintain design control are in place, as discussed in our responses to Actions (a), (b), and (d), the ongoing assessments will also address any program issues identified.

Pending the completion of the ongoing assessments and improvement initiatives at LaSalle County Station, we have conducted an assessment to ensure that, in its current shutdown status, LaSalle County Station SSC configuration and performance are consistent with applicable design bases requirements for that mode. The principal supporting conclusions from this assessment are summarized below.

3.2 Background

In the normal course, performance and configuration of SSCs are initially determined to be consistent with design bases as part of preoperational licensing activities. These activities include preoperational and startup testing, calculations and studies, plant walkdowns, and other verification efforts.

LaSalle County Station has an advantage with respect to design basis documentation and control in that the licensing of the Station occurred just after the Three Mile Island Accident (TMI) and thus received heightened scrutiny during the licensing process. Many of the programmatic NRC bulletins and letters issued shortly after TMI (e.g., IEB 79-14 on piping configuration) were incorporated into the design and construction in lieu of backfitting during plant operation. In addition, plants of LaSalle County Station's vintage have significantly more design documentation than older plants.

As part of the initial LaSalle County Station licensing process, several initiatives were undertaken, for various reasons, including to confirm that the plant was designed in accordance with the design bases and to provide a more complete set of improved design documents. Examples of these initiatives include:

- Reformatting of the FSAR to a Regulatory Guide 1.70 Revision 2 format, which required a "design basis" section for essentially every system in the UFSAR.

- Development of LaSalle County Station Technical Specifications under the direction of ComEd personnel using the standardized BWR format specified in NUREG- 0123 as well as input from General Electric and Sargent and Lundy.

- A Compliance Review of the LaSalle County Station with the requirements of 10 CFR Parts 20, 50, and 100.

- Certification that Unit 2 Technical Specifications accurately reflect the physical plant configuration and the FSAR. This certification was based on: (1) the iterative process utilized to prepare the Unit 1 Technical Specifications; (2) the positive two year operating experience with the Unit 1 Technical Specifications; (3) the use of the Unit 1 Technical Specifications as the basis of the Unit 2 Technical Specifications; and (4) the positive experience since the operating license was issued with the Unit 2 Technical Specifications.

- Re-review of Unit 1 Technical Specifications to ensure the same quality level as Unit 2 Technical Specifications, subsequent to certification of Unit 2 Technical Specifications. As required, the Unit 1 Technical Specifications were upgraded to reflect those for Unit 2, unless the difference was due to a specific design difference.

These efforts were reviewed by both internal audits and third parties, including for example:

- A review transmitted to the NRC, of procedures and practices used in the control of design and construction of LaSalle County Station providing assurance that the plant was designed and was being built in a manner that would assure its safe operation in accordance with the requirements of the FSAR and the SER.

- A follow-up review to assure that LaSalle County Station was designed and constructed in accordance with the requirements of the FSAR and SER, and that no changes had been made in design control practices subsequent to ComEd's initial review described immediately above.

- An independent design review by Teledyne Engineering Services on piping and structural aspects of the RHR "C" Loop (as a vertical slice) that could not be verified by preoperational or startup testing.

- A review of Emergency Operating Procedures (EOPs) by the NSSS supplier (GE).

- A review of the LaSalle County Station Unit 1 HVAC system documenting construction (i.e., not design) conformance of design changes, fabrication, and installation to AE design specifications.

- A review of the Control Room design documenting conformance to human factors commitments, identified discrepancies and findings, as well as necessary actions.

The NRC issued the original Safety Evaluation Report, NUREG-0519 dated March 5, 1981, stating its intent to issue operating licenses to the LaSalle County Station Units 1 and 2. This SER discusses the NRC's evaluations of the LaSalle County Station design bases and FSAR, and the Station's design conformance to regulatory requirements. Supplements to the SER identified a series of open items identified such as small pipe visual inspection during preoperational tests and review of the independent inspection of cable routing. These open items were to be resolved by ComEd prior to issuance of the operating licenses. The NRC issued a series of SER supplements closing these items and subsequently issued operating licenses for each unit.

3.3 Preservation of the Station Configuration and Performance Consistent with Design Bases

Processes, programs, and procedures, in place since original plant startup, control maintenance, testing, and design changes. These programs, processes, and procedures are intended to ensure that configuration and performance are maintained consistent with the design bases. These processes, as they currently exist at LaSalle County Station, are described in Actions (a), (b), and (d) of this response.

In summary, these processes include numerous reviews, tests, and other checks to ensure the desired results; i.e., maintenance of Station configuration and performance consistent with the design basis. When effectively implemented, they ensure that plant operations are performed in accordance with operating procedures which are maintained consistent with the design basis through adherence to the procedure change process described in Action (b) of this response. Ongoing plant performance is then monitored through operator and other plant personnel actions including the following:

- **Plant Walkdowns:** For instance, operating procedures require plant rounds to be performed on a regular basis, during which Operations Department personnel record parameters (e.g., pressure, flow, temperature, vibration) which indicate whether certain SSCs are operating within the envelope of their design bases. System Engineers also perform regular plant walkdowns to validate system configuration and

to identify system deficiencies. In addition, System Readiness Reviews are prepared by System Engineers to assess the system status and performance history and reviewed by the System Readiness Review Board (SRRB).

- **Surveillance Testing:** Equipment important to safety at LaSalle County Station is subject to a comprehensive surveillance testing program. The program consists of equipment performance testing, integrated system tests, periodic tests of activation circuitry, and mechanical component testing.

- **Post Maintenance Testing / Post Modification Testing:** As part of the work package preparation process, post maintenance testing requirements are determined and specified by the work analyst with assistance from system engineering unless post maintenance testing requirements are specified in implementing procedures. As part of the design change process, post modification testing requirements are determined by design engineering with assistance from system engineering if required and specified in the design change documentation. These testing requirements are implemented either in work packages or by special tests prepared by Engineering. They are meant to ensure that modifications are tested to demonstrate compliance with applicable codes and standards, as well as design bases requirements.

- **10 CFR 50.65 Maintenance Rule Implementation:** The Maintenance Rule implementation and compliance program at LaSalle County Station is based on NRC Regulatory Guide 1.160, NUMARC documents 93-01 and 93-02, ComEd guidelines, and the Maintenance Rule implementation procedure. It is meant to provide added assurance that SSC performance is consistent with the design bases.

In addition, activities to validate SSC configuration and performance are consistent with design bases include:

- **Special Verifications and Improvement Initiatives:** A number of special verifications activities and improvement initiatives have been undertaken at LaSalle County Station for the purposes of: (1) examining specific aspects of plant conformance with design bases; and (2) enhancing conformance with design bases on an ongoing basis. These initiatives have included, for example:

    - a 1995 review of plant procedures to ensure their conformance with Technical Specification surveillance requirements;

    - an ongoing UFSAR pilot validation project;

    - an ongoing Improved Technical Specifications Project;

    - the Vendor Equipment Technical Information Program (VETIP);

- Equipment Database Improvements; and

- Motor Operated Valve (MOV) Program.

- **Special Monitoring Programs:** In addition to routine monitoring activities, special programs and/or diagnostic tools provide enhanced monitoring of key system components to provide added assurance that their performance remains consistent with the design bases. Two examples of such programs at LaSalle County Station include the Emergency Diesel Generator (EDG) Reliability Testing Program and Generic Letter 89-13 programs.

- **Audits and Inspections:** Internal audits and inspections assess Station configuration and/or performance. Examples of vertical slice audits that have been performed or are on-going at LaSalle County Station include the following:

  - **ComEd Safety System Functional Inspections (SSFIs):** A 1987 SSFI on the HPCS and the 2B Diesel Generator was conducted by a team of ComEd Corporate Engineers. A team of ComEd Corporate engineers also conducted an SSFI on the Standby Liquid Control System (SBLC) in 1988. Both teams focused on consistency of design documents, drawings, and procedures through all phases of modification and maintenance, as well as on verification of physical conformance of the plant to design documentation. ComEd is completing an intensive design review covering the CSCS, Control Room Ventilation, Auxiliary Electric Equipment Room, and 125Volt DC systems prior to startup from the current outages. The objectives of these design reviews include: (1) confirmation of the technical adequacy of a high-PRA impact safety system by confirming consistency among the design basis, Technical Specifications, procedures, design documentation, and the physical plant; and (2) an assessment of the effectiveness of the design control process and the adequacy of implementing procedures and management controls.

  - **NRC Electrical Distribution System Functional Inspection (EDSFI):** In Late 1991, an NRC inspection team reviewed the adequacy of the mechanical system design for support of the EDGs. The review included system walkdowns, examination of the mechanical support system design documentation included in the UFSAR, and Technical Specifications.

  - **NRC Safety Operational Performance Inspection (SOPI):** In 1996, a SOPI was conducted on the LaSalle County Station service water system which included service water supply to Component Cooling, Residual Heat Removal, and Diesel Generators. The team assessed the service water system's operational performance by performing a detailed review of the systems design, maintenance, operation and surveillance testing procedures and documentation. The team also assessed the planned and implemented actions for LaSalle

County Station in response to GL 89-13 and service water system problems affecting safety related equipment.

3.4 Current Status

Recently, largely because of recent NRC inspections and critical self-assessments, ComEd has identified certain lapses in the implementation of the processes and programs outlined above and discussed in response to Actions (a), (b), and (d). Examples of recently identified issues as summarized in the cover letter include:

- As discussed with the NRC Staff at a pre-decisional enforcement conference on September 27, 1996, injection of substantial quantities of sealant material into the Service Water Tunnel (with the potential consequence that the affected systems may not have been capable of functioning when required);

- Operability, testing and design basis issues, as described in Licensee Event Report 373-96-012 submitted on November 11, 1996, and those identified as a result of our System Functional Performance Review and Design Review effort, concerning the safety-related ventilation systems for the Main Control Room and the Auxiliary Electric Equipment Room, and the essential service water systems. These indicate that operability had not been assured and that the design basis requirements for ventilation flows, differential pressures, heat removal, and environmental conditions had not always been properly implemented, or periodically confirmed;

- Deficiencies, identified during the recent NRC System Operational Performance Inspection, concerning the Core Standby Cooling System (see letters to NRC dated December 20, 1996, and January 10, 1997, for response to violations and questions identified during this inspection);

- The determination that safety-related control switches (General Electric SBM design) were not replaced in the late 1970s, or subsequently, as recommended by General Electric;

- Weaknesses in our corrective action program and maintenance activities as discussed in Licensee Event Report 374-96-009 submitted on November 15, 1996, reporting the discovery that the Unit 2 suppression pool contained substantial amounts of foreign material within the corrosion product layer on the bottom of the pool that could have resulted in the Emergency Core Cooling System not being capable of performing its safety function when required; and

- Certain weaknesses in design control that resulted in modifications being performed during maintenance activities, outside of design control processes (for example, see letters to NRC dated December 20, 1996, and January 10, 1997, providing responses to the NRC System Operational Performance Inspection).

Pending the completion of ongoing assessment activities, as well as development and implementation of improvement initiatives, we have conducted an assessment to provide confidence that the systems relied upon to maintain the units in the safe shutdown mode are configured and are performing consistent with the design functional requirements. Specific systems supporting reactivity control, decay heat removal and inventory control, radioactivity control and supporting systems were identified and reviewed. The assessment is based on: (1) System Engineer performance review of key systems and support systems relied upon in safety shutdown; and (2) implementation of Technical Specifications and procedural controls for the "Shutdown Risk Management" process. The reviews were in addition to those normal activities performed to confirm and control the performance of operating and standby systems required during shutdown. Planned and in-progress work, material condition, recent surveillance test results and UFSAR requirements, were reviewed and walkdowns performed as required. The assessment provided LaSalle County Station management with confidence that the plant systems required to maintain the fuel in the reactor and/or the spent fuel pool in a safe condition will perform in accordance with their intended function.

3.5 Improvement Programs

The following are examples of ongoing assessment actions and improvement initiatives being taken at LaSalle County Station to address the issues referred to above before restart of Units 1 and 2.

- System reviews, and selected functional testing of systems and equipment important to safe and reliable operation, are being conducted. We embarked on these reviews after recognizing, in late October 1996, several design implementation and configuration control problems in the ventilation systems for the main Control Room, adjacent auxiliary electric equipment room, and essential service water systems. We are continuing to expand the review, as necessary, to ensure adequate problem characterization and resolution prior to restart.

- Our review of plant material condition has identified the need to complete a large scope of maintenance activities, including inspection and replacement of approximately eleven hundred GE SBM control switches in both Units, and replacement of about one-half of the control rod drive scram solenoid pilot valves in Unit 1 which will reach the end of the vendor recommended in-service life in late 1997.

- The need for improvement in our corrective action program has been identified, with particular focus on improving root cause determination and achieving effective corrective action implementation.

- The number of operator workarounds, temporary alterations, and control room deficiencies that challenge our operators will be reduced at the Station.

- Improvements in the work management process are underway, with particular emphasis on the scope, control, and preparation of satisfactory work packages for field execution.

3.6 Conclusion

ComEd understands the importance of the NRC's concern that plants be operated and maintained within their design bases and that any deviations be reconciled in a timely manner. As discussed in Section 3.1, both units at LaSalle County Station remain in a shutdown status to resolve deficiencies identified in recent self-assessments and NRC inspections which are discussed in Section 3.4. In its current shutdown status, LaSalle County Station is maintained consistent with applicable design bases requirements.

As discussed above, LaSalle County Station was licensed just after TMI. Therefore, as part of the initial LaSalle County Station licensing process, several initiatives were undertaken which helped confirm that the plant was designed in accordance with the design bases and to provide a more complete set of improved design documents. As discussed in Section 3.3, throughout the life of the plant, processes, programs, and procedures, have been in place to control maintenance, testing, and design changes. We currently conclude that the existing design and configuration control processes are adequate if implemented effectively. However, our confidence in the effectiveness of past management and implementation of these processes has been reduced by the deficiencies we have encountered through continuing self-assessment, and the potential extent of condition. We are continuing to aggressively pursue identification and correction of deficiencies. Actions to be taken to assess and correct the weaknesses are addressed in response to Action (e). The results of these efforts will be available for your review.

4.0 Action (d)

Description of processes for identification of problems and implementation of corrective actions including actions to determine the extent of problems, action to prevent recurrence, and reporting to the NRC.

4.1 Overview

This section describes the processes used by LaSalle County Station to identify and document problems, determine the extent and root causes of the problems identified, resolve problems identified through implementation of appropriate corrective actions, including actions to prevent recurrence, and perform effectiveness reviews of implemented corrective actions. The Problem Identification Form (PIF) is the primary station method for documenting and reporting problems. The PIF process also provides for reportability reviews and reporting to the NRC. In addition to the PIF process, this section also addresses the identification and correction of issues through special programs, targeted reviews, audits, and inspections.

Flowchart 1 provides an overview of the Corrective Action Process at LaSalle County Station. While its major elements are similar to the other five ComEd nuclear stations, initiatives were taken in late 1995 to simplify some aspects of the process. Consequently, some differences exist between the terminology and procedures used to implement the corrective action process at LaSalle County Station and those at the other ComEd stations.

4.2 Problem Identification Form (PIF) Process

The PIF is the primary station method for documenting and reporting identified problems (See attached Flowchart 2). PIF processing involves investigating problems through a systematic process, controlling and tracking corrective actions, and conducting effectiveness reviews. After PIFs are evaluated, problems are assigned a priority for timely corrective action based upon their significance to safety and reliability. Significant problems are subjected to root cause evaluations or departmental investigations. Corrective actions for significant problems are tracked through completion, and all PIFs are coded and trended to identify programmatic concerns. PIF procedures include steps to prevent recurrence of problems, and to identify and resolve any generic implications.

With respect to design bases-related problems, the PIF process includes criteria to ensure that design concerns are formally considered, documented, and evaluated. Following is a discussion of each element of the PIF process.

4.2.1 Initiating a Problem Identification Form

Any individual may initiate a PIF. The PIF is available to all station personnel for identifying any problem or concern. PIF forms are readily available at various locations at the station, as well as through a computer system.

The threshold for creating a PIF is very low, and PIF forms are easy to complete. They can be created electronically or by hard copy form. Station procedures provide guidance on the types of problems that warrant a PIF, as well as instructions on how to initiate and process a PIF. Station management aggressively encourages all station personnel to document problems on a PIF.

4.2.2 Screening a PIF

Once a PIF is initiated, it is reviewed by a Senior Reactor Operator (SRO) to determine whether an immediate nuclear safety, operability or reportability concern exists. If an operability or safety concern does exist, the Shift Manager takes appropriate action to place the plant in a safe condition. All new PIFs are reviewed during each shift. If additional input from Engineering is required to demonstrate operability, then the issue is forwarded to Engineering for an "Operability Evaluation." Station procedures require that Engineering be notified within one working day to perform a detailed Operability Evaluation.

The operability assessment process is described in the response to Action (a). Station operability assessment procedures require Engineering personnel to identify whether the problem, failure, defect, degraded or nonconforming condition impacts any required functions(s) of any affected UFSAR structure, system, or component. The process for reporting to the NRC is described in Section 4.6.

All PIFs are reviewed every business day by the Event Screening Committee (ESC). During non-business days, procedures and guidelines are in place to ensure root cause investigations are initiated promptly. The ESC is comprised (as a minimum quorum) of the Station Manager and representatives from Operations, Engineering, Work Control, and Maintenance. It uses the combined group knowledge and experience to understand the importance of plant problems and focus management's attention on significant issues.

The ESC evaluates the adequacy of any immediate corrective actions taken prior to its review, determines whether follow-up actions are required, and classifies a PIF as "significant" or "non-significant" in accordance with guidance provided in Station Procedures. For "significant" PIFs, the ESC assigns an action for a Root Cause Analysis or Departmental Investigation. Root Cause Analysis is performed by an individual or a team at the direction of the ESC. The ESC assures that the appropriate departments/personnel are assigned for the timely investigation of significant events.

PIFs that do not result in a Root Cause Analysis or Departmental Investigation are sent to the responsible department for further action or for information, at the discretion of the ESC, and maintained in a database for trending. Following the ESC meeting, the database is updated.

4.2.3 Root Cause Analysis

Root cause analyses are conducted in accordance with site procedures and policies. Root cause analyses are used to determine the fundamental causes of the problem so that corrective actions to resolve the causes can be developed to prevent recurrence.

The root cause investigator prepares a Root Cause Report (RCR) to document the investigation. The RCR includes a description of the event, the cause(s) of the event, an assessment of the safety consequences, recommendations for corrective actions to prevent recurrence, a description of why previous corrective actions were ineffective, and a listing of component failure data.

The station root cause analysis procedure states that the impact of the cause of the event on the other unit/train should be addressed in the safety consequences and corrective action sections of the RCR.

4.2.4 Corrective Actions

Corrective actions are generated as a result of Root Cause Analyses and Departmental Investigations.

The Corrective Action Review Board (CARB) presently reviews and approves each RCR analysis. Onsite Review also reviews investigation results for all PIFs that involve violations of Technical Specifications, reportable events, and other significant operating abnormalities. Following CARB review and approval (and Onsite Review, if necessary), the Station Manager performs a final review and approves each RCR.

Corrective actions generated as a result of Departmental Investigations are reviewed by the department head and Regulatory Assurance Supervisor. Corrective actions are assigned tracking numbers by the Regulatory Assurance Department PIF coordinator in the Nuclear Tracking System (NTS) and tracked to closure. The completed investigation is entered into a database, and the document is filed into the Site Central Files.

4.2.5 Offsite Review

Following Station Manager approval of the RCR, a copy is transmitted to Offsite Review.

4.2.6 Effectiveness Review

Procedures also require that corrective actions to prevent recurrence resulting from root cause investigations be reviewed for effectiveness by the cognizant individual. The effectiveness review is to be completed within six months from the action item completion date.

4.2.7 Trending

PIF trending has been performed at LaSalle County Station since early 1996. All PIFs are coded and codes entered into a database for trending.

4.3 Other Processes that Identify Problems

4.3.1 Action Request (AR)/Work Request

Action Requests and Work Requests may be used by anyone at the station to identify hardware problems. The AR is the primary vehicle used to initiate repairs and other work on plant equipment. The AR process is described in detail in the response to Action (a). The Shift Manager or designee determines if the deficiency requires either immediate action or action prior to the next meeting of the Screening Committee. The Shift Manager then approves the AR and forwards it to the Screening Committee, a multi-discipline group. The AR Screening process is described in the response to Action (a). The System Engineering Group reviews ARs for recurring system or component failures and uses the data to improve system performance.

4.3.2 Engineering Request (ER)

An ER is used as a method to request assistance and evaluation from Engineering in conducting problem evaluations. The station procedure for ERs provides guidelines on how plant personnel submit technical inquiries, design evaluation and design change requests, and requests for Temporary Alteration to the Engineering Department. This procedure also provides requirements for processing and resolving ERs. The ER process assures that design bases issues are properly identified, documented, and prioritized based on their significance. PIFs are generated for design bases nonconformances and are routed to the PIF process as needed.

4.3.3 Document Change Request (DCR)

Discrepancies between plant documentation and the as-built condition of the plant can be identified through the As-Built DCR process which is described in the response to Action (a). The As-Built DCR process provides a mechanism for making an administrative-only change, based on an existing condition, where no field work is required.

4.3.4 Operating Experience Reviews (OPEX)

The OPEX program is the primary means used to review and evaluate operating experience information for applicability and to determine necessary follow-up actions. As such, the process is a form of problem identification. This program applies to any source of industry operating experience information, including INPO Significant Operating Experience Report (SOERs) and Significant Event Reports (SERs), NRC Information Notices, Bulletins, and Generic Letters, and Vendor/NSSS Bulletins. Operating experience assessment and dissemination are currently the responsibility of the Regulatory Assurance Department (RAD). RAD is responsible for the

specific implementation of the OPEX Program, including assigning evaluations, tracking reports through the system, and ensuring the preparation and availability of periodic status updates.

If an OPEX issue is applicable, it is sent to the appropriate departments for review/response. It is assigned a response due date commensurate with its significance, a determination is made as to what corrective actions would effectively reduce the risk of occurrence, and commitments with due dates are issued to applicable personnel. These commitments are tracked via the NTS system. Information determined to have vendor manual impact is forwarded to the VETIP Coordinator. Regulatory information from the NRC is processed by RAD.

4.3.5 Operator Workaround (OWA)

An OWA is defined as equipment operated in the manual mode when its design is to be automatic; operator action during a transient or normal operations to compensate for a degraded condition that is not a part of the design; or compensatory procedural requirements to perform a task due to degraded equipment. Specific criteria are provided in the PIF process to document and resolve OWAs.

4.3.6 Technical Alert

The Technical Alert program is a special, advisory ComEd program for operating experience feedback which identifies "lessons learned at one station" and makes them available to the other stations. The content of a Technical Alert is intended to provide sufficiently detailed information on emerging engineering issues to be useful for other potentially affected sites. In addition, Technical Alerts address lessons learned, identified solutions, and actions needed to address the issue at other locations. Since the inception of the program, seven Technical Alerts were issued in 1994, 15 in 1995, and 33 in 1996.

4.3.7 Nuclear Operations Notifications

A Nuclear Operations Notification (NON) notifies ComEd nuclear sites of problems or events that occur at other ComEd Stations so that all can review them for applicability. NONs summarize the nature, impact, and significance of the event. In general, they are published before completion of the event investigation. They are posted on a ComEd computer bulletin board so that anyone with a cc:mail account has immediate access to them.

At LaSalle County Station, PIFs are reviewed for potential NON subjects. Criteria are established for determining which events should be publicized as NONs. If it is determined that a NON should be published, it is prepared by cognizant station personnel and posted to the cc:mail bulletin board. Each NON published by other sites is forwarded by the OPEX Coordinator to the appropriate station department for information and/or applicability review if the problem appears to be potentially applicable to LaSalle County Station. If applicable, a PIF is generated within 14 days. LaSalle County Station initiated 52 of approximately 170 NONs issued by all six ComEd stations.

4.3.8 Audits and Evaluations

Problems are also identified by formal audits and evaluations, necessitating corrective actions where required. Examples of Onsite Quality Verification (SQV) activities are discussed in the following subsections:

SQV Audits and Surveillances: Audits and surveillances are conducted in accordance with Nuclear Oversight procedures and SQV instructions. Procedures and instructions establish the methodology and requirements for planning, staffing, preparing, performing, and reporting SQV audits and surveillances. Deficiencies found during audits and surveillances are documented on a Corrective Action Record (CAR), which is discussed in Section 4.5.1. Since 1990, the SQV organization has conducted performance-based audits and surveillances. Prior to that time, the audits were compliance-based.

Independent Safety Engineering Group (ISEG): The ISEG examines unit operating activities, NRC issuances, industry advisories, Licensee Event Reports (LERs), and other operating experience information, including that from plants of similar design, which may indicate areas for improving unit safety. ISEG personnel also conduct surveillances of unit activities to provide independent verification that activities are performed correctly and human errors are reduced as much as practical. They also make recommendations for improving unit safety. ISEG performs reviews in accordance with Nuclear Oversight procedures and SQV instructions. Deficiencies identified during ISEG reviews are documented on a PIF or a CAR, which is discussed in Section 4.5.1.

Field Monitoring Program: The SQV organization also conducts field monitoring activities designed to focus on adverse or declining performance areas. Field monitoring activities are scheduled based upon a "graded approach" analysis in accordance with procedural guidance. Field monitoring activities include such activities as daily tours of the control room and witnessing field implementation of operating, test, or maintenance procedures or sequences. Deficiencies are documented on a Field Monitoring Report or a CAR, if a problem is identified that needs corrective action.

Trending: The Integrated Analysis Administrator (IAA) is the SQV individual who performs an independent analysis of station performance information from an oversight perspective in accordance with established guidance. The IAA analyzes information from such sources as the PIF process, station trend reports, ISEG, QC, and Field Monitoring Reports. Trends (both positive and negative) are reported to station and Nuclear Oversight Department management via a monthly report. The Quality Control (QC) group also trends weaknesses identified during work request reviews and field inspections and provides written reports to management. PIFs are initiated when adverse trends are identified.

Quality Control Program (QC): The QC program tracks discrepancies in components, parts, spares, consumables, portable test equipment, and inspection and test procedures identified in the field. Discrepancies are documented and tracked on Discrepancy Records (DRs) pending resolution.

4.3.9 Quality First Process

Employees and contractors are encouraged and expected to voluntarily raise any concerns they may have in the performance of their jobs. Through the Quality First Program, Nuclear Operations Division (NOD) employees and contractors are able to address concerns directly and indirectly related to quality and safety.

ComEd management has high expectations for the entire NOD when it comes to quality and safety. ComEd management also expects supervisors and the line management team to create an atmosphere in which employees can freely voice concerns. The individual raising the concern may request confidentiality and every effort will be made to assure the confidential status is maintained. Feedback will be provided to the individual raising the concern.

Supervisors are crucial to the concern reporting process since they are in positions to receive the maximum input from the workforce regarding potential deficiencies and discrepancies. All supervisors are expected to be sensitive to potential concerns, clarify communications, assure mutual understanding, and act upon potential concerns in a timely manner.

4.4 Process That Determines the Extent of Problems - Root Cause Analysis

Root cause analyses are performed to understand how a significant incident or degradation occurred and to provide insight on how to prevent recurrence. Station root cause analysis procedures state that the impact of the cause of the event on the other unit/train should be addressed in the safety consequences and corrective action sections of the root cause report.

