URL to December 14, 2011 Event at Palisades

http://www.nrc.gov/reading-rm/doc-collections/event-status/event/2011/20111215en.html#en47523

Power ReactorEvent Number: 47523

Facility: PALISADES

Region: 3 State: MI

Unit: [1] [ ] [ ]

RX Type: [1] CE

NRC Notified By: MIKE LEE

HQ OPS Officer: VINCE KLCO Notification Date: 12/14/2011

Notification Time: 16:40 [ET]

Event Date: 12/14/2011

Event Time: 15:10 [EST]

Last Update Date: 12/14/2011

Emergency Class: NON EMERGENCY

10 CFR Section:

50.72(b)(2)(iv)(B) - RPS ACTUATION - CRITICAL

50.72(b)(3)(iv)(A) - VALID SPECIF SYS ACTUATION

OTHER UNSPEC REQMNT

Person (Organization):

HIRONORI PETERSON (R3DO)

UnitSCRAM CodeRX CRITInitial PWRInitial RX ModeCurrent PWRCurrent RX Mode

1M/RY100Power Operation0Hot Standby

Event Text

MANUAL REACTOR TRIP DUE TO LOSS OF BOTH MAIN FEEDPUMPS

"The reactor was manually tripped at 1510 EST on 12/14/11 due to loss of both main feedpumps. Both feedpumps tripped on low suction pressure due to an apparent unplanned opening of the 'A' main feedpump recirculation valve. The cause of the main feedpump recirculation valve opening has not been determined. All full length control rods fully inserted. Auxiliary feed pump P-8A automatically started at 1511 EST on steam generator level as designed (10CFR50.72(b)(3)(iv)(A)). The turbine bypass valve is in service maintaining reactor coolant system temperature [by directing steam flow to the main condenser]. The plant is stable in mode 3 [and the reactor trip was considered uncomplicated].

"The Van Buren County Sherriff was notified [per other plant requirements] concerning use of the atmospheric steam dump causing excessive noise in the vicinity of the plant [immediately following the plant trip]."

The plant electric power is in the normal shutdown configuration. There was no primary to secondary leakage.

A press release is planned for the local media.

The licensee notified the NRC Resident Inspector.

URL for September 25, 2011 Event at Palisades

http://www.nrc.gov/reading-rm/doc-collections/event-status/event/2011/20110926en.html#en47290

Power ReactorEvent Number: 47290

Facility: PALISADES

Region: 3 State: MI

Unit: [1] [ ] [ ]

RX Type: [1] CE

NRC Notified By: BRUCE BAUER

HQ OPS Officer: JOHN KNOKE Notification Date: 09/25/2011

Notification Time: 18:21 [ET]

Event Date: 09/25/2011

Event Time: 15:06 [EDT]

Last Update Date: 09/25/2011

Emergency Class: NON EMERGENCY

10 CFR Section:

50.72(b)(2)(iv)(B) - RPS ACTUATION - CRITICAL

50.72(b)(3)(iv)(A) - VALID SPECIF SYS ACTUATION

Person (Organization):

ANN MARIE STONE (R3DO)

UnitSCRAM CodeRX CRITInitial PWRInitial RX ModeCurrent PWRCurrent RX Mode

1A/RY100Power Operation0Hot Standby

Event Text

URL for September 19, 2011 Event at Palisades

http://www.nrc.gov/reading-rm/doc-collections/event-status/event/2011/20110919en.html#en47271

Power ReactorEvent Number: 47271

Facility: PALISADES

Region: 3 State: MI

Unit: [1] [ ] [ ]

RX Type: [1] CE

NRC Notified By: PAUL ADAMS

HQ OPS Officer: JOHN KNOKE Notification Date: 09/16/2011

Notification Time: 15:04 [ET]

Event Date: 09/16/2011

Event Time: 14:50 [EDT]

Last Update Date: 09/16/2011

Emergency Class: UNUSUAL EVENT

10 CFR Section:

50.72(a) (1) (i) - EMERGENCY DECLARED

Person (Organization):

TAMARA BLOOMER (R3DO)

SCOTT MORRIS (IRD)

MARK KING (NRR)

ANNE BOLAND Acting (RA)

ERIC LEEDS (NRR)

BILL GOTT (IRD)

JANE MARSHALL (IRD)

SULLIVAN (FEMA)

FLINTER (DHS)

UnitSCRAM CodeRX CRITInitial PWRInitial RX ModeCurrent PWRCurrent RX Mode

1M/RY79Power Operation0Hot Standby

Event Text

Below is a link to Preliminary Notification of Occurrance (PNO) These are write ups which must be made of more serious Events.

