



**Commonwealth Edison**

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December 12, 1989

Mr. A. Bert Davis  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, IL 61350

Subject: Zion Station Units 1 and 2  
Additional Information for  
Inspection Report Nos. 50-295/89018 and 50-304/89017  
NRC Docket Nos. 50-295 and 50-304

Reference: (a) September 29, 1989, letter from T. J. Kovach  
to A. B. Davis

Dear Mr. Davis:

This letter provides the additional information discussed in the Zion Station Management Meeting with NRC Regional Staff on November 14, 1989. The Commonwealth Edison response from reference (a) did not fully address the corrective actions that Zion Station has taken to satisfy the weaknesses identified in the inspection report. In this regard, Attachment A contains additional information regarding the Technical Support Weaknesses. Attachment B contains additional information regarding the Maintenance Weaknesses. Attachment C contains an expanded explanation of the corrective actions, results achieved, and the actions taken to prevent further violations.

Please direct any further questions regarding this matter to this office.

Very truly yours

R. A. Chrzanowski  
Nuclear Licensing Administrator

RAC/rmd

cc: Zion Resident Inspector  
C. Patel - NRR

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Attachment A

Significant Technical Support Weaknesses:

Instances of inadequate and untimely corrective action:

Weakness

- \* An auxiliary feedwater pump turbine overspeed trip mechanism had not been tested or maintained for approximately 17 years. Another auxiliary feedwater pump turbine overspeed trip mechanism was tested in April 1987, with inconclusive results, and recently failed to function due to lack of maintenance during a static test. The failure of these overspeed trip mechanisms had the potential to significantly overpressurize the pump discharge piping. The necessity for such tests was previously made known through vendor information, and a NRC information notice, your own and INPO assessments.

Response:

As an update to our September 29 response, TSGP-50 "Auxiliary Feedwater Turbine Overspeed Test" has undergone a major revision. Several comments and changes were requested by the Onsite Review Committee. These changes are currently being incorporated into the procedure. It is Zion's intent to perform the physical overspeed test on the Unit 1 AFW turbine within two weeks following the return to service of Unit 1 from the current refueling outage. The physical overspeed test on Unit 2 will be conducted before March 31, 1990.

The investigation to determine the best methodology to provide lubrication to the trip linkage has been completed. Procedure changes are now being prepared for presentation to Onsite Review. These procedure changes will be in effect by March 31, 1990.

Weakness

- \* Significant deficiencies were not always documented and properly addressed. For example, on more than one occasion the Technical Staff and Electrical Department appeared to accept the recurrence of a battery to bus circuit breaker failure to close on the first attempt. Adequate documentation of these failures or a root cause evaluation to correct the degraded condition did not exist.

Response:

Zion Station does not regard a failure of a breaker to close to be an acceptable condition. ZAP 5-51-3A "Use of Procedures in Operating Department" states in Section E.2.e.: "A work request or Deviation Report should be initiated as required for failures, even if a subsequent attempt restores operability."

The DC breakers addressed are called the "Battery Feed Breaker" to the associated DC bus. These are manually operated breakers that are only operated quarterly and during a refueling outage. There are no automatic closure requirements for these breakers. The quarterly operation is to allow each DC battery to be equalize charged. During a refueling outage the breakers are operated twice to allow testing of the battery and battery charger. The DC bus is always crosstied to another bus before the battery feed breaker is opened.

Difficulties were experienced during the performance of these tests in the reclosing of the Battery Feed Breakers. Work requests were generated and an investigation into the difficulties was initiated.

An engineering evaluation has been completed that demonstrates that the failure of these breakers to close would not have a safety significance. As long as the breaker does close, the operability requirement is met. If a breaker did fail to close, the Technical Specifications on DC Batteries and distribution system would be followed.

As an interim action Periodic Test (PT-30) "Station Battery Records Monthly Quarterly Equalizing Charge" has been changed to require the recording of the number of attempts needed to close these breakers. The system Technical Staff engineer is required to review the PT-30 at the completion of the test. The system engineer is trending the number of attempts needed to close the DC bus feed breakers to determine if further degradation is occurring. For your information only two out of six breakers have a history of not closing on the first try. These two breakers have always closed on the second attempt.

