UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

MAR 11 1993

MEMORANDUM FOR: James Lieberman, Director, Office of Enforcement

FROM: James L. Milhoan, Regional Administrator

SUBJECT: RECOMMENDED ENFORCEMENT ACTION - NPPD (EA 93-030)

I am recommending the issuance of the enclosed Notice of Violation and Proposed Imposition of Civil Penalties ($200,000) to the Nebraska Public Power District for violations of requirements at Cooper Nuclear Station. This enforcement action involves a failure on the part of NPPD to provide accurate information to the NRC in response to a Notice of Violation and a failure of NPPD's corrective action program to identify and resolve issues related to temporary strainers left in safety systems. The justification for this recommendation is contained in the enclosed enforcement recommendation worksheet.

With regard to the inaccurate information, we consider the actions of the Plant Engineering Department supervisor who prepared the written response sufficiently negligent to warrant a request to the licensee to provide us its basis for believing that this individual understands the importance of providing accurate and complete information to the NRC. We have included this request in the draft cover letter to NPPD.

This recommended action is based on an inspection that ended on February 9, 1993, an enforcement conference on March 4, 1993, in the regional office, and on post-conference discussions in which you participated. The enclosed recommendation is slightly different than that which was discussed following the conference: 1) for the reasons explained in the enclosed worksheet, we have elected to cite only the inaccurate information provided by the licensee; and 2) we have elected to modify the application of the licensee performance factor for both violations. These changes did not affect the total civil penalty amount. Please call Gary Sanborn for clarification or additional information.

James L. Milhoan
James L. Milhoan
Regional Administrator

Enclosures: (see next page)

W/H in part
Ex-5

9512.

Enclosures:

1. Regional Recommendation Worksheet
2. Draft Enforcement Correspondence to NPPD
3. Inspection Report 93-06 dated 2/26/93
4. Excerpts from Inspection Report 92-19 dated 11/3/92
5. NPPD's 12/1/92 reply to Notice of Violation
6. Excerpts from RCIC Preoperational and Startup Test Instructions
7. Excerpts from NPPD's NCR 92-104
8. NRC Information Notice 85-96 dated 12/23/85
9. Summary of Licensee Performance - Corrective Action Program
10. Chronology of events - CNS Temporary Strainers
11. Enforcement conference summary dated 3/5/93

(NOT FOR PUBLIC RELEASE WITHOUT APPROVAL OF THE DIRECTOR, OE)

RCIC S/U TEST

TOTAL P.06

[redacted]

6.2.5 Initiate a cold quick start of the RCIC turbine by jumpering terminals 28 and 29 on TB-BB in 9-30 and using a stopwatch, measure the time from initiation to rated pump flow.

John T Ulrich 5/31/04

6.2.6 After the system has achieved steady-state, enter the data required on Form 14.6-1 and Form A-3. Also record, for future use, the steady-state value of RCIC steam line ΔP. (If possible, also the maximum ΔP overshoot during the cold quick start).

Howard Smith 31 May

6.2.7 Secure the system and restore normal lineup in accordance with the station normal operating procedure, SOP 2.2.67.

6.2.8 Evaluate the data obtained as described in Section 7.

6.2.9 Remove suction strainers at a convenient time after completion of all RCIC related tests.

6.3 Final System Verification

6.3.1 Verify from test records that the final controller settings used for the vessel injection test were used with satisfactory results in Steps 6.1.1 through 6.1.3. If changes have been made, repeat the affected step(s) using the final settings.

Howard Smith 31 May

7. ANALYSIS

7.1 Confirm that the test criteria have been met as follows:

7.1.1 Determine the time t for the RCIC system to achieve the required flow as follows:

7.1.1.1 Using the quick-start transient recording, determine t from the initiation signal to the point which:

a) $W_t \geq W_{required}$

b) $\int_t^{T_{ss}} \frac{W_t(T)\, dT}{T_{ss} - t} \geq W_{required}$

Where: $W_t \triangleq$ RCIC test flow

$W_{required} \triangleq$ RCIC controller set point flow (final flow) See Section 8.5 for determination of $W_{required}$

$T_{ss} \triangleq$ Time to steady-state operation (sec)

$W_t(T) \triangleq$ RCIC flow as function of time

ATT 6

1009907

0355192663

RCIC PREOP TEST

RCIC

OFFICIAL

b. Emergency CST to Emergency CST

Operate the system taking suction from the emergency condensate storage tank and discharging to the emergency condensate storage tank through the test loop. Record results on Data Sheet VIII.F.2.

Completed by [redacted] Date 11/4/73

c. Emergency CST to RPV

Operate the system taking suction from the emergency CST and discharging to the Reactor Pressure Vessel through the normal discharge line to the feedwater system. Record results on Data Sheet VIII.F.3.

Completed by [redacted] Date 11/4/73

Witnessed by [redacted] Date [redacted]

2. Acceptance Criteria

This test verified flow paths to be in accordance with B&R P&ID's Nos. 2040, Rev. 10 and 2043, Rev. 12.

Verified by [redacted] Date 10/26/73

3. Return to Normal

a. Return RCIC to the normal standby mode in accordance with System Operating Procedure 2.2.67, IV.C.

Completed by [redacted] Date 10/25/73

b. The startup strainer in the pump suction should not be removed until the completion of the testing during the Power Test Program.

