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November 15, 1996

AEP:NRC:1238C1

Docket No: 50-315
50-316

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

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
NRC INSPECTION REPORT NO. 50-315/316-96006 (DRP)

The purpose of this letter is to respond to your request for information regarding our operability assessments for pipe supports in compliance with generic letter 91-18. Our response is contained in the attachment to this letter.

Sincerely,

E. E. Fitzpatrick
E. E. Fitzpatrick
Vice President

jmb

Attachment

cc: A. A. Blind
A. B. Beach
MDEQ - DW & RPD
NRC Resident Inspector
J. R. Padgett

IEDI'

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ATTACHMENT TO AEP:NRC:1238C1

INFORMATION ON COMPLIANCE WITH GENERIC LETTER 91-18
FOR PIPE SUPPORT DISCREPANCIES

This attachment contains our response to a request for information regarding compliance of our large bore piping program with generic letter (GL) 91-18.

RESPONSE

LARGE BORE PIPING RECONSTITUTION PROGRAM

A 1989-1990 study of a representative sample of safety-related piping systems at Cook Nuclear Plant was completed by Impell Corporation. The study found a number of discrepancies existed, primarily in the pipe support area. However, system operability was not affected. The results of the analyses performed during the study showed significant margins were available beyond the minimum requirements of the interim acceptance criteria (IAC). This information was presented at a conference that took place at the NRC Region III office on June 7, 1990.

As a result of this study and interactions with the NRC, we launched the large bore piping reconstitution program (LBPRP). LBPRP was embarked on as a corrective action program using a systematic approach to resolve the known problems over a reasonable time frame, as agreed upon with the NRC. The purpose of the LBPRP is to:

1. confirm that the pipe supports are installed with correct functionality (walkdown);
2. confirm geometry of the piping systems and location of the supports (non-dimensional walkdown);
3. recreate calculations (analysis);
4. update design drawings (analysis/drafting); and
5. bring the piping systems into full compliance with design basis (analysis/modification).

The LBPRP walkdowns began in March 1991 to document as-found information on large bore safety related piping and pipe supports to be used later in the piping system analyses. The walkdown scope of work included the requirement to perform operability determinations when discrepancies were identified between the as-found condition and the design drawing. The operability determination was performed at the time the discrepancy was discovered using engineering judgment and the screening criteria established in the design guideline 5700-13. The screening criteria in 5700-13 was developed as a result of the Impell study and Cook Nuclear Plant experience with the operability determinations performed for many piping system related condition reports (CR).

We selected specific EBASCO Services personnel who were qualified for both their analytical and practical field experience in piping and pipe support designs and installations to perform both the walkdowns and operability determinations. The results of the LBPRP walkdowns and operability determinations showed that none of the discrepancies would impair the continued operability of the piping systems.

The conclusions of the LBPRP walkdowns reinforced our position that the large bore piping systems at Cook Nuclear Plant are safe to operate in their current condition. The results of the walkdowns matched the findings of the evaluation of numerous piping and pipe support related discrepancies identified through the CR process prior to establishing the LBPRP.

The LBPRP analysis effort began shortly after walkdown information was available for the piping system analysis effort. Technical instructions for the engineers performing the analyses are described in nuclear design group guideline no. LBPRP-TECH-01. The analysis process utilizes existing design drawing and as-found data obtained from the system walkdowns to create analytical models. These models represent the as-found condition of the piping system and are analyzed against piping and pipe support design basis requirements. The piping and/or pipe support models are modified, if needed, to qualify the piping systems to the design basis requirements.

Specific analyses are not regularly performed to confirm that as-found conditions of the piping systems meet the IAC documented in our AEP:NRC:1100A letter. The results of the Impell study, results from the investigation of numerous CRs, and the piping system walkdowns and operability determinations performed by EBASCO Services provide a high level of confidence and reasonable assurance that although discrepancies exist within the piping systems, they are operable.

**GENERIC LETTER 91-18
TECHNICAL GUIDANCE ON OPERABILITY DETERMINATIONS**

GL 91-18 emphasizes the need to perform timely operability determinations commensurate with the safety significance of the issue and provides technical guidance in what actions should be included in performing operability determinations (ref. section 6.1).