For the longer term, an action plan has been developed and is contained in the Zion Station Performance Improvement Plan (PIP). The PIP number assigned to this action plan is 00014. This action plan contains steps to procure replacement breakers. Previously the station purchased three replacement breakers from Satin America. These breakers arrived on site in 1988. The subsequent procurement problem with Satin America has resulted in the need to explore obtaining breakers from other vendors. Therefore, discussions are underway with General Electric on purchasing three new breakers and the refurbishing of our present breakers. These discussions will be completed by January 31, 1990. Procurement of the new breakers onsite will be dependent upon the manufacturing lead times.

While the AFW pump turbine overspeed trip mechanism and DC bus feed breakers have been addressed specifically, the general issue on how Zion Technical Staff will provide adequate and timely corrective actions needs to be addressed in broader terms. We have broken this down into two distinct areas. These two areas are root cause determination and responsiveness.

Under root cause determination, the Station is providing training in two programs. These two programs are; Human Performance Evaluation System (HPES) and Management Overview Risk Tree (MORT).

The HPES program is designed to improve human performance and to identify the root cause of human error. All deviation reports and Licensing Event Reports suspected to involve a personnel error receive an HPES evaluation. The HPES coordinator also does evaluations of other events such as "near misses". Presently fourteen people at Zion are trained in the HPES process. The HPES coordinator is presently arranging a training session on HPES for 1990. An additional twelve people are expected to attend this training.

MORT is a method of root cause analysis that focuses on equipment failures. This method is utilized by those engineers, who have been trained, in investigating equipment problems. Presently, twelve people are trained in MORT at Zion Station. An additional six engineers are presently scheduled to receive training in MORT in 1990.

The basic objective of both the HPES and MORT programs is to determine the root cause of an event in order to prevent recurrence.

In the area of responsiveness, the Technical Staff's highest priority action plan in the Performance Improvement Plan is to meet our upcoming commitments on time. This will be achieved by several means.

The first means is an increase in staffing levels. The Introspect reorganization of Commonwealth Edison has authorized the Zion Technical Staff to increase from 60 to 70 people. This increase will help us to better manage our work load.

The second means is the creation of an Engineering Support Group within the Technical Staff in August of this year. This Engineering Support Group has several responsibilities, including part evaluations and technical expertise on selected detailed equipment. This group will relieve the remaining Technical Staff engineers of these responsibilities thereby allowing them to concentrate more on their assigned system and engineering problems.

The third means to be utilized to ensure responsiveness is the augmentation of the electrical group in the Technical Staff. This group has the largest number of past due and future commitments. Two individuals have recently been obtained to help address and close these commitments.

Therefore, with improved root cause determination and better responsiveness to problems and commitments, the Technical Staff will provide more proactive corrective actions to engineering problems.

## Weakness

- \* Instances of inadequate engineering support and involvement in maintenance as indicated by the problems and examples discussed above.
  - System engineers did not adequately evaluate and correct generic problems such as failure of battery to bus circuit breakers to close on the first attempt.
  - Lack of an aggressive review of vendor recommended maintenance activities that resulted in components being excluded from the preventive maintenance program.

## Response

This concern of inadequate engineering support of maintenance activities will be addressed by improvements in two areas. These two areas are the Vendor Equipment Technical Information Program (VETIP), and System Engineer Concept.

The VETIP program was moved to the Technical Staff in August of 1989. The VETIP coordinator is now part of the Engineering Support Group. This reassignment brings the VETIP program closer to the system engineers.

Guidelines for the system engineer to use in reviewing vendor manuals are currently being developed. These guidelines will provide consistency in the review process by the different engineers. These guidelines are scheduled to be completed by December 15, 1989. These guidelines will then be utilized by the various system engineers in reviewing the equipment manuals that have been reviewed and human factored by the VETIP group.

The major effort presently underway in the VETIP program is the controlling of all vendor manuals within the station. The action plan for the VETIP program is number 00077. The targeted completion date for placing all manuals under control is March 1, 1990.

It is expected that Zion Station will control approximately 3000 manuals. This is an estimate based on discussions with other plants. Once the total number of manuals is known, an estimate on the resources and time required to perform the review of the manuals can be made.

In the interim, a controlled manual may be used per our ZAP 6-52-5. Departmental Head approval should be obtained prior to use.

The System Engineer concept has always been in place at Zion Station. Engineers are assigned as lead and/or backup on several systems. Generally, a new engineer will have, as his backup, the engineer who had the system prior to him.