Notation has been made to remove these strainers when appropriate.

Location of Notation [redacted]

Verified by [redacted] Date 11/4/73

"I certify that the Quality Control work of this test is complete; that the Preoperational Test File is complete with copies of all required records and reports as described in the Preoperational Test Program Description; that this system is ready to be put into service; and that this system meets the requirements set forth in the SAR and the Tech. Specs."

[redacted] 11/4/73

Signature Date

OPERABILITY DETERMINATION

RCIC PUMP 1/28/93 1-7(1)

STRAINER RADIOGRAPH done 1/29/93

File

OPERABILITY DETERMINATION	ATTACHMENT 1

OD No.: 93-007

DESCRIPTION OF SSC: RCIC Pump

DEGRADED OR NONCONFORMING CONDITION: A spacer plate located in the pump suction spool piece indicates the potential for a temporary startup strainer to be installed.

TIME OF DISCOVERY: ~~1030~~ 1520 (1/27/93) DATE OF DISCOVERY: 1-27-93

RESULTS OF OPERABILITY DETERMINATION:

NOTE - Determination must be made within 24 hours of discovery time or Plant Manager notified, even if the degraded or nonconforming condition is sooner resolved.

☒ OPERABLE (FUNCTIONALITY) - Document basis for operability.

☐ OPERABLE (QUALIFICATION) - SSC remains OPERABLE until Operability Evaluation completed.

COMMENTS:

SHIFT SUPERVISOR: [signature] TIME: 1533 DATE: 1/27/93

CNS ENGINEERING MANAGER REVIEW:

1. SORC REVIEW REQUIRED IN: ☒ ONE WORKING DAY; ☐ FIVE WORKING DAYS
2. SORC REVIEW NOT REQUIRED ☐

CNS ENGINEERING MANAGER: [signature] for JRF DATE: 1-27-93

SORC REVIEW:

☒ OPERABILITY EVALUATION NOT REQUIRED

☐ OPERABILITY EVALUATION REQUIRED - Promptly notify the Engineering Manager.

SORC MEETING NO.: 593-008 COMMENTS:

ATT 7(1)

SORC CHAIRMAN: [signature] DATE: 1-28-93

OD No.: 93 - 007

BASIS FOR OPERABILITY DETERMINATION:

NOTE - Attach any supporting documentation, records of telephone conversations, previously approved Operability Determinations, etc.

The existence of a spacer plate located in the RCIC pump suction spool piece was previously identified during a walkdown following the discovery of the CS pump suction strainers (Reference ER 92-19). However, because a preponderance of evidence (including a pre-op sign-off for removal) indicated no strainer installed, no operability concerns were identified at that time. Additionally, an MWR was initiated to remove the RCIC pump suction spool during the 1993 outage and verify the removal of the strainer. In the meantime, a temporary startup strainer was found in the suction piping of RCIC pump C. What was believed to be a spacer ring only (no identification tag) was actually a strainer. In light of this finding, there is less confidence that the spacer ring in the RCIC pump suction is not a suction strainer. This lessened confidence has resulted in an operability concern, thus the reason for this OD.

Corrosion: Based upon the condition of the Core Spray alternate supply suction strainers which were removed in August, 1992, loss of strength due to corrosion is not a concern. The core spray strainers removed in August were in excellent condition, thus confidence is high that, if the RCIC suction strainer is actually installed, the loss of base metal due to corrosion is low.

TOTAL P.04

OPERABILITY DETERMINATION

ATTACHMENT 1

OD No.: 93 . 007

BASIS FOR OPERABILITY DETERMINATION (Continued):

Page 2 of 3

Plugging: There has been no pump operational data to suggest any blockage in the RCIC pump suction. Should a detectable amount of blockage occur, however, the suction strainer (if installed) can be back flushed to a nearby floor drain.

Seismic: Failure due to seismic activity is not expected because 1) the reactor building response spectra for building motion at the 859 level is relatively low compared to higher building levels and 2) due to its close proximity to the pump (anchor point) piping amplification is not expected and 3) the physical characteristics of the strainer are ones of relatively low mass and high stiffness (cone shaped)

As mentioned previously, the RCIC suction strainer has not been verified as installed. The conical section of the strainer may have been removed during post plant construction activities, leaving the flange ring installed as a spacer for proper pipe fit up. This determination therefore provides the most conservative analysis by assuming their existence.

[signature] 1-27-93

RCIC PREOP TEST 1-7(2)

RCIC

OFFICIAL

b. Emergency CST to Emergency CST

Operate the system taking suction from the emergency condensate storage tank and discharging to the emergency condensate storage tank through the test loop. Record results on Data Sheet VIII.F.2.

Completed by [redacted] Date 10/4/73

c. Emergency CST to RPV

Operate the system taking suction from the emergency CST and discharging to the Reactor Pressure Vessel through the normal discharge line to the feedwater system. Record results on Data Sheet VIII.F.3.

Completed by [redacted] Date 10/4/73

Witnessed by [redacted] Date [redacted]

2. Acceptance Criteria

This test verified flow paths to be in accordance with B&R P&ID's Nos. 2040, Rev. 10 and 2043, Rev. 12.

Verified by [redacted] Date 10/5/73

3. Return to Normal

a. Return RCIC to the normal standby mode in accordance with System Operating Procedure 2.2.67, IV.C.