4.5 Other Processes that Identify and Implement Corrective Action

4.5.1 Corrective Action Records

This program is administered by the SQV organization. A CAR is a stand-alone document used to identify concerns or strengths developed during audits and surveillances, field monitoring, and ISEG activities. The CAR is used for documenting, reporting, follow-up, action close-out, and trending of identified problems.

4.5.2 Nuclear Tracking System (NTS)

For corrective actions identified by sources other than SQV (which uses the CAR), corrective actions are tracked via the Nuclear Tracking System (NTS) which provides a mechanism for the tracking, searching, and follow-up of action items.

4.6 Processes for Reporting Problems to the NRC

Station processes require that PIFs be evaluated for reportability to the NRC and, if appropriate, be reported to the NRC pursuant to NRC regulations set forth in the Code of Federal

Regulations. In addition to NRC regulations, guidance on reportability is provided in the ComEd "Reportability Manual." This controlled manual provides an event-driven system of decision trees to aid in reportability determinations and addresses notifications and reporting in accordance with 10 CFR 50.72, 50.73, 50.9 and Part 21, as well as other regulations. The Summary Tables contained in the Manual provide a concise encapsulation of the various reportability requirements.

4.7 Process Effectiveness

Some of the specific process elements described above are relatively new; e.g., Technical Alerts (1994), Effectiveness Reviews (1996), and Trending (1996). The roll-up of several predecessor processes into the current process occurred relatively recently in LaSalle County Station history. The PIF process, for example, was initiated in 1993 and revised in October 1995. However, equivalent processes for reporting, analysis, and resolving problems have been in place throughout LaSalle County Station's history.

In general, the structure of the LaSalle County Station Corrective Action Program, although different in detail from the programs at the other ComEd plants, embodies the same functional elements required for identification and documentation of problems, implementation of corrective actions (including actions to determine the extent of problems and to prevent recurrence), and reportability determinations. However, audits and assessments of these processes conducted by ComEd personnel and by external agencies, including the NRC, as well as the events over the last several months noted in the cover letter and in response to Actions (c) and (e), indicate deficiencies in the implementation of these functions at LaSalle County Station.

Audits, surveillances, and inspections conducted by ComEd Quality Assurance, the Joint Utility Management Audit team, the NRC, and the SQV group have identified several weaknesses in the effective implementation of elements of the program and of the overall program. Examples of these include the following:

- Low levels of problem reporting and a reluctance to document identified problems.
- Ineffective implementation of the Corrective Action Process (CAP). Specifically, the station was not identifying, documenting, evaluating, and resolving non-conforming conditions in a timely manner, nor were they effective in prioritizing problems. The station failed to meet a commitment to SQV to have an effective CAP in place by December 1, 1993, and SQV did not aggressively pursue implementation of the actions necessary to correct the CAP.
- Marginal effectiveness of LaSalle County Station audits because of the compliance-based approach to the planning, execution, reporting, and follow-up of audits.
- Failure to track issues to completion in NTS and ineffective maintenance of NTS.
- Ineffective response to findings from external evaluations.
- Failure to conduct some root cause investigations in accordance with procedures.

- Ineffective corrective actions for negative operability determinations.
- Event Screening Committee membership was not consistent with procedures.
- Significant operating experience program implementation deficiencies related to failure to perform effectiveness reviews, lack of departmental involvement, and a backlog in the screening and evaluation of Information Notices.

Several corrective actions have been and are being taken to address these issues:

- Recent station Senior Management initiatives have increased awareness of individual responsibility to report problems and charged all personnel with maintaining high standards. Trends of the number of PIFs written in 1996 show significant increases over prior years.
- Screening processes have been improved by involving Senior Management in the process.
- SQV has initiated a performance-based audit process.
- Personnel performing root cause evaluations are receiving increased training.
- The addition of the Technical Alert, Trending, and Effectiveness Review programs, discussed above, are improvements in the program structure, particularly for monitoring program performance.

In addition to the above program enhancements, other improvements to the corrective action program are part of restart activities.

Finally, ComEd has created a six-station peer group to develop a more common, improved CAP. Additionally, the NOD Action Plan includes several items intended to enhance the SQV organization, including enhancing the stature of the organizations on site and reviewing SQV staffing levels and competencies.

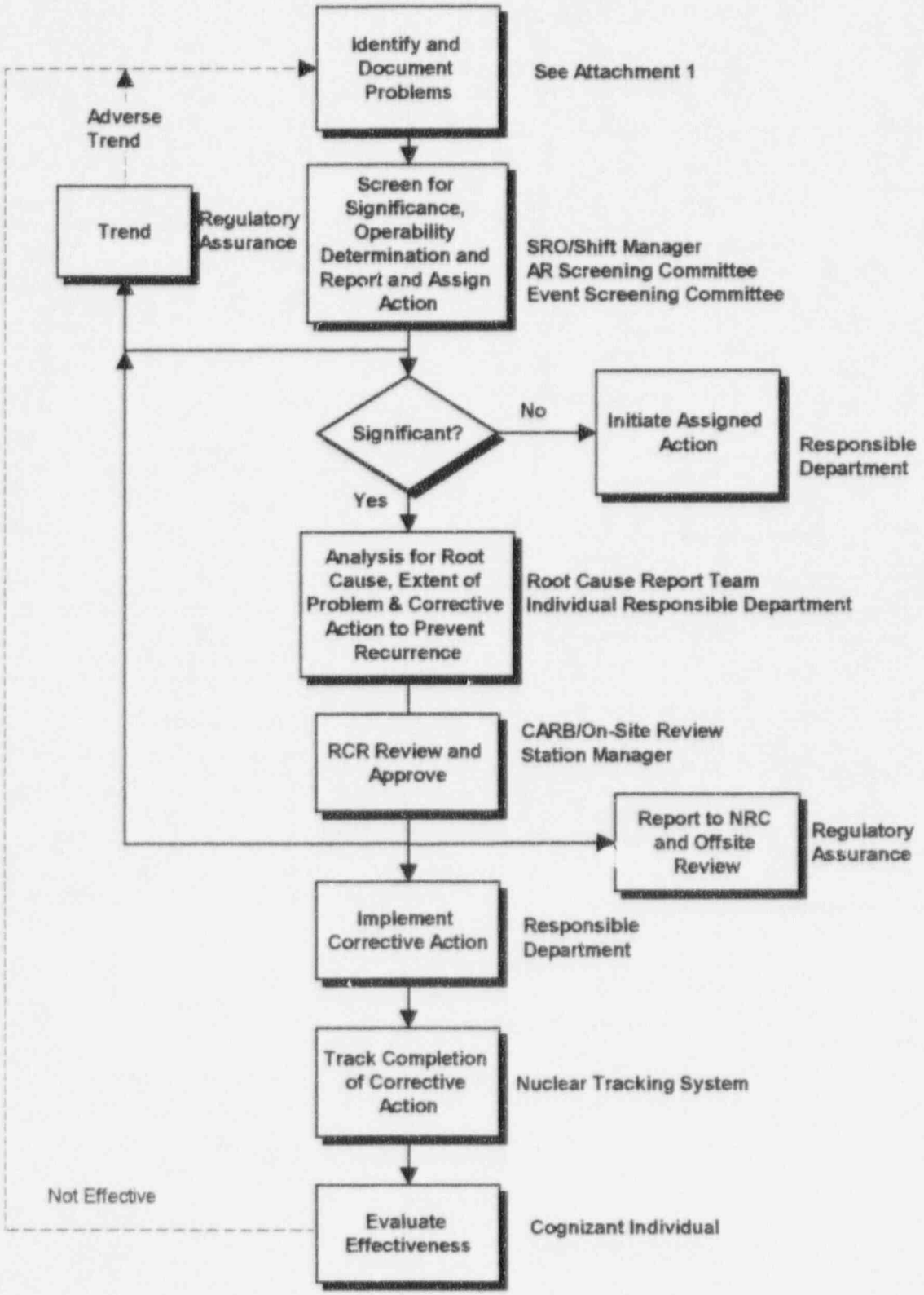
The effectiveness of these actions will be monitored by station management, Quality Assurance, and other internal and external oversight organizations to ensure that there is reasonable assurance that the processes for identification of problems and implementation of corrective actions are capable of identifying, correcting and preventing the recurrence of any significant non-conformances with the design bases.

4.8 Summary

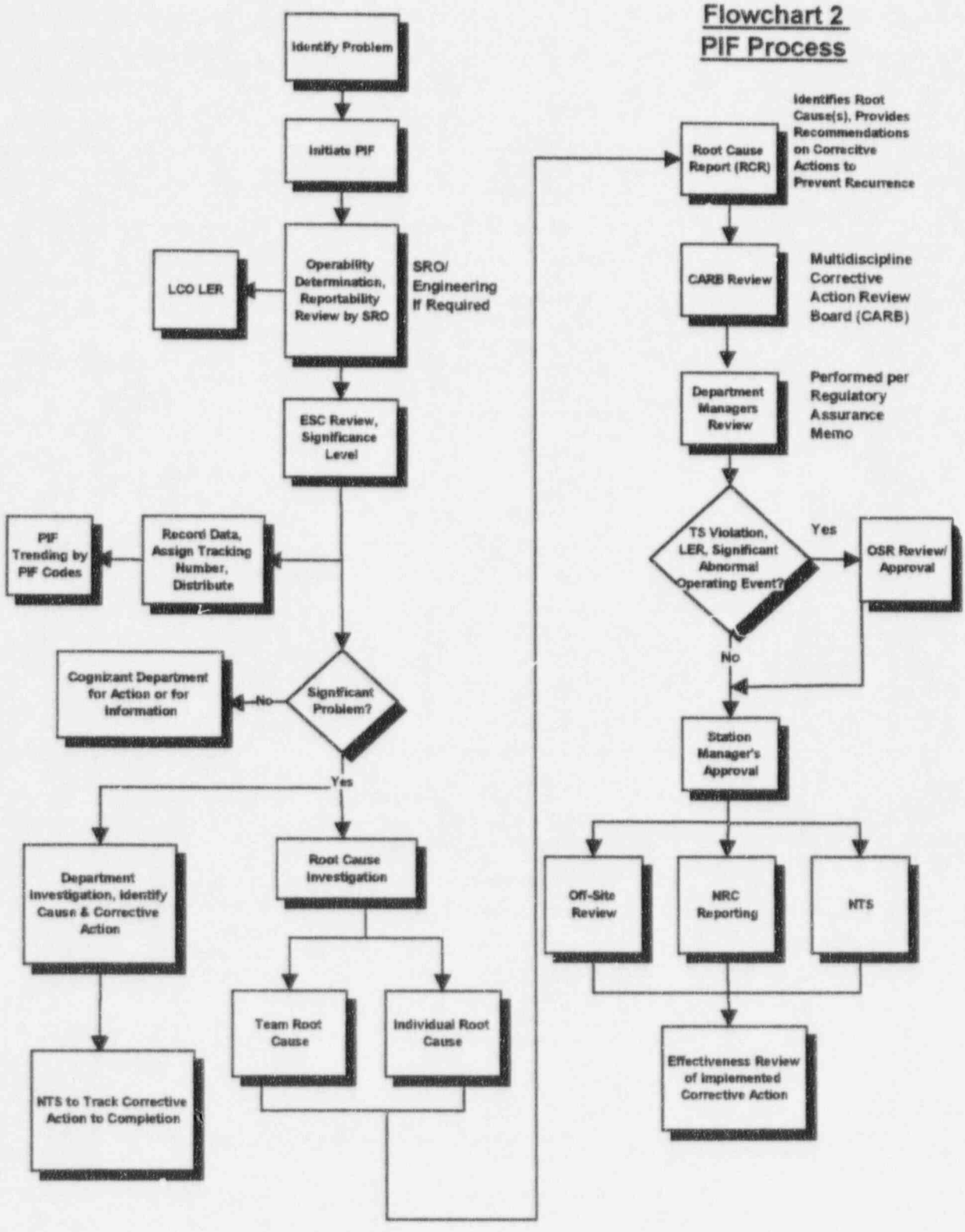
As noted, the structure of the LaSalle County Station CAP is different in detail from the programs at the other ComEd plants. However, it embodies those functional elements required for identification of problems, implementation of corrective actions (including actions to determine the extent of problems and to prevent recurrence) and reporting to the NRC. The results of

audits and assessments of these processes, conducted by ComEd personnel and by external agencies, including the NRC, as well as the events over the last several months noted in the cover letter and in response to Actions (c) and (e), indicate deficiencies in the effectiveness with which these elements are being implemented at LaSalle County Station.

Flowchart 1
Corrective Action Process



Flowchart 2
PIF Process



Attachment 1

Summ y of Primary Processes and Procedures for Identifying and Documenting Problems as Part of the Corrective Action Program

Identify the Problem	Document the Problem/Initiate Resolution						
	PIF	AR	DCR	ER	CAR	DR	FMR
Any Individual	X	X	X	X			
Operating Exp/Eval: OPEX	X	X	X	X			
OWA	X						
Tech Alerts	X	X	X	X			
NON	X	X	X	X			
Trending	X						
Site Quality Verification: A&S					X		
FM					X		X
ISEG					X		
QC	X					X	
Quality First	(Separate program with confidential reporting)						

Applicable Procedures:

PIF	Problem Identification Form	LAP-1500-8A
AR	Action Request	LAP-1300-1
DCR	Document Change Request (As-Built)	NEP-08-03
ER	Engineering Request	LAP-1300-16
CAR	Corrective Action Record	N.O.-09
DR	Deficiency Record	LAP-1500-3
FMR	Field Monitoring Record	N.O.-08
OPEX	Operating Experience Program	LAP-850-4 and 6 LAP-810-1 LAP-100-8
OWA	Operator Workaround	LAP-1500-8A
Tech Alerts	Technical Alerts	(No Procedure)
NON	Nuclear Operations Notification	NOD-OA.26
Trending	Trending	LAP-1700-12
A&S	Audits and Surveillances	N.O.-07 SQI-02
FM	Field Monitoring	N.O.-08
ISEG	Independent Safety Evaluation Group	N.O.-03 SQI-03
QC	Quality Control Program	LAP-1700 series and Nuclear Station Work Procedures
QF	Quality First	

5.0 Action (e)

The overall effectiveness of current processes and programs in concluding that the configuration of the plant is consistent with the design bases.

5.1 Introduction

The stated purpose of the NRC's 50.54(f) request is to provide the Commission with "added confidence and assurance" that plants are "operated and maintained within the design bases and any deviations are reconciled in a timely manner." In the normal course, such confidence and assurance would be based on:

- the existence of programs, processes, and procedures that: (1) control configuration, operation, and design basis information; and (2) identify and correct conditions adverse to quality and safety;
- effective implementation of those programs, processes, and procedures; and
- the Station's approach to safe and conservative operations, which includes aggressive self-assessment.

We currently conclude that the existing design and configuration control processes are adequate if implemented effectively. These processes include: (1) engineering design and configuration control processes and programs as described in response to Action (a); (2) operating, maintenance, and testing procedures as discussed in response to Action (b); and (3) corrective action processes summarized in response to Action (d). These processes and programs are designed to ensure that LaSalle County Station is operated and maintained within its design bases, and that any deviations are effectively addressed in a timely manner.

5.2 Implementation of Current Processes and Programs

Due in large part to recent aggressive and critical self-assessment, ComEd has identified certain lapses in the implementation of the programs, processes, and procedures discussed in response to Actions (a), (b), and (d). As explained in response to Action (c), the assessment and audit processes on which we rely to periodically confirm that implementation of configuration control processes are effective in maintaining plant configuration consistent with design bases did not prevent these lapses. We are continuing to aggressively pursue identification and correction of these deficiencies.

5.3 Assessments and Improvement Initiatives

Corrective actions to address the deficiencies discussed above and in response to Action (c) include the implementation of an extensive review, modification, and testing program, as well as other improvements to ensure that LaSalle County Station will be operated and maintained in accordance with its design bases. Longer term improvements that will extend beyond restart of the LaSalle County Station units include preparation of a series of design bases documents, which is anticipated to entail reconstitution of selected analyses and calculations. Each of these two categories of improvement efforts is described below.

First, the issue assessment activities, planned or in progress, include functional reviews, design reviews, testing of selected systems and equipment, implementation of a range of design modifications, completion of a large scope of maintenance activities, improvements in the corrective action program, retraining of Operations personnel, work management improvements, and focused improvements in human performance throughout the Station. Examples of actions being taken at LaSalle County Station in some of these areas are outlined in response to Action (c).

The second category of improvement initiatives is responsive to the inquiry in the NRC's 50.54(f) letter relative to "design review and reconstitution programs." Several corporate-sponsored programs address this issue: (1) the ongoing Design Bases Program; (2) the results of a major self-assessment and actions taken regarding the quality and accessibility of design information; and (3) ComEd's ongoing UFSAR Validation Efforts. Each of these is discussed below.

5.3.1 Design Bases Program

In the late 1980's, ComEd began to assess the quality and availability of the design information for each of its plants. The extent and level of detail in available information varied considerably across the ComEd plants. There was a marked difference between the older plants which had been designed in the 1960s prior to 10 CFR 50 Appendices A and B, and the newer plants which had been licensed in the 1980s in accordance with Standard Review Plans. The older ComEd plants (Dresden, Quad Cities, Zion) had original FSARs of approximately three to five volumes and the newer ComEd plants (LaSalle County Station, Byron, and Braidwood) have FSARs of 12 to 18 volumes.

Except for Byron and Braidwood, design input requirements and summaries of design analyses were assembled in Design Basis Documents (DBDs) to provide the rationale for the information documented in design output documents. NUMARC 90-12 was used as a guidance document in this effort. Seventy-five (75) system and topical DBDs were produced during the period between 1991 and 1996. Of these, three (3) topical DBDs were for LaSalle County Station.

The DBDs for LaSalle County Station were written by ComEd personnel in conjunction with AE design engineers. Through the plan described later in this section, the DBDs developed, or under development, will be validated in the 1997-99 time frame using NUMARC 90-12 Guidelines.

Calculations used in the development of the DBDs were acquired by ComEd as part of the DBD program, with the exception of those which existed as individual computer runs of proprietary NSSS vendor codes (e.g., GE's SAFR GESTR LOCA code.) ComEd has not systematically reconstituted unavailable calculations for the plant design process. This approach has been re-evaluated as stated in a letter from T.J. Maiman (ComEd) to A. Bill Beach (NRC-Region III), dated November 12, 1996. As described in that letter, ComEd has committed to the plan described below for improving the quality and access to design information. Until that plan is complete, calculations that are unavailable will be reconstituted on demand when needed to support ongoing operations or new modifications.

In recognition of the need to strengthen the area of design bases information at each of ComEd's six (6) nuclear sites, a comprehensive two and one-half year plan has been developed to improve the quality of and access to design information, as submitted to the NRC by letter dated January 30, 1997. In accordance with the plan, applicable documents (e.g., UFSAR and Technical Specifications) will be reviewed to identify the parameters which are key to understanding the design bases for LaSalle County Station. Supporting documentation for these key parameters will be validated. Where such documentation is incomplete or missing, the necessary information will be revised or reconstituted.

The plan includes development of additional system and topical DBDs for each of ComEd's sites. Approximately twenty system and seven additional topical DBDs will be developed for LaSalle County Station. All approved DBD manuals, existing and new, will be validated for adequacy, correctness, and consistency with the UFSAR, plant configuration, and plant procedures. Additionally, to improve on the ability to quickly locate design bases information which has been transferred to the Electronic Work Control System (EWCS), a review and enhancement of the indexing information with design bases records will be performed through the plan.

5.3.2 Design Information Self-Assessment

The ComEd Engineering Managers Team (EMT) established the Design Information Review Team in 1993-94 to investigate the quality, control, and accessibility of design information in the Nuclear Operations Division (NOD). The EMT was tasked with determining the current state of design information, design information systems, and ongoing improvement programs from an end user perspective. This effort was initiated to assist the EMT ensure that design information is accessible and controlled to support NOD functions. Design information users from the nuclear sites and Corporate were selected to participate on the team. Surveys at all sites and across most departments were performed to establish the current state of design information and access systems.

The Design Information Review Team influenced action in the following programs.

- Upgraded Critical Control Room drawings by reducing the backlog of open Drawing Change Requests (DCRs) and developed criteria to provide consistency of which drawings are critical across the six stations.
- Relocated the Vendor Technical Information Program (VETIP) under Engineering with a focused plan to reduce backlogs and established a VETIP Peer Group sponsored by Corporate Configuration Management.
- Integrated individual component databases (equipment, instrument, fuse, setpoint lists) into the Electronic Work Control System (EWCS). This effort normalized the component numbering, abbreviations, and data formats to improve accessibility and maintainability.
- Developed an on-line, automated means for updating and changing design bases data in EWCS.

5.3.3 UFSAR Validation Effort

This is an ongoing effort to review the operational requirements of the UFSAR to ensure that requirements are translated into operating, test, and maintenance procedures. Engineering has reviewed four chapters thus far and the results have identified some discrepancies with UFSAR requirements being translated into procedures. These potential issues are currently being researched and resolved, as necessary. Only one item found to date has been termed "significant" by the event screening committee. However, it had already been identified as part of the service water event. Several other items resulted in procedure changes.

5.4 Conclusion

Pending the development and implementation of these improvement initiatives, we have conducted an assessment to provide confidence that the systems relied upon to maintain the units in the safe shutdown mode are configured and are performing consistent with the design functional requirements. The nature and results of this assessment are described in the response to Action (c).

Assessment and improvement efforts underway will identify the scope of the deficiencies referred to in this report, will provide additional confidence that plant configuration is consistent with the design bases, and will support safe and reliable restart of the LaSalle County Station units. We will be submitting a follow-up letter to report the results of our continuing self-assessments and associated corrective actions as part of our continuing correspondence with NRC Region III.

Appendix I ComEd Organizational Restructuring to Improv[illegible] LaSalle Station's Ownership and Control of the Design Bases

1.0 Role of ComEd Engineering in Design Bases Management

The Station Engineering Organization has a significant role in controlling, maintaining, and assuring conformance with design bases. The role Engineering has had in support of station activities has transitioned over time as stations moved from construction to operation. Self assessments conducted in the early 1990s pointed to a need to further transition the role of Engineering to one with a more active focus directly at the station. Transition of major responsibilities to Engineering and the role of Corporate versus Site Engineering are described below.

1.1 Transition of Design Control and Engineering In-House Development

ComEd's historical approach to design had been the use of a combined engineering and construction team with Engineering producing design and analysis by predominantly managing architect engineering (AE) contracts from the General Office (essentially a Category 3 organization as described in Section 2.2.3 of NUREG 1397). The system engineering function was organized under a technical staff that reported on site to the Station Manager. In 1990 small engineering groups were established on-site to provide a closer presence for station support. In late 1992, the nuclear organization was changed to establish authority and accountability on-site under a Site Vice President.

Multiple architect engineers were used; but a common approach was assured by use of an AE guidebook. This guidebook formalized the interfaces and communication channels between ComEd and the AE. During this period, responsibility for design of the reactor core was centralized at the General Office, initially utilizing the NSSS suppliers for the design. A transition was begun in 1990 for core design to be performed in-house.

In late 1993 ComEd conducted a self-assessment utilizing senior individuals from TENERA Corporation . This was done at a time when we had established Site Engineering but had not yet initiated major activities to bring significant work in-house. We continued to rely primarily on AE firms for our design. The AE's also held the majority of the design bases information. Common procedures that had been in place prior to decentralization no longer existed and each site was essentially heading in its own direction for understanding and control of the design bases. This review identified strategic issues and targeted recommendations to deal with those issues. Key amongst them was the understanding and "owning" of the design. ComEd clearly had to become more knowledgeable in the design, license, and operating bases of the plants. ComEd needed to be in a stronger position to control the design configuration and be proactive in matters that require design information to resolve. The TENERA Report provided recommendations regarding access to and control of design information, and suggested that the first priority should be assigned to efforts required to take ownership of the design and develop in-house capability. It also included a recommendation for development and implementation of a plan for consolidation of design information under ComEd control.

In response to this report, a significant engineering transition began in 1994 to move ComEd into a Category 2 engineering organization (NUREG 1397) by the first quarter of 1997. An Engineering Vice President position was established. ComEd established a vision that assigned to the engineering organization the primary responsibility to be accountable to prevent and solve problems. It had to be a capable design authority; and it had to hold itself accountable, establish high expectations, and be its own worst critic. The organization that existed at that time lacked many of those attributes because of the high reliance on architect engineers.

A Chief Engineering organization was established in the Corporate Office that was responsible for the establishment of standards, transfer of lessons learned from site to site, oversight of site engineering functions and the education of the organization as the design authority. The onsite organization was integrated into the existing INPO ACAD 91-017 population to ensure that the engineers onsite have a common foundation in engineering fundamentals, plant systems, and site processes.

QA records previously controlled by the A/Es, (typically silver halides) have been transferred to the stations and placed in QA vault storage. Additionally, hard copies of high use original design documents have been indexed and transferred to the station.

1.2 Relative Roles of Corporate and Site Engineering

As indicated above, the corporate office evolved from being the principle focus for the production of design through architect engineers to an organization that teaches, coaches, mentors, establishes policy, and provides oversight of the design control functions of the site engineering organizations. Accountability is established between the sites and Corporate, with Corporate being responsible for technical methods and policy, and the sites being responsible for production and the establishment of priorities. The corporate office does limited production work, primarily in the area of fuel design, PRA, and common multisite projects, e.g., power uprate and steam generator replacement.

In establishing commonality among the sites in the area of tools and standards, the corporate office procured and implemented the Sargent & Lundy design standards. Common Nuclear Engineering Procedures were established and implemented (and are still in progress); computer codes likewise have been standardized.

The key Engineering information transfer vehicles that have been used are a daily engineering phone call, a Tech Alert program, Corporate Engineering oversight of station activities, the Engineering Managers Team meeting, and Engineering Peer Groups.

> Tech Alerts - Tech Alerts are prepared and issued by Downers Grove to provide sufficiently detailed information on emerging engineering issues to share lessons-learned, solutions , and actions to address the issue at other locations.

Corporate Engineering Oversight Role - The Chief's staffs periodically review design products developed by the Site Engineering organizations. The objective of the reviews is to assure that the design is adequate and is in compliance with procedures.

Peer Groups - The Peer Groups provide a mechanism to share lessons-learned, champion consistency on common issues, focus actions on key issues, prioritize activities, and elevate larger issues to the Engineering Management Team. Many groups are active in the areas of management, components, generic programs, general design, and special projects.

1.3 Configuration Management Philosophy

The departments at the station share responsibility in maintaining Configuration Management. In general, Engineering is accountable for ensuring the plant design and performance is in conformance with the design bases; Operations is accountable for ensuring the operational configuration is maintained and that operation procedures comply with the design bases; and Maintenance is accountable for ensuring physical plant work is conducted in accordance with the design bases.

At the corporate level, there is a Chief Engineer, Configuration Management, reporting to the Engineering Vice President. The Chief is accountable for setting policy for configuration management and implementing the policy through a series of common processes and procedures. These common processes are documented in a set of Nuclear Engineering Procedures (NEPs) used commonly across the six nuclear stations.

At each of the six nuclear stations, there is a supervisor in the site Engineering Department who is accountable for configuration control. This supervisor oversees the design change processes discussed in Action (a), and supervises the close-out of the design changes to ensure controlled documentation (with the exception of procedures) and databases are updated in a timely manner. Procedure update is the accountability of the procedure update group, which is part of the Operations and Maintenance Departments.