NOTIFICATION OF UNUSUAL EVENT DUE TO PRIMARY SYSTEM LEAKAGE GREATER THAN 10 GPM

The Licensee declared an Unusual Event for Palisades Unit 1 on 09/16/2011 at 1450 EDT based on EAL SU 8.1, RCS (Reactor Coolant System) leakage exceeding 10 gallons per minute (gpm). The licensee was monitoring an increase in RCS leakage, and at a rate of 3.5 gpm entered their off normal procedure and began shutting down the plant. Technical Specification requires the plant to be in Mode 3 within 6 hours. Leakage increased to greater than 10 gpm, and at 1454 EDT the reactor was manually tripped from 79% power. All control rods fully inserted, and the shutdown was described by the licensee as uncomplicated. Unit 1 is stable in Mode 3.

No safety injection was required since two charging pumps (B&C) were able to keep up with RCS leakage estimated to be between 14 and 15 gpm. Pressurizer level was restored to 43% and rising. RCS pressure was greater than 2000 psi and RCS temperature was being maintained at no load Tave of 535F on the turbine bypass valves. There is no indication of any primary-to-secondary leakage and all equipment is available except for charging pump 'A', which was tagged out of service for planned maintenance.

An entry into containment had been made and the licensee had identified the source of the RCS leakage as being in the vicinity of the 'A' pressurizer spray control valve #1057. This was based on a steam plume seen from below the pressurizer looking up through grating towards this valve.

The licensee has notified the NRC Resident Inspector.

\* \* \* UPDATE FROM JAMES BYRD TO JOHN KNOKE AT 1952 EDT ON 09/16/11 \* \* \*

At 1934 EDT the licensee terminated from their Unusual Event due to EAL SU 8.1. The plant is still in Mode 3 with a leak rate of 0.324 gpm..The licensee has confirmed that the leak is a result of the packing gland backing out of pressurizer spray valve #1057.

The licensee has notified the NRC Resident Inspector. The R3DO (Bloomer) was notified. Notified FEMA (Eiscoe) and DHS (Flinter).

REACTOR TRIP DUE TO LOSS OF TWO 120 VOLT AC INSTRUMENT BUSSES

"At 1506 EDT, while the electricians were working on the left train DC bus, a bus bar slipped causing an arc and a loss of the left train DC busses D-10 L and D-10 R. This resulted in the loss of two preferred AC [120 Volt Instrument] busses Y-10 and Y-30. The loss of both preferred AC busses caused a reactor trip, a safety injection signal, auxiliary feedwater actuation signal, containment high radiation isolation signal, and main steam isolation signal.

"All systems responded as expected. Electric power has been restored to the affected DC busses and preferred AC busses. The plant is stable in Mode 3 at NOT and NOP, and controlling temperature using Atmospheric Dump Valves. Pressurizer level is high due to the loss of letdown (result of containment isolation signal), however, it is recovering slowly."

All rods fully inserted and the electrical lineup is back to normal.

The licensee has notified the NRC Resident Inspector, and will be notifying local agencies. The licensee will also be issuing a press release.

http://pbadupws.nrc.gov/docs/ML1126/ML11269A230.pdf

September 27, 2011

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE - PNO-III-11-011

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public

interest significance. Some of the information may not yet be fully verified or evaluated by the

Region III staff.

Facility

Palisades Nuclear Plant

Entergy Nuclear Operations, Inc.

Covert, Michigan

Docket No: 50-255

License No: DPR-20

Licensee Emergency Classification

Notification of Unusual Event

Alert

Site Area Emergency

General Emergency

x Not Applicable

SUBJECT: PALISADES REACTOR TRIP

Brief Description of the Significant Operational Event or Degraded Condition:

At 3:06 p.m. EDT on September 25, 2011, the licensee experienced an automatic reactor trip

due to the loss of one of two trains of direct current (DC) power. At the time of the reactor trip,

the licensee was working on a DC distribution panel in order to troubleshoot a previously known

issue. During the work, a bus bar slipped causing an arc and the loss of one of the two trains

of DC power distribution. Each train is comprised of a set of batteries, two chargers,

instrumentation, and two inverters. The inverters provide alternating current (AC) power to the

preferred AC buses which provide power to control room indications and controls.