Technical Staff also has a training program for all of our people. This training program can be broken down into new employee orientation, management and supervision, technical training at our Production Training Center (PTC), technical training onsite and vendor speciality training. The technical training includes, for example, classes in valves internals, motor operated and air operated actuators and breakers. Some of the onsite technical classes attended are those given to the maintenance department personnel in their training program.

The improvement that Zion Station needs to make with system engineers is to provide a consistent set of expectations with regards to duties and documentation. No set standard or expectation currently exists for these items.

With this in mind, several improvements will be taken to strengthen our system engineer concept.

First, position descriptions will be updated to reflect the new organization and current duties of a Technical Staff engineer. This will update the expectations of what a system engineer is responsible for. These expectations will define a minimum standard to achieve consistency from person to person. The position descriptions will be updated and approved by January 31, 1990.

The largest improvement is needed in the documentation and trending of system information. Currently, no guideline exists for a system engineer to determine what documentation on a system basis is expected.

Therefore, a guideline on system engineer notebooks will be developed. This guideline will set a minimum standard and achieve consistency from engineer to engineer.

A working team comprised of a mixture of older and newer engineers has been formed. This team is being lead by an experienced group leader. The team has been given the task to develop this guideline by January 15, 1990. The team guideline will then be reviewed, approved and disseminated to the system engineers by March 1, 1990.

With these improvements in the Zion Station system engineer concept, a strengthening of the engineer's role will be achieved. This strengthening of the system engineer will improve the support that the maintenance and operating departments require.

Attachment B

Additional Identified Significant Weaknesses directly relating to Maintenance:

- \* Previously identified NRC violations have not been adequately addressed in the areas of work instruction adequacy, bypassing of QC hold points, and radiological controls.
- \* Instances of failure to specify post maintenance test requirements for safety-related and non safety-related components and systems.
- \* Instances of failure to follow procedures, or inadequate procedures, that resulted in: a miswired torque switch on an auxiliary feedwater pump turbine main steam inlet valve that subsequently tripped on thermal overload; an incorrect procedure in a work package that was used to perform the maintenance activity; and three of six unplanned reactor trips at Zion in 1988.
- \* Lack of management aggressiveness in implementing the maintenance program, including balance of plant. This resulted in instances where items classified as high priority work were not completed for an extended time period and were not technically justified.

The above stated weaknesses can be divided into three major areas: Work Packages, Work Practices, and Management Overview. The major focus of corrective actions in these and other areas lies in the Zion Performance Improvement Plan (PIP). This is a comprehensive program utilized to formalize, prioritize, monitor, and adjust through overview, Action Plans which are in place to address weaknesses and raise performance at Zion Station. This program also assures communication and participation through all levels of management, which enables senior management expectations and standards to be implemented.

The following matrix lists some of the action plans that are in place to address these three major areas: Work Packages, Work Practices, and Management Overview.

AREA	PIP ACTION PLANS
WORK PACKAGES	00016 UPGRADE WORK CONTROL SYSTEM (TJM) 00020 MAINTENANCE HISTORY (TJM) 00035 WORK ANALYST PRE-JOB CHECKLIST 00058 PROCEDURE UPGRADES 00083 MORE DETAILS IN PM WRs 00119 PMT IMPROVEMENTS 00121 STANDARD WORK PACKAGES 00157 WR HISTORY/RANGES & TOLERANCES 00160 EQUIPMENT INFORMATION 00161 TS ENGINEER INVOLVEMENT & PACKAGE ORG. 00162 WORK CONTROL SYSTEM 00163 WORK REQUEST INVESTIGATION
WORK PRACTICES	00037 JOB SITE SET-UP 00048 MAINTENANCE POLICIES 00049 MAINT. FOREMAN ENFORCEMENT OF POLICIES 00050 CRAFT TRAINING (FOREIGN MATERIAL EXCLUSION) 00052 CRAFT TRAINING 00051 SHOP IMPROVEMENT COMMITTEE 00089 TJM ENHANCEMENT/TRAINING 00090 REVIEW OF PROCEDURE CHANGES BY DEPT. 00120 CONTROL OF MAINTENANCE ACTIVITIES 00158 TROUBLESHOOTING PROCEDURE 00013 PROBLEM ANALYSIS
MGMT. OVERVIEW	00120 SR. MANAGEMENT TOURS 00110 DEPARTMENT TOURS 00170 OVERVIEW OF WORK PACKAGES 00171 COMMUNICATE MAINTENANCE STANDARDS



Details of these actions plans are periodically reviewed with NRC Region III Management. A current status of each of the above mentioned action plans is provided during these reviews, and is available at the Station at any time.