- I. Determine what equipment is degraded or potentially nonconforming.
- II. Determine the safety function(s) performed by the equipment.
- III. Determine the circumstances of the potential nonconformance, including the possible failure mechanism.
- IV. Determine the requirement or commitment established for the equipment, and why the requirement or commitment may not be met.
- V. Determine by what means and when the potential nonconforming equipment was first discovered.
- VI. Determine safest plant configuration including effect of transitional action.
- VII. Determine the basis for declaring the affected system operable, through:
 - a. analysis;
 - b. test or partial test;
 - c. operating experience; and
 - d. engineering judgement.

The above noted items have been addressed by the LBPRP and through other active programs at Cook Nuclear Plant. The identification of the component, its safety function, circumstances of the nonconformance, requirement for the component, means of discovery, safe operation of the plant, and basis for operability have been addressed in an independent study. Historical operability

determination data, operating experience, and detailed analyses all support the intent of GL 91-18.

The need to perform operability determinations within approximately 24 hours of discovery as recommended may not be commensurate with the safety significance of the discrepancy. The discrepancies which are typically identified at Cook Nuclear Plant on the pipe supports have minimal, if any, safety significance and the studies and detailed analyses performed demonstrate they do not cause the piping systems to become inoperable.

Guidance for performing the operability determinations is incorporated in the LBPRP walkdown procedure and is provided in specification DCC-NECP-202-QCN (formerly design guideline 5700-13). This specification contains screening criteria to assist in performing operability determinations and provides instruction for required actions. The screening for operability determinations is utilized when nonconforming conditions are identified. The LBPRP and specification DCC-NECP-202-QCN meet the intent of the technical guidance and requirement for performing timely operability determinations as identified in GL 91-18, section 6.1.

The LBPRP and specification DCC-NECP-202-QCN comply with the intent of GL 91-18 requirements in evaluating the operability determination based on past analyses, operating experience, and engineering judgment as follows.

Impell Study Conclusions: The results of the extensive and comprehensive Impell study (# 09-0120-0361) that measured all attributes of a representative sample of safety related piping and pipe supports in Cook Nuclear Plant identified discrepancies between the pipe support design drawing and the as-found condition. In some instances, these discrepancies indicated that design basis limits could be exceeded; however, there were no instances where there was a lack of operability of the piping system. The results of this study and the accumulation of historical operability data form the basis for the development of the operability screening criteria in specification DCC-NECP-202-QCN.

LBPRP walkdown conclusions: EBASCO performed non-dimensional walkdowns of safety related piping systems, documented discrepancies, and performed operability determinations per design guideline 5700-13. The operability determinations concluded that the piping systems are operable in the as-found condition.

Small Bore Piping Reconstitution Program Conclusions: Earthquake Engineering (EQE) carried out complete non-dimensional walkdowns of the safety related small bore piping systems at Cook Nuclear Plant, identified deviations from the standard spans and support configurations, and performed bounding analyses. EQE concluded that all conditions encountered met operability criteria.

ISI CR evaluations: The ISI program has identified discrepancies in safety related pipe supports and the operability determinations have concluded that the systems are operable in the as-found condition.

In 1994, concern arose that the language of our AEP:NRC:1100A and B letters could be construed to imply that analytically based operability determinations for piping system discrepancies had been a commitment regardless of the LBPRP activities. CR 94-1515 was initiated and an investigation was conducted. A backup operability

determination was performed on a random sample of piping systems to evaluate CR 94-1515. Fifty-nine pipe supports were randomly selected from a population of 984 pipe supports identified as having discrepancies between the design drawing and the as-found condition. The 59 discrepant pipe supports were part of six piping systems and 28 individual system calculations. The 28 calculations were rerun for operability with all discrepancies included (not just the ones from the 59 pipe supports). All 28 calculations met stress allowables contained in the IAC, and three calculations met the design basis criteria. This effort confirmed the soundness of the original approach and engineering judgment used in the initial LBPRP walkdown operability assessments. The CR 94-1515 evaluation is consistent with the conclusions derived from the Impell study and EBASCO walkdowns.

CURRENT PRACTICES

The work that has been carried out at Cook Nuclear Plant to date in the area of piping and pipe support discrepancy evaluations has demonstrated to a reasonable degree of certainty that discrepancies normally encountered do not affect the safe operation of the plant. Moreover, to the extent additional operability determinations are enveloped by the operability determinations of the Impell study, EBASCO walkdowns, EQE study, CR 94-1515 evaluation, and numerous other evaluations carried out in the last seven years, these additional operability determinations would be repetitive and would yield no new information.

