From:	Drake, James
To:	Taylor, Nick; Mateychick, John; Henderson, Christopher; Voss, Patricia; Anchondo, Isaac A
Cc:	Clark, Jeff; Vegel, Anton; Lantz, Ryan; Pruett, Troy; Werner, Greg
Subject:	Information relative to WC RCS Boundary leakage
Date:	Friday, September 02, 2016 9:00:32 PM
Attachments:	Using ASME Code 2007 edition.docx N-733 clamps.pdf

3-page ASME Case Study N-733 withheld in full under ex4.

Nick,

If I am remembering correctly, the clamp was installed on a leaking seal weld on a CRDM. this would be leakage from a mechanical joint.

There are still issues that must be addressed, even if it is leakage from a mechanical joint.

John Mateychick is acting for Greg today. I do not have a home contact number for him.

I called Greg and left a voicemail on his cell phone.

I have attached some excerpts from ASME Code Section XI as well as Code Case N-733.

Dave Alley has been informed is ready to provide whatever support we need.

The reactor vessel head and CRDM safety assessment is described in EPRI report MRP-110.
Per Section 5,
5.1.1 Bare Metal Visual (BMV) Examination

Examination Requirements
• Allowed obscured areas shall be examined upslope and downslope from the obstructions (whether within the penetration region defined in Figure 5-1 or not) to identify any evidence of boron or corrosion product deposits.
• If **any evidence of boron** or corrosion product deposits are identified adjacent to, beneath, or downslope from an obstruction, the RVCH upper surface under the obstruction **shall be examined** in the area of the identified evidence to ensure that the RVCH is not degraded.

From information we have,
The original leak has gotten worse and must be re evaluated.
This would include the original leak location, as well as the area under the clamp and the impact on the bolts for the clamp. (Corrective action for leakage identified at bolted connections shall be performed per the requirements of ASME Section XI, IWA-5250(a)(2), as identified by the utility ASME Section Xl ISI Program. Alternatively, ASME Code Case N-566-2 (Reference 23) may be used.)

I am available as needed to assist. Please call me when you send an email, since I am not continuously monitoring my email account. I am having trouble accessing Citrix from home, but have access to email through webmail.

If necessary, I can go into the office to get additional reference documents.

Jim

James F. Drake
Email: James.Drake@nrc.gov
Office phone:817-276-6558
Cell phone: (b)(6)

Using ASME Code 2007 edition.

IWA-4133 Mechanical Clamping Devices Used as Piping Pressure Boundary
Mechanical clamping devices used to replace piping pressure boundary shall meet the requirements of Appendix IX.

MANDATORY APPENDIX IX
MECHANICAL CLAMPING DEVICES FOR CLASS 2 AND 3 PIPING PRESSURE BOUNDARY

ARTICLE IX-1000
GENERAL
(a) Mechanical clamping devices used as piping pressure boundary may remain in service only until the next refueling outage, at which time the defect shall be removed or reduced to an acceptable size.
(b) These clamping devices may be used on piping and tubing, and their associated fittings and flanges, and the welding ends of pumps, valves, and pressure vessels, except as prohibited by (c) below.
(c) Clamping devices shall not be used on the following:
(1) Class 1 piping;
(2) portions of a piping system that forms the containment boundary;
(3) piping larger than NPS 2 (DN 50) when the nominal operating temperature or pressure exceeds 200°F (95°C) or 275 psig (1 900 kPa);
(4) piping larger than NPS 6 (DN 150).
(d) A Repair/Replacement plan shall be developed in accordance with IWA-4150, and shall identify the defect characterization method, design requirements, and monitoring requirements.
(e) Welding performed as part of the fabrication and installation of the clamping device shall be in accordance with the requirements of IWA-4400. Welding shall be documented on an NIS-2 Form.
(f) The records required by IWA-6000 shall be maintained by the Owner until the clamping device is removed.

From CC N733 Mitigation of Flaws in NPS 2 (DN 50) and Smaller Nozzles and Nozzle Partial Penetration Welds in Vessels and Piping by Use of a Mechanical Connection Modification
Section XI, Division 1 (Copy attached to email)

(-e) For the examinations of (-b), (-c), and (-d), above, if leakage or evidence of leakage since the prior examination is identified the entire mechanical connection assembly shall be disassembled and examined as required by (4).

From:	Clark, Jeff
To:	Kopriva, Ron; Werner, Greg; Taylor, Nick
Cc:	Drake, James; Anchondo, Isaac
Subject:	RE: Wolf Creek head inspection update 10-31-2016
Date:	Monday, October 31, 2016 7:18:44 PM
Attachments:	image001.png

Guys, thanks for the followup.

-------- Original Message --------
From: "Kopriva, Ron" <Ron.Kopriva@nrc.gov>
Date: Mon, October 31, 2016 5:44 PM -0500
To: "Werner, Greg" <Greg.Werner@nrc.gov>, "Taylor, Nick" <Nick.Taylor@nrc.gov>
CC: "Drake, James" <James.Drake@nrc.gov>, "Anchondo, Isaac" <Isaac.Anchondo@nrc.gov>, "Clark, Jeff" <Jeff.Clark@nrc.gov>
Subject: RE: Wolf Creek head inspection update 10-31-2016

The Wolf Creek reactor head inspection being discussed is an Ultrasonic Testing inspection being performed from under the reactor head. The equipment being used is a very flat UT probe slid up the nozzle between the nozzle wall and the thermal sleeve of the control rod drive mechanism. They do have Video capability, but it is not integrated into the UT probe. The video capability used is for proper nozzle location, confirmation of the UT probe functioning properly (since there is no one under the head during the exam due to exposure) and it is not set up to perform an augmented Visual Exam. The probe seen in the attachment from Jeff was for the bottom mounted instrument penetrations and the J-Groove weld on the bottom of the reactor.