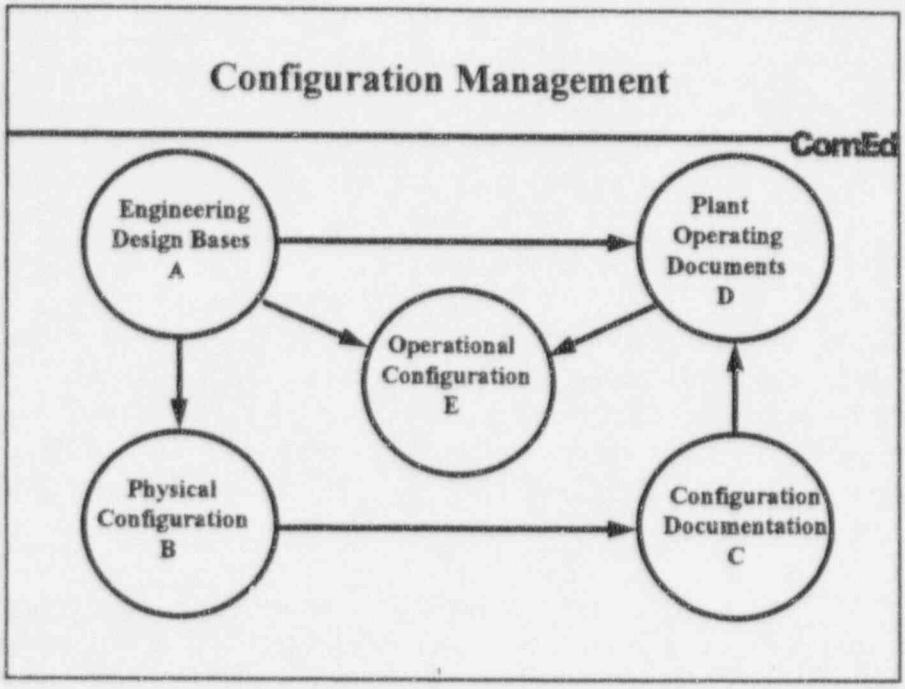
1.4 Configuration Management Model

The following "five ball" model is a convenient means for illustrating Configuration Management:

Actions (a), (b), and (c) of the 50.54(f) letter can be directly related to this model. Action (a) is the description of configuration control processes. These are the processes that maintain the design bases in "configuration" with the plant operating documents (A to D link) and the physical configuration (A-B link), as well as with configuration documentation (B-C/and C-D links), i.e., drawings, databases, and reports. Action (b) is conformance of procedures to the design bases (as described in 10 CFR 50.2) (A-D link). And, Action (c) is conformance of the physical configuration and plant performance to the design bases (A-B and A-E links).

Action (d) is also addressed in the above model. When one of the five ball "links" is identified as being in non conformance, ComEd's Corrective Action Programs as described in Action (d)

documents the non conformance and initiates corrective action to fix the immediate problem, investigate the cause of the problem, and, if significant, fix the root cause of the problem.



2.0 Self Assessment Organizations And Departments

ComEd implements many programs to provide assurance plant actions are in accordance with design bases. Some of these are required by regulation, such as the quality verification function. Others, such as corporate and site engineering assurance, are self initiated. A description of key self assessment organizations and a highlight of their role in providing assurance of design bases conformance is provided below. This includes a new function established in January 1997 at all six stations: Site Engineering Assurance.

2.1 Corporate Engineering Assurance

The Corporate Engineering Assurance Function is part of the Configuration Management organization. The role of this group is to provide technical assurance that the work performed by Architect Engineers and other contractors is in conformance with ComEd's Nuclear Engineering Procedures and the QA Manual. This is accomplished through periodic audits of the AEs, generally in a teaming arrangement with the Quality Assurance Department.

The Corporate Engineering Assurance Group is planning on leading a group of the new site Engineering Assurance Group, to provide self assessment, SSFI, and cross-station evaluations of findings.

The Corporate Engineering Assurance Group also coordinates the generation and reporting of performance metrics for the Engineering Department.

2.2 Site Engineering Assurance

As a result of the NRC Independent Safety Inspection at Dresden in November 1996, which pointed out weaknesses in the oversight of the site engineering activities, onsite Engineering Assurance organizations directly reporting to the Site Engineering Manager were established. This added assurance function was deemed necessary to provide independent oversight of the expanded accountabilities of the site engineering organization since assuming design change authority from the Architect Engineering firms.

A draft charter describing the role and responsibilities for the LaSalle Engineering Assurance Group has been issued for Engineering management review and comment. As indicated in the charter, the objective of the group is to improve the technical quality of selected engineering products. This will be accomplished by:

- Performing a combination of third party in-line and overview reviews of engineering products,
- Using a combination of experienced LaSalle personnel and senior industry-experienced personnel,
- Providing feedback to improve the quality of the specific engineering product being reviewed, and
- Conveying lessons learned using coaching and tutorial techniques to improve the technical capabilities of Engineering.

Organizationally, the group is headed by a manager who reports directly to the Site Engineering Manager. Initial group functions include safety reviews, design reviews, engineering process and program reviews, root cause analysis and assigned corrective action reviews, and performance monitoring/reporting.

2.3 Offsite Review

The Offsite Review and Investigative Function resides at the Corporate Office of the Nuclear Division in the Nuclear Oversight Department's Safety Review Group. Each Site submits documents, such as operability assessments, Safety Evaluations, and Licensing Event Reports to Offsite Review in accordance with Section 20 of the Quality Assurance Topical Report (QATR). The Offsite Review for documents requires an approval signature. As reviews are completed, they are transmitted to the station. Actions may be assigned based on results of the reviews and the completeness of information contained in the document.

In 1996 there were four separate audits of Offsite Review by the Site Quality Verification personnel and one evaluation conducted by the NRC Region III inspectors. In all cases, Offsite Review personnel were determined to be properly qualified and records were maintained for these individuals. Additionally, the audit teams reviewed specific Offsite Reviews with no findings or comments. The NRC inspection had no findings.

The Safety Review Group conducts routine self-assessments of its activities. These assessments have helped Offsite Review improve their reviews and increase the expectation for greater

document quality. Offsite Review perform trend analyses on submittals and Offsite Review's responses. This information is fed back to the stations. The assessment process has also helped Offsite Review understand the need to interface more at the stations and attend station meetings.

2.4 Role of Corporate SQV

The Nuclear Oversight Manager manages the Quality Assurance Program and Safety Review. This position reports directly to the Chief Nuclear Officer. He develops, maintains, and interprets the Company's quality assurance and nuclear safety policies, procedures, and implementing directives. He is responsible for the vendor audit program and for ensuring that audits of Corporate support functions are conducted. He is also responsible for conducting a periodic review of the site audit program to assure that oversight of QA Program implementation is effective.

The Site Quality Verification (SQV) Director is responsible for conducting internal audits, surveillances, and assessments of station line and Corporate activities to ensure compliance with quality assurance and nuclear safety requirements. He monitors the day-to-day station activities involving operating, modification, maintenance, in-service inspection, refueling and stores through onsite audits, field monitoring, and safety reviews.

Matrix of Appendix II Processes

LASALLE STATION

Process Number	Process Description	Procedure Reference	Implements Regulatory Requirement		Configuration Management Model Linkages (note 1)						
			50.59	50.71(e)	A/A	A/B	B/C	C/D	A/D	A/E	D/E
1	Action Request (AR) Screening Process	NSWP-WM-08				X	X			X	X
2	Roadmap to Design Control Process				X	X	X	X	X		
3	Design/Document Change Process Roadmap	NEP-04-(Series)			X	X	X	X	X		
4	Engineering Design Change Process	NEP-04-01/ NEP-04-02	X	X	X	X	X	X	X		
5	Modification Work Control Process	NSWP-G-01 (note 2)	X	X		X	X				
6	Temporary Alterations (Temp Alts)	NEP-04-08	X			X	X	X	X		
7	Document Change Requests (DCRs)	NEP-08-03	X	X		X	X	X			
8	Like-for-Like or Alternate Replacement Evaluation Process	NEP-11-(Series)	X	X		X	X	X			
9	Setpoint Change Request		X	X	X	X	X	X			
10	Design Basis Document (DBD) Update Process	NEP-17-01				X	X				
11	Engineering Software Development and Revision Process	NEP-20-01			X						
12	Engineering Change Notices (ECNs)	NEP-08-01				X	X	X			
13	Safety Evaluation Process	NSWP-A-04	X	X	X						
14	VETIP Processing	NEP-07-04				X	X	X			
15	Configuration Control Using EWCS	NEP-14-01				X	X				
16	DBD Development Process	NEP-17-01				X	X		X		
17	Calculation Process	NEP-12-02			X	X					
18	Operability Assessment Process	LAP-220-5			X	X			X		
19	UFSAR Update Process	LAP-400-4	X	X	X	X	X	X	X		
20	Out of Service/Return to Service Process	LAP-900-4 (Series)								X	X

NOTES:

1. A/A Link are processes that affect the design bases only.
2. Applies to Field Change Request when needed

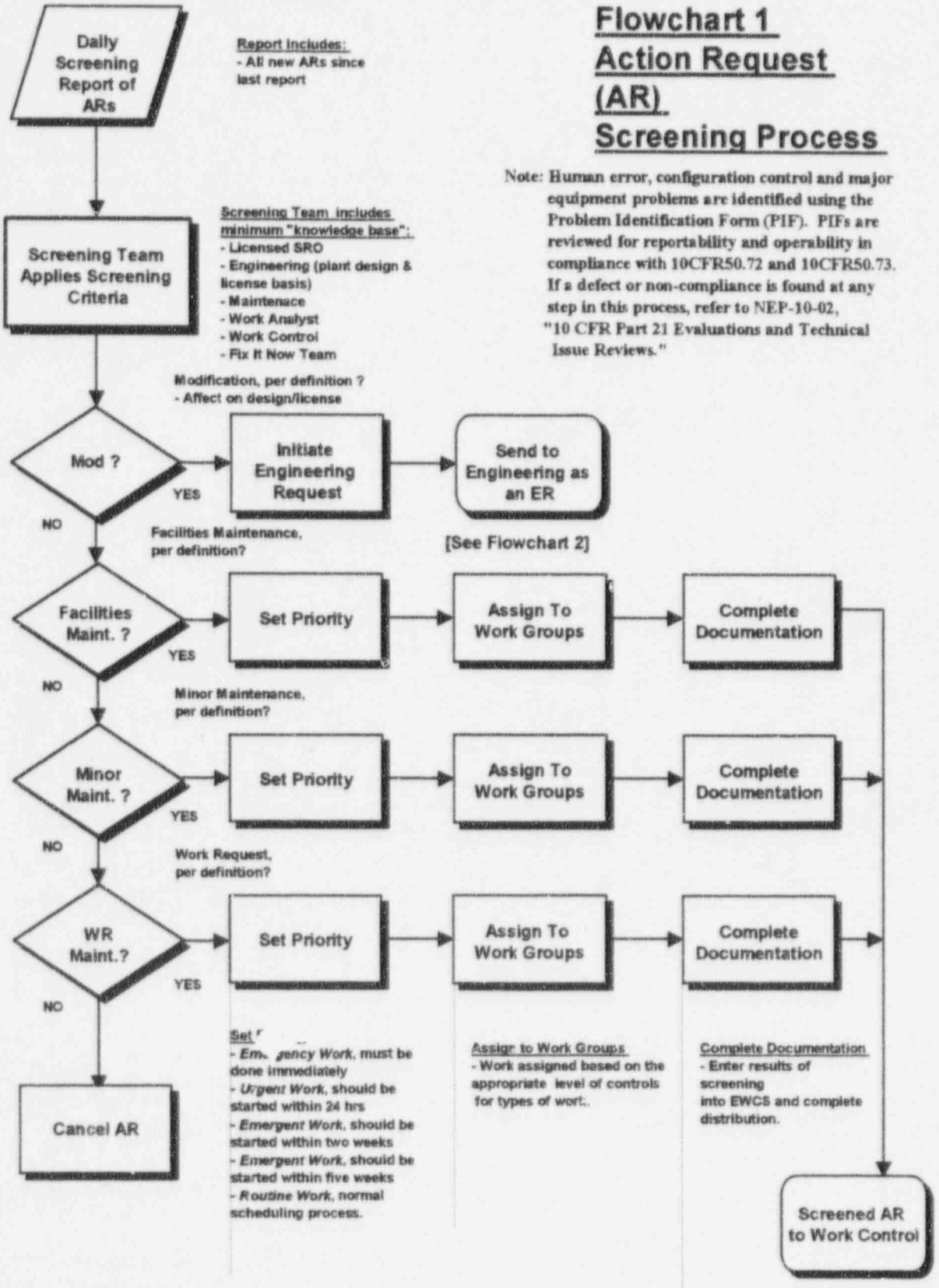
Appendix II Design Control and Configuration Control Processes

Background

This appendix summarizes the major processes used at LaSalle to control the plant's design bases and configuration, i.e., maintaining the physical plant consistent with the documented plant and with design bases. These processes are designed to ensure the design bases of the plant are maintained or modified as changes are made to the plant as a result of design changes, repairs, or equipment lineup changes. This appendix supports the description of configuration control and design control processes as required for action (a) of the 10 CFR 50.54(f) response. Those processes which are addressed through a corporate procedure (NSWP of NEP) are in place essentially in the same manner at all six nuclear stations.

Note:
Each flowchart is generally followed by a narrative discussion of the process. Flowchart numbers correspond with the process numbers used in Action (a).

Flowchart 1
Action Request (AR) Screening Process



Note: Human error, configuration control and major equipment problems are identified using the Problem Identification Form (PIF). PIFs are reviewed for reportability and operability in compliance with 10CFR50.72 and 10CFR50.73. If a defect or non-compliance is found at any step in this process, refer to NEP-10-02, "10 CFR Part 21 Evaluations and Technical Issue Reviews."

Action Request (AR) Screening Process

NSWP-WM-08

PURPOSE

Work that needs to be done at ComEd's nuclear stations, is initially identified and documented on an Action Request (AR) which is initiated using the Electronic Work Control System (EWCS) The AR process is intended to provide all site personnel with a simple and readily accessible process to identify work that needs to be performed. This AR is "screened" to determine the safety classification of the involved equipment, the priority of the work, the work group to whom it will be assigned, and the "type" of work to be performed.

PROCESS DESCRIPTION

The AR screening process begins with a review of a daily Screening Report that captures all of the newly generated ARs. This report summarizes the initial information provided by the initiator of the AR, identifies if the AR is related to a Problem Identification Form (PIF) and is used to determine the appropriate level of controls that are needed to implement the work. ARs can include repairs, maintenance activities, and plant modifications.

A "Screening Committee" determines the appropriate level of controls that need to be applied to the work. The committee brings a required "Knowledge Base" to the table to be used in a consensus determination. This "Knowledge Base" includes:

- Operations - has a current SRO license
- Engineering - is knowledgeable in engineering design and plant design and license basis.
- Maintenance (IM, EM, MM) - is knowledgeable in the division and scope of work among the three maintenance departments.
- Work Analyst - is knowledgeable in work requirements and package preparation.
- Work Control (Scheduling) - is knowledgeable in work scheduling.
- Fix It Now (FIN) - is knowledgeable in FIN Team capabilities.

In addition to the knowledge of the team, the ARs are also screened against the definitions of the work and/or work groups where the work will eventually be performed. The definitions or "types of work" are as follows:

- Modification - A planned change in plant design or operation and accomplished in accordance with requirements and limitations of applicable codes, standards, specifications, licenses, and predetermined safety restrictions. A change to an item made necessary by, or resulting in, a change in design requirements.
- Facilities Maintenance - A minor work activity conducted only on non power plant boundary or equipment. The work will not affect plant or power block structures, systems or components.

- Minor Maintenance - A work activity on Power Plant Boundary Equipment, considered routine and repetitive and within the "skill of the craft" of the maintenance work force. Additionally, minor maintenance requires an initiating work document, does not require detailed instructions, and may be performed without plant scheduling.
- Work Request Maintenance - A work activity requiring detailed instructions and an approval process.

Once the appropriate controls have been determined, the Screening Committee will establish priorities for when the work will be completed. Priority codes and descriptions are as follows:

A **Emergency work** having an immediate and direct impact on the health and safety of the general public or plant personnel, poses a significant industrial hazard, or requires immediate attention to prevent the deterioration of plant condition to a possible unsafe or unstable level. This work must be done immediately.

B1 **Urgent work** that should be scheduled and started within 24 hours.

B2 **Emergent work** that should be scheduled and started within two weeks.

B3 **Emergent work** that should be scheduled and started within five weeks.

C **Routine work** that follows the normal scheduling process.

After the priority has been determined for all work except for modifications, the AR is assigned to the appropriate work group, the documentation is completed by updating EWCS, and the AR is submitted to Work Control/Work Analyst. For modifications, an Engineering Request (ER) is generated and assigned to Engineering for processing under the controls of a modification.

CHECKS AND BALANCES

The first line of defense against potentially performing work with an inappropriate or inadequate level of control is the AR Screening Committee. The "Knowledge Base" requirements of the Screening Committee have provided an additional level of confidence to the screening process. By having Engineering participate, it provides a design and licensing basis understanding from people who often reference and interpret the appropriate source documents. If the person representing Engineering is unfamiliar with the proposed work and its affect on the design/licensing basis, they will know who to contact.

The second line of defense in ensuring that work is performed with appropriate control is the Work Analyst. Once the initial determination of "type of work" is made by the screening committee, the AR's identified as Work Request Maintenance are sent to a work analyst for further planning and preparation of work instructions. The review and approval of these instructions provides an additional opportunity (the third line of defense) for knowledgeable personnel to evaluate the requested work against the licensing/design basis of the plant and to ensure that no unrecognized design changes are being made.

Additionally, with recent industry and ComEd events (especially the LaSalle Service Water event) that deal with design/licensing basis issues, an increased awareness of the affects changes may have to our plants has occurred. Corporate direction was issued to all sites, directing them to

strengthen their evaluation of changes against the definition of a modification and for their potential affect on the design basis of the plant. This was formalized with the recent issue of NSWP-WM-08, Action Request Screening.

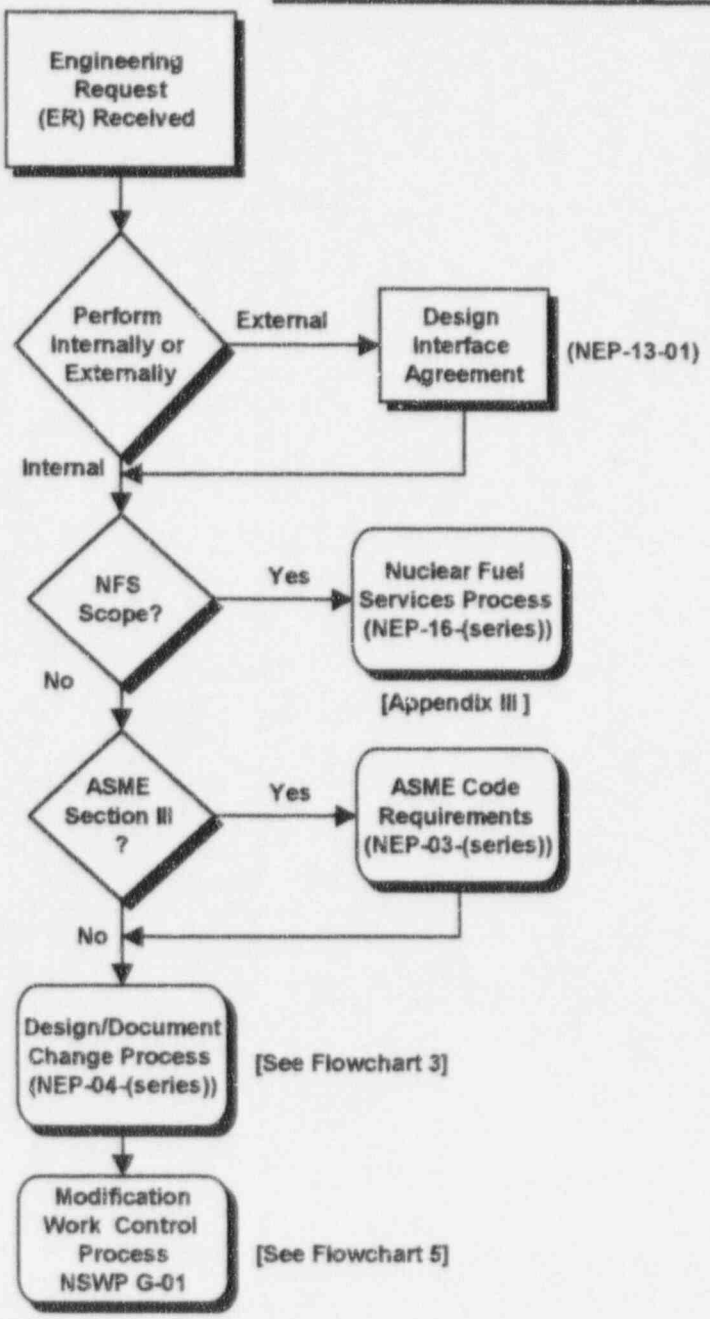
Increased emphasis has also been placed on the definition of Facility Maintenance, Minor Maintenance, and Work Request Maintenance. In each of these types of work, clear boundaries have been provided to maintain the appropriate level of controls. If during the process something requires work to fall outside the predetermined boundaries, the work scope changes or the work scope increases, the work is reevaluated per the initial screening criteria. At that time, the appropriate controls (new or different controls, if applicable) are applied. This fourth line of defense then comes into play because station personnel are encouraged by management and supervision to challenge a work package they believe could be improperly classified.

RECENT PLANNED IMPROVEMENTS

Prior to the implementation of EWCS (Electronic Work Control System) in 1994 & 1995, these key screening decisions were made by an Operating Engineer, an experienced Senior Manager with an SRO license. Once safety classification and other decisions were made, including whether the work involved maintenance or modification, the work request was forwarded to the working department for any necessary planning, work instruction preparation, inclusion of procedures, etc. This Operating Engineer review was a key control step to ensure identification of work that had the potential to alter the original design. Working department review and approval during the planning phase also provided a secondary control function to ensure that work to be performed did not inadvertently deviate from the plant design.

Since the introduction of EWCS, the methodology has changed somewhat but the intent of the process is unchanged. Decisions on safety classification are now only required on an exception basis as the classification of components has typically been captured in the data base supporting the process. Additionally, organization changes have taken place with the creation of Work Control Centers and the screening function was typically reassigned to the Lead Unit Planners and Lead Maintenance Planners. While this has worked well in most cases, inadequate sensitivity to Action Requests with the potential to introduce changes to the design has occasionally been observed. Further, Minor Maintenance teams and Fix It Now teams have also been created which have predefined boundaries in which they perform specific types of work. The net result has been a subtle deterioration of the screening function as an effective barrier to inadvertent design changes. In response to this identified weakness, changes have been recently implemented to strengthen the screening process. These changes include the addition of an Engineering participant to the Screening Team and the strengthening of the evaluations performed in accordance with the recently issued Nuclear Station Work Procedure, "Action Request Screening," NSWP-WM-08.

Flowchart 2
Roadmap To Design Control Process



Note: Human error, configuration control and major equipment problems are identified using the Problem Identification Form (PIF). PIFs are reviewed for reportability and operability in compliance with 10CFR50.72 and 10CFR50.73. If a defect or noncompliance is found at any step in this process, refer to NEP-10-02, "10 CFR Part 21 Evaluations and Technical Issue Reviews."

Roadmap to Design Control Process

PURPOSE

This flowchart serves as an overview roadmap of the design control process. It links the major design processes and indicates decision points that determine whether these design processes are required.

PROCESS DESCRIPTION

After the need for a design activity has been identified and an Engineering Request (ER) has been forwarded to Engineering, the first thing that needs to be determined is whether or not the work will be performed internally. External design organizations are required to meet the ComEd procedures for Design Changes in order to maintain design and configuration control.

If the scope of work to be performed involves Nuclear Fuel Services (NFS) this needs to be identified and they need to be brought into the design process. Since the design authority assigned to NFS is retained in the Corporate office, and has not been delegated to the stations, their processes, although similar to those described here, are separate, and need to be addressed separately.

If the design involves ASME Section III systems or components, a parallel series of design requirements and processes are required to be performed in addition to the design change process described here. Because these requirements pertain only to ensuring Code compliance, they are not described in more detail.

The Design Change Process and the Modification Work Control Process will be described separately in the detailed process descriptions that follow.

Throughout all of these processes and overlaying all of them is the process of identifying and reporting defects and noncompliances. This process applies and can be invoked at any stage and within any of the processes identified here. This process is described separately in more detail.

CHECKS AND BALANCES

The checks and balances applicable to the processes represented here will be described separately in the detailed process descriptions. Human error, configuration control and major equipment problems are identified using the Problem Identification Form (PIF). PIFs are reviewed for reportability and operability in compliance with 10CFR50.72 and 10CFR50.73. If a design defect or noncompliance is identified, it is evaluated in accordance with NEP-10-02, "10CFR Part 21 Evaluations and Technical Issue Reviews."

RECENT/PLANNED IMPROVEMENTS

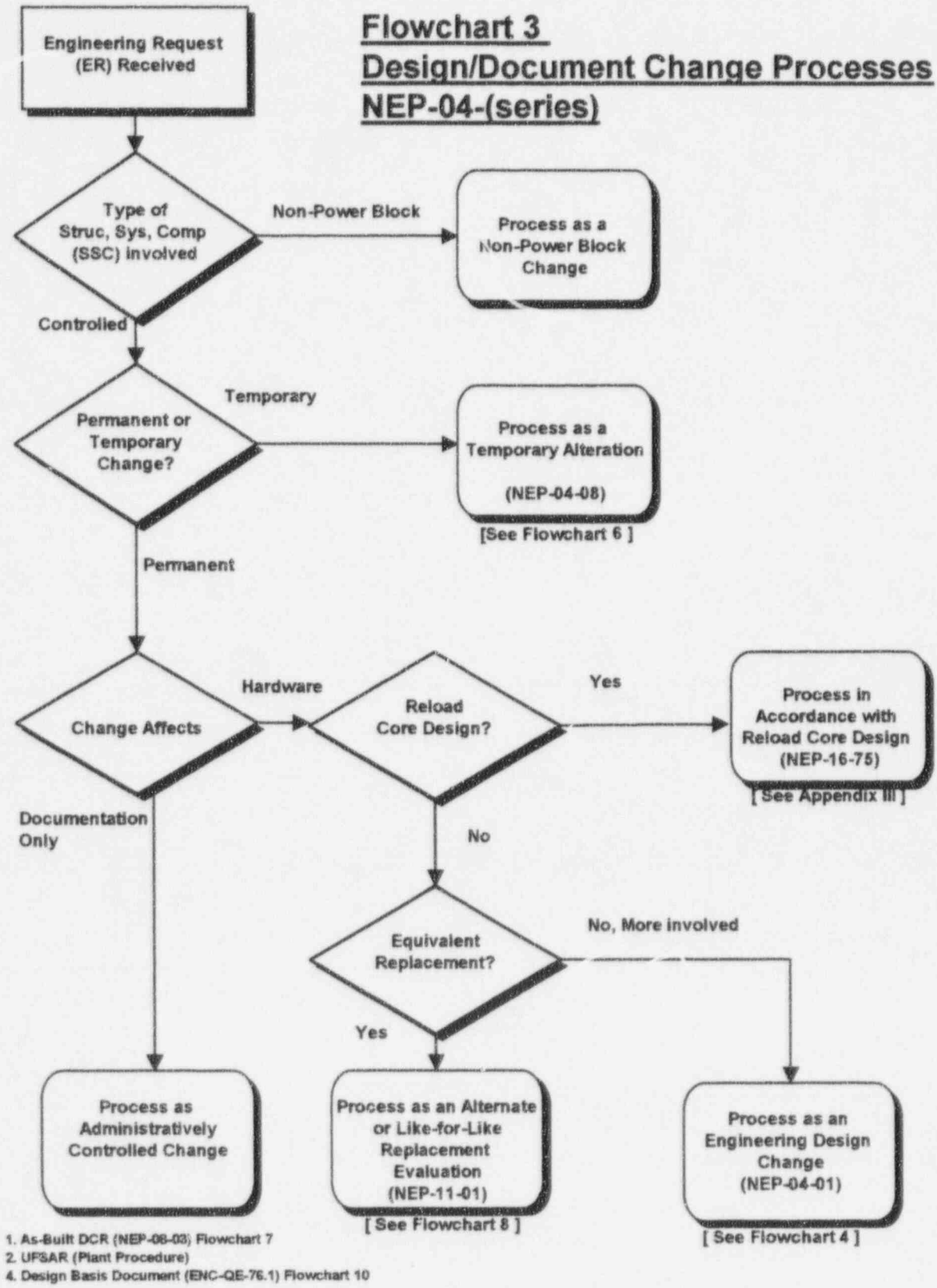
Improvements to the processes represented here are discussed in the detailed process descriptions that follow. As stated in the November 12, 1996 letter from T. Maiman to A. Bill Beach, ComEd will establish an Engineering Assurance Group to provide oversight of key engineering activities. This organization will remain in place until normal engineering activities have improved to the point where these reviews are no longer required.