At present, four programs are in place at Cook Nuclear Plant in the piping and pipe support discrepancy area:

- I. the LBPRP;
- II. the ISI program;
- III. the preventive maintenance program; and
- IV. the condition report program.

The LBPRP, as described earlier, is intended to verify the piping and pipe support systems are consistent with design basis requirements and to update the documentation of the configuration of the piping systems. The discrepancies noted during the walkdowns were evaluated for their effect on the operability of the piping systems. Individual CRs were not generated for each discrepancy as the LBPRP is the corrective and preventive action for the typical piping and pipe support system discrepancies.

The ISI program, mandated under ASME section XI, inspects the piping and supports for signs of service induced degradation. The ISI program embodies the industry's and Cook Nuclear Plant's commitment to identify ongoing piping and support degradation prior to it resulting in system failure, and taking corrective and remedial steps to prevent eventual failure. Under the ISI program the piping and the pipe supports are inspected for signs of service induced degradation and configuration discrepancies. Immediate operability determinations of degradations and discrepancies are carried out by the inspectors and supervisors utilizing operability screening specification DCC-NECP-202-QCN. The degradation and discrepancies then receive appropriate engineering evaluations and dispositions. Service induced degradations are written up under the CR system for final disposition, tracking, and trending. Few instances of piping system service induced degradation have been found.

The preventive maintenance program monitors piping system maintenance type discrepancies and restores the systems to as designed configuration. Typical examples of preventive maintenance activities are tightening of loose nuts, restoration of gaps, surveillance and maintenance of snubbers, and evaluation and elimination of vibration. The study and analyses indicate these maintenance type discrepancies do not render the piping systems inoperable. Specification DCC-NECP-202-QCN was developed to provide guidance in identifying maintenance type discrepancies and provides instruction regarding restoring the pipe supports to their intended design function.

Finally, the CR process is used to document conditions outside the above noted programs in piping and pipe support systems. Identified configuration discrepancies are generally routine and fall under one of the programs previously mentioned. Conditions identified through the CR process are evaluated per the corrective action procedure, PMI-7030 (formerly GP 16.1).

The comprehensive programs in place at Cook Nuclear Plant in the piping and pipe supports area meet the intent of GL 91-18. The programs require identification and documentation of the nonconformance, require operability determinations to be performed utilizing proven screening criteria, and require the identification and implementation of corrective action, if required. Taken together, these programs represent a substantial investment of resources to ensure the safety of the piping systems, and provide a high level of confidence the piping systems at Cook Nuclear Plant perform as intended during normal operation and will perform as intended during upset and emergency conditions.

TIMELINESS OF OPERABILITY DETERMINATION

The GL 91-18 guidance on timeliness of operability determinations states that timeliness should be commensurate with the potential safety significance. Our experience, and the vast experience of the industry, has shown the pipe support discrepancies of the type usually encountered at Cook Nuclear Plant have minimal, if any, safety significance and detailed analyses performed for Cook Nuclear Plant discrepancies demonstrate they do not cause the piping systems to become inoperable. The above noted programs as described each incorporate operability determinations into the program requirements.

The LBPRP walkdown procedure required operability determinations to be performed during the walkdowns when discrepancies were identified. The ISI program, preventive maintenance, and CR process utilize the operability screening criteria provided in specification DCC-NECP-202-QCN. We believe the operability determinations performed under these programs are timely and meet the intent of GL 91-18.

The timeliness of operability determinations associated with select pipe support discrepancies was questioned because in some instances the determination may not have been performed within the recommended 24 hours. The operability determinations were performed in what was believed to be a time frame commensurate with the safety significance of the issue and did not affect the quality of the operability determination or resulting corrective action. We recognize the significance of performing timely operability determinations and have taken the following actions.

ACTIONS TAKEN TO ENHANCE THE PROGRAMS

1. Senior management issued a letter, "Identification of Conditions, Sr. Management Expectations," on October 7, 1996, stressing the importance of writing timely condition reports for all conditions that involve nonconformance with the design or procedural requirements. Training has been provided in this area.
2. "Specification for Operability Screening Guideline for Pipe Support Conditions and Discrepancies Found by In-Service Inspection" (DCC-NECP-202-QCN) is being reviewed and will be revised to reference the requirements of GL 91-18.