Also, in talking to both headquarters and the Westdyn (Westinghouse) inspectors, there are Eddie Current probes that have the capability of performing the inspection of the upper penetrations of the reactor head. Both HQ and Westdyn indicated that the Eddie current exam under the reactor head is not very effective.

Does this help at all??

For the bare metal visual exam, I don't know if the licensee intends to use the crawler or if they are just going to perform a VT 2 with a qualified examiner. Maybe we can get more info on the visual exam.

Ronald A. Kopriva
Senior Reactor Inspector
U.S. NRC, Region IV
Division of Reactor Safety, Engineering Branch 1
817-200-1104 (Work)
(b)(6) (Cell)
ron.kopriva@nrc.gov

From: Werner, Greg
Sent: Monday, October 31, 2016 4:33 PM
To: Kopriva, Ron <Ron.Kopriva@nrc.gov>
Cc: Drake, James <James.Drake@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>
Subject: FW: Wolf Creek head inspection update 10-31-2016

Ron,

I didn't think so, so please clarify.

Greg

From: Clark, Jeff
Sent: Monday, October 31, 2016 3:57 PM
To: Werner, Greg <Greg.Werner@nrc.gov>
Cc: Taylor, Nick <Nick.Taylor@nrc.gov>; Pruett, Troy <Troy.Pruett@nrc.gov>; Lantz, Ryan <Ryan.Lantz@nrc.gov>; Vegel, Anton <Anton.Vegel@nrc.gov>
Subject: RE: Wolf Creek head inspection update 10-31-2016

Greg,

In my "past life" experiences with doing these inspections, the licensees always had equipment (similar to the attachment) that was capable of doing the visual at the same time as volumetric. Does the WC rig not have this capability?

Jeff

From: Taylor, Nick
Sent: Monday, October 31, 2016 3:51 PM
To: Clark, Jeff <Jeff.Clark@nrc.gov>
Subject: RE: Wolf Creek head inspection update 10-31-2016

I don't think so – but perhaps the ISI guys can clear that up?

Nick

From: Clark, Jeff
Sent: Monday, October 31, 2016 3:34 PM
To: Taylor, Nick <Nick.Taylor@nrc.gov>
Subject: RE: Wolf Creek head inspection update 10-31-2016

So, their "rig" for volumetric examination does not contain a surface probe?

From: Taylor, Nick

Sent: Monday, October 31, 2016 3:18 PM
To: Pruett, Troy <Troy.Pruett@nrc.gov>; Lantz, Ryan <Ryan.Lantz@nrc.gov>; Clark, Jeff <Jeff.Clark@nrc.gov>; Vegel, Anton <Anton.Vegel@nrc.gov>; Kennedy, Kriss <Kriss.Kennedy@nrc.gov>; Morris, Scott <Scott.Morris@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Singal, Balwant <Balwant.Singal@nrc.gov>; Lingam, Siva <Siva.Lingam@nrc.gov>; Regner, Lisa <Lisa.Regner@nrc.gov>
Cc: Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>
Subject: Wolf Creek head inspection update 10-31-2016

All,

By way of updates…I spoke a few minutes ago with Fabian Thomas (resident @ Wolf Creek), who observed that the licensee is now making plans and mobilizing equipment to perform ultrasonic inspections of the remaining 66 nozzles on the reactor vessel head. Fabian reports that the licensee's schedule shows this activity commencing on November 4. We don't yet know how long the activity will take.

Fabian also reports that the licensee is scheduled to begin their bare metal visual inspection of the vessel head on November 5.

We are still expecting the licensee to need relief from the surface examinations of the j-groove welds for the 66 additional penetrations. The licensee has not yet communicated their plans for requesting this additional relief (or anything else for that matter).

Thanks,

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects
USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov

BMI Nozzle and J-Weld Examination

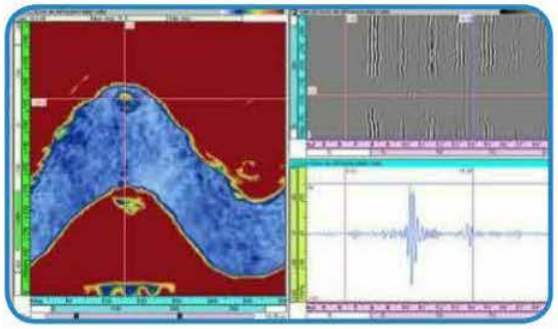
Simple Reliable Delivery Tools

Comprehensive inspection capability for both mandatory as well as voluntary inspections within the Bottom Mount Instrumentation (BMI) Nozzle or J-weld.

Wide range of technologies

Global requirements for BMI nozzles and J-weld examination vary widely. Our broad experience can efficiently deliver technologies including:

- UT of the nozzle and nozzle-weld interface from nozzle ID
- ET of the nozzle ID
- Bare-metal visual of the vessel OD
- J-Weld EVT and Eddy Current



UT Data

TOFD probes

UT nozzle tool