Completed by [redacted] Date 10/4/73

b. The startup strainer in the pump suction should not be removed until the completion of the testing during the Power Test Program.

Notation has been made to remove these strainers when appropriate.

Location of Notation [redacted]

Verified by [redacted] Date 10/4/73

"I certify that the Quality Control work of this test is complete; that the Preoperational Test File is complete with copies of all required records and reports as described in the Preoperational Test Program Description; that this system is ready to be put into service; and that this system meets the requirements set forth in the SAR and the Tech. Specs."

[redacted] 10/4/73

Signature Date

0510 0747

ATT 7(2)

6.2.5 Initiate a cold quick start of the RCIC turbine by jumpering terminals 28 and 29 on TB-BB in 9-30 and using a stopwatch, measure the time from initiation to rated pump flow.

John [illegible] 5/31/84

6.2.6 After the system has achieved steady-state, enter the data required on Form 14.6-1 and Form A-3. Also record, for future use, the steady-state value of RCIC steam line ΔP. (If possible, also the maximum ΔP overshoot during the cold quick start).

Howard Smith 31 May

6.2.7 Secure the system and restore normal lineup in accordance with the station normal operating procedure, SOP 2.2.67.

6.2.8 Evaluate the data obtained as described in Section 7.

6.2.9 **Remove** suction strainers at a convenient time after completion of all RCIC related tests.

6.3 Final System Verification

6.3.1 Verify from test records that the final controller settings used for the vessel injection test were used with satisfactory results in Steps 6.1.1 through 6.1.3. If changes have been made, repeat the affected step(s) using the final settings.

Howard Smith 31 May

7. ANALYSIS

7.1 Confirm that the test criteria have been met as follows:

7.1.1 Determine the time t for the RCIC system to achieve the required flow as follows:

7.1.1.1 Using the quick-start transient recording, determine t from the initiation signal to the point which:

a) $W_t \geq W_{required}$

b) $\int_t^{T_{ss}} \frac{W_t(T)\,dT}{T_{ss} - t} \geq W_{required}$

Where:

$W_t \triangleq$ RCIC test flow

$W_{required} \triangleq$ RCIC controller set point flow (final flow)
See Section 8.5 for determination of $W_{required}$

$T_{ss} \triangleq$ Time to steady-state operation (sec)

$W_t(T) \triangleq$ RCIC flow as function of time

1-7(3) PORTIONS OF NPPDS NCR EVALUATIONS AND Root CAUSE TO Core Spray Temp Strainers

NCR 92-104

DESCRIPTION: This NCR was written upon discovering that strainers were installed in the Core Spray Pump suction lines from the Condensate Storage Tank that should have been removed following plant construction as part of construction or pre-operational testing. Upon discovery, an operability evaluation (92-043) was performed in accordance with CNS Procedure 0.29, resulting in the determination that the System was still operable even with the strainers installed. Strainers such as these were the subject of an NRC IE Notice, IE 85-96, issued in December, 1985. In March of 1986, based upon a review of P&IDs, it was concluded that suction strainers were not installed in the CS or RHR Systems. Later during the year, however, suction strainers were found during implementation of a DC in the RHR System and were removed. No double check of the CS System was conducted at that time. Action on this NCR was deferred at NOC Meeting 92-15, pending NRC issuance of a violation.

RCC(S): 23 - Procedure Deficiency (LTA or Incomplete) was assigned since the pre-operational test procedure did not assure that the strainers were removed. Additionally, RCC 14 - Programmatic (Corrective Action LTA) was assigned since the response to the 1985 IE Notice was inadequate. At the time, direction was given to verify that strainers were not installed by reviewing P&IDs. Had system walkdowns been required, it is believed that the strainer installation would have been discovered.

CORRECTIVE ACTION: During the mid-September shutdown conducted to modify DC control power to the LPCI injection valves and Recirc Loop discharge valves, the strainers were removed. Additionally, the HPCI, RCIC, RHR, and REC Systems were walked down to ensure that no additional tempoary strainers that may have been installed for construction/pre-operational testing remained. None were discovered, though an unlabeled spacer plate was discovered on the inlet spool piece of the RCIC Pump. The RCIC System pre-operational test procedure was reviewed and documentation of strainer removal was found. As added assurance that the strainer was removed, the inlet spool piece will be removed and inspected or radiographed during the 1993 Refueling Outage.

In response to the programmatic concern, program upgrades, including the Corrective Action program and System Engineer Training program, have been implemented since "occurrence" of this event in 1985/86. No further action in response to this NCR is warrented.

This event will be incorporated in the Industry Events Training program for Engineering personnel.

COMMENTS: This NCR was returned at NOC Meeting 92-14 for consideration of a Root Cause of 14 - Programmatic, since it is believed that, in 1986, when strainers were found in the RHR system, other systems should have been reviewed for the same condition.

Discussed the need for a walkdown of the CS System with R Foust in 1986 after strainers were found in the RHR suction piping. Might have been due to a lack of communications since NED was involved in the DC whereas CNS Engineering was involved in the IE Notice response.

Discussed the additon of RCC 14 for Drawings/Prints LTA and Corrective Action LTA. The P&IDs in 1986 were correct in that they were suppossed to reflect the system design, not necessarily what was installed. With regard to CA LTA, had the direction provided in response to the IE Notice required a field walkdown, the installation might have been discovered. In any case, the real root cause was that the pre-op test procedure was not adequate to ensure strainer removal following construction.