As stated in the November 12, 1996 letter from T.J. Maiman to A. Bill Beach, ComEd will expand the SQV audits of our major design contractors with focus on:

(1) Interfaces with ComEd,
(2) Design control processes, and
(3) Corrective action notification

An action plan will be developed that includes the principal architect-engineers, fuel suppliers, and NSSS vendors.

Flowchart 3
Design/Document Change Processes
NEP-04-(series)



1. As-Built DCR (NEP-08-03) Flowchart 7
2. UFSAR (Plant Procedure)
4. Design Basis Document (ENC-QE-76.1) Flowchart 10

Design/Document Change Processes

NEP-04-(Series)

PURPOSE

This flowchart serves as a roadmap to the appropriate process to be used in implementing design changes to the plant. At each decision point, a specific process that applies the appropriate level of controls to the change, is chosen. Each decision may be determined through the use of specific definitions, screening questions, and/or lists.

PROCESS DESCRIPTION

Non-Power Block Changes - The first decision point determination is whether the proposed change can be processed as a Non-Power Block Changes. These are permanent changes made to Structures, Systems, and Components (SSCs) that have no impact on nuclear safety, are not subject to NRC regulatory requirements and are not required for the generation of electric power.

Temporary Alterations (Temp Alts) - The second decision point determines if the proposed change is permanent or temporary. Temp Alts are defined as a planned change (non permanent) to the fit, form or function, of any Controlled operable SSC, or circuit that does not conform to approved design drawings or other approved design documents. This process is described separately.

Hardware / Documentation Changes - A decision is made to determine the type of permanent change being made. Documentation changes that are clearly administrative in nature, are processed through the As-Built Design Change Requests (DCRs), Setpoint Changes, Computer Software Revisions, UFSAR Revisions or Design Basis Document Changes. Each of these processes is described separately.

If hardware changes involve a reload core design, they are processed in accordance with Nuclear Fuel Services (NFS) procedure, "Reload Core Design" (NEP-16-75). This process is described separately.

Other hardware changes and documentation changes that are technical in nature, are reviewed against the definition of equivalent replacements. These include like-for-like replacements or replacements of parts, components, subcomponents, and materials the meet current interface, interchangeability, safety, fit and functional requirements of the original components. This process is described separately.

Changes that are more involved, will be processed as Engineering Design Changes. These include changes to SSCs that are safety-related, subject to NRC regulatory requirements, or are necessary for electric power generation. This process is described separately.

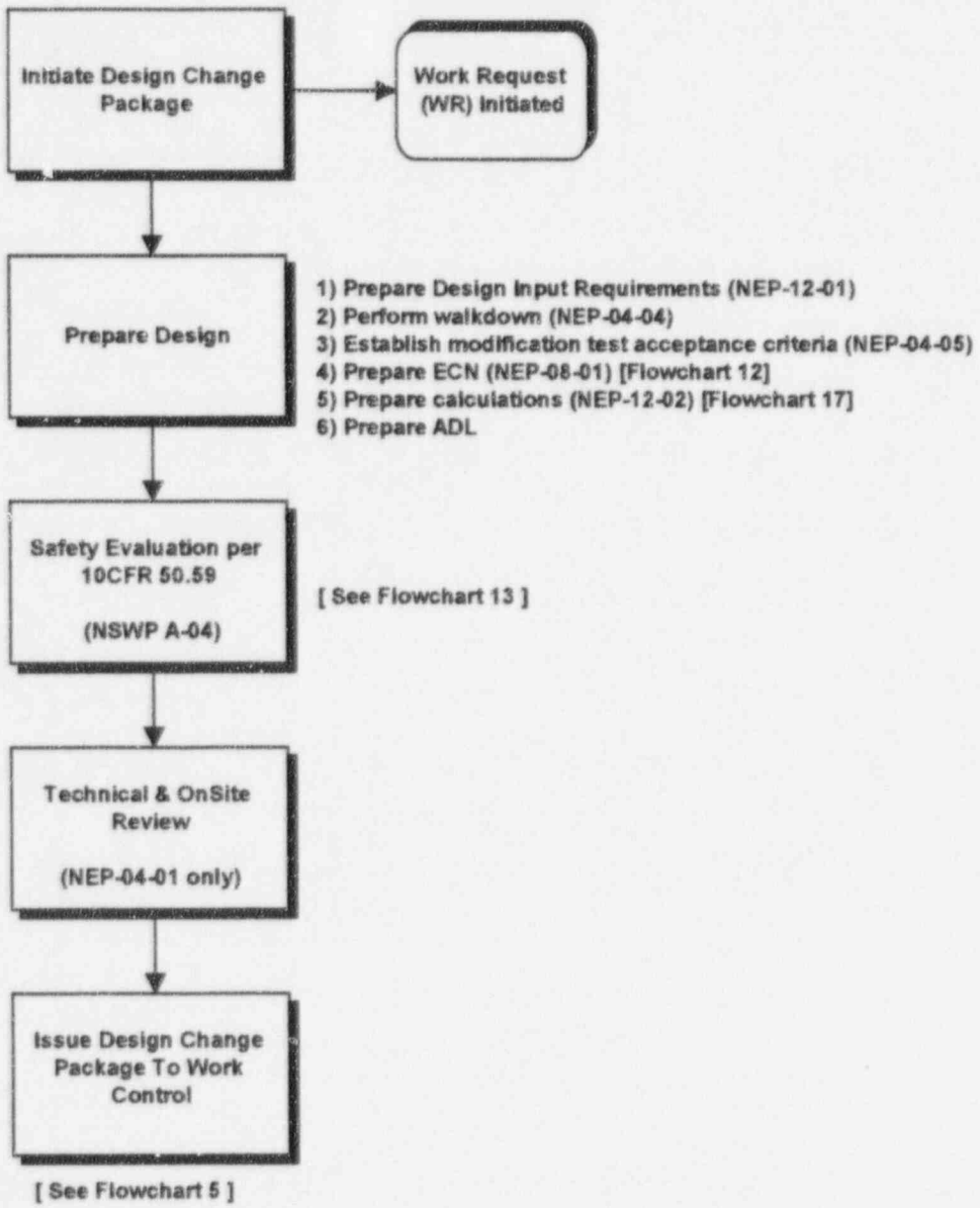
CHECKS AND BALANCES

The checks and balances that apply to the processes represented here will be discussed separately in the individual process descriptions.

RECENT/PLANNED IMPROVEMENTS

In order to reduce the administrative burden of including changes which have no impact on nuclear safety, are not subject to NRC regulatory requirements and are not required for the generation of electric power, ComEd has established a separate process for handling these "Non-Power Block Changes." This process is currently being used at Braidwood, Dresden and LaSalle, and will soon be used at all ComEd stations. This revised process is based on the guidance provided in EPRI TR-103586, "Guidelines for Optimizing the Engineering Change Process for Nuclear Power Plants." An Engineering screening review is utilized to determine applicability of this process. Implementation of this process enables ComEd to focus its resources and management on those changes that do have a potential impact on nuclear safety, regulatory compliance or generation of electric power. Improvements in other areas represented on this flowchart will be discussed separately in the individual process descriptions.

Flowchart 4
Engineering Design Change Process
NEP-04-01 and NEP-04-02



Engineering Design Change Process

NEP-04-01 and NEP-04-02

PURPOSE

This is the process used to implement "Controlled Design Changes" to the plant. These changes include changes to Structures, Systems, and Components (SSCs) that are safety-related, subject to NRC regulatory requirements, or are necessary for electric power generation. This process provides the requirements for implementing changes that could potentially affect the design basis of the plant.

PROCESS DESCRIPTION

Prior to initiating a planned change to the plant design or operation, ComEd management requires the following prerequisites to be performed before significant resources are expended:

- Approval of technical objectives and proposed conceptual design, including an assessment of compliance with the design and licensing basis,
- Approval of the budget and source of the funding,
- Assignment and approval of the selected design organization, and
- Assignment and approval of the installer(s) and a proposed installation schedule.

After the above pr requisites are met, a Modification Scope Meeting is held depending on the complexity of the project. This meeting brings together appropriate Engineering, Operations, Maintenance and Support personnel to review the scope and schedule for the modification, define responsibilities, determine deliverables, review the preliminary design, identify and confirm design inputs, perform a pre-design walkdown and resolve or identify any potential concerns or problems. If the design has a low potential to significantly reduce the margin of nuclear safety and requires minimal engineering input, it is categorized as an "Exempt Change" and is processed in accordance with NEP-04-02. If the ER is approved as a Controlled Design Change, it is processed in accordance with NEP-04-01. A Design Change Package is created through Electronic Work Control System (EWCS). A Work Request (WR) is initiated that will be used to implement the required work.

Depending on the complexity of the project, the design is then processed through a series of individual steps that include a scoping activity, field walkdowns, preparing Design Input Requirements (DIRs), engineering calculations, documents, and 50.59 safety evaluations, engineering calcs as required. For complex design changes, a separate document which defines the design input requirements is provided. The DIR defines the major technical objectives, constraints and regulatory requirements that govern the development of the design. It addresses design input categories and serves as a common reference point for the preparation of the more

detailed design related documents such as drawings, specifications, calculations, analysis and test specifications. Once the Design Change Package is completed, a final Technical and for major mods an OnSite Review is initiated that provides for interdepartmental reviews. This final review is not required for Exempt Changes.

After the reviews have been completed, the Design Change Package is issued for Work Instruction preparation as the first step in the Modification Work Control Process. This process is described separately.

The design and engineering activities described in these processes are implemented at ComEd by individuals who have been trained and are qualified to perform these functions. These individuals are trained and their qualifications are documented in accordance with the NEP-15-XX series of procedures. These procedures address and comply with the requirements of ACAD 91-017, "Guidelines for Training and Qualification of Engineering Support Personnel," Rev. 1 and ANSI/ANS 3.1, "Selection, Qualification and Training of Personnel for Nuclear Power Plants." This topic is addressed in more detail in the special section of this response that addresses training and qualification.

CHECKS AND BALANCES

Although there are areas within the process that provide overall reviews of the design, several specific areas provide for independent reviews against the design basis. The first area is handled through Engineering Change Notices (ECNs), which are used to develop the detailed design. Each ECN goes through an interfacing review process, an independent reviewer, and an approver. Similarly, engineering calculations are prepared to support the design indicated on ECNs and go through an interfacing review process, an independent reviewer, and an approver. A 50.59 safety evaluation is also part of the design process and provides an additional level of review. The ECN, calculation and safety evaluation process are described separately in more detail.

Walkdowns performed after installation, as described in the Modification Work Control Process, also provide another area where the design is evaluated to ensure that it has met the original design requirements.

Post Modification Testing, as discussed in the Modification Work Control Process, is the last area where the design is evaluated to ensure that it has met the original design requirements.

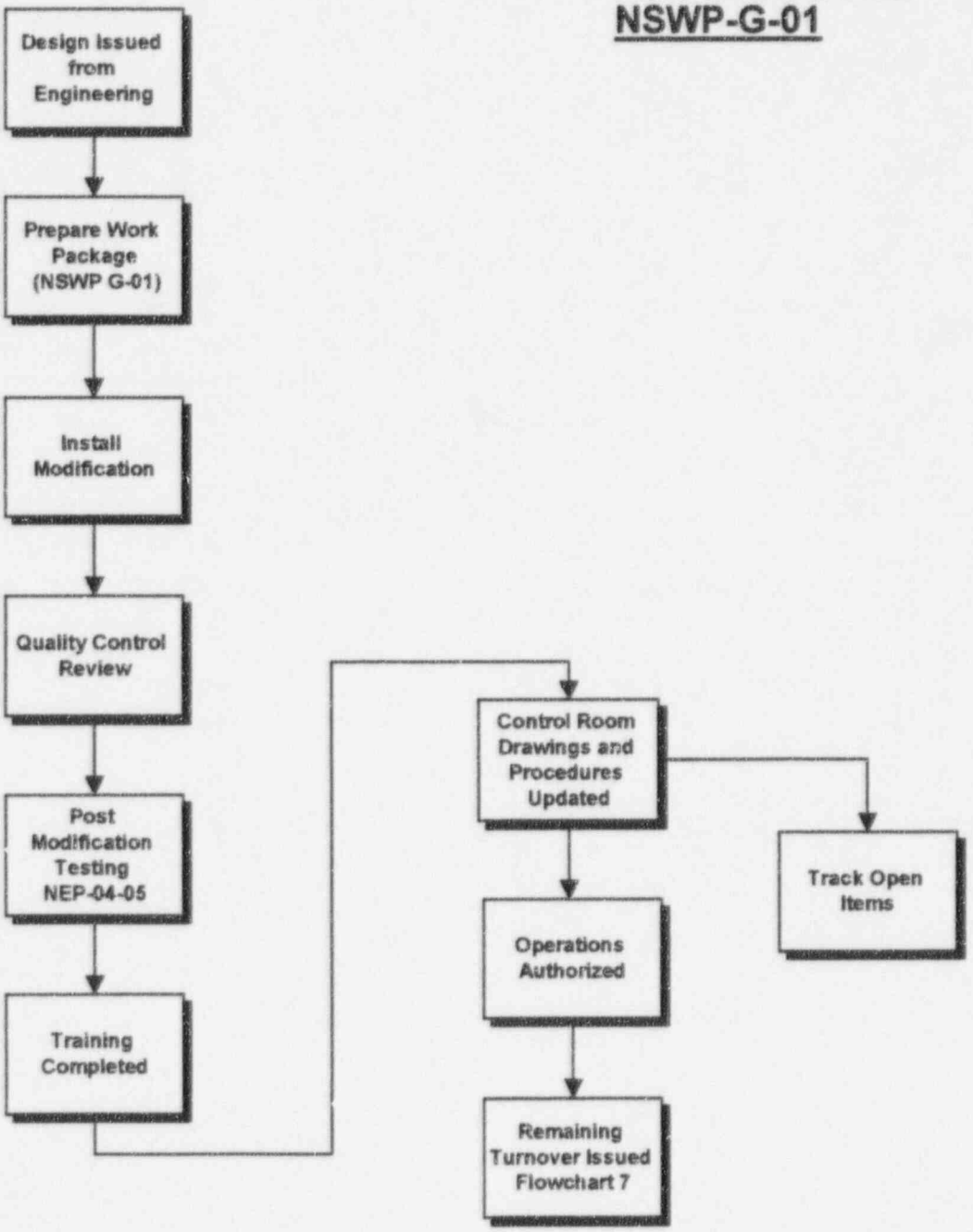
RECENT/PLANNED IMPROVEMENTS

A streamlined process, currently being utilized only at Dresden, LaSalle, and Braidwood, to handle "Non-Power Block" changes will soon be implemented at all ComEd stations. This change was previously described in the section that addressed the Roadmap to the Design Change Process.

Improvements in the ECN, calculation and safety evaluation processes are addressed in the specific process descriptions.

As stated in the November 12, 1996 letter from T.J. Maiman to A. Bill Beach, ComEd recently completed a review of partially implemented modifications, and established a schedule to close them out in a timely manner.

Flowchart 5
Modification Work Control Process
NSWP-G-01



Modification Work Control Process

NSWP-G-01

PURPOSE

The purpose of this process is to provide the necessary controls for the development of work packages which include installation instructions, quality control review expectations, and post modification testing requirements prior to Operations Authorization of the modification.

PROCESS DESCRIPTION

Once the Design Change Package (DCP) is issued, a Work Package is prepared that provides the necessary instructions for installation, QC reviews, and testing. During the installation phase, a pre-installation walkdown is performed, Field Change Requests (FCRs) are generated for variations to installation requirements (if required), and post-installation walkdowns are performed to ensure that the modifications are installed per the construction documents.

After installation, a QC review is completed, post modification testing is performed, associated training is completed, and all configuration control issues are addressed. This includes updating Critical Control Room Drawings (CCRD) and operating procedures. Any open items that are not needed for Operation Authorization, are identified and tracked separately for future closure.

The modification is then "Operations Authorized" and a "Turnover" is issued incorporating changes to the affected design documents.

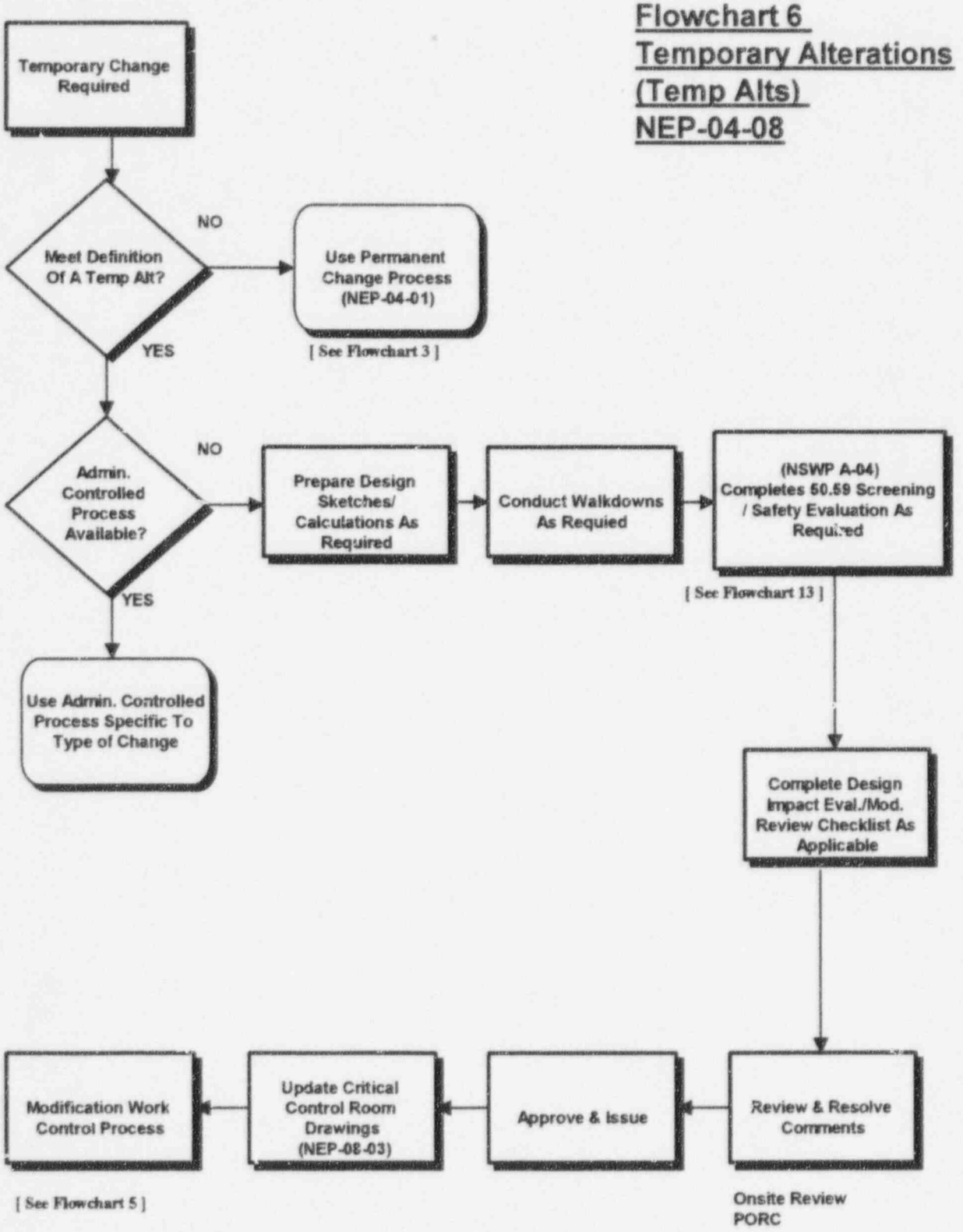
CHECKS AND BALANCES

Post-installation walkdowns and testing are performed to ensure that the modification is installed as designed and that it functions as intended.

RECENT/PLANNED IMPROVEMENTS

A Corporate-wide initiative is currently underway to improve "getting work done" within ComEd. This initiative includes the Work Control Process as an important element of the overall objective.

Flowchart 6
Temporary Alterations
(Temp Alts)
NEP-04-08



Temporary Alterations (Temp Alts) Process

NEP-04-08

PURPOSE

The Temporary Alteration (Temp Alt) process is intended to provide assurance that a Temp Alt made to plant equipment does not degrade plant safety/reliability or unacceptably alter the approved design configuration.

PROCESS DESCRIPTION

The first step is to determine if the proposed change meets the definition of a Temp Alt. If not, the change must be processed using one of the permanent design change processes. If it does meet the definition, it can be processed as a Temp Alt or using an Administrative Controlled process that is specific to the type of change being considered.

With the Temp Alt process, design sketches and calculations are prepared, as required. When needed, walkdowns are performed and a 50.59 screening/safety evaluation is completed, as appropriate.

A Design Impact Evaluation and Modification Review Checklist are completed. The design goes through an independent review process and the Temp Alt is approved and issued.

CHECKS AND BALANCES

The first checkpoint involves the control to ensure that permanent changes are not processed as a Temp Alt. Permanent change processes are available that provide the appropriate level of controls. A 50.59 screening/safety evaluation is required for each Temp Alt. This process is described separately.

A Design Impact Evaluation/Modification Review Checklist is used to ensure that plant safety and reliability are not adversely affected, proper design control is maintained through a verification that appropriate drawings and procedures are revised to reflect the temporary configuration, and that testing consideration are addressed.

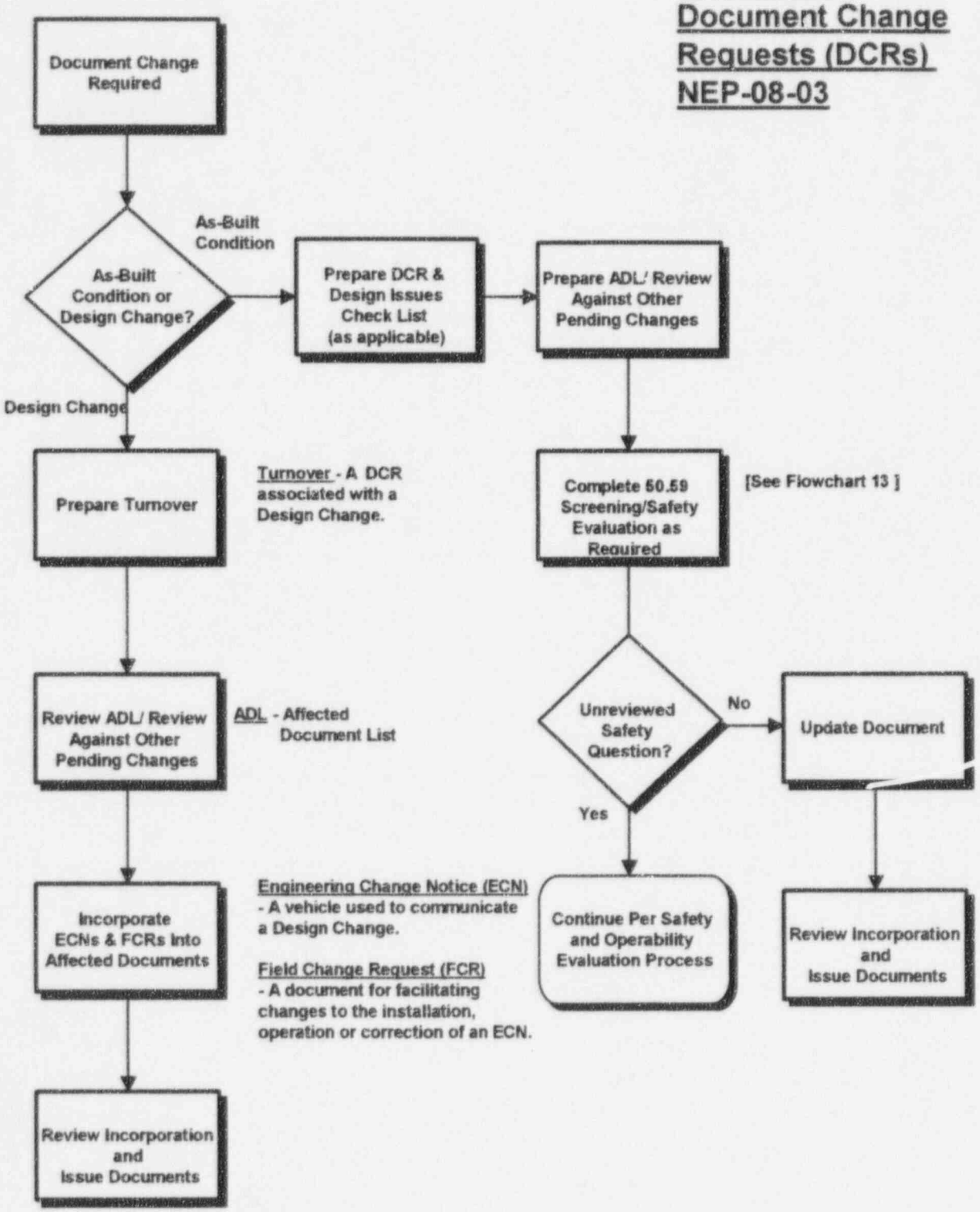
Temporary Alterations are required to be updated on the Critical Control Room Drawings (CCRD) so that these are maintained to reflect the plant configuration at all times.

RECENT/PLANNED IMPROVEMENTS

There is currently a six site evaluation team that has been formed to review Temp Alt issues that were identified through Nuclear Regulatory Commission, Site Quality Verification, and Chief Design Review. This team has established root causes and solutions that are now being reflected in a new NSWP.

This new NSWP is intended to simplify the process, improve the understanding of what is considered a Temp Alt and standardize the process at all six sites. Implementation is planned for early 1997.

Flowchart 7
Document Change Requests (DCRs)
NEP-08-03



Document Change Requests (DCRs)

NEP-08-03

PURPOSE

The Document Change Request (DCR) process is used to control incorporation of design changes or as-built information into design documents. This document is initiated through the Electronic Work Control System (EWCS).