In addition to the reactor trip, the loss of the one train of DC power led to a safety injection

signal, auxiliary feedwater actuation signal, containment isolation signal, and a main steam

isolation signal. The main steam isolation signal caused the condenser to not be available for

decay heat removal and for this reason the operators used the Steam Generator Atmospheric

Dump Valves to maintain reactor coolant temperature for decay heat removal. The steam

released contained very low tritium levels at concentrations far below the regulatory limit

allowed for the public. Based on our initial review, systems on the unaffected train worked as

designed and the licensee retained all safety functions.

The plant is currently in a stable shutdown condition. The licensee is currently working on

restoring the DC train and all other affected equipment to operable status. NRC Resident

Inspectors responded to the control room and continue to monitor and assess plant conditions.

Michigan State officials have been informed of the plant shutdown.

NRC Region III will update this PN after plant restart.

Region III received initial notification of this occurrence through the resident inspectors. The

information presented herein has been discussed with the licensee, and is current as of

September 26, 2011, at 3:00 p.m. (CDT). This preliminary notification is issued for information

only and no further action by the staff is anticipated.

ADAMS Accession No ML11269A230

CONTACTS: John Ellegood John Giessner

269/764-8971 630/829-9619

John.Ellegood@nrc.gov John.Giessner@nrc.gov

http://pbadupws.nrc.gov/docs/ML1126/ML112630030.pdf

PRELIMINARY NOTIFICATION

September 19, 2011

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE - PNO-III-11-010

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public

interest significance. Some of the information may not yet be fully verified or evaluated by the

Region III staff.

Facility

Palisades Nuclear Plant

Entergy Nuclear Operations, Inc.

Covert, Michigan

Docket No: 50-255

License No: DPR-20

Licensee Emergency Classification

x Notification of Unusual Event

Alert

Site Area Emergency

General Emergency

Not Applicable

SUBJECT: PALISADES UNPLANNED SHUTDOWN GREATER THAN 72 HOURS AND

NOTIFICATION OF UNUSUAL EVENT

On September 16, 2011, at 12:59 p.m. (EDT), Palisades Nuclear Plant commenced a shutdown

due to unidentified leakage in excess of 1 gallon per minute (gpm) as required by the Technical

Specification for the Reactor Coolant System (RCS). At the time the licensee began the

shutdown, unidentified leakage was at 3.5 gpm. The licensee determined that the leakage was

in containment; therefore, no radioactivity was released to the environment.

During the shutdown, the leakage increased and exceeded 10 gpm. The Emergency Action

Level threshold for RCS leakage is 10 gpm and at 2:50 p.m. the licensee declared a Notice of

Unusual Event (NOUE) and manually shut down the reactor from 79 percent power. The NOUE

is the lowest of the four NRC emergency classification levels. All safety systems functioned as

designed and plant safety was not compromised. The maximum leakage observed was

14-15 gpm.

Based on a containment entry, the licensee determined that the leakage was from the packing

of a valve. The licensee isolated the leak and the NOUE was terminated at 7:34 p.m. (EDT)

after confirmation that the leak had been isolated.

The plant is currently in a stable shutdown condition. The licensee has replaced the packing on

the valve. NRC Resident Inspectors responded to the control room and are continuing to

monitor the licensee’s repairs that are necessary for the plant to startup. They will monitor the

plant’s startup activities.

Michigan State officials have been informed of the plant shutdown.

Region III received initial notification of this occurrence by the Headquarters Operations Center

from the licensee’s NOUE notification at 3:04 p.m. (EDT). The information presented herein

has been discussed with the licensee, and is current as of September 19, 2011, at 12:00 p.m.

(CDT). This preliminary notification is issued for information only and no further action by the

staff is anticipated.

ADAMS Accession Number: ML112630030

CONTACTS: John Ellegood John Giessner

269/764-8971 630/829-9619

John.Ellegood@nrc.gov John.Giessner@nrc.gov

More on Palisplagues...

Entergy Nuclear Operations, Inc.