Discussed whether or not APA, in the drawing verification project, should have identified the discrepancy between the P&ID and the as-installed configuration. The CS System was in the pilot program. A number of deficiencies with project work accomplished during the pilot program are acknowledged to exist. While the project has dramatically inmproved, many pilot program deficiencies remain.

86-4329 86-4749 92-1911 WALKED DOWN NO STRAINER

PER SSF, RHR, CS, HPCI REMOVED

ATT 7(3)

i-7(4)

NCR Number: 92-104
JRF-92-2316

NCR CORRECTIVE ACTION
Disposition 1 and 3

1.0 EVENT

On August 21, 1992, it was discovered that the temporary plant startup strainers located in the Core Spray (CS) pumps A and B suction lines from the Condensate Storage Tank (CST) were still installed in the inlet piping to the pumps. These strainers are perforated, conical temporary strainers manufactured by Mack Iron Works Company, series PCS, for 14 inch pipe. No documentation can be found which justifies why these strainers are still in place. The strainers do not appear on the Core Spray System flow drawings. Core Spray, pumps A and B systems, subsystems, and components affecting the safety-related operation of the plant need to be appropriately documented in plant records.

2.0 BACKGROUND/HISTORY

Radiography was performed on August 22, 1992, the results of which verified the strainers were still in place. An operability evaluation (OD-92-043) of the CS System was performed which concluded that the strainers are not affecting the safety function of the CS System.

In December 1985, the NRC issued IE Information Notice 85-96 entitled, "Temporary Strainers Left Installed in Pump Suction Piping". In a memo to system engineers on March 21, 1986, they were instructed to "Confirm that pump suction strainers shown on system prints are part of the permanent plant design". This instruction did not result in detection of suction strainers in the RHR and CS systems because they were not shown on the Burns and Roe P&IDs. The RHR strainers were detected in late 1986 during implementation of a design change. They were subsequently removed under MWRs 86-4829 and 86-4749.

3.0 EVALUATION/ANALYSIS

An operability evaluation has been performed (OD-92-043), concluding the strainers are not affecting the safety function of the CS System. The original purpose for installing startup strainers was to prevent any foreign material, tools, nuts, bolts, weld rod, slag, etc., that may have been introduced into the piping during construction from entering the pump suction and damaging the pump. The strainers were designed to be removed following startup testing by removing and re-installing the associated spool piece. To ensure similar strainers are not located in the pump suction lines for the RCIC, HPCI, RHR, and REC systems, these lines have been walked down and the associated spool pieces were visually inspected. There was not any externally visible indication that strainers are present in the REC, RCIC, or HPCI suction piping.

Originator: David L. Gross Date: 9-25-92

Department Supervisor: [signature] Date: 9/25/92

Section Manager: [signature] Date: 9/25/92

The spool pieces contained a single gasket on each end, indicating that strainers are not installed. There were no visible manufacturer tags like those found on the CS suction pipes. It has been verified that the strainers were removed from the RHR A and B loops via work items 86-4829 and 86-4749 in 1986. A work item was generated to remove the strainers from the CS System.

4.0 ROOT CAUSE CODE - CAUSE

The root cause is identified as 23-Procedural Ambiguous Instructions. Strainers were designed to be removed prior to preoperational testing, however, the preoperational test procedure did not contain specific steps for strainer removal. Very ambiguous steps for system readings were noted.

5.0 EXTENT-SIGNIFICANCE

The RCIC, HPCI, REC, and RHR systems have been walked down and verified not to have strainers installed. Removal of the strainers in the RHR System is documented in Work Item history.

6.0 RECOMMENDED CORRECTIVE ACTION

The construction startup strainers were removed from the CS System under MWR 92-1911. The RCIC, HPCI, REC, and RHR systems have been walked down and the strainers have been verified not to be present.

7.0 RECOMMENDED PREVENTIVE ACTIONS

None; once removed, the startup strainer will not be re-installed.

8.0 ACTIONS REMAINING OPEN

All corrective actions completed; no actions remain open.

1-7(s)

Date: October 12, 1992
To: Don Reeves
From: Scott S. Freborg
Subject: NCR 92-104 NOC Comments (JRF-92-2316)

The subject NCR response was returned to Plant Engineering with the following comment summary:

The root cause and corrective action discussion do not adequately address the failure to determine that the CS strainers were installed in 1986, subsequent to issuance of IE Notice 85-96 and/or determining that the strainers were found installed in the RHR system.

The subsequent action required was stated as follows:

Address the above concern. For example, the failure to check for the CS strainers upon finding the RHR strainers appears to be a programmatic concern.

In a nutshell, the NOC concern can be stated (in general), "Why wasn't something done a certain way six or seven years ago like the way we would do it today?" The answer is simple: "That's the way things were done six or seven years ago". The same thing can be said about the deficiencies in the original preop procedures. If conducted today, each preop would be hundreds of pages long with no end to the details. But that's how things were done in 1974.

Engineering can add a root cause of programmatic to the original response if NOC wishes. I personally do not have a problem doing as such. However, one would have to question the added value of this root cause since it addresses something that happened six or seven years ago in calendar time and what seems like six or seven decades ago in the evolution of the corrective action program. Perhaps a statute of limitations should apply to things that have been discovered to have not been done correctly by today's standards or even by original standards.