PROCESS DESCRIPTION

When a document change is required, two separate paths are provided depending on the source of the change. If the required change is the result of a Design Change, then the Affected Document List (ADL) is prepared and is reviewed against other pending changes. Engineering Change Notices (ECNs) and Field Change Requests (FCRs) are incorporated, and the documents are reviewed, approved, and issued.

If the required change is the result of an as-built condition, then an ADL is prepared, it is reviewed against other pending changes, and a 50.59 Screening/Safety Evaluation is prepared. If no Unreviewed Safety Question has been identified, the documents are updated, reviewed, approved, and issued.

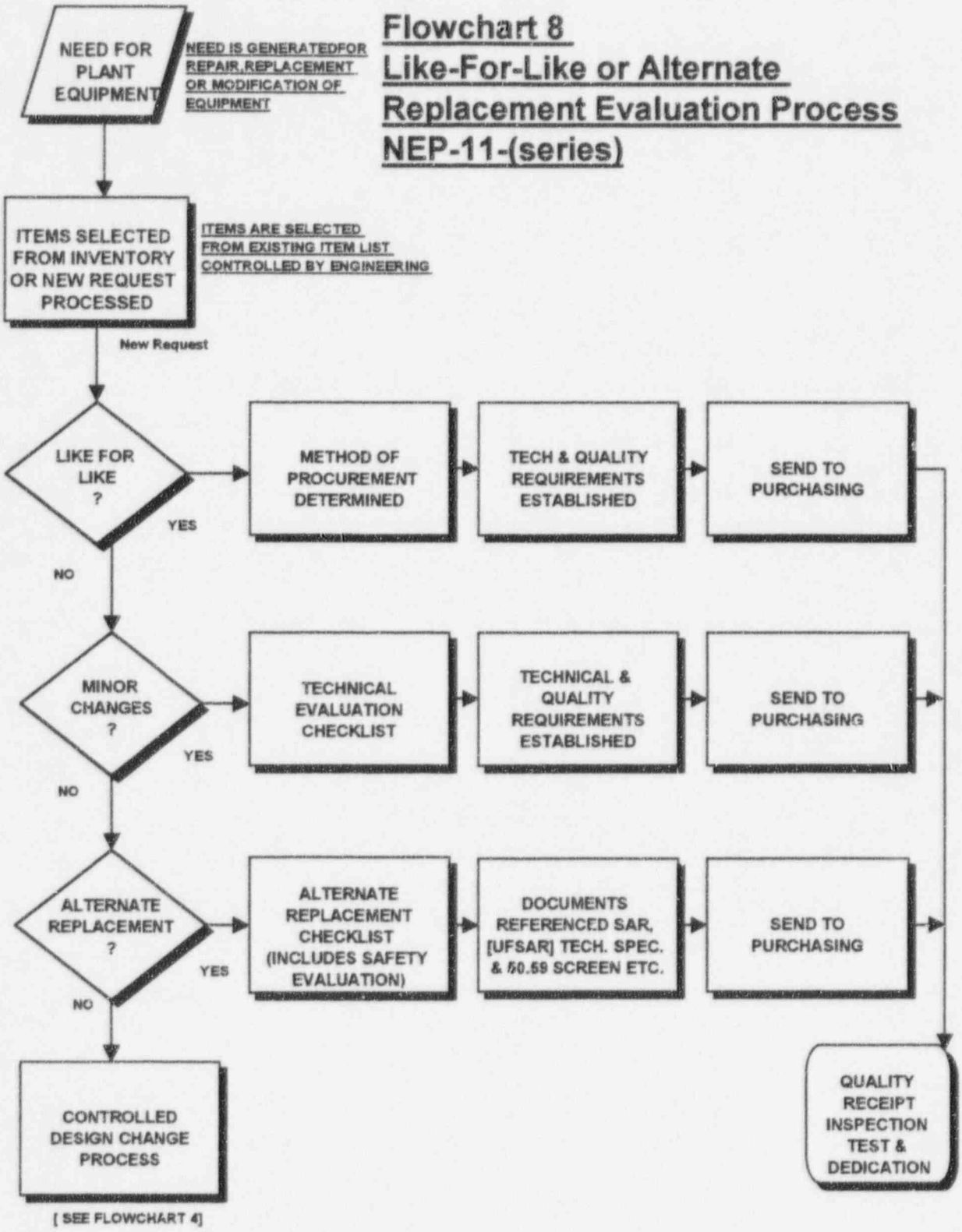
CHECKS AND BALANCES

There are several areas within this process that provide additional checks for reviewing the proposed change against other pending changes and design issues. Several of these checks are accomplished through the main elements of EWCS, which are described separately.

When preparing the ADL, EWCS is used to identify all outstanding changes that exist against the current revision of the document. This aids in determining the full impact of the proposed change for as-built evaluations and for combining information for document updates. A Turnover/DCR Design Issues Checklist is also provided for use in determining the impact of as-built changes in reference to several design issues.

The 50.59 Screening/Safety Evaluation process, which is described separately, is tied to processing all noneditorial as-built changes. When a document and physical plant mismatch is discovered, a design engineer reviews the design to ensure it is functionally correct before automatically assuming the documentation is incorrect from a design perspective.

Flowchart 8
Like-For-Like or Alternate Replacement Evaluation Process NEP-11-(series)



Like-For-Like or Alternate Replacement Evaluation Process

NEP-11-(Series)

PURPOSE

The purpose of the Material Procurement Process is to establish uniform criteria for procurement of items and services that will be used for operations, maintenance, and modification of ComEd nuclear units with the following objectives:

- Ensure installed items comply with the plant Design Basis
- Ensure the configuration gets properly documented
- Minimize cost to the company
- Maximize the use of existing inventory
- Minimize inventory
- Minimize procurement effort
- Maximize the use of technically acceptable alternates

The company received recognition on the effectiveness of its program in August 1992 by an industry independent assessment group and conferred the title of Good Practice on the material procurement dedication processes.

The scope of the process includes new and replacement items for quality related applications. The process also describes the relationship between design, qualification, procurement, dedication, and supply.

PROCESS DESCRIPTION

Items being replaced are reviewed to determine whether the replacement is a "Like-for-Like replacement" or is an "Alternate replacement." This review is conducted by the Work Analyst and/or Maintenance personnel responsible for the work. Guidance on what constitutes a "Like-for-Like replacement" is provided in the site procedure [LAP-1300-1] controlling all physical work performed on site property. This guidance states in part:

> "Parts shall be replaced with those that are identical in all physical and performance characteristics. These characteristics consist of the same description as the original item, same nameplate data as the original item (excluding non-engineering data; e.g., serial number, EPN, data), same documentation requirements as the original, same physical dimensions and weight as the original item."

A "Like-for-Like replacement" may be used without further evaluation. For an "Alternate replacement" a technical evaluation is required to establish the suitability of the replacement for use in the intended application. For safety, regulatory, and ASME code related items, this suitability evaluation is referred to as an "Alternate Replacement Evaluation" and is controlled by

a corporate procedure [NEP-11-01]. This same procedure may also be used for non-safety related items. The "Alternate Replacement Evaluation" is performed by identifying the differences between the replacement and the original as defined in design documents, vendor literature, and in some instances physical examination. These differences are then evaluated in regards to their effect upon:

- the item's (or that of its parent component) capability to perform its intended function,
- the item's (or that of its parent component) environmental and seismic qualification as applicable,
- plant licensing bases as defined in the UFSAR and Technical Specifications,
- plant design documentation, including drawings, lists and procedures.

If, in the course of performing an Alternate Replacement Evaluation, questions or concerns are identified, the procedure requires that design engineering be consulted. If the use of the alternate replacement impacts the licensing bases or exceeds the scope of what can be addressed using NEP-11-01, it is considered to be a design change and is implemented using the design change process.

NEP-11-01 has been derived from the following EPRI Guidelines:

> EPRI NP-5652 [NCIG-07], "Guidelines for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications"
>
> EPRI NP-6406 [NCIG-11], "Guidelines for the Technical Evaluation of Replacement Items in Nuclear Power Plants"

CHECKS AND BALANCES

A number of checks and balances exist in the current process. These checks and balances are summarized below:

1) Safety-related material purchase orders are quality records, as such, documentation attesting to the item's pedigree is maintained. In addition a chain of custody is maintained from issuance of the purchase order to installation, including receipt inspection, commercial grade dedication by ComEd (if applicable), and warehousing.
2) Technical and quality requirements are defined in the purchase order. These requirements are established to assure that the item being ordered conforms with the design/quality requirements applicable to the specific end use application.
3) The technical evaluation process requires independent engineering review of completed work.
4) Verification that purchase order requirements have been met is accomplished through receipt inspections, and testing performed during commercial grade dedication (if applicable).
5) The receipt process includes independent quality control overview of Quality Assured items. ASME Code items undergo additional verification by Hartford Authorized Nuclear Inspectors with the process periodically audited to ASME 626.

The process is audited bi-annually by ComEd Quality Verification to the appropriate requirements of 10 CFR 50 Appendix B. Corrective actions are identified and program revisions are made. The process has undergone independent review and self assessment a number of times since 1990 with corrective actions made based on the weaknesses identified.

Strengths and Weaknesses

Strengths include:

A process and program recognized by industry peer evaluation as a Best Practice supported by standardized procedures, and significant resource with state of the art inspection and testing tools.

The process includes reverse engineering criteria, which has evolved for similar applications in other military, aerospace programs where maintaining design of items are critical and a suitable replacement is available in the supply chain.

Weaknesses include:

Prior to 1990, procedures governing the process were not standardized across the six stations. Common problems existed. Fraudulent material concerns were noted by the NRC in 1988.

Application of parts engineering procedures, and process was mandatory for safety related and regulatory related equipment only. Use of procedures and process was optional for non safety equipment.

RECENT/PLANNED IMPROVEMENTS

A timeline entitled, "Safety Related Materials Process Improvements" is attached to summarize the issues and corrective actions that have been implemented in the materials procurement process from 1988 through 1996. This provides a ready summary of the improvement efforts undertaken during this time frame.

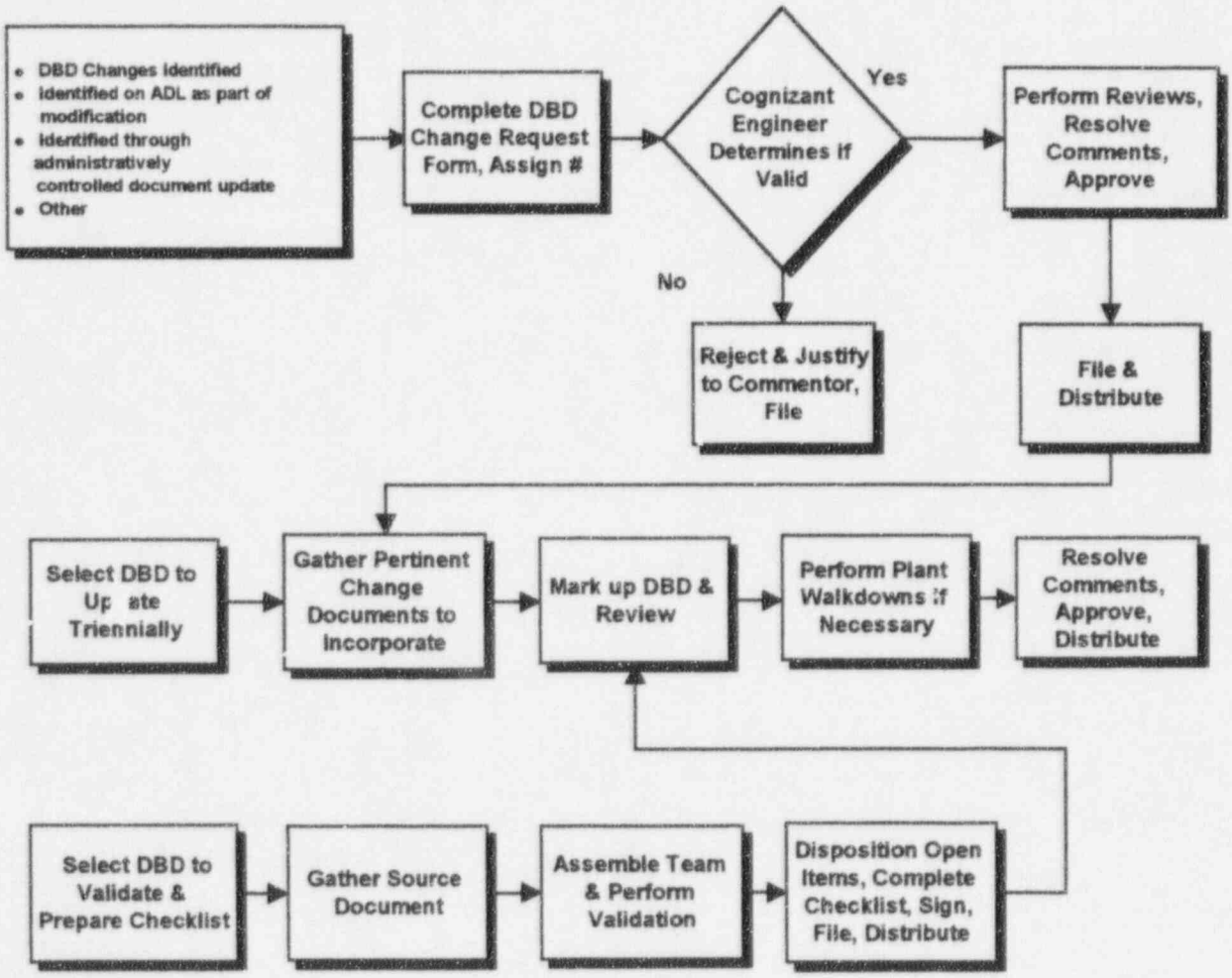
Corrective actions for current program weaknesses have been established. Implementation of current corrective actions began in October 1996. Parts Engineering procedures are applicable to systems and components referenced in the plants UFSAR.

Qualification and Training of parts engineers is currently under site specific programs. A Qualification and Training program which contains INPO ACAD criteria that relate to activities performed by parts engineers has been implemented by the corporate Materials Engineering Group. This program will be reviewed and compared to site specific programs to standardize where possible.

Flowchart 9
Setpoint Change Request

Setpoints are done in accordance with the Modification Process at LaSalle.

FLOWCHART 10
Design Basis Document (DBD) Update Process
NEP-17-01



Design Basis Document (DBD) Update Process

NEP-17-01

PURPOSE

The DBD update process is used to evaluate DBD changes and incorporate approved changes. This process provides the controls to ensure that the change is appropriately reviewed, prior to updating the DBD.

PROCESS DESCRIPTION

A DBD change can result from a modification or it can be identified through the revision process associated with an administratively controlled document (such as an UFSAR change, setpoint change, etc.) or it can be self-initiated as part of the normal work process or as a result of a regulatory inspection or self-assessment.

Once an evaluation of a design change has determined that a DBD is affected, the DBD is indicated on the Affected Documents List (ADL) and the change is processed for an update evaluation. A DBD Change Request Form is initiated and placed into the review process. The process from this point on applies regardless of the reason for the originating change to the DBD.

The review will determine if the change is valid for incorporation. Once accepted, this change will be compared with all other outstanding changes and incorporated accordingly. Plant walkdowns will also be performed, as necessary.

A final review and approval process will be completed and then it will be issued.

CHECKS AND BALANCES

The initial review by the Cognizant Engineer is used as the main determination for the validity of the change to the DBD. Additionally, the review of all other outstanding changes to ensure that this proposed change is compatible with others, is provided.

Plant walkdowns to determine the affects of these changes on other plant components in the same areas, are also performed. A triennial update will also be performed on selected DBDs to ensure that they are current.

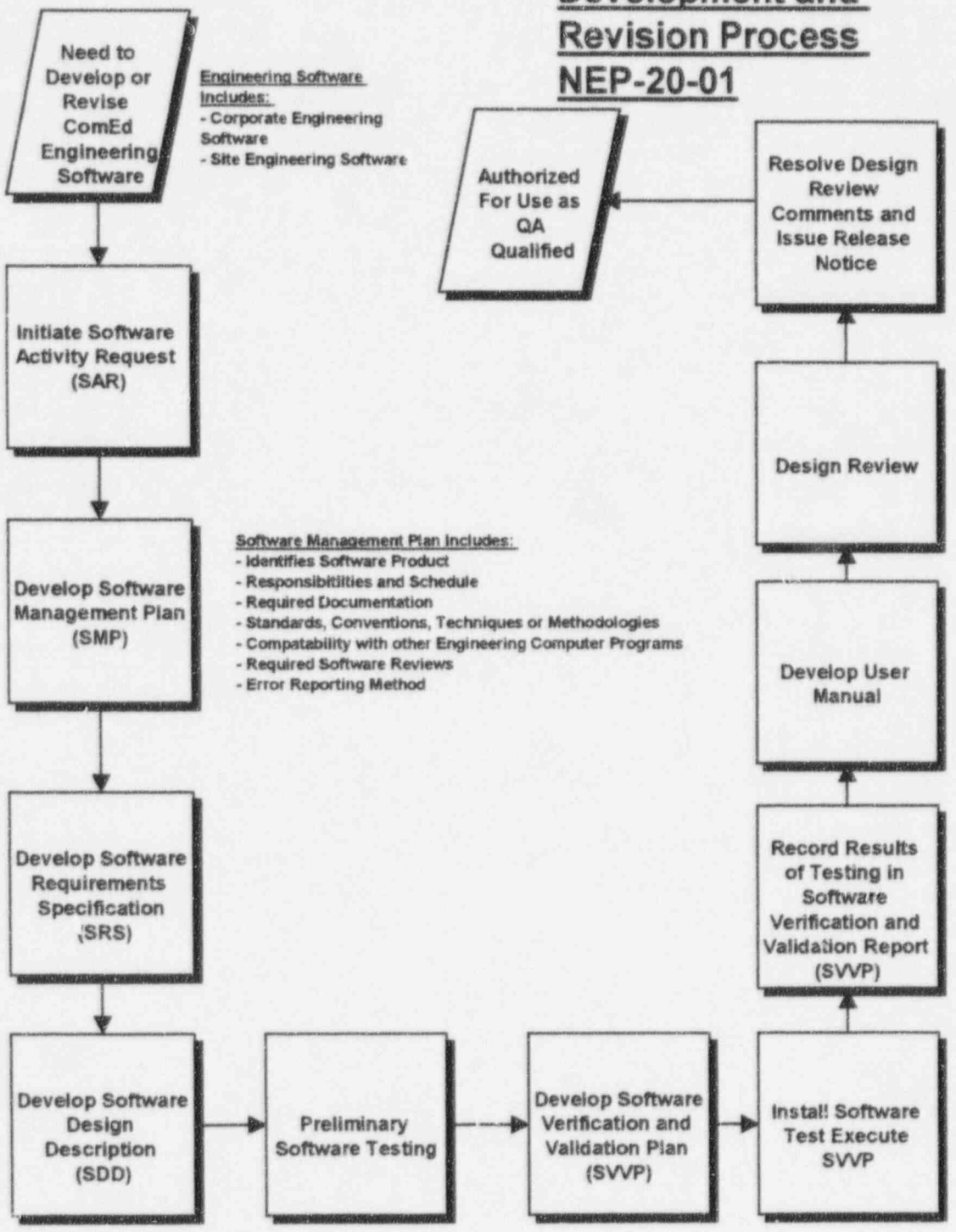
An optional DBD Validation process which is performed by separate team is available for select DBDs. The results of this process are tied back to the update process described above.

RECENT/PLANNED IMPROVEMENTS

ComEd is developing and assembling design basis information in a common format for the top 20-25 risk significant systems and topical subjects for Dresden, Quad Cities, LaSalle and Zion Stations.

As stated in the November 12, 1996 letter from T.J. Maiman to A. Bill Beach, the NEPs will be revised to provide specific direction to engineers on steps to be followed whenever a potential Design Bases discrepancy is identified.

Flowchart 11
Engineering Software Development and Revision Process
NEP-20-01



Engineering Software Development and Revision Process

NEP-20-01

PURPOSE

The Engineering Software Program applies to software that is safety-related, used to perform controlled work, used to verify Station Technical Specification compliance or used to comply with regulatory requirements not contained in the Technical Specification. This process specifically describes the steps used to control revisions to Engineering Software.

PROCESS DESCRIPTION

Once a need to develop or revise Engineering Software has been identified, a Software Activity Request is filled out to describe the situation and identify the activities that need to be performed.

A Software Management Plan (SMP) is generated that includes:

- identification of the Software Product.
- responsibilities and schedules.
- required documentation.
- standard, conventions, techniques or methodologies
- compatibility with other engineering computer programs.
- required reviews.
- error reporting method.

A Software Requirements Specification (SRS) is then developed to describe:

- the functions the software is to perform.
- the software performance.
- design constraints.
- attributes.
- external interfaces.

The programming change will then begin based on the documents generated above, in preparation of software testing. A preliminary test case shall be used to validate the ECP to assure that the software produces correct results for the test case.

CHECKS AND BALANCES

Software Verification and Validation (SVV) activities shall begin with the development of a SVV Plan which shall describe:

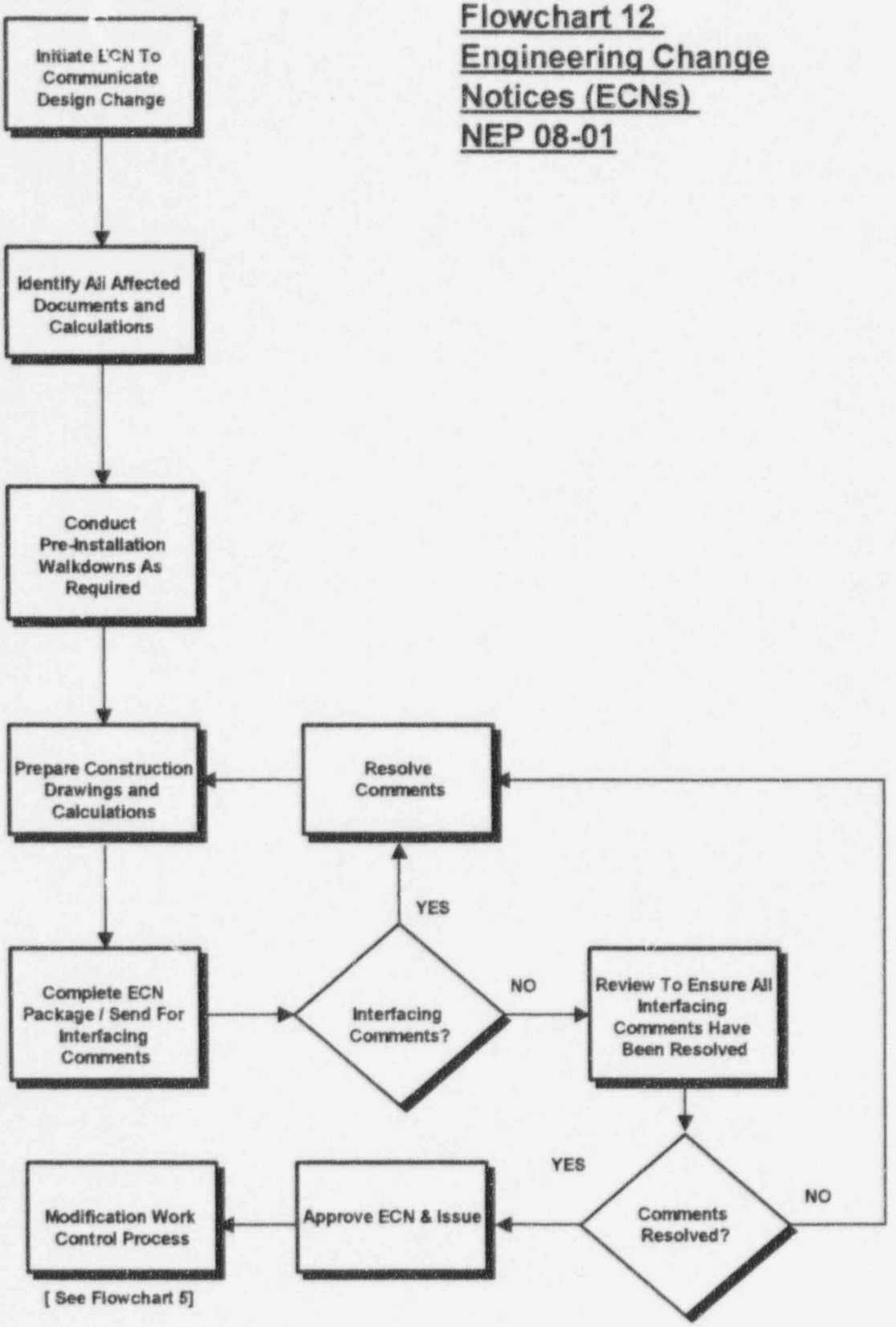
- tasks and criteria for accomplishing the Verification of the ECP.
- hardware and software configurations pertinent to V and V.
- tracability to both the software requirements and the software design.

The software shall then be installed, tested and the results documented for review in a Software Verification and Validation Report. A user manual is then prepared for review.

A Design Review, as defined in NEP-20-01, is required prior to designating the software as qualified for controlled work. This review ensures that the requirements of the engineering software have been fully met and documented.

The results of the Design Review are documented through a release notice and the software is authorized for use.

Flowchart 12
Engineering Change Notices (ECNs)
NEP 08-01



Engineering Change Notices (ECNs)

NEP-08-01

PURPOSE

Engineering Change Notices (ECNs) are used to communicate design changes which are included in a Design Change Package. They are initiated through the Engineering Work Control System (EWCS) and provide for a systematic approach to support the preparation, review and approval process.

PROCESS DESCRIPTION

Once the ECN is initiated, all affected documents are identified on the Affected Documents List (ADL). Initial configuration changes/additions are prepared and pre-installation plant walkdowns are performed, as required. Detailed designs and engineering calculations are then prepared and a package is sent for interfacing comments.

After interfacing comments have been resolved, the ECN goes through an independent review process, and is then approved and ready to be included in the Design Change Package for forwarding to the Modification Work Control Process.