Maintenance has formed two separate groups to address the Work Package and Work Practice issues. These individual groups meet weekly to formulate and execute action plans to address problems in their assigned areas. The makeup of the groups includes craft labor, first line supervision, procedure writers, and work analysts. These people are obtained from all three maintenance areas: Mechanical, Electrical, and Instrument. Additionally, other departments, Training, Technical Staff, Operating, Quality Control, and other support groups are involved as the subject dictates. The action plans developed include long term and shorter term interim actions to address the identified problems.

#### WORK PACKAGE

In the Work Package area, the major points of the effort which are completed, on-going or scheduled to be completed are:

1. Standardization of the work package.
2. Checklists for work analysts (preparer of work package).
3. Standard chronology log of work performed (improved work history).
4. Post maintenance testing specification and documentation.
5. Technical Staff engineer involvement.

The goal of these Action Plans is to provide the worker with a complete package with sufficient details to consistently accomplish the work and retain the proper documentation for the work accomplished. An important part of this work package is post maintenance testing of the equipment. One of the specific Action Plans (00119) provides the highlights and time line for this effort. Major milestones in this program include, administrative controls, feedback, and training of all work groups involved in the process.

#### WORK PRACTICE

Work Practice issues in some cases are very closely tied to the quality of the work package. This necessitates the overlap of these two subjects in many of our action plans. For example, a work package of substandard quality may result in poor work practices to accomplish the work. The work practices group has identified some major areas to address management attention. Job setup, craft training both technical and administrative, troubleshooting and analysis of maintenance problems (rework) are topics of action plans. In addition, later in this response, troubleshooting will be addressed in the broad sense, and also specifically in the response to Violation (295/89018-02D;304/89017-02D).

## MANAGEMENT OVERVIEW

Management Overview is a subject that is receiving increased attention via the Performance Improvement Plan. Some of the specific action plans are identified in the above PIP Action Plan Matrix. Station Senior Management and Department Management Tours are the subject of individual action plans. Senior Management Oversight Tours are conducted on a periodic basis, at least one a week, to assess the status of the programs that are in place and their effects on setting proper standards for the operation of the Station. Feedback from these tours is discussed monthly to assure that the results of the programs match the expectations and standards set by Senior Station Management.

Department tours are conducted on a rotating weekly basis in each of the Maintenance Departments. These tours are lead and documented by the Assistant Superintendent of Maintenance with a first line management individual of the specific department. For example, a foreman will participate in a walkdown of work in progress to address work practice issues, procedure adequacy and adherence, and general department efficiency concerns. When a work analyst participates in the tour, the work package is reviewed in detail to assure that it properly supports and documents the work that is to be accomplished. An additional action plan provides for Senior Management Overview of work packages which includes; package organization, detail of instruction, post maintenance testing, and documentation for work history.

Communication of maintenance standards and expectations including a status of where our maintenance program is at and where it is going has also been addressed in an action plan. In the maintenance area, the objective of our management overview is to assure that proper actions are ongoing to attain the goals which are set and that interim programs are in place which will meet our standards until the goals are met. Additionally this overview assures uncompromising standards of acceptable performance are communicated and enforced.

Attachment C

Additional corrective action details that relate to the violation's identified in the subject report.

1. VIOLATION:

10CFR50, Appendix B, Criterion V, as described in Section 5, of Topical Report CE-1A, Revision 55, and as implemented by Quality Assurance Manual, Section 5, requires that activities affecting quality be prescribed by documented instructions, procedures and drawings, and that those activities be accomplished in accordance with those instructions, procedures and drawings.

Contrary to the above:

- a. Surveillance Procedure PT-30, Paragraph 5.2, required that the electrolyte levels in station batteries be verified to be between 1/4 inch below the full line and the low level line. However, electrolyte levels for battery No. 212 were verified to be between the full line and the low level line, which resulted in acceptance of the levels even though the procedural requirements were not met (295/89018-02A; 304/89017-02A).
- b. The wrong procedure was used during repair of the Limitorque operator for Valve 2MS006 (295/89018-02B; 304/89017-02B).
- c. Procedure E022-1, "Inspection and Maintenance of Limitorque Valve Motor Operators", Revision 1, did not provide adequate instructions to prevent miswiring of the torque switch associated with Valve 2MS006 (295/89018-02C; 304/89017-02C).
- d. Maintenance personnel failed to document the lifting and landing of leads as required by ZAP 3-51-4, "Temporary Alteration Program", Revision 26, during corrective maintenance performed on the 1B Emergency Diesel Generator (295/89018-02D; 304/89017-02D).