In summary, Engineering agrees that, by the strictest definition of programmatic, a programmatic problem resulted in the non-discovery of the CS and RHR suction strainers in 1985/86. Additionally, preventive action has already been taken in the form of a much overhauled corrective action program over the years. If NOC agrees with this they may supplement the NCR response by attaching this memo.

Please contact me with any questions you may have.

ATT - 1(s)

Scott S Freborg
PED Supervisor

cc: Jim Flaherty
Rick Foust

ID:SSF 92-21

DEC 2 2 1992

(P.SD)

NCR RESPONSE REVIEW

1-7(6)

NCR 92-104 DATE 12/22/92 NOC MTG NO 92-15

QCT 920562

REVIEW COMMENT SUMMARY This NCR was tabled, awaiting development, approval & transmittal to NRC on Inspection Report NOV response on the same subject

ACTION REQUIRED Revise NCR response to be consistent with the response to the NOV identified in NRC Inspection Report No. 50-298/92-19. (NPPD response is dated December 1, 1992).

D L Reeves
12/22/92

ACTION ASSIGNED TO J Flaherty

DUE DATE 1/6/93

C R Mueller 12/23/92
NOC Chairman

ATT 7(6)

1-7(7)

OUTGOING NRC CORRESPONDENCE ACTION ASSIGNMENT FORM

Document Title/Description: Subject: Reply to a Notice of Violation (NRC Inspection Report No. 50-298/92-19)

Document Date: 12/01/92 Correspondence Number:

G.R. Smith (Name/Initials) assigned the following actions on 12/5/92 (Date): (document attached)

See attached document for action assignments ____ Action Assignments listed below X No Action Required Routed For Information ____

Responsibility	Action Description	Due Date	Firm?
T.J. Meacham &	Inspect RCIC spool piece to verify the absense of a	STarTup from 1993	Y
	Temporary STarTup STrainer	Refueling outage	
J.M. Meacham &	Incorporate discovery of Temporary STarTup STrainer in CS into	May 31, 1993	Y
	industry event Training for system engineers		

NAITS TRACKING X TICKLE FILE ____ NO TRACKING ____

ID Number _____ Input Date: _____

Distribution:

- X NPG Distribution
- X Action Assignee(s) (with assignment form also)
- X G. R. Horn (with assignment form also)
- ____ RCS-GO
- X RCS-CNS
- ____ _____
- ____ _____
- ____ _____
- ____ _____

File: _____

ATT 7(7)

NONCONFORMANCE REPORT	ATTACHMENT 1

NCR NUMBER: 92-104 DATE: 920824 PAGE 2 OF ____

1.0 SYSTEM, COMPONENT, REQUIREMENT

Core Spray, Pumps A&B, System, Subsystems & components effecting the safety related operation of the plant, need to be appropiately documented in plant records.

2.0 NONCONFORMANCE ☐ Return Copy Requested

on Aug. 21, 1992 Temporary Plant Startup Strainers were found in the CS pump suction lines from the ECST. These strainers are not shown on appropriate plant P&ID's

Originator (please print)/Date: DAVID GROSS / 8-24-92

3.0 REPORTABILITY REPORT NUMBER: ____

10CFR50.72: ☐ 1 Hr ☐ 4 Hr — 10CFR50.73: ☐ 30 Day

☒ None ☐ 1 Hr ☐ 4 Hr ☐ 30 Day ☐ 10CFR21 ☐ Other: ____

4.0 DISPOSITION WORK ITEM NUMBER: 92-1911

1. Perform root cause analysis, identify root cause code(s), recommend and initiate corrective actions to prevent recurrence.
2. Remove both strainers.
3. REVIEW OTHER SAFETY SYSTEMS FOR SIMILAR INSTALLATIONS

Department Supervisor/Date: [signature] / 8/24/92

5.0 REMARKS

6.0 ACTION ASSIGNMENT

[signature] / 8/25/92
Technical Staff Supervisor Date

[signature] / 8/25/92
Plant Manager Date

	DUE DATE
1) CNS ENG	9/25/92
2) MNT	9/25/92
3) CNS ENG	9/25/92

ATT 7(3)

NCR Number: 92-104 Page ____ Of ____

NCR CORRECTIVE ACTION

1.0 EVENT

On August 21, 1992, it was discovered that the temporary plant startup strainers located in the Core Spray (CS) pumps A and B alternate suction. Lines from the Condensate Storage Tank (CST) were still installed in the inlet piping to the pumps. These strainers are perforated, conical temporary strainers manufactured by Mack Iron Works Company, series PCS, for 14 inch pipe. No documentation can be found which justifies why these strainers are still in place. The strainers do not appear on the Core Spray System flow drawings. Core Spray, pumps A and B systems, subsystems, and components affecting the safety-related operation of the plant need to be appropriately documented in plant records.

2.0 BACKGROUND/HISTORY

Radiography was performed on August 22, 1992, the results of which verified the strainers were still in place. An operability evaluation (OD-92-043) of the CS System was performed which concluded that the strainers are not affecting the safety function of the CS System.