CHECKS AND BALANCES

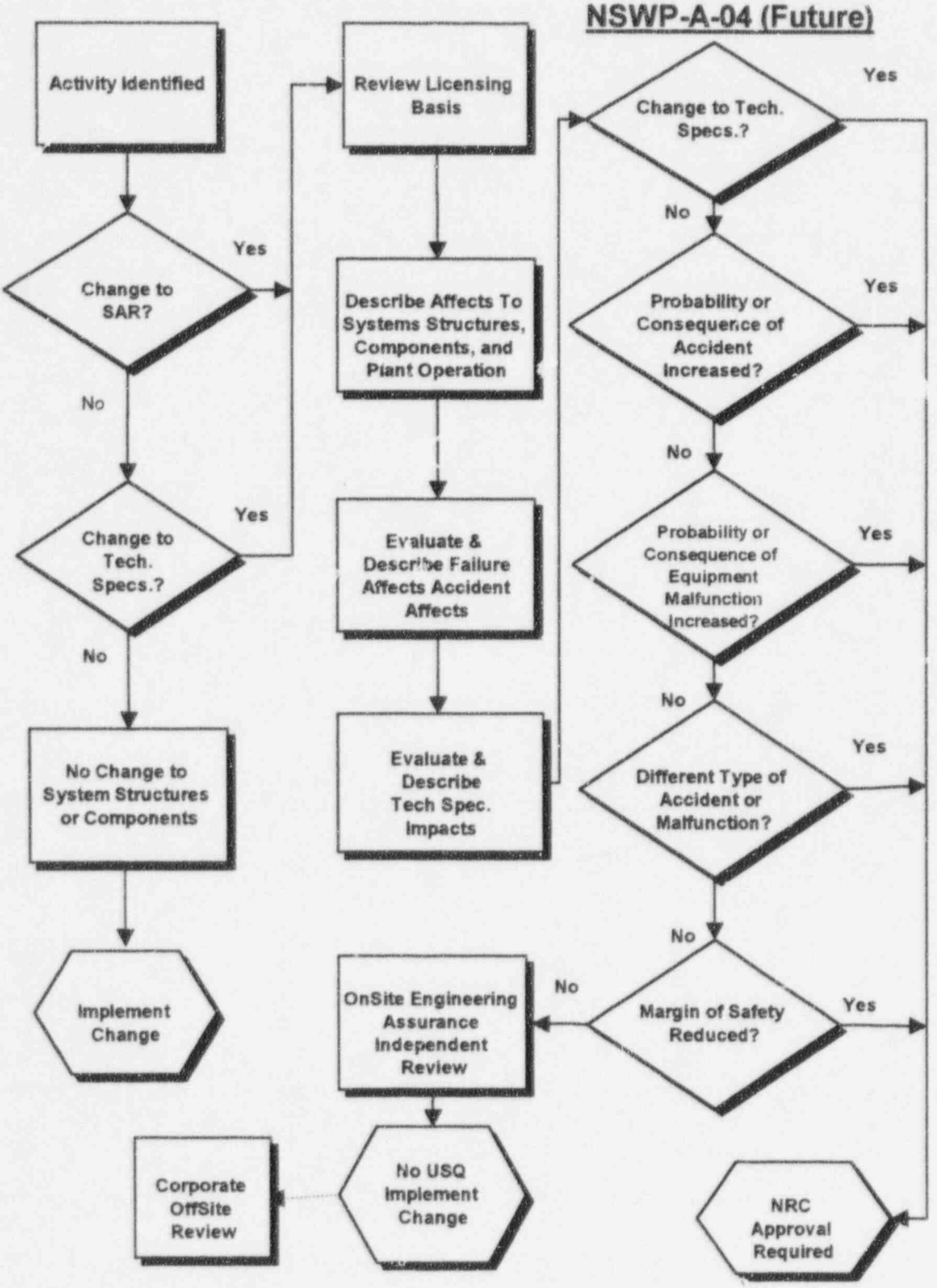
As the ADL is prepared through EWCS, all pending changes are identified and evaluated for their impact to the new change/addition. This allows for an additional evaluation of all previously planned changes and those which are currently underway.

The interfacing comment step provides for a technical evaluation in specific related areas that interface with the all aspects of the design. The evaluation is performed by those with expertise in the specific areas and are performed independently.

RECENT/PLANNED IMPROVEMENTS

The list of potentially affected design documents to be included in the ADL was recently revised to provide more detailed guidance to the preparer. This should improve the accuracy of the initial ADL.

Flowchart 13
Safety Evaluation Process
NSWP-A-04 (Future)



Safety Evaluation Process

NSWP-A-04 (Future)

PURPOSE

To determine and provide a documented basis for concluding if an Unreviewed Safety Question exists for a change, test, or experiment.

PROCESS DESCRIPTION

Reviewers and preparers must be trained and qualified to perform Screenings and Safety Evaluations.

A Screening is performed to determine if the change can directly or indirectly affect any of the requirements of the UFSAR, Technical Specification, and other licensing basis information.

If any affects are determined a Safety Evaluation must be performed to determine if the change could result in an Unreviewed Safety Question.

The Reviewer reviews the UFSAR, pending UFSAR changes, and other Licensing Basis documents.

Describe how the proposed activity will affect plant operations.

Describe how the proposed activity will affect equipment failures.

Identify accidents / transients activity could affect.

Determine if new or revised Tech Specs are needed.

For each accident affected, discuss the probability of the accident being increased.

For each accident affected, discuss the effect on the consequences of the accident.

Discuss how the activity affects the probability of a malfunction of equipment important to safety.

Discuss how the activity affects the consequences of a malfunction of equipment important to safety.

Discuss the possibility of a new accident or malfunction of a type different than those previously evaluated in the SAR

For each Tech Spec involved with the activity determine affects on acceptance limits and margins.

Determine if the margin of safety is reduced.

Identify if changes to the SAR are needed to complete the activity.

All completed 50.59 reviews are to be independently reviewed by the Off Site Review Group for the following:

- Confirm the conclusion of no USQ
- All questions are properly answered
- Supporting documentation justifies conclusion
- Technical Specification change needed

CHECKS AND BALANCES

The overviews of the safety evaluations performed by the on-site Engineering Assurance group, the Off-site Corporate Offsite Review and Analysis, and the Engineering Oversight Team provide three levels of independent assessment of the quality and effectiveness of this process.

RECENT/PLANNED IMPROVEMENTS

ComEd's Safety Evaluation Process has been the subject of several NRC Audits. The specific findings and ComEd's corrective actions are discussed in the station attachments. The following steps have been implemented on a corporate-wide basis to improve this process:

A common, Corporate procedure has been developed for use by all departments, by all stations. Previously, each station had different procedures and, in some cases, different procedures for different departments. This Corporate procedure is scheduled for implementation in the first quarter of 1997.

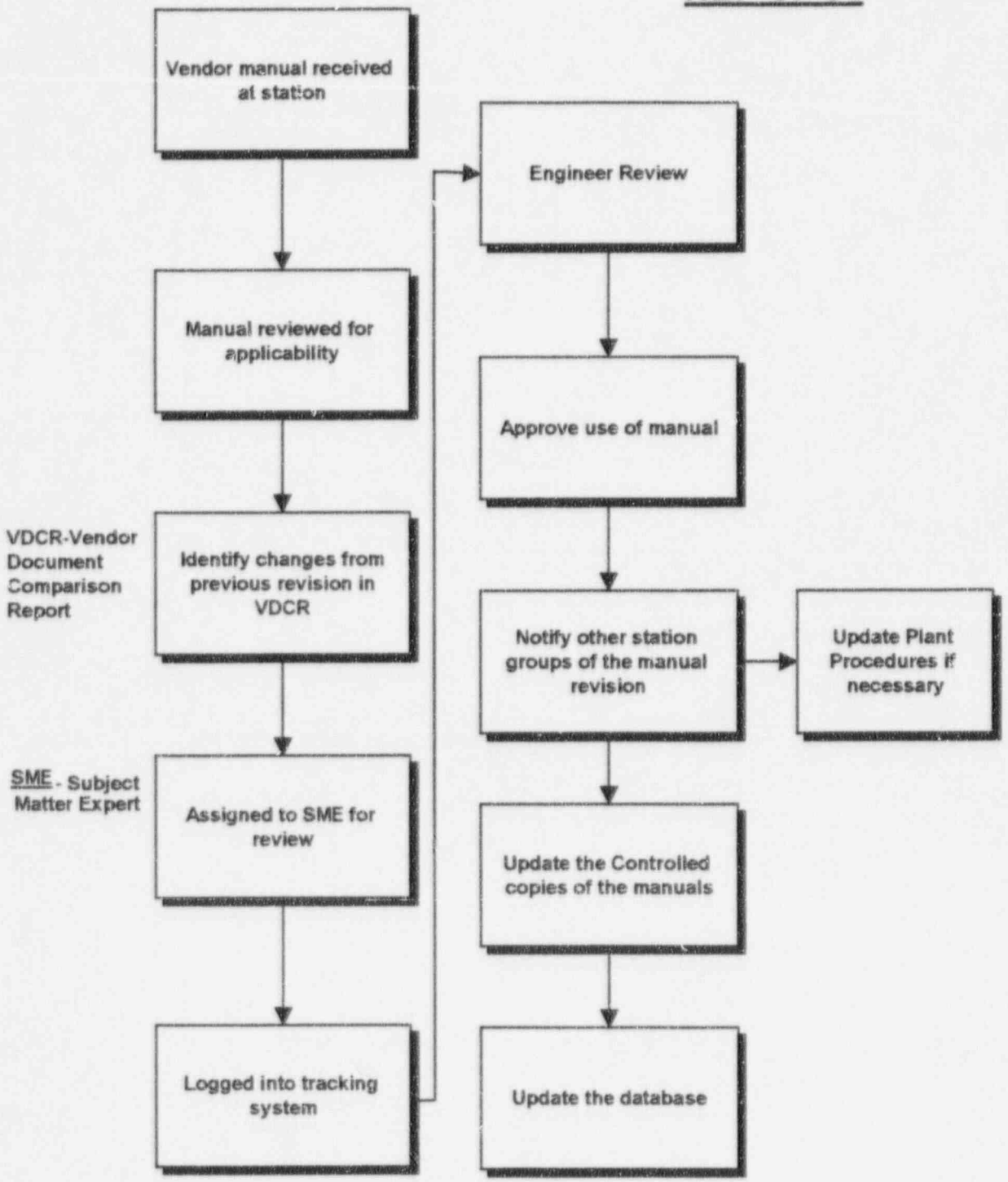
Corporate Offsite Review and Analysis performs an offsite review of all Safety Evaluations

A Chief Engineer, in charge of regulatory compliance has been assigned accountability to teach and mentor the Site Safety Evaluations. Training and certification is required of all Safety Evaluations

As stated in the November 12, 1996 letter from T.J. Maiman to A. Bill Beach, ComEd has established Engineering Assurance teams to review operability and safety evaluations.

Note: Existing procedures use the term "approver" in lieu of "reviewer."

Flowchart 14
VETIP Processing
NEP-07-04



VETIP Processing

NEP-07-04

PURPOSE

This process provides a methodology for the control of vendor technical information used for the installation, maintenance, operation, testing, calibration, troubleshooting, and storage of equipment. In compliance with ComEd's commitment to NRC Generic Letter 90-03, vendors supplying critical safety related components are recontacted every three years to ensure the latest manual revision is in the VETIP system.

PROCESS DESCRIPTION

All vendor manual information will be received and processed through the VETIP Coordinator at the station. The following activities will be performed for each vendor manual:

A review for applicability will be done by the VETIP Coordinator. This step also includes a review to see if the document is already in use at the station.

If the vendor manual is a revision to an existing manual, a review to classify the document as an administrative or technical change is made.

If the vendor manual is a revision to an existing manual, a summary of revisions document, called a Vendor Document Comparison Report (VDCR), is prepared.

Review of the changes to the vendor manual by the Subject Matter Expert (SME).

SME approves the manual, as appropriate, and determines what other station groups should be notified of the manual change for their work. If station procedures are affected, the manual is sent to the procedure coordinator.

VETIP Coordinator processes the new vendor manual and updates hard copies and databases.

CHECKS AND BALANCES

The Subject Matter Expert Review concept is new and ensures the right person is reviewing the manual and no time is lost waiting for other reviews.

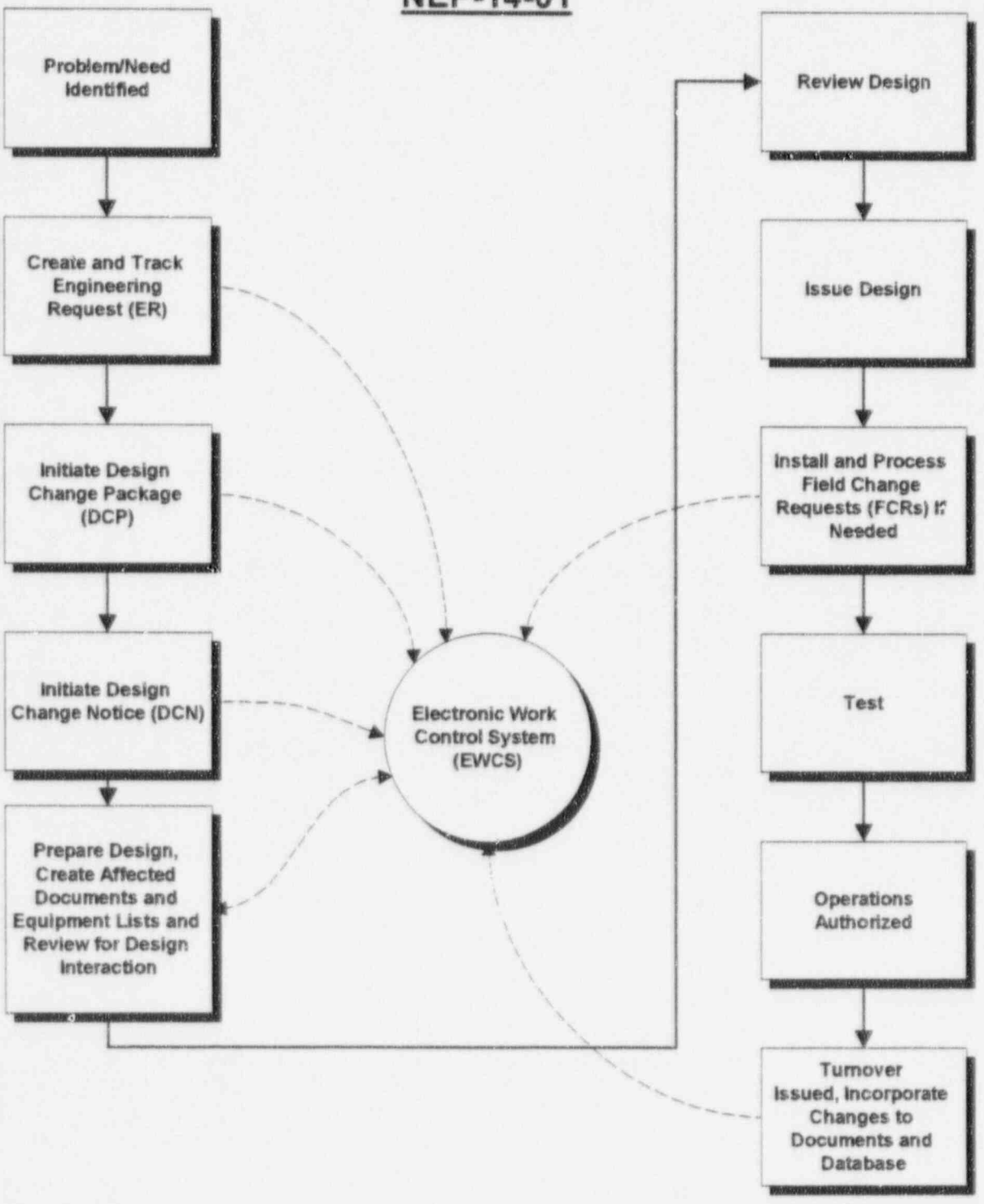
Common processing at each station for better control and a more consistent review and documentation of VETIP information.

RECENT/PLANNED IMPROVEMENTS

Procedural requirements for processing incoming vendor manuals within a 90 day period has not always been met because of emergent work. The stations are adding contractors to help eliminate the backlog of old documents and to get the program current with incoming work.

Process for changing the vendor manuals to the current status based on incoming OPEX documents, is not well proceduralized. The procedure governing the VETIP is being revised by the VETIP Coordinators peer group to account for those changes.

Flowchart 15
Configuration Control Using EWCS
NEP-14-01



Configuration Control Using EWCS

NEP-14-01

PURPOSE

The Electronic Work Control System (EWCS) is an online workflow and database tool used at all six ComEd nuclear sites and the corporate offices. The elements of EWCS that are used to support configuration control are:

- Engineering Design Change Module (EDCM)
- Revision Tracking and Control
- Controlled Documents (CD)
- Equipment Database

These modules and their configuration control functions are outlined below.

PROCESS DESCRIPTION

Engineering Design Change Module

This module provides for assignment and status monitoring of 5 types of change documents. These are:

Engineering Requests (ERs) - Used to solicit assistance from engineering. ERs which may be closed by issuing a design change (only a small fraction of ERs become design changes) can be used to track the status of the change through the business review and technical review process.

Design Change Packages (DCPs) - Used as the over all tracking package for a collection of other change documents (DCNs, FCRs) or as the primary package for minor changes. When used for minor changes (simple, non-safety related), DCPs require an Affected Document List (ADL) and Affected Equipment List (AEL) to track the status of impacted controlled documents and equipment data records through the change process.

Design Change Notices (DCNs) - Primary vehicle for issuing and tracking design changes. DCNs use ADLs and AELs to identify and track the status of impacted documents and equipment data records through the change process. DCNs must be associated with an overall DCP.

Field Change Requests (FCRs) - Used to issue and status field requested changes to support installation of issued DCPs. FCRs use ADLs and AELs to identify and track the status of impacted documents and equipment data records through the change process. FCRs must be associated with an overall DCP.

Document Change Requests (DCRs) - Used to document as found changes and discrepancies to design documents. DCRs use ADLs and AELs to identify and track the status of impacted

documents and equipment data records through the change process. Note that a Turnover, not a DCR, is the vehicle used to track closure of document and equipment data changes associated with DCPs and DCNs and is part of those respective processes.

EDCM is the primary tool for tracking design and document changes from request to closure. Design interaction is readily identified through the use of the ADL and AEL.

Revision Tracking & Control (RT&C)

RT&C is technically a part of EDCM since it is initiated from the AEL. RT&C provides the ability to change equipment data associated with an EDCM change object through an on-line process. Anyone in the plant can initiate a data change request with this process. RT&C creates a temporary revision of each data record flagged as affected and allows this temporary change to be prepared, reviewed and approved on-line. When the design change is installed in the plant, the approved temporary revision is electronically issued into the EWCS equipment database.

Controlled Documents (CD)

CD is used as the controlled index to important plant document including drawings, calculations, procedures, and vendor information. The search features of CD are used by engineers and others to find and retrieve (from central files or through on-line viewing for some types of documents) these documents.

Equipment Database

The Equipment Database in EWCS is a common database used by engineering, maintenance and operations at each site. Users can search this database for equipment data such as safety classification, ASME code class, or electrical class. This data feeds into the on-line maintenance work requests and out-of-service requests to control quality requirements. Engineering controls critical equipment data in this database using RT&C. Multiple legacy databases are being migrated into this database to provide access to data for:

- Master Equipment List/ Quality List Data
- Valve Data
- Instrument Data
- Fuse Data

The Approved Model List is also an available feature of this database which can be used to effectively communicate evaluated alternate replacement components for a given application to maintenance. The Bill of Material feature is beginning to be used to provide detailed parts list for equipment in the system to greatly facilitate maintenance activities.

CHECKS AND BALANCES

When a document is identified as affected by the change and is placed on the ADL, Engineering Design Change Module (EDCM) searches the document database for any other open change against the document and immediately notifies the user if found. This feature is also in place for equipment records placed on the AEL.

Revision Tracking and Control (RT&C) also notifies all users of the EWCS equipment database when pending changes exist against the data they are viewing.

Like RT&C, Controlled Documents (CD) readily identifies to the user when outstanding changes exist against the current revision of a document. When a document has been checked out for use in the field, CD automatically notifies the user when a new revision is issued.

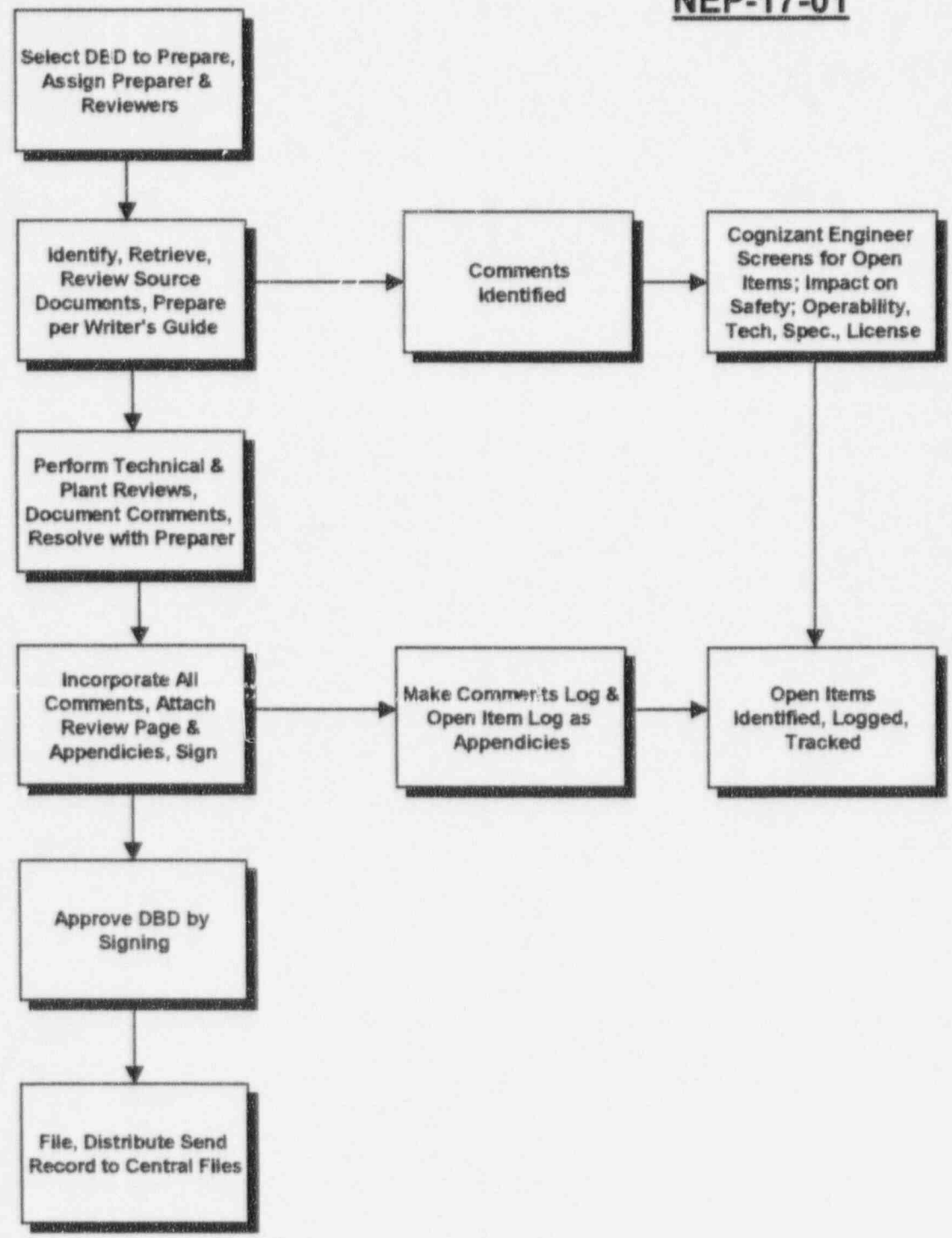
RECENT/PLANNED IMPROVEMENTS

Various legacy databases from AE and ComEd records are being migrated into the Equipment Database in order to provide access to data associated with equipment lists, valve lists, instrument data and fuse data.

In addition, the Bill of Material feature of the Equipment Database is beginning to be used to provide detailed parts lists for equipment. This is expected to improve the consistency and significantly decrease the level of effort required to generate a Bill of Material.

Flowchart 16
DBD Development Process
NEP-17-01

DBD DEVELOPMENT PROCESS



DBD Development Process

NEP-17-01

PURPOSE

The Design Basis Document, DBD, development process is controlled by a Writer's Guide, which provides guidance to the writers for consistent format and content. The process includes identifying original plant design basis, incorporating changes resulting from various types of modifications, reviewing existing design information, and resolving any conflicts between documents.

PROCESS DESCRIPTION

Engineers from the NSSS suppliers and Balance of Plant Architect Engineers, A/E's, were utilized in the development of the various DBDs. The NSSS writers access their internal sources to identify the references used to support the original design. The A/E writers access A/E project files and ComEd databases. In addition, they review all modifications to identify any impact on the design basis.

Reviews are performed by ComEd organizations and other A/E's that were involved in the design and operation of the Station. These groups include Site Engineering, System Engineering, Corporate Engineering, Nuclear Fuel Services, Mechanical & Structural Design, Electrical/Instrumentation & Control Design, and the Site Training departments. This provides a check to ensure the latest design information is identified.

When the review of a draft DBD is complete, comments are compiled and a meeting is held between the NSSS writers, A/E writers, the ComEd Engineers, and others that had significant technical input. Comments are discussed to identify discrepancies, assess their significance and determine a resolution. In some cases, where original studies or calculations are unavailable, system and component specifications as well as process flow diagrams are utilized to establish the original design basis. Where supporting calculations for modifications are incomplete, an open item is generated, evaluated for significance, and prioritized for resolution. References used in the DBDs to support the design basis are indexed and referenced in the DBD. When all comments have been addressed and the remaining open items logged and tracked, the DBD is issued.

In order to maintain the DBDs as living documents, a process is in place to ensure that any design changes are reviewed to determine their impact on the DBD. This process is addressed on Flowchart 10, DBD Update Process.

CHECKS AND BALANCES

Writers of DBD's are trained to recognize and report discrepancies during the writing process. DBD comments submitted by the writers and reviewers are screened by the cognizant ComEd engineer to determine their significance. Comments are either resolved and incorporated into the

DBD or handled as discrepancies and prioritized for resolution. Evaluations to determine disposition of discrepancies were done by the Cognizant Engineer.

Discrepancies are evaluated and prioritized by the following Categories:

1. Safety Impact, Operability/Tech Spec Violation, Licensing Violation
2. Deficiency in Design Change
3. Resolution Required to Support Future Design Changes
4. Inconsistency or Missing Documentation that is not Necessary to Resolve

Category 1 items are immediately referred to the applicable ComEd process for performing Safety, Operability, and Reportability determinations.

Category 2 items are evaluated and short term action plans are developed for resolution.

Category 3 items are evaluated and long term action plans are developed to resolve the discrepancy.

Category 4 items are tracked via the Open Item Log, contained within the DBD, for resolution as part of on-going activities.

Cognizant DBD Engineers are responsible to track and resolve Open Items listed against their DBD. When appropriate actions are completed, the resolution is documented, any necessary DBD changes initiated, and the Open Item closed.