This is a Severity Level IV Violation (Supplement 1).

A. Response

Corrective Action Taken and Results Achieved

The immediate corrective action taken was to determine the operability of the batteries with high electrolyte levels in the cells. Technical Staff engineers verified the batteries to be operable.

A clarification of the intent of battery level check was made to PT-30 "Station Battery Record - Monthly Quarterly Equalizing Charge". The note also requires notification of the Technical Staff engineer if overfill occurs while adjusting cell electrolyte level.

This event was reviewed with the individuals involved, describing the responsibility for understanding each procedural step with emphasis on the importance of following procedures.

Corrective Actions To Be Taken To Prevent Further Violations

To address the broader issue of procedure adherence and other work practices, Maintenance has formed a Work Practices Committee, whose charter, through the Corporate Conduct of Maintenance Directive, is to formulate corrective actions for problems related to work performance. Their efforts have resulted in the development of numerous action plans. These action plans are contained in the Zion Station Performance Improvement Plan (PIP). A listing of PIP Action Plans for work practices follows:

00013	PROBLEM ANALYSIS
00037	JOB SETUP
00048	MAINTENANCE POLICIES
00049	MAINT. FOREMAN ENFORCEMENT OF POLICIES
00050	CRAFT TRAINING ON FME
00051	SHOP IMPROVEMENT COMMITTEE
00052	CRAFT TRAINING
00089	TJM ENHANCEMENT/TRAINING
00090	REVIEW OF PROCEDURE CHANGES BY DEPT.
00120	CONTROL OF MAINTENANCE ACTIVITIES
00158	TROUBLESHOOTING PROCEDURE

Some major projects contained within these action plans include:

- 1) Minimum expectations including procedure adherence.
- 2) Procedure revision training.
- 3) Upgrading foreign material exclusion practices.
- 4) Troubleshooting practices.

Date When Full Compliance Will Be Achieved

The Work Practices Committee is scheduled to complete their charter by the end of the first quarter of 1990. The actual action plan steps will be tracked to completion via the Performance Improvement Plan. All current steps have completion dates before 3/31/90.

## B. Response

### Corrective Action Taken And Results Achieved

The two procedures referenced in this event are P/M016-5N and P/M016-6N. A side by side comparison of both procedures was performed to determine whether the "incorrect" procedure had steps which would if performed, result in the operability of the valve being questioned. This review determined that the procedures are essentially the same for the steps which were performed and although the "incorrect" procedure was attached to the work package, no operability concerns resulted.

In addition, Maintenance will perform a review of both procedures P/M016-5N and P/M016-6N to determine if, in fact, separate procedures are warranted. (Commitment #295-100-89-018NOV1)

### Corrective Actions To Be Taken To Prevent Further Violations

Maintenance has formed a Work Packages Committee, whose charter, through the Corporate Conduct of Maintenance Directive, is to formulate corrective actions for problems related to work packages. Their efforts have resulted in the development of numerous action plans. These action plans are contained in the Zion Station Performance Improvement Plan (PIP). A listing of PIP Action Plans for work packages follows:

00016	UPGRADE WORK CONTROL SYSTEM (TJM)
00020	MAINTENANCE HISTORY (TJM)
00035	WORK ANALYST PRE-JOB CHECKLIST
00058	PROCEDURE UPGRADES
00083	MORE DETAILS IN PM WRs
00119	PMT IMPROVEMENTS
00121	STANDARD WORK PACKAGES
00157	WR HISTORY/RANGES & TOLERANCES
00160	EQUIPMENT INFORMATION
00161	TS ENGINEER INVOLVEMENT & PACKAGE ORG.
00162	WORK CONTROL SYSTEM
00163	WORK REQUEST INVESTIGATION

Some major projects contained within these action plans include:

- 1) Work package standardization.
- 2) Tech Staff engineer involvement. (In both the work package preparation and in the work)
- 3) Prejob checklist development.
- 4) Revision to the work control administrative procedure.
- 5) Post maintenance/verification.