Palisades Nuclear Plant ~Enterg,i 27780 Blue Star Memorial Highway

Tel 269 764 2000

Anthony J Vitale

Site Vice President

PNP 2011-066

October 03, 2011

U. S. Nuclear Regulatory Commission

ATTN: Document Control Desk

Washington, DC 20555-0001

SUBJECT: Licensee Event Report 2011-005, Service Water Pump Shaft

Coupling Failure

Palisades Nuclear Plant

Docket 50-255

License No. DPR-20

REFERENCES: 10 CFR 50.73, 10 CFR 21.21

Dear Sir or Madam:

Licensee Event Report (LER) 2011-005 is enclosed. This LER is being submitted in

accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant’s

Technical Specifications and 10 CFR 21.21(c) for reporting defects, and failures to

comply, associated with substantial safety hazards for dedicated items.

This letter contains no new commitments and no revisions to existing commitments.

Sincerely,

AJV/tad

Enclosure: Licensee Event Report 2011-005

CC Administrator, Region Ill, USNRC

Project Manager, Palisades, USNRC

Resident Inspector, Palisades, USNRC

NRC FORM 366 APPROVED BY 0MB NO. 3150-0104 EXPIRES 1013112013

U.S. NUCLEAR REGULATORY COMMISSION

(10-2010) Estimated burden per response to comply with this mandatory information collection request: 80

hours. Reported lessons learned are incorporated into the licensing process and fed back to

industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6),

U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to

LICENSEE EVENT REPORT (LER) bjsl~nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-1 0202

(3150-0104), Office of Managementand Budget, Washington, DC 20503. If a means usedto impose

information collection does not display a currently valid 0MB control number, the NRC may not

conduct or sponsor, and a person is not required to respond to, the information collection.

(See reverse for required number of

digits/characters\_for\_each\_block)

1. FACILITY NAME 2. DOCKET NUMBER 3. PAGE

PALISADES NUCLEAR PLANT 05000255 1 of 4

4. TITLE:

Service Water Pump Shaft Coupling Failure

5. EVENT DATE 6. LER NUMBER 7. REPORT DATE 8. OTHER FACILITIES INVOLVED

MONTH DAY YEAR YEAR SENQUUMEBNETRIAL RNEOV MONTH DAY YEAR FACILITY NAME

FACILITY NAME

08 09 2011 2011 - 005 - 00 10 03 2011

9. OPERATING MODE II. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

El 20.2201(b) U 20.2203(a)(3)(i) El 50.73(a)(2)(i)(C) El 50.73(a)(2)(vii)

~ El 20.2201(d) U 20.2203(a)(3)(ii) El 50.73(a)(2)(ii)(A) El 50.73(a)(2)(viii)(A) El 20.2203(a)(1) U 20.2203(a)(4) El 50.73(a)(2)(ii)(B) El 50.73(a)(2)(viii)(B)

[] 20.2203(a)(2)(i) U 50.36(c)(1)(i)(A) El 50.73(a)(2)(iii) El 50.73(a)(2)(ix)(A)

10. POWER LEVEL El 20.2203(a)(2)(ii) El 50.36(c)(1)(ii)(A) U 50.73(a)(2)(iv)(A) U 50.73(a)(2)(x)

U 20.2203(a)(2)(iii) El 50.36(c)(2) El 50.73(a)(2)(v)(A) El 73.71(a)(4)

,~ IUV UU 2200..22220033((aa))((22))((ivv)) EEll 5500..4763((aa))((32))((iii))(A) EEll 5500..7733((aa))((22))((vv))((BC)) E~l O73T.H71E(Ra)(5)

Specify in Abstract below or in El 20.2203(a)(2)(vi) ~\_\_50.73(a)(2)(i)(B) El\_\_50.73(a)(2)(v)(D) NRC\_Form\_366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME TELEPHONE NUMBER (Include Area Code

Terry Davis (269) 764-2117

I . COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

AUSE SYS EM COMPONENT FACTURER REPORTABLE CAUSE SYSTEM COMPONENT FACTURER PORTABLE

B BI CPLG H331 Y

14. SUPPLEMENTAL REPORT EXPECTED 15. EXPE~..TED MONTH DAY YEAR

SUBMISSION

El YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ~ NO DATE

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines

On August 9, 2011, at 1202 hours, service water system (SWS) pump, P-7C, failed to deliver discharge

pressure. As a result, a 72-hour limiting condition for operation (LCO) was entered in accordance with

Technical Specification (TS) 3.7.8 condition A, due to one or more SWS trains being inoperable. The TS

72-hour LCO was exited after approximately 63 hours on August 12, 2011, at 0309 hours when repairs and

testing on P-7C had been completed.