In December 1985, the NRC issued IE Information Notice 85-96 entitled, "Temporary Strainers Left Installed in Pump Suction Piping". In a memo to system engineers on March 21, 1986, they were instructed to "Confirm that pump suction strainers shown on system prints are part of the permanent plant design". This instruction did not result in detection of suction strainers in the RHR and CS systems because they were not shown on the Burns and Roe P&IDs. The RHR strainers were detected in late 1986 during implementation of a design change. They were subsequently removed under MWRs 86-4829 and 86-4749.

3.0 EVALUATION/ANALYSIS

An operability evaluation has been performed (OD-92-043), concluding the strainers are not affecting the safety function of the CS System. The original

Originator: David L. Gross Date: 12-29-9?

Department Supervisor: RBP [signature] 12/29/92 Date: 12-31-92

Section Manager: [signature] Date: 1/4/9?

purpose for installing startup strainers was to prevent any foreign material, tools, nuts, bolts, weld rod, slag, etc., that may have been introduced into the piping during construction from entering the pump suction and damaging the pump. The strainers were designed to be removed following startup testing by removing and re-installing the associated spool piece. To ensure similar strainers are not located in the pump suction lines for the RCIC, HPCI, RHR, and REC systems, these lines have been walked down and the associated spool pieces were visually inspected. There was not any externally visible indication that strainers are present in the REC, RHR, or HPCI suction piping. The spool pieces contained a single gasket on each end, indicating that strainers are not installed.

During walkdown of the RCIC system an unlabeled spacer plate was discovered on the inlet spool piece of the RCIC pump. However, RCIC preoperational test procedure indicates the strainer was removed prior to startup testing. In all of the systems walked down, there were no visible manufacturer tags like those found on the CS suction pipes. It has been verified that the strainers were removed from the RHR A and B loops via work items 86-4829 and 86-4749 in 1986. A work item was generated to remove the strainers from the CS System.

4.0 ROOT CAUSE CODE - CAUSE

The root causes are identified as:

23 - Procedural Ambiguous Instructions.

Strainers were designed to be removed prior to preoperational testing, however, the preoperational test procedure did not contain specific steps for strainer removal. Very ambiguous steps for system readings were noted.

14 - Programmatic - Corrective Actions Less than Adequate.

In December 1985, the NRC issued IE Information Notice 85-96 entitled, "Temporary Strainers Left Installed in Pump Suction Piping". The purpose of the Information Notice was to alert licensees about a potentially significant problem pertaining to temporary construction strainers left installed in the suction piping of safety-related pumps. As a result of IE Information Notice 85-96, system engineers were instructed to confirm that pump suction strainers shown on system P&IDs were either removed or continued to be part of the permanent plant design. This instruction did not result in detection of strainers in the CS System alternate suction supply line apparently because they were not shown on plant P&IDs. Had a detailed system walkdown been conducted, the temporary strainers would most likely have been detected. As such, one root cause of this violation is a programmatic weakness in that

REC strainers are shown on P&ID's

corrective action taken to address IE Information Notice 85-96 was less than adequate.

5.0 EXTENT-SIGNIFICANCE

The RCIC, HPCI, REC, and RHR systems have been walked down and verified not to have strainers installed. Removal of the strainers in the RHR System is documented in Work Item history.

6.0 RECOMMENDED CORRECTIVE ACTION

The construction startup strainers were removed from the CS System under MWR 92-1911. The RCIC, HPCI, REC, and RHR systems have been walked down and the strainers have been verified not to be present. The inlet spool piece for the RCIC pump will be removed and inspected or radiographed to verify a strainer is not present.

Preventive action to address programmatic concerns has been implemented in the form of various program upgrades since occurrence of this oversight in 1986. Specifically, extensive system engineering training and corrective action program upgrades have been implemented. This event will also be incorporated into industry event training for system engineers. The District believes that these upgrades will prevent similar events from recurring.

7.0 RECOMMENDED PREVENTIVE ACTIONS

- Programmatic concerns have been addressed in Section 6.0 above.

- Incorporate this event into Industry Events Training for System Engineers.

8.0 ACTIONS REMAINING OPEN

- RCIC inlet spool piece will be inspected before startup from the 1993 Refuel Outage. MWR 92-3390 Due: May 1, 1993 Resp.: Unruh

- Incorporate this event into Industry Events Training for System Engineers. Due: May 31, 1993 Resp.: Dutton

- Revise necessary drawings. Due: May 15, 1993 Resp.: PED

NCK 92-104

NEBRASKA PUBLIC POWER DISTRICT

NOTED

SEP 25 1992

J.R. FLAHERTY
FOR INTER-DISTRICT
BUSINESS ONLY

CNSS923740

Date September 25, 1992

To J. R. Flaherty

From S. S. Freborg

Subject Condition of Core Spray Strainers Removed per MWR 92-1911

Under MWR 92-1911 startup strainers were removed from the condensate supply lines on the suction to the CS pumps. Visual inspection of the removed Mack Iron Works strainers reveal no indication of corrosion or structural integrity degradation. Inspection for possible flow blockage indicated that only a couple small flakes of corrosion product were trapped by the strainer. These small trapped contaminants would have had virtually no impact on flow through the strainer. In conclusion there were no visible indications of degradation discovered when the strainers were removed.

If you have any further questions, please contact me.