RECENT / PLANNED IMPROVEMENTS

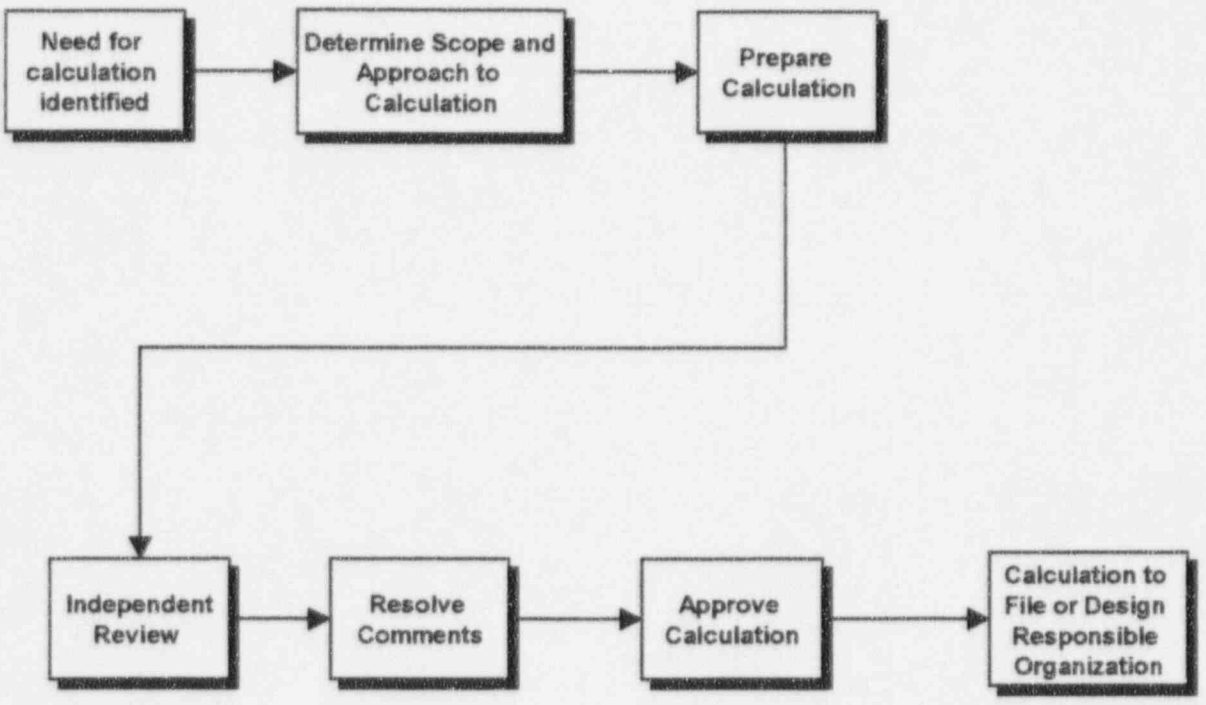
Several process improvements have been made to the DBD program. Some are the result of assessment recommendations while others reflect lessons learned from experience. In May 1994 a detailed assessment effort resulted in the issuance of the Design Information Review Team (DIRT) Project Report. This report recommended the DBD Program coordinate more closely with the sites to better meet their needs, generate key missing data, and make licensing documentation more available to the users. As a result of these recommendations, several DBD content and format changes were incorporated to better meet the end users needs. In addition, the production of several topical DBD's was initiated.

As these improvements were being implemented, a strategic goal of performing more engineering design work in-house was being pursued. In keeping with that goal, a plan was established for LaSalle County to create DBD's utilizing site engineering personnel directly in their development. This level of involvement as compared to a purely review function, would lead to a better transfer of design basis knowledge to the site personnel involved. By the end of 1995, LaSalle completed its first topical DBD, Electrical Separation, using this new approach.

In addition to these changes in the actual production process, there have been changes made in the administrative handling of DBD's and their associated references. A key change has been the indexing of DBD's and there references into the Electronic Work Control System, EWCS. EWCS is the computer database where all engineering documents are indexed and controlled.

The DBD Development activity is planned to continue through 1997. Enhancements and improvements to the DBD Development Process are expected as part of the overall ComEd response to the commitments outlined in T.J. Maiman's November 12, 1996 letter to A. Bill Beach.

Flowchart 17
Calculation Process
NEP-12-02



Calculation Process

NEP-12-02

PURPOSE

This process describes the preparation, review, and approval requirements for calculations that support Engineering Design and Analysis.

PROCESS DESCRIPTION

The scope and approach to the calculation shall be established and applied.

Preparers are responsible for compiling the information and preparing the calculation in a prescribed manner for the stated purpose. Preparers shall possess discipline qualifications related to the subject matter or a specialization in the area through work experience, education, training, etc. During preparation, the Preparer shall:

Be aware of the following which directly relate to the calculation.

Project files	Drawings
Meeting notes	Codes
Design criteria	Standards
Applicable previous calculations	Studies
System descriptions	Commitments to Regulatory Agencies

Adequately document Engineering Judgment, if applicable, to permit Reviewer to verify logic.

Once the calc is completed, the calc may be checked prior to being submitted for an independent review.

After all comments generated through the independent review have been resolved, the calc is approved and issued.

CHECKS AND BALANCES

The Supervisor/Approver may check the calculation prior to formal review for:

Format	Attributes
Completeness	Reasonableness of results
Technical adequacy	

An "Independent Review" of Calculations is performed by a qualified individual, using detailed guidance, assigned by the Supervisor based on their training, experience, and level of skill. The

Reviewer shall have had no influence on inputs or approaches utilized in the design development. The Reviewer is responsible to ensure the calculations:

Completeness	Meets applicable codes
Technical adequacy	Meets applicable standards
Accuracy	Meets quality requirements
Appropriateness for stated purpose	Meets licensing commitments
Appropriateness of assumptions	Reasonableness of output data

Calculations are reviewed by one or more of the following methods:

Detailed Design Review Method

Review calculations against design input documents to verify:

Conformance with specified configurations

Dimensions

Materials

Correctness of input parameters

Alternate Calculation Method

After ensuring that assumptions are appropriate and mathematics, input data or other calculation methods are correct, a simplified or approximate method of calculation is performed.

Qualification Testing Method

Verifying the adequacy of the calculation via a test program which demonstrates adequate performance under the most adverse operating conditions.

Review of Repetitive Calculations

Review previously approved calculations in terms of purpose, methodology, assumptions, and design inputs. Verify that any differences will not affect the comparison and that conclusions are consistent.

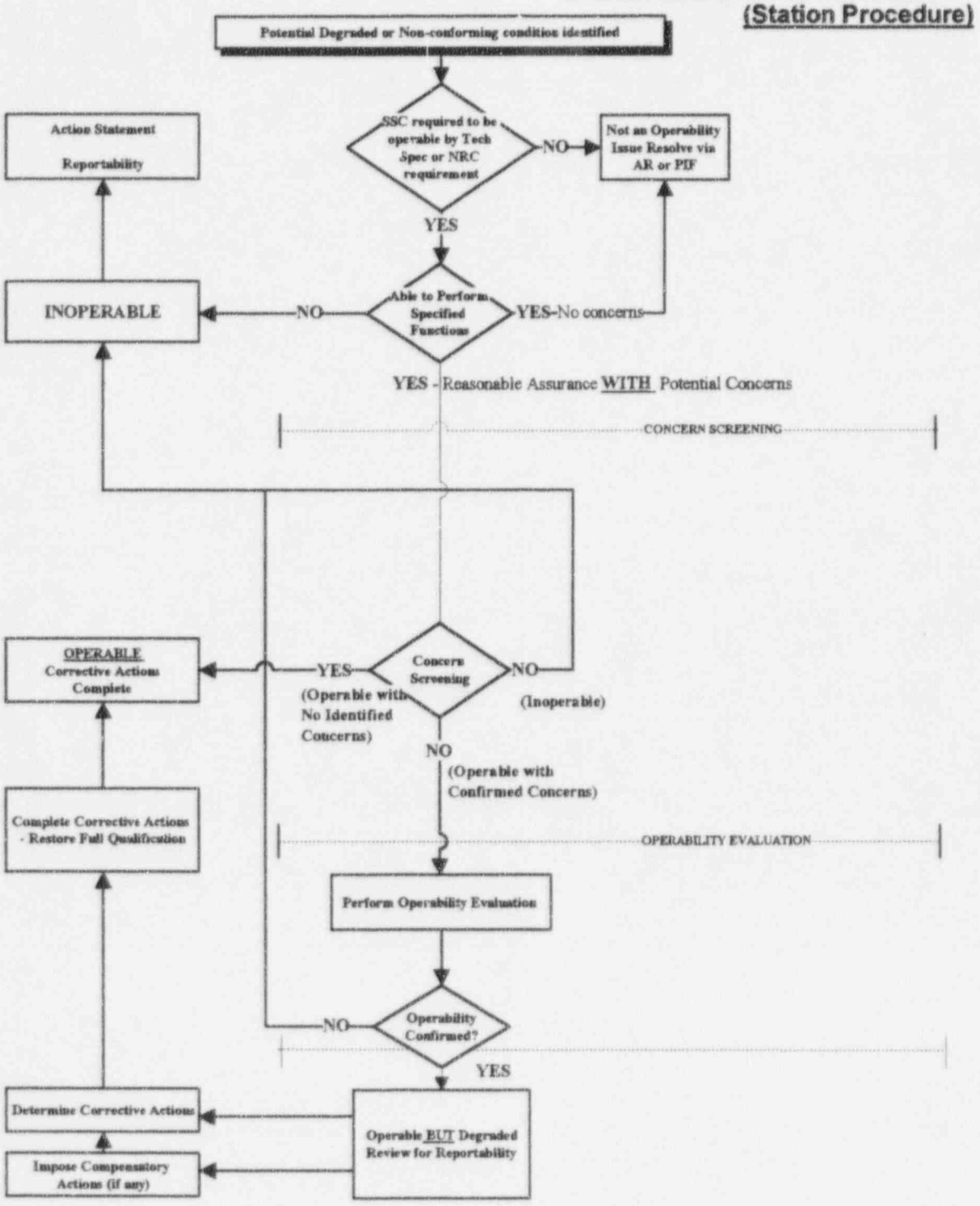
Calculations are approved by the Supervisor or an individual designated by the Supervisor based on their experience. The Approver is responsible for the overall quality of the calculation.

RECENT/PLANNED IMPROVEMENTS

As stated in the November 12, 1996 letter from T.J. Maiman to A. Bill Beach, ComEd intends to take the following action.

Critical calculations are an important part of maintaining the Design Bases. ComEd will define the set of calculations that are critical to maintaining design control and reconstitute them when they do not exist. Until this long term program is completed, we will validate or reconstitute a critical calculation when needed to support ongoing operations or new modifications.

Flowchart 18
Operability Assessment Process
(Station Procedure)



Operability Determination Process

Station Procedure

PURPOSE

Operability determinations are performed when the capability of a system, structure, or component (SSC) to perform its specified function(s) as required by the Technical Specifications or UFSAR cannot be unequivocally demonstrated or where a degraded or nonconforming condition results in a judgment that the equipment is operable but there are remaining concerns or uncertainties. Station procedures address the detailed process; however, the stations procedures generally agree with the guidance provided in NRC Generic Letter 91-18 and the approach described here.

PROCESS DESCRIPTION

ISSUE SCREENING

When an operability issue is identified, Operations expeditiously performs an issue screening.

Completion of the issue screening will determine if the SSC is:

Operable with no concerns.

Inoperable. Review for reportability.

Operable with potential concerns. (Problem or deficiency that applies to and may impair a SSCs performance) This determination will require a Concern Screening to be performed by Engineering.

CONCERN SCREENING

Concern Screenings are performed by knowledgeable qualified Engineers to determine whether an operability concern exists. Screenings are performed using detailed guidance.

Completion of the concern screening will determine if the SSC is:

Inoperable.

Operable (with no identified concerns).

Operable with confirmed concerns.

CONCERN SCREENING REVIEW AND APPROVAL

Concern screenings are reviewed by Engineering supervision and the Independent Safety Review Group. They are then approved by the Shift Manager.

OPERABILITY EVALUATION

Operability evaluations are performed by knowledgeable qualified Engineers using detailed guidance.

Completion of the Operability Evaluation will determine:

If compensatory actions are required to maintain functionality.

If corrective actions are required to restore full qualification.

OPERABILITY EVALUATION REVIEW AND APPROVAL

Operability Evaluations are reviewed by the Regulatory Assurance Supervisor, System Engineering Supervisor, Site Engineering Support Supervisor, Operating Engineer, and the Independent Safety Review Group. They are then approved by the Shift Manager.

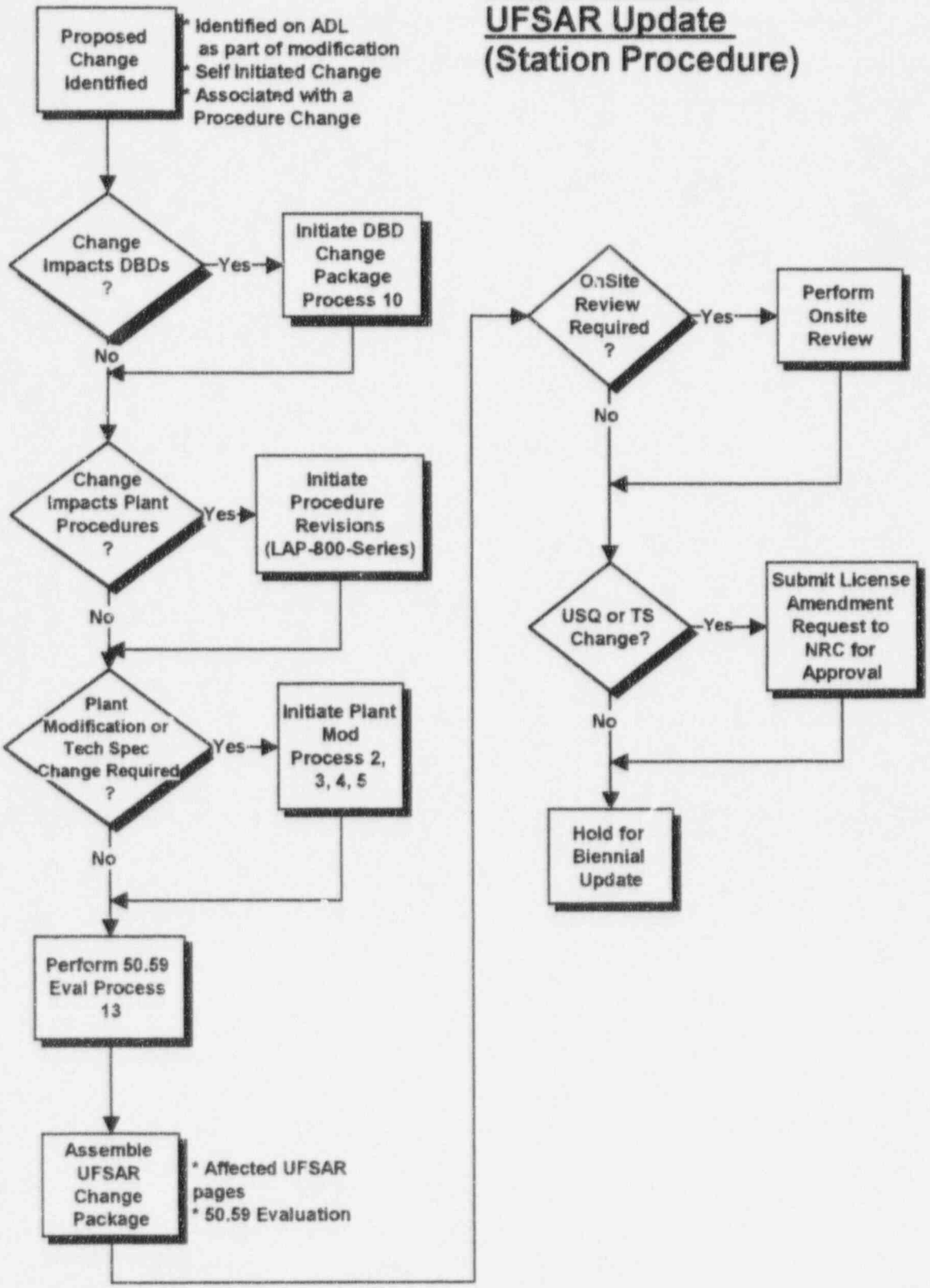
CLOSURE

An operability determination is open as long as the degraded or non-conforming condition exists. The operability can only be "closed" when it can be shown that the SSC has been repaired or modified to meet the original full qualification or the design basis has been changed via a modification and/or UFSAR change so that the "as-found" condition now meets full qualification.

RECENT/PLANNED IMPROVEMENTS

ComEd is in the process of adopting a uniform Operability Determination Process across all six sites.

Flowchart 19
UFSAR Update
(Station Procedure)



UFSAR Update Process

Station Procedure

PURPOSE

Changes made to the facility, equipment, analysis, procedures, programs, or organizations which change the description included in the UFSAR, require a UFSAR Change to be initiated. The impact of UFSAR changes to the station Design Basis is controlled through detailed preparation and review processes as described below:

PROCESS DESCRIPTION

Changes to the UFSAR can result from the design change modification process (Where they are identified in the ADL) or they can be self-generated as part of a general UFSAR update program or through UFSAR reviews associated with the normal work process or regulatory or self-assessments. The impact of UFSAR changes originated as part of the modification process is addressed as part of that process. The process addressed here describes how self-generated UFSAR changes are evaluated and implemented.

CHANGE PREPARATION

The initiator of a UFSAR Change thoroughly researches the change to determine whether it:

- Impacts the Technical Specifications (If so, initiate a plant modification).
- Impacts the Design Basis Documents (If so, initiate a DBD Change Package).
- Impacts Plant procedures (If so, initiate a plant procedures revision).
- Impacts system design (If so, initiate a plant modification).
- Impact Station commitments (If so, initiate a plant modification or commitment change).
- Impacts Administratively Controlled Documentation (If so, initiate proper administrative program).

10CFR50.59 SAFETY EVALUATION

10CFR50.59 Safety Evaluations are performed to determine if the UFSAR Change could involve an Unreviewed Safety Question or a change to the Technical Specifications.

All UFSAR Changes other than editorial/typographical changes or changes resulting from a License Amendment receive a 10CFR50.59 Safety Evaluation.

10CFR50.59 Screenings are performed and reviewed by individuals meeting the qualification requirements of ANSI N18.1-1971, Standard for Selection and Training of Nuclear Power Plant Personnel.

ONSITE REVIEW

UFSAR changes which involve an Unreviewed Safety Question or affect nuclear safety receive a critical and thorough administrative Onsite Review, as follows:

Onsite Reviews are performed by at least two individuals who collectively possess background and qualification in the subject matter. At least one of the reviewers must be a System Engineering Department Supervisor who is designated the "Senior Participant."

The Stations Technical Specifications require that Onsite Review personnel meet the applicable experience requirements of Sections 4.2 and 4.4 of ANSI N18.1-1971, Standard for Selection and Training of Nuclear Power Plant Personnel.

Ensure Fulfillment of Technical Specifications requirements.

Ensure Fulfillment of UFSAR requirements and commitments.

Ensure review of Safety issues.

Review of 10CFR50.59 Safety Evaluations for Technical Specification and UFSAR application.

Review Procedural compliance.

Review Administrative Radiological concerns.

Ensure Fulfillment of station commitments to NRC, INPO, and other regulatory agencies.

CHECKS AND BALANCES

The safety evaluation and Onsite Review performed at ComEd for all UFSAR changes other than editorial/typographical changes or changes resulting from a License Amendment provide an important checkpoint in the process to ensure regulatory compliance and maintain design control.

The Offsite Review also provides an after the fact review of 10 CFR 50.59 Safety Evaluations that effect Nuclear Safety.

RECENT/PLANNED IMPROVEMENTS

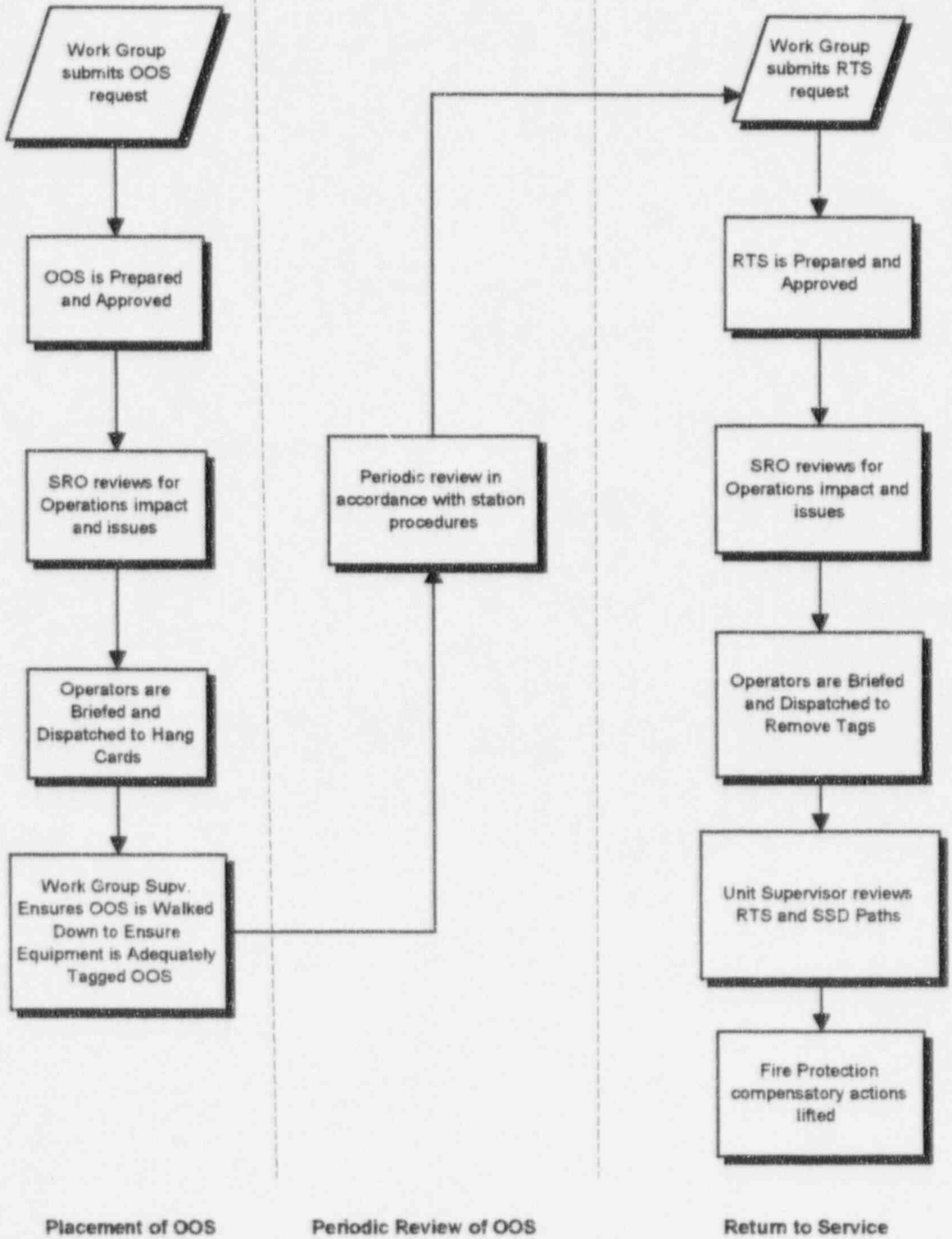
ComEd recently undertook a UFSAR Update Program at the older stations. This program utilized outside resources and required almost two years to complete. It resulted in updated UFSAR's at Dresden, Quad Cities and Zion.

ComEd formed a UFSAR Process Improvement Team with members from each station and the Corporate office. This team is examining how UFSAR changes are documented and will provide recommendations for UFSAR reviews. It is also pursuing the development of a standard process for all sites that will better ensure that plant changes are appropriately reflected in the UFSAR.

In addition, as stated in the November 12, 1996 letter from T.J. Maiman to A. Bill Beach, and as a result of recent inspections and events at Zion and LaSalle, ComEd self initiated a validation of

UFSAR information for a minimum of two systems against the operati... surveillance procedures. The results of this validation have caused ComEd to e... an expanded review program which will be discussed in separate correspondence.

Flowchart 20
Out of Service/Return to Service Process
Station Procedure



Out Of Service/Return To Service Process

Station Procedure

PURPOSE

This process provides an overview of the common approach utilized to initiate and remove an equipment Out-Of-Service. The detailed control procedures are station procedures, and are unique to each station.

PROCESS DESCRIPTION

The following is an outline of the equipment Out-Of-Service (OOS) and Return to Service (RTS) process. It is controlled via station procedures.

PLACEMENT OF OOS

Any station personnel may initiate an OOS Request to perform work safely on station equipment or to otherwise maintain and control abnormal configurations. This process is managed through ComEd's Electronic Work Control System (EWCS).

1. Work Groups requesting the OOS are responsible to sufficiently define the scope of the work to allow the Operations Department to develop an adequate OOS.
2. Qualification requirements are established for individuals who prepare and review OOS. Controlled documents and drawings are used to ensure accuracy of prepared OOS. When controlled drawings are unavailable, the OOS will be walked down in the field to ensure accuracy. A second qualified OOS Preparer independently verifies the OOS as correct.
3. The OOS is reviewed by an SRO licensed operator to identify Technical Specification (Tech Spec), Primary/Secondary Containment related, fire protection/Appendix R and other issues. The SRO also conducts an independent review and weighs the impact of the OOS on the probabilistic risk assessment for the Unit.
4. Operations personnel are briefed prior to positioning equipment and hanging the OOS cards.
5. Both licensed and non-licensed operators may place OOS cards. All cards are hung and then independently verified if required.
6. The Work Group Supervisor is responsible to verify the OOS has been correctly hung and is adequate for the scope of the work.

PERIODIC REVIEW OF OOS

While in place OOS are subjected to periodic reviews for potential impact on station operation in accordance with requirements specified in station procedures.

RETURN TO SERVICE

When work is completed, a Return-To-Service (RTS) Request initiates removal of the OOS.

1. A qualified OOS Preparer reviews controlled documents and drawings to prepare the RTS and determine repositioning requirements for equipment.

2. RTS is SRO reviewed to identify potential Tech Spec/Containment issues, and identify that equipment repositioning requirements are appropriate.
3. Operators will be briefed prior to repositioning equipment and removing the OOS card.
4. All equipment is repositioned and OOS cards are removed with independent verification, if required.
5. The Unit Supervisor reviews the RTS to restore Safe Shutdown Paths and to ensure all actions are properly completed.
6. A SRO licensed operator will oversee restoration of any Fire Protection requirements.

CHECKS AND BALANCES

Independent verification is used throughout the OOS program for Technical Specifications and Safety Related equipment. There are 2 OOS Preparers and each is responsible to independently review controlled documents and drawings to satisfy themselves that the points of isolation and special instructions are correct. Technical Specification, Primary/Secondary Containment impact fire protection/Appendix R and other operation impact and issues are also independently reviewed by SRO licensed operators. When equipment is positioned and cards are hung during OOS or RTS, 2 operators (if required) assigned to perform independent verification. The review by both the Unit Supervisor and NSO considers potential impacts of the OOS or RTS on the current plant configuration. The Work Group Supervisor is responsible to ensure that the OOS is appropriate for the scope of work to ensure protection of the equipment as well as personnel safety. The periodic review of OOS ensures that OOS have received a 10CFR50.59 Screening/Evaluation to ensure the level of plant safety is not degraded by the duration of the OOS, equipment is maintained in the correct OOS position and that the Control Room adequately reflects the impact of the OOS on the configuration of the plant.

RECENT/PLANNED IMPROVEMENTS

ComEd has initiated a corporate-wide standardization of the OOS process. The new process is being designed to eliminate many issues common to all sites, and is exploring the use of an all electronic version of the Out of Service Program.

Appendix III - Nuclear Fuel Services' Design Processes

The Nuclear Fuel Services (NFS) Department is the major ComEd Corporate Engineering organization providing production services to the ComEd nuclear stations. In the past, its functions were performed by a separate service organization that was not a part of corporate engineering and was under separate management. Consequently, when NFS was merged into the Nuclear Engineering Services Department under the direction of the Engineering Vice President, it already had unique processes and procedures that migrated with it to the new organization. This Appendix addresses those unique NFS processes that impact design bases and configuration control.

In addition, in recent years, NFS has had an increasingly important role in establishing and maintaining the design bases. New reactor fuel designs, new fuel vendors, changes to the core configuration, changes to core components and changes to the refueling cycles can have impacts on the thermal-hydraulic and transient analysis that form the bases of the safety analyses and evaluations. These important roles are discussed in this Appendix.