### Date When Full Compliance Will Be Achieved

The Work Packages Committee is scheduled to complete their charter by the end of the first quarter of 1990. The actual action plan steps will be tracked to completion via the Performance Improvement Plan. All current steps have completion dates before March 31, 1990.

C. Response

Corrective Action Taken And Results Achieved

ZMS0006 was repaired on July 13, 1989 under Work Request Z-83483. The valve was then tested and declared operable.

Training has been conducted with all personnel in the Electrical Maintenance Department. The training included a demonstration of how to determine proper contact points using actual torque switches.

Corrective Actions To Be Taken To Prevent Further Violations

Procedure E022-1, "Inspection and Maintenance of Limitorque Valve Motor Operators" includes an Attachment F. Attachment F is a reference diagram which allows differentiation between old and new style torque switches. The Attachment F will be revised to illustrate proper contact placement.

To prevent miswiring of contacts, steps for disconnecting and reinstalling torque switches will require the wires be labeled per the connect/disconnect data sheet.

Date When Full Compliance Will Be Achieved

The revision to E022-1 will be completed and in use after this refueling outage and no later than January 19, 1990. (Commitment #295-100-89-018 NOV2)

The Work Package Committee, as previously described, has developed action plan steps for:

- 1) Worker feedback on procedures.
- 2) Procedure review.
- 3) Procedure development.
- 4) Training on procedures.

D. Response

Corrective Action Taken And Results Achieved

The Instrument Maintenance Department has developed a troubleshooting procedure (IMTS-1 "Electronic Loop Troubleshooting/Repair for Safety Related Loops") which requires that lifted and landed leads be documented.

The Instrument Maintenance Department will be required to use this procedure whenever troubleshooting efforts involve the lifting and landing of leads in electronic loops.

### Corrective Actions To Be Taken To Prevent Further Violations

This part of the response demonstrates the broad approach that Zion is taking to corrective actions. Troubleshooting was not only addressed in the Instrument Maintenance department as the original September 29, 1989, response to violation discussed. It was addressed in all maintenance areas and had integrated action plans to achieve the desired results. These action plans and their relationship are as follows.

Five action plans are directly related to maintenance troubleshooting:

00120	Assistant Superintendent of Maintenance
00158	Work Practice Team
00110	Electrical Maintenance
00116	Instrument Maintenance
00127	Mechanical Maintenance

Part of Action Plan 00120 defines the requirement for maintenance troubleshooting procedures. This item is followed by the Assistant Superintendent of Maintenance. It is only one part of the broader action plan covering "Control of Maintenance Activities." Steps call for drafting procedures, evaluation, and implementation of the formal program, along with a specific time line for these actions.

The Work Practice Group was assigned the troubleshooting procedure concern. Action Plan 00158 was the result. Major steps in this action plan include:

1. Obtain troubleshooting practices from other utilities via Nuclear Network.
2. Obtain troubleshooting procedures from other Edison sites.
3. Following review of Edison and Industry procedures, develop a program for Zion Station.

This resulted in individual action plans for each of the three maintenance departments: Mechanical (00127), Electrical (00110) and Instrument (00116). These action plans include:

1. Drafting of troubleshooting procedures.
2. Use and evaluation of the draft procedures.
3. Institution of formal troubleshooting procedures.

The time line for this program is found in the PIP.

### Date When Full Compliance Will Be Achieved

The Work Practices Committee is scheduled to complete their charter by the end of the first quarter of 1990. The actual action plan steps will be tracked to completion via the Performance Improvement Plan. All steps have completion dates before 3/31/90.

2. VIOLATION:

10CFR50, Appendix XVI, as described in Topical Report CE-1A, Revision 55, and as implemented by Quality Assurance Manual, Section 16, requires that measures be established to assure conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measure shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, the licensee failed to:

- a. Take timely and effective corrective action to ensure that adequate work instructions were provided in work requests. This had been identified as a violation during a 1986 NRC inspection and remained uncorrected (295/89018-01A; 304/89017-01A).
- b. Provide timely corrective action to correct DC battery to bus circuit breaker failures. A history of problems in reliably closing the breakers on the first attempt was initially identified on work requests dated October 10, 1987. However, since all breakers had successfully closed on the second attempt, the work requests were never completed, even after vendor representatives indicated the problem appeared to be worn bearings (295/89018-01B; 304/89017-01B).
- c. Provide timely or adequate corrective action on known problems in post-maintenance testing, temporary modifications, and work control. These recurring problems were identified in September 1987, and again in February 1989, during self-assessment (295/89018-01C; 304/89017-01C).
- d. Take adequate and timely corrective action to maintain and test 2A Auxiliary Feedwater pump turbine overspeed mechanism for approximately 17 years, or successfully test the 1A Auxiliary Feedwater pump turbine overspeed mechanism in 1987. The vendor recommended testing once a week. The necessity of the tests was previously made known to the licensee by General Electric Company in July 1986, by the NRC in Information Notice 88-67, by the licensee's own Safety System Functional Inspection in September 1988, and by an INPO assessment team in February 1989.