Darrin Rayfield for SSF 9/25/92

Scott Freborg
Plant Engineering Supervisor

SSF/DSD/dsd:bjs

cc: D. L. Gross

NCR 92-104

NOTED

DEC 10 1992

J.R. FLAHERTY

NEBRASKA PUBLIC POWER DISTRICT

CNSS927462

Date December 8, 1992

To D. S. Dageforde

From D. L. Gross

FOR INTER-DISTRICT BUSINESS ONLY

Subject Temporary Startup Strainers, CS Pump Suction From Condensate Storage Tank, Rev. 1

BACKGROUND

On August 21, 1992, it was discovered that the temporary plant startup strainers located in the Core Spray (CS) pumps A and B suction lines from the Condensate Storage Tank (CST) were still installed in the inlet piping to the pumps. No documentation can be found which justifies why these strainers are still in place. The strainers do not appear on the Core Spray System flow drawings.

RESOLUTION

An NCR has been generated to appropriately document this discovery and provide a means to resolve the issue. Radiography was performed on August 22, 1992, the results of which verified the strainers were still in place and not a safety concern. An operability determination (OD-92-043) of the CS System was performed, which concludes that the strainers are not effecting the safety function of the CS System. To ensure similar strainers are not located in the pump suction lines for the RCIC, HPCI, RHR, CS, and REC systems, the normal and alternate suction lines have been walked down, from the suction source to the pump. There was no externally visible indication that strainers are present in any of the suction piping. There were no visible manufacturers tags like those found on the strainers in the CS suction pipes. The start up strainers which were located in the CS pump suction from the condensate Storage Tanks were removed under MWR 92-1911.

David L. Gross

D. L. Gross
Mechanical Engineer

DLG:kg

NNCR DATA BASE INPUT FORM	ATTACHMENT 7

NCR NUMBER: 92-104

NCR DATE: 920824

NCR NARRATIVE: SEE NCR FORM SECTION B

NCR ROOT CAUSE CODE(s): G 33 16 23 14

REFERENCES(s): OD-92-043; MWR 86-4829; MWR 86-4749; MWR 92-1911

COMPONENT IDENTIFICATION CODE: CS-P-A

MANUFACTURER CODE: B5800

MODEL: DVSS

COMPONENT IDENTIFICATION CODE: CS-P-B

MANUFACTURER CODE: B5800

MODEL: DVSS

COMPONENT IDENTIFICATION CODE:

MANUFACTURER CODE:

MODEL:

COMPONENT IDENTIFICATION CODE:

MANUFACTURER CODE:

MODEL:

COMPLETED BY: David L Gross DATE: 9-23-92

NEBRASKA PUBLIC POWER DISTRICT

Date _____

To (Tracked by IR 92-19)

FOR INTER-DISTRICT BUSINESS ONLY

From LuAnn Bray

Subject Assignment of Level 3 NCR Action Item

Based upon the attached response to NCR 92-104, you have been assigned a Level 3 NCR action item. A Level 3 action item is initiated in order to ensure that the actions stipulated in the original NCR response are followed through to completion.

If an estimated completion date is not specified in the original NCR response, a 30-day due date is generally assigned. If the assigned due date cannot be met, please request a more appropriate due date by submitting a "Request for NCR Schedule Change" form to the Division Manager of Nuclear Operations for approval.

Action: Completion of IR 92-19 corrective actions (V 92-19-03).

Due Date: 930531

If you have any questions regarding this assignment, please contact me.

LuAnn

LuAnn Bray
Regulatory Compliance Specialist
Cooper Nuclear Station

LEB/sg

Attachment

1-9(1)

COOPER PERFORMANCE HISTORY ON ITEMS INVOLVING CORRECTIVE ACTIONS OR STRAINERS

- **IR 89-03** - STRAINER FOUND IN HTX INLET FLANGE
- **SALP 92-99** - WEAKNESS IN CORRECTIVE ACTION PROGRAM, HIGH THRESHOLD FOR NCRs
- **IR 92-03** - WEAKNESS IN PROBLEM RESOLUTION AND UNTIMELY ROOT CAUSE ANALYSIS
- **IR 92-04** - NOV - INEFFECTIVE CORRECTIVE ACTIONS TO ADDRESS COPPER CONTAMINATION OF THE BATTERIES
- **IR 92-06** - MULTIPLE ANNUNCIATOR PROBLEMS NOT DOCUMENTED IN NCR AND NOT RECEIVING APPROPRIATE MANAGEMENT ATTENTION
- **IR 92-11** - NOV - EOP SUPPORT PROCEDURES WOULD NOT WORK AND NOT CORRECTED
- **IR 92-15** - NOUE NOTIFICATIONS NOT MADE IN REQUIRED TIME AND THE LICENSEE DID NOT DOCUMENT THIS INTO THEIR CORRECTIVE ACTION PROGRAM UNTIL PROMPTED BY THE NRC
- **IR 92-19** - NOV - COORECTIVE ACTION NOT TAKED TO IDENTIFY AND CORRECT CORE SPRAY TEMPORARY STRAINERS
- **IR 93-03** - NO CRITIQUE FOR A BOTCHED EP DRILL AND NO CORRECTIVE ACTION ASSIGNED FOR IDENTIFIED WEAKNESSES

ATT 9(1)