Investigation into the failure revealed a broken pump shaft coupling. The failure mechanism of the coupling

was determined to be intergranular stress corrosion cracking (IGSCC). A past operability evaluation

concluded that, based on the failure mechanism of the coupling, P-7C would have been unable to operate

satisfactorily for the required 30-day mission time. Therefore, P-7C was inoperable from July 10, 2011, until

the coupling failed on August 9, 2011. During the period P-7C was considered inoperable, SWS pumps P-7B

and P-7A were removed from service, on separate occasions for brief periods of times, for the performance of

routine maintenance activities. The requirement of TS 3.7.8 condition C, that 100% of the required post

accident SWS cooling capability be available, was met at all times during the 30-day period when P-7C was

considered inoperable.

The cause of the IGSCC was due to inadequate coupling design specifications. P-7A and P-7B shaft

couplings were replaced using newly designed couplings. Replacement of the shaft couplings on P-7C, with

the new design, is scheduled. This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a

condition prohibited by TS and 10 CFR 21.21(c) for reporting defects, and failures to comply, associated with

substantial safety hazards for dedicated items.

NRC FORM 366A U.S. NUCLEAR REGULATORY COMMISSION

(10-2010) LICENSEE EVENT REPORT (LER)

CONTINUATION SHEET

1. FACILITY NAME 2. DOCKET 6. LER NUMBER 3. PAGE

SEQUENTIAL REVISION

YEAR NUMBER NUMBER

PALISADES NUCLEAR PLANT 05000255 2011 - 005 - 00 2 OF 4

PLANT CONDITIONS

On August 9, 2011, at the time service water system (SWS) [BI] pump [P], P-7C, failed, the plant was in

Mode 1, operating at approximately 100% power.

INTRODUCTION

The SWS provides a heat sink for the removal of process and operating heat from safety-related

components during a design basis accident or transient. During normal operation or a normal shutdown,

the SWS also provides this function for various safety-related and non-safety-related components. During

post-accident conditions, with all other SWS and related system components operable, 100% of the

required SWS post-accident cooling capability can be provided by any one SWS pump.

The SWS consists of three pumps, P-7AIBIC connected in parallel, taking suction from a common intake

structure supplied by Lake Michigan. The discharge of the pumps flow into a common header before

splitting into three headers (two critical headers for safety-related equipment and a single non-critical

header for non safety-related equipment). The return piping from the three headers join into a common line

and discharge to the cooling tower makeup basin.

The three SWS pumps are comprised of a two stage pump end with stainless steel (SS) impellers. The

pump end is coupled to the motor through six line shafts, a packing shaft, and a motor shaft connected by

eight couplings all of the same design.

The design specification of the line shaft couplings for the three SWS pumps was changed in December

2007. The design specification included information from previous engineering evaluations that changed

coupling material from carbon steel to 416SS. The line shaft couplings for P-7A were replaced in April

2009. The line shaft couplings on P-7B were replaced in May 2010. The line shaft couplings for P-7C were

replaced in June 2009.

On September 29, 2009, P-7C failed to deliver discharge pressure. The investigation into the failure

revealed a broken coupling between the top line shaft and the packing shaft. An analysis determined that

the coupling failed from intergranular stress corrosion cracking (IGSCC). There are three parameters that

must be present for couplings to fail by the mechanism of IGSCC; susceptibility of material for IGSCC, a

corrosive environment, and a stress intensity that exceeds the threshold for IGSCC on the pump shaft

coupling. Inherent to the Palisades design is the corrosive environment (lake water) and the stress applied

during pump operation. The failed coupling was determined to have been improperly heat treated, based

on the high hardness value of the 41 6SS coupling, rendering it susceptible to IGSCC. Improper heat

treatment was a result of issues within the quality control program of the vendor, HydroAire Services Inc.

EVENT DESCRIPTION

On August 9,2011, at 1202 hours, P-7C, failed to deliver discharge pressure. A 72-hour limiting condition

for operation (LCO) was entered in accordance with Technical Specification (TS) 3.7.8 condition A, due to

one or more SWS trains being inoperable. Work to restore P-7C began immediately. During disassembly,

it was determined that the line shaft coupling [CPLG] failed similarly to the failed coupling in the same pump

in September, 2009.