Subsequent to the Maintenance Team Inspection and NRC's inquiry, the licensee conducted a static test of the linkage and valve mechanism on July 22, 1989, for the 1A Auxiliary Feedwater pump turbine with unsuccessful results. Maintenance had to be performed on the overspeed trip mechanism before a successful test was obtained. The inspectors were informed that the tests for the 2A Auxiliary Feedwater pump turbine were successfully completed on July 23, 1989 (295/89018-01D; 304/89017-01D).

This is a Severity Level IV Violation (Supplement 1).



A. Response

Corrective Action Taken And Results Achieved

Commonwealth Edison formally issued a Corporate Conduct of Maintenance (COM) directive early in 1989. Zion Station implementation of the COM includes upgrades in work package preparation. The pilot program covers improved work package format, Post Maintenance Testing (PMT) requirements, and work instructions.

To adequately implement the COM, Zion has identified the need for additional work analysts. Ten additional positions were authorized and to date six have been filled. It is the belief of Zion Station that the additional manpower will allow a more thorough review of the work packages.

In addition, a work package checklist has been created by the Work Packages Committee and is undergoing a trial implementation. This checklist provides a systematic outline to ensure the completeness of the work package.

The final version of the checklist will be implemented for all work packages by December 31, 1989.

Corrective Actions To Be Taken To Prevent Further Violations

As previously discussed, Maintenance has formed a Work Packages Committee, whose charter through the Corporate Conduct of Maintenance Directive, is to formulate corrective action for problems related to work packages. Their efforts have resulted in the development of numerous action plans. These action plans are contained in the Zion Station Performance Improvement Plan (PIP). A listing of PIP Action Plans for work packages is located in the beginning of this response.

Date when Full Compliance Will Be Achieved

The Work Packages Committee is scheduled to complete their charter by the end of the first quarter of 1990. The actual action plan steps will be tracked to completion via the Performance Improvement Plan. All steps have completion dates before 3/31/90.

## B. Response

### Corrective Action Taken And Results Achieved

Zion Station does not regard a failure of a breaker to close to be an acceptable condition. ZAP 5-51-3A "Use of Procedures in Operating Department" states in Section E.2.e.: "A work request or Deviation Report should be initiated as required for failures, even if a subsequent attempt restores operability."

The DC breakers addressed are called the "Battery Feed Breaker" to the associated DC bus. These are manually operated breakers that are only operated quarterly and during a refueling outage. There are no automatic closure requirements for these breakers. The quarterly operation is to allow each DC battery to be equalize charged. During a refueling outage the breakers are operated twice to allow testing of the battery and battery charger. The DC bus is always crosstied to another bus before the battery feed breaker is opened.

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An engineering evaluation has been completed that demonstrates that the failure of these breakers to close would not have a safety significance. As long as the breaker does close, the operability requirement is met. If a breaker did fail to close, the Technical Specifications on DC Batteries and distribution system would be followed.

As an interim action Periodic Test (PT-30) "Station Battery Records Monthly Quarterly Equalizing Charge" has been changed to require the recording of the number of attempts needed to close these breakers. The system Technical Staff engineer is required to review the PT-30 at the completion of the test. The system engineer is trending the number of attempts needed to close the DC bus feed breakers to determine if further degradation is occurring. For your information only two out of six breakers have a history of not closing on the first try. These two breakers have always closed on the second attempt.

### Corrective Actions To Be Taken To Prevent Further Violations

An action plan has been developed and is contained in the Zion Station Performance Improvement Plan (PIP). The PIP number assigned to this action plan is 00014. This action plan contains steps to procure replacement breakers. Previously the station purchased three replacement breakers from Satin America. These breakers arrived on site in 1988. The subsequent procurement problem with Satin America has resulted in the need to explore obtaining breakers from other vendors. Therefore, discussions are underway with General Electric on purchasing three new breakers and the refurbishing of our present breakers. These discussions will be completed by January 31, 1990. Procurement of the new breakers onsite will be dependent upon the manufacturing lead times.