CHRONOLOGY OF EVENTS CNS TEMPORARY STRAINERS

DEC 85	IN 85-96 ISSUED IDENTIFYING TEMPORARY STRAINERS LEFT IN PUMP SUCTIONS
	IN 85-96 ALSO INDICATED THAT IDENTIFICATION OF THE TEMPORARY STRAINERS WAS MADE DIFFICULT BECAUSE THEY APPEARED AS SPACER RINGS
JUL 86	CNS EVAL OF IN 85-96 COMPLETE
	SYSTEM ENGINEER IDENTIFIED THAT STRAINERS MAY BE INSTALLED IN THE REC SYSTEM, FURTHER EVALUATION IS REQUIRED - THIS FURTHER EVALUATION WAS NOT DONE
	SYSTEM ENGINEER INDICATES THAT A STRAINER MAY BE INSTALLED IN RCIC, BUT AFTER FURTHER EVALUATION, CONCLUDES THAT "STARTUP (STRAINERS) HAVE BEEN REMOVED VIA STARTUP PROCEDURE SIGN-OFFS"
	FOR CORE SPRAY AND RHR, SYSTEMS ENGINEERS CONCLUDE THAT NO TEMPORARY STRAINERS ARE INSTALLED IN PUMP SUCTION PIPING
NOV 86	TEMPORARY STRAINERS (4) WERE FOUND IN RHR SHUTDOWN COOLING SUCTIONS AND REMOVED. THIS FINDING APPARENTLY INVALIDATED THE JUL 86 CONCLUSIONS REGARDING TEMPORARY STRAINERS, BUT NO ADDITIONAL EVALUATION WAS PERFORMED
APR 89	TEMPORARY STRAINER FOUND IN HTX INLET LINE, NOV WRITTEN, BUT NO RESPONSE REQUIRED
AUG 92	NRC IDENTIFIES TEMPORARY STRAINERS IN CORE SPRAY SUCTIONS (2)
SEP 92	LICENSEE REMOVES CORE SPRAY TEMPORARY STRAINERS
	NCR ROOT CAUSE (REQUIRED WITHIN 30 DAYS): THE ABSENCE OF A PROCEDURE STEP IN CORE SPRAY PREOP TO REMOVE TEMPORARY STRAINER
	NCR IDENTIFIES THAT TEMPORARY STRAINERS WERE FOUND IN RHR IN 1986 WITH NO ADDITIONAL REVIEW PERFORMED
	REC SYSTEM ENGINEER WALKS DOWN THE REC SYSTEM, SEES 'SPACER PLATES,' DISCUSSES WITH MECHANICS, AND CONCLUDES NO STRAINERS
OCT 92	THE NONCONFORMANCE OVERVIEW COMMITTEE (NOC) RETURNED THE NCR WITH THE COMMENT THAT THE IDENTIFIED ROOT CAUSE DID NOT ADDRESS THE FAILURE TO DETERMINE THAT THE CS STRAINERS WERE INSTALLED IN 86 BECAUSE OF IN 85-96 AND THE DISCOVERY OF STRAINERS IN RHR
	NOC THOUGHT THAT THE FAILURE TO CHECK FOR THE CS STRAINERS UPON FINDING THE RHR STRAINERS APPEARS TO BE A PROGRAMMATIC CONCERN

	OCT 12 - CNS ENGINEERING SUPERVISOR WRITES MEMO INDICATING THAT BUSINESS IS DIFFERENT TODAY - BUT THAT IF NOC WANTS TO REVISE THE NCR, THEY CAN ATTACH HIS MEMO
NOV 92	IR 92-19 CITES THE CORE SPRAY STRAINERS, CRITERION XVI
???	NCR TABLED BY NOC PENDING NOV RESPONSE
DEC 92	DEC 1 - LICENSEE RESPONSE TO NOV
	CAUSES: (1) PROCEDURAL - THE CS PREOP DID NOT HAVE STEP TO REMOVE STRAINER (2) LESS THAN ADEQUATE EVAL OF IN 85-96
	LICENSEE TOOK CREDIT FOR SYSTEM WALKDOWNS
	UNMARKED SPACER PLATE FOR RCIC DISCUSSED, BUT DISMISSED BECAUSE A SPECIFIC SIGNED STEP IN PREOP REMOVED
	UNCOMPLETED 1986 REC EVALUATION WAS NOT DISCUSSED
	UNMARKED SPACER PLATES FOUND IN SEP 92 IN REC NOT DISCUSSED
	IDENTIFICATION OF RHR TEMPORARY STRAINERS IN 1986 NOT DISCUSSED
DEC 92	DEC 5 - CORPORATE ASSIGNS TO MEACHAM ACTIONS TO INSPECT RCIC SPOOL TO VERIFY NO STRAINER AND TO INCORPORATE DISCOVERY OF TEMP STRAINERS INT INDUSTRY EVENT TRAINING FOR SYSTEM ENGINEERS
DEC 92	DEC 22 - ACTION ITEM TO REVISE NCR RESPONSE TO BE CONSISTENT WITH THE RESPONSE TO THE NOV ASSIGNED TO FLAHERTY
JAN 93	WEEK OF JAN 11 (APPROX.) REC PUMP C REMOVED, NO STRAINER FOUND
JAN 93	JAN 27 - STRAINER IDENTIFIED IN REC C
	JAN 28 - SORC APPROVES OPERABILITY DETERMINATION FOR RCIC
	JAN 29 - STRAINER IDENTIFIED IN RCIC VIA RADIOGRAPH - INSTALLED BACKWARDS
FEB 93	SPECIAL INSPECTION