NRC FORM 366A (10-2010)

NRC FORM 366A U.S. NUCLEAR REGULATORY

COMMISSION

(9-2007) LICENSEE EVENT REPORT (LER)

CONTINUATION\_SHEET

1. FACILITY NAME 2. DOCKET 6. LER NUMBER 3. PAGE

SEQUENTIAL REVISION

YEAR NUMBER NUMBER

PALISADES NUCLEAR PLANT 05000255 2011 - 005 - 00 3 OF 4

Replacement couplings from inventory stock were installed. The TS 72-hour LCC was exited after

approximately 63 hours on August 12, 2011, at 0309 hours when repairs and testing on P-7C had been

completed. The requirement of TS 3.7.8 condition C, that 100% of the required post accident SWS

cooling capability be available, was met at all times during the 30-day period when P-7C was considered

inoperable.

CAUSE OF THE EVENT

Investigation into the December 2007 design specification change, the September 2009 coupling failure,

and industry operating experience (CE) revealed several causes for the IGSCC failure of the coupling in

2011.

• The 2007 design change specification to use 416SS in the Palisades SWS operating environment

was faulted. Personnel involved in the design change process did not have sufficient metallurgical

knowledge. Palisades did not obtain an adequate technical review by personnel with expertise in

metallurgy.

• The root cause conducted after the 2009 coupling failure did not sufficiently investigate the base

material properties of 41 6SS. Specifically, the toughness properties of the material in the corrosive

environment of Lake Michigan water were not investigated. The coupling material is a quenched and

tempered 416 martensitic SS with low toughness properties. This makes it particularly susceptible to

IGSCC when subjected to the tensile stress and a corrosive environment (due to the presence of

chlorides).

• Ineffective use of CE. Since 2004, there have been several examples of nuclear industry CE linking

IGSCC susceptibility with high Rockwell hardness values and/or low material toughness in type

416SS when exposed to fresh water. Palisades did not translate this CE into effective specification,

contract, inspection, testing, or oversight actions.

CORRECTIVE ACTIONS TAKEN

After the August 2011 failure, Palisades completed an engineering change (EC) to change the material of

the service water pump couplings from 41 6SS to I 7-4PH SS. This EC was based on a report provided to

Palisades, by an independent vendor that evaluated similar failures in the industry, and recommendations

from a team of metallurgy and pump experts.

A new design specification using 1 7-4PH SS for the material of the SWS pumps shaft couplings was

developed and approved for all three SWS pumps. The new design specification for the coupling

material was changed in order to minimize susceptibility to IGSCC. The 4165S shaft couplings on P-7A

and P-7B were replaced with the 17-4PH SS design.

Past operability evaluations performed for P-7A and P-7B, due to the shaft coupling on the pumps being

constructed of the same 41 6SS material, concluded the pumps could have met the required

30-day mission time. An independent laboratory confirmed there were no indications of IGSCC on the

number 5, 6, and 7 couplings, those couplings considered to be most susceptible to IGSCC, removed

from P-7A. There were indications of IGSCC identified on the number 5, 6, and 7 couplings removed

from P-7B. However, the evaluation concluded the cracking on the couplings had not propagated to

the point where P-7B would have been unable to meet the required 30-day mission time.

NRC FORM 366A (10-2010)

NRC FORM 366A U.S. NUCLEAR REGULATORY

COMMISSION

(9-2007) LICENSEE EVENT REPORT (LER)

CONTINUATION\_SHEET

1. FACILITY NAME 2. DOCKET 6. LER NUMBER 3. PAGE

SEQUENTIAL REVISION

YEAR NUMBER NUMBER

PALISADES NUCLEAR PLANT 05000255 2011 - 005 - 00 4 OF 4

CORRECTIVE ACTIONS TO BE TAKEN

Replacement of the 416SS shaft couplings that remain on P-7C with the 17-4PH SS design couplings.

Creation of an Engineering Standard that clearly identifies station requirements and expectations for

material changes affecting installed plant equipment.

ASSESSMENT OF SAFETY CONSEQUENCES

No actual safety consequences resulted from this event. Operating service water pumps continued to

meet all critical, non-critical and containment service water system cooling loads. Potential safety

consequences of this event are of low safety significance: the equipment necessary to safely shutdown

the reactor and maintain safe shutdown conditions under normal and emergency circumstances

remained intact and available.

PREVIOUS SIMILAR EVENTS

LER 2010-001, Service Water Pump Shaft Coupling Failure.