### Date When Full Compliance Will Be Achieved

Full compliance is dependant upon obtaining new replacement breakers in relationship to future outage schedules. The actual action plan steps will be tracked to completion via the Performance Improvement Plan.

### C. Response

#### Corrective Action Taken And Results Achieved

Each finding from the Production Services Maintenance Self Assessment report has been entered into the Nuclear Tracking System (NTS) commitment data bank in order to track to completion, resolution of these findings. Action plans are currently in place to drive the implementation of the Conduct of Maintenance directive at Zion. (At the end of 1989, 2 chapters of the Conduct of Maintenance are expected to be fully implemented).

#### Corrective Actions To Be Taken To Prevent Further Violations

The action plans in place will have, as an integral part, interim measures to address findings from these assessments. Interim programs formulated to address the January 1989 corporate assessment include:

- 1) Outage coordinator acting as the central focus point for planning and scheduling under (PIP) action plan 00133 until Chapter 6, "Planning, Scheduling and Coordination", is fully implemented with a computerized schedule.
- 2) Post Maintenance Testing/Verification is being specified by the work analyst in accordance with Maintenance Memo 31 until a detailed matrix is developed for Chapter 8, "Post Maintenance Testing", in accordance with (PIP) action plan 00119.
- 3) Management tours, reviews and meetings are being conducted to demonstrate expectations of upper station management. (PIP) action plans 00120, 00170 and 00171 associated with Chapter 5, "Control of Maintenance Activities", describe action steps taking place.
- 4) (PIP) action plans 00126 and 00157 discuss standard chronology logs which are now being used to record information from work requests for entry into the Total Job Management (TJM) history program. Chapter 15, "Maintenance History", describes the information needed.
- 5) Trial Problem Analysis Data Sheets (PADS) are being completed under a pilot program associated with (PIP) action plan 00013, to work out problem areas before Chapter 16, "Analysis of Maintenance Problems", is fully implemented.
- 6) Training needs have been identified and (PIP) action plans 00050, 00052, 00089 and 00204 are being performed by the Work Practices and Work Packages groups. Chapter 2, "Training and Qualification of Maintenance Personnel", was referenced when drafting the action steps needed.
- 7) Plant walkdowns have been performed by all station management. Chapter 13, "Station Material Condition and Housekeeping", when fully implemented, will have specifically assigned inspectors in accordance with (PIP) action plan 00136.

Date When Full Compliance Will Be Achieved

The Conduct of Maintenance Directive is planned to be fully implemented at Zion by the end of 1991, contingent on corporate analysis.

D. Response

Corrective Action Taken And Results Achieved

Changes to PT-7, "Auxiliary Feedwater System Checks and Tests", have been incorporated to test the overspeed trip mechanism in manual fashion. This PT is run monthly and both AFW turbines have been tested under this procedure since the change went into effect in July of 1989. All the Unit 1 and Unit 2 AFW turbine overspeed mechanism trip tests, performed as part of PT-7, have been successful.

Corrective Actions To Be Taken To Prevent Further Violations

As an update to our September 29 response, TSGP-50 "Auxiliary Feedwater Turbine Overspeed Test" has undergone a major revision. Several comments/changes were requested by the Onsite Review Committee. These changes are currently being incorporated into the procedure. It is Zion's intent to perform the physical overspeed test on the Unit 1 AFW turbine within two weeks following the return to service of Unit 1 from the current refueling outage. The physical overspeed on Unit 2 will be conducted before March 31, 1990.

The investigation to determine the best methodology to provide lubrication to the trip linkage has been completed. Procedure changes are now being prepared for presentation to Onsite Review. These procedure changes will be in effect by March 31, 1990.

Date When Full Compliance Will Be Achieved

The physical overspeed test on the Unit 1 AFW turbine will be conducted within two weeks following the return to service of Unit 1 from the current refueling outage. (Commitment 295-100-89-018NOV3). The physical overspeed test on the Unit 2 AFW turbine will be conducted before March 31, 1990. (Commitment 295-100-89-018NOV4) Procedure changes incorporating the lubrication of the trip linkages will be completed by March 31, 1990. (Commitment #295-100-89-18NOV5)