Organization and Responsibilities:

The NFS Department has lead responsibility for Core Reload Design and other reactor core components for all six nuclear stations. The NFS Chief Nuclear Engineer and the NFS Supervisors plan, direct and monitor all activities related to Core Reload Design. The NFS Chief Nuclear Engineer reports directly to the Engineering Vice President. Reporting to the NFS Chief Nuclear Engineer are Supervisors for the following areas (PWR and BWR): Support Services, Nuclear Design, and Safety Analysis.

The PWR and BWR Support Services Supervisors administer the technical projects involving the fuel, reactor core and core components in support of the Core Reload Design of the reactors. The PWR and BWR Nuclear Design Supervisors administer activities related to reactor neutronic analyses which are required for the Core Reload Design. The PWR and BWR Safety Analysis Supervisors administer the activities related to thermal-hydraulic and transient analysis for the reload safety evaluations of each of the operating nuclear reactors.

A Reload Licensing Engineer (RLE) provides oversight and input as needed for the licensing aspects of the reload process. A Fuel Reliability Engineer (FRE) provides oversight and input as needed in the area of fuel reliability. A FRE monitors fuel performance and provides recommendations to the stations on activities such as fuel inspections and reconstitution. A FRE also reviews significant changes to fuel designs and manufacturing processes prior to their implementation. Both, the RLE(s) and FRE(s) report directly to the Chief Nuclear Engineer.

The Site Vice President and Senior Station Management are responsible for providing oversight review and concurrence with the reactor core design. This includes significant changes in unit operation philosophy (such as 24 month cycles) and fuel design changes. Additionally, they

supply corporate and station goals to be used in the design of the reload (such as the cycle startup/shutdown dates and anticipated operating capacity factor).

The Station Reactor Engineer administers the on-site Core Reload Design activities related to design input, fuel and component handling, core loading, startup testing and operations support. The Reactor Engineer takes functional direction from the NFS Chief Nuclear Engineer in matters related to Core Reload Design. The Site Engineering Manager is responsible for engineering activities at the station. Site Engineering provides input to the Core Reload Design process by identifying any plant modifications or changes which may affect the Core Reload Design.

Onsite Review is responsible for performing a review of the Core Reload Design 50.59 package and/or any license amendments produced in the Core Reload Design process. Offsite Review is responsible for fulfilling the Offsite Review and Investigative Function, including the review of changes to procedures, equipment or systems as described in the Safety Analysis Report. Offsite Review is responsible for performing a review of the Core Reload Design 50.59 package and/or any license amendments produced in the Core Reload Design process.

The Fuel Vendors are responsible for the mechanical design and fabrication of the fuel assemblies, LOCA Analysis of record and maintenance of the Core Reload Design capabilities required by the Fuel Contract and Vendor Interaction Procedures or Guidelines. Fuel Vendors must maintain approved Quality Assurance programs for their design work, which may include some or all of the nuclear design and safety analysis scope if requested.

Core Reload Design Control Process (Process 1):

Note: For the purposes of this discussion, the term "Fuel Vendor" is applied to the organization responsible for the fabrication of the fuel and delegated to perform the required core design and licensing analyses. ComEd currently performs the core design and is in the process of licensing the capability for performing the cycle specific transient analyses.

The planned completion date of the NFS Reload Design Safety Evaluation (including UFSAR changes and COLR) is dependent upon whether or not a change to the Technical Specifications is required and, if so, its complexity. Requests for Technical Specification Amendments are made as early as practical with the objective of providing sufficient lead time for NRC review and approval.

Normally, the preliminary core design, including fuel bundle design, the goals for the operating cycle performance and the Reload Licensing Schedule are reviewed with Senior Station Management. This review permits Senior Station Management to participate in the review and approval of the reactor core design including significant changes in unit operation philosophy (such as 24 month cycles) and fuel design and/or core component changes. Note that this review meeting is in the process of being enhanced as a result of recommendations from a recent industry (INPO) managers conference.

The Station Reactor Engineer, NFS Support Services and Safety Analysis Cognizant Engineers coordinate and review the transient analysis parameters and LOCA analysis parameters.

The Reload Design Initialization (RDI) process sets the scope and ground rules for the reload design. The RDI process is broken into two parts:

a) The RDI process identifies plant changes such as modifications, Technical Specification amendments and setpoint changes which could potentially affect the design or schedule. The RDI also identifies any fuel design changes or first-of-a-kind applications.

b) The RDI process also determines how the proposed reload design would affect the plant. The RDI process identifies any supporting activities which must occur to support the reload design. Supporting activities include setpoint changes, license amendments, training, procedure changes, special tests and others. The RDI process tracks to completion or resolution each of these changes.

The assumptions and conditions identified in the RDI process are applied in the Core Reload Design process. The Reload Design Safety Evaluation (10CFR50.59 for the reload design) confirms that these inputs do not create an unreviewed safety question. The assumptions and conditions are again reviewed prior to criticality in the Reload Design Finalization (RDF) process (discussed below) and incorporated into the Reload Design Safety Evaluation.

When the draft licensing documents are received from the "Fuel Vendor," the Station Reactor Engineer and the Support, Safety Analysis and Nuclear Design Cognizant Engineers perform a detailed review of the draft reload licensing documents. The first action taken when reviewing the results of the licensing analyses is to evaluate the trends by comparing the results to previous reload analyses.

NFS completes a separate evaluation for any new fuel or core component designs under the Nuclear Fuel and Component Design and Fabrication Control Process (see below). This evaluation typically is referenced by the NFS Reload Design Safety Evaluation.

The Nuclear Design Engineer verifies that the final Fuel Assembly Design Package and Nuclear Design Report properly reflects the fuel assembly neutronic designs established for the reload.

Once the reload licensing documents are finalized, they are transmitted to the station as a Nuclear Design Information Transmittal (NDIT).

The Cognizant Support Engineer, with the support of the other review team members, develops the NFS Reload Design Safety Evaluation, including related documents such as UFSAR page mark-ups. The objective of the Safety Evaluation is to review and document the essential aspects of the reload, including fuel design or component changes, with sufficient detail to ensure no unreviewed safety questions exist in accordance with 10CFR50.59. An Independent Review by

another qualified Engineer of this package is conducted in accordance with the Controlled Work process (see below).

The Reload Design Finalization (RDF) process is performed to confirm that the assumptions used for the design, analysis, and supporting activities are still appropriate considering the actual conditions and that the required supporting activities (identified during the RDI) are completed or will be completed as required.

A Station Onsite Review and Offsite Review are conducted on the Core Reload Design 50.59 package.

Upon completion of the core loading, the core configuration is verified by the performance of an as-loaded fuel assembly serial number surveillance. Typically, an underwater camera is used and the results are video taped. The Reload Licensing Loading Pattern, used for all licensing evaluations, is the acceptance criteria bases for this review. This surveillance is witnessed by a member of the NFS staff using an independently obtained copy of the Reload Licensing Loading Pattern.

During the latter stages of the refuel outage, the station performs an Onsite Review of the outage activities. A subsection of this review is a verification that the assumptions used for the design, analysis, and supporting activities are still appropriate considering the actual conditions and that the required supporting activities (identified during the RDI) are completed or will be completed as required.

Upon completion of the refuel outage, unit startup commences. Various startup tests are performed in accordance with the station's Technical Specifications or other administrative controls. Additionally, tests are performed as required by the Core Reload Design process. The results of these tests are evaluated to provide assurances that the design is valid by comparing test results to design values for key parameters.

Nuclear Fuel and Component Design and Fabrication Control Process (Process 2):

The Fuel and Component Design and Fabrication Control Process involves the technical review of all significant changes to the design of the fuel assembly. This design review covers, as a minimum, the potential impact of the change on plant safety and transients, interfaces, reliability, and performance. A Fuel Reliability Engineer (FRE) has the primary responsibility for implementation of this process. Other areas of NFS have the responsibility to provide personnel to assist in or lead the review of nuclear fuel or core component design changes as agreed upon between the NFS Chief Nuclear Engineer, NFS Supervisors, and a FRE.

Uranium enrichment and burnable absorber content vary from cycle to cycle to accommodate cycle energy requirements. These parameters are specified by Nuclear Design and may be included under this process if their values are outside previously utilized ranges and there is a possible affect on safety or transient analysis, fuel rod performance, etc.

The significance of the change is determined by a FRE or designee by reviewing the drawing or specification changes provided by the vendor. Any questions or comments about the design changes should be discussed with vendor personnel.

For Significant Design Changes, a more rigorous review process is required, as follows:

A Design Review Team is formed consisting of NFS personnel, appropriate station personnel and, when needed, appropriate technical experts from outside NFS. Documentation of the review is maintained including any notes or minutes from meetings and telecommunications with vendor personnel or expert consultants on the design change.

The Design Review Team thoroughly reviews the design change and all documentation provided by the vendor to support the change. In addition, the Design Review Team requests any additional information from the vendor which it believes would assist in the review. Information such as design analyses, design bases, prototype testing, Lead Test Assembly (LTA) experience, the vendor's qualification of the design change and fuel fabrication process changes associated with the design change are typically requested to assist in the evaluation.

The following conditions are those that typically require NRC approval prior to implementation of a fuel or component design change:

- Any hardware change that results in a design that is different than that described in the Technical Specifications (e.g. different clad material, fuel or absorber material).

- Any design change that results in an unreviewed safety question per the criteria of 10CFR50.59.

- Any hardware change that is not bounded by an applicable ComEd or Vendor topical report (e.g. a spacer grid design change that requires a new CHF/CPR correlation).

After resolution of all technical issues related to the design change, the Design Review Team determines if the design change is technically acceptable for application at ComEd plants. In some cases the Design Review Team will also determine if the design change is financially attractive to ComEd (i.e. there is a justified economic payback if the change involves a cost increase to the price of the fuel).

If the design change is acceptable to the Design Review Team, station concurrence with the change is obtained. Significant design changes are reviewed and approved by Senior Station Management.

The Design Review Team prepares a report of their review of the design change. This report details all the technical issues associated with the design change and their resolution. The report is typically signed by all team members. The Design Review Report is considered Controlled Work.

The Design Review Team Leader prepares a memo to the ComEd Buyer for the NFS Chief Nuclear Engineer's signature which accepts or rejects the design change. The memo lists any limitations or conditions which the team believes are needed to make the design change acceptable for use in ComEd plants or contains the reasons for rejection of the design change, if necessary.

The FRE follows up to assure that all limitations and conditions agreed to between the vendor and the Design Review Team are followed both in the designing and manufacturing as well as the handling and use of the fuel or component at the plant.

Nuclear Fuel Services Controlled Work Process (Process 3):

Controlled Work is a calculation or analysis, or formal evaluation, review, response or recommendation, or change thereto, which is:

- Important to safety in the design or operation of a fuel rod, fuel assembly, or reactor core, or in the design or operation of a plant system, subsystem or component; or,
- Used to generate information which will be sent to the NRC in support of ComEd submittals; or,
- Used to support an NFS, Station or other ComEd department Safety Evaluation, Significant Hazards Evaluation, Technical Specification or FSAR change or interpretation thereof; or,
- Used in the generation of Special Nuclear Material accountability information.

All Controlled Work receives an Independent Review by a qualified Engineer.

A Controlled Analysis is any NFS calculation that meets one or more criteria of Controlled Work.

A Routine Controlled Analysis is a Controlled Analysis which is performed according to a procedure for a recurring application.

A Special Controlled Analysis is a Controlled Analysis for which no procedure has been written, or for which a procedure cannot be followed without alteration that affects the intent of the procedure or the margin of safety.

A Routine External Analysis is a standard, recurring analysis performed external to ComEd which meets one or more criteria of Controlled Work and which has been performed in accordance with the external organization's ComEd-approved Quality Assurance program.

A Special External Analysis is a non-routine, infrequently performed, or first of a kind analysis performed external to ComEd which meets one or more of the criteria for Controlled Work.

An Additional Review (AR) is required for all Special External Analyses, after completion of the initial Acceptance Review. For the other types of Controlled Work, the NFS Supervisor shall determine whether an Additional Review (AR) and/or a Special Review Team (SRT) is warranted and shall document this conclusion. Examples of Controlled Work that may require review by a SRT are:

- First-of-a-kind application of a substantially new methodology or design.
- First application of a Special Controlled Analysis or Special External Analysis that is particularly significant, or that has a direct and significant impact on a Technical Specification or that is required for NRC submittal.
- Special Analyses or safety reviews or recommendations that would result in a major change in station operation, Special Nuclear Material accountability, or reactivity management.

Review of Problem Identification Forms (PIFs)

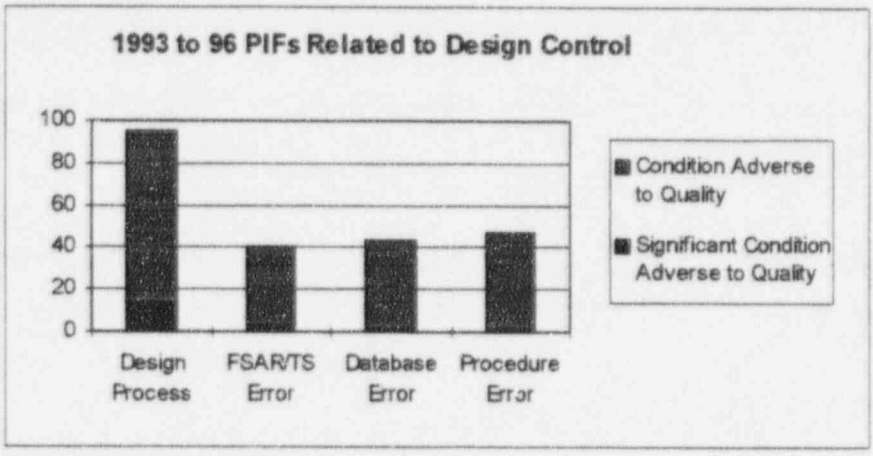
A review was performed of NFS generated PIFs from 1993 (the first year the PIF process was used in NFS) to present (November 8, 1996). As described in Action (d), the PIF process is common to all six nuclear stations and is also used by NFS to identify, document, assess, and correct design bases and other nonconformances. Nearly 50% of the NFS generated PIFs were associated with the reload design process (RDP). A review of each year's PIF log demonstrated that this trend is also prevalent on a yearly basis. Over the three and a half year period, nearly half of the design bases deficiencies were equally distributed in the areas of the licensing bases documents (UFSAR and Technical Specifications), databases (typically computer data files) and procedures. The remaining 50% are associated with the design bases process itself. Approximately 10% of the reload design process PIFs were categorized as significant and received a heightened level of investigation. It should be noted that RDP PIFs that had the potential to result in a reportable issue per 10 CFR 50.72 or 73 were typically issued by the affected station independent of the location of the identifying organization.

The RDP PIFs covered a spectrum of issues; from minor errors caught during the Independent Review process to significant process deficiencies that resulted in notable process enhancements. The age of the deficiencies also ranged widely; from inaccuracies in currently open evaluations to original licensing bases analyses.

Significant design bases process enhancements that resulted from RDP PIF investigations include:

- Created a transient input parameter list.
- Created a reload design initialization/control procedure.

- Developed reload interaction agreement with Fuel Vendor for pertinent fuel rod design information.
- Upgraded procedure for Controlled Work to improve required handling and review of all external documents including those classified as routine design.
- Changed the threshold for writing PIFs to require that any anomalies identified consistent with a "controlled work" review be PIF'd.
- Developed a Quality Software Control Process. The various stages of testing, validation, operation, maintenance and upgrades were defined and a list of approved quality software developed, communicated and maintained.



Summary of Major Audit Findings and Corrective Action

Nuclear Fuel Services (NFS) and the Nuclear Engineering Groups at the stations, as the owners of the Reload Design Process, participate in an aggressive design control audit and technical review program. NFS and the Nuclear Engineering Groups participate in audits of the ComEd nuclear stations, fuel and core component vendors and licensing analyses Architect Engineers (A/Es). For ComEd internal audits, the Site Quality Verification (SQV) department is typically the coordinating organization. For external audits, the Supplier Evaluation Services (SES) department is typically the coordinating organization. Some of the external audits are conducted as a joint audit by a collection of utilities. All audits are undertaken periodically or as a special review as the result of an adverse trend.

Typically, members of NFS and/or the Station Nuclear Engineering Groups participate in internal and external audits as the audit team's Technical Expert(s). ComEd internal audits have included reviews of the reload design process and the Reactivity Management program. External audits have included issues from fuel and nuclear component fabrication (at the manufacturing facility) to licensing analyses. Findings and Recommendations are identified and conveyed to the auditee. Some of the more significant findings (Level II) are listed as follows:

- Using an unapproved procedure to make changes to controlled documents without making a revision change to the document.
- Reference files used during testing of a revision to the Core Monitoring Software were not completely reviewed.
- The calculation notebook to support the application of Traversing Incore Probe (TIP) machine data substitution methodology was not completed.

As part of the transition to Siemens Power Corporation (SPC) ATRIUM-9B fuel at ComEd's BWRs, increased vendor special audits and technical reviews have been and are continuing to take place at SPC's offices/facilities due to the introduction of the new fuel type and licensing methodologies. Examples of these include a technical review of the LaSalle Equipment Out Of Service Analysis and a technical review of the Quad Cities LOCA/ECCS analysis.

The Reload Design Process has also received both internally and externally originated audits. These audits are initiated both periodically as well as when a trend is identified. Over the last few years, the Reload Design Process has been the subject of numerous internal and INPO audits as well as two NRC inspections. Overall, the Reload Design Process has been found by the NRC to be satisfactory. The 1992 inspection[1] found a strength in:

"Communications between the station personnel (PWR) and NFS was a strength and included:

- The weekly conference call with the three Lead Nuclear Engineers from the three PWR stations.
- A single NFS contact for each station contributed to effective and efficient communications.
- Direct access (using the paging system and home telephone numbers) and availability of Technical Staff (NFS) personnel during off-normal hours and weekends."

The 1994 inspection[2] also found the Reload Design Process to be satisfactory:

> "Overall, we found that the conduct of activities related to the development of core reload analysis for the ComEd stations were good. The Corporate Nuclear Fuel Services department was found to be a technically strong, interactive organization, providing good communications and support to the nuclear engineering groups at each of ComEd's nuclear power plants. We were encouraged by the depth and extent of the root cause investigation and corrective actions taken in response to the June, 1994 failure to install hafnium rod inserts event."

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[1] Inspection Reports No. 50-295 / 92012 (DRS); 50-304 / 92012 (DRS); 50-454 / 92010 (DRS); 50-455 / 92010 (DRS); 50-456 / 92010 (DRS); 50-457 / 92010 (DRS), April 27 through May 8, 1992, Routine Inspection of nuclear engineering related activities at both the three PWR plants and at the Nuclear Fuel Services Department.

[2] Inspection Reports No. 50-295 / 94022 (DRS); 50-304 / 94022 (DRS), October 17 through October 21, 1994, "Special Inspection of the failure to include Hafnium rod inserts at the Zion Nuclear Power Station and a review of ComEd's Nuclear Fuel Services Organization".

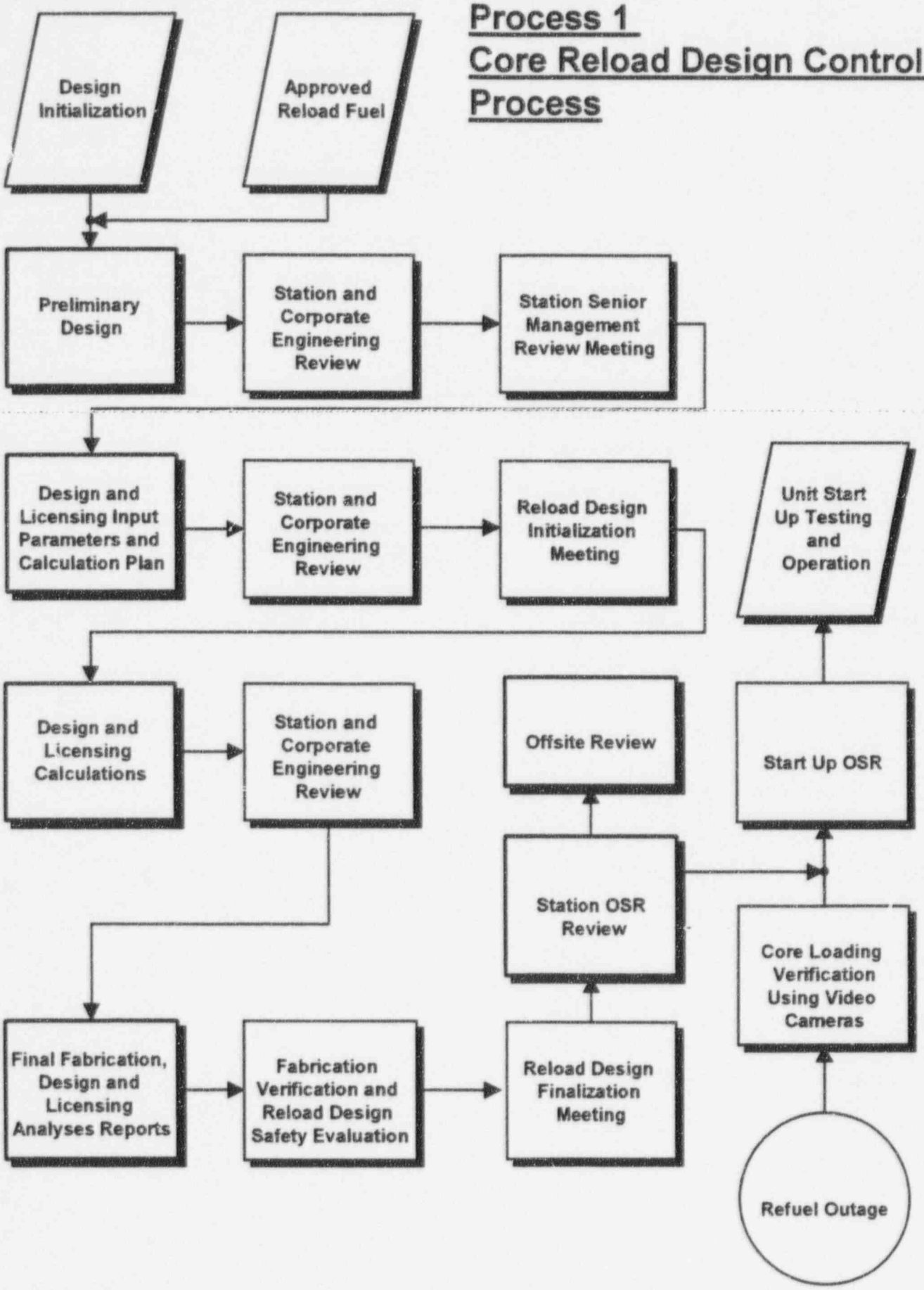
However, weaknesses were also identified such as:

> "Most communication for special circumstances and unique issues appear to be verbal";
> "Training and qualification was identified as a contributing cause to the reactivity control problem"; and,
> "... deficiencies were identified in the areas of Qualified Nuclear Engineer (QNE) training and self-assessment. The QNE training deficiencies involved a lack of clear ownership of the QNE requirements. Additionally, the self-assessment process was of limited benefit to the NFS organization, primarily because this effort was still in the initial stages of development."

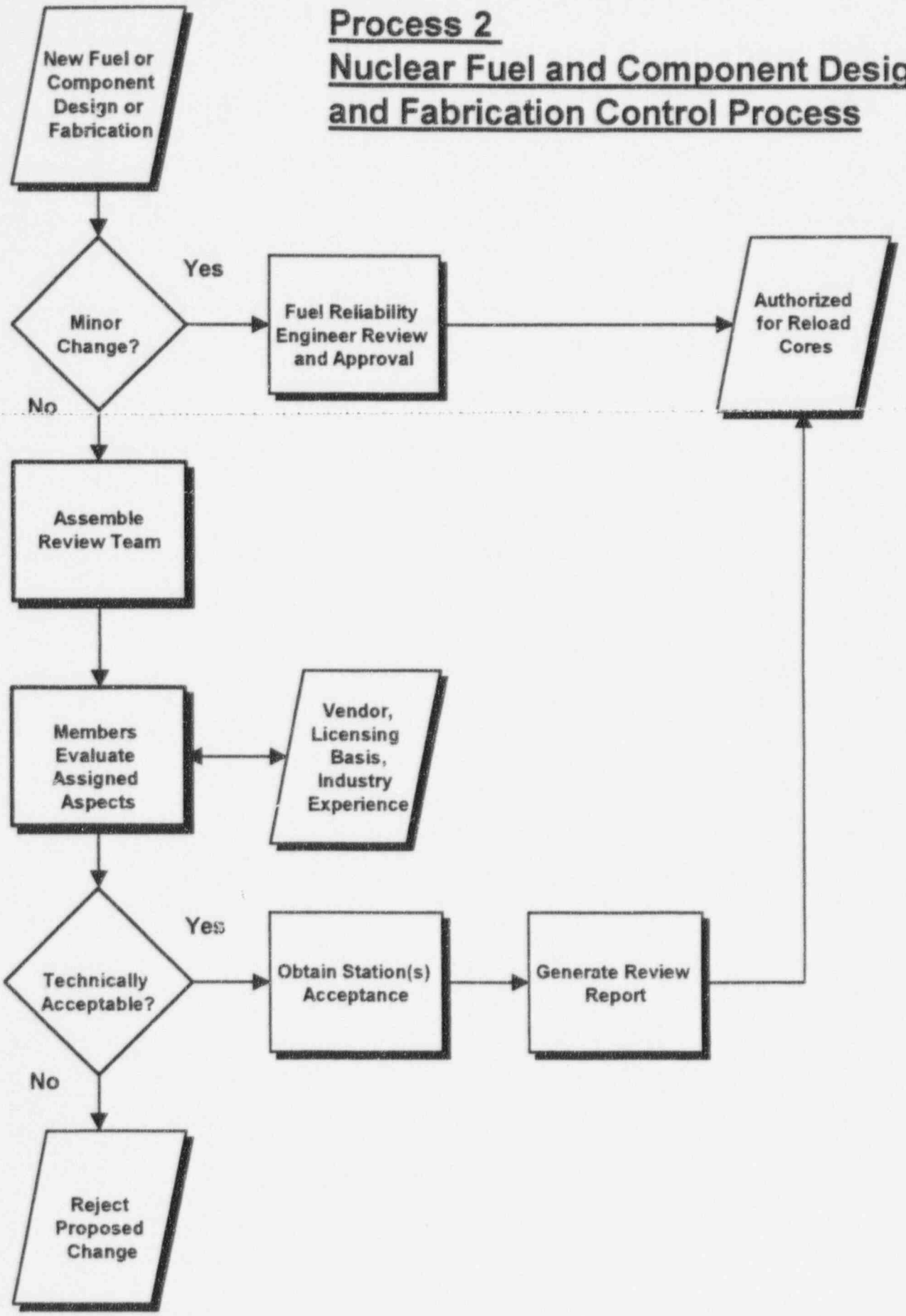
These weaknesses have been and are continuing to be addressed through enhancements to the reload design process.

In addition to corrective actions and process improvements undertaken in response to audits and regulatory findings, NFS is planning to implement a proactive process improvement that was identified from recommendations made at an industry managers conference. A review meeting with Senior Station Management is being added to the Core Reload Design Process. This review meeting provides Senior Management oversight review and approval of the core reload design including significant changes in unit operation philosophy and fuel design changes.

Process 1
Core Reload Design Control Process



Process 2
Nuclear Fuel and Component Design and Fabrication Control Process



Process 3
Nuclear Fuel Services
Controlled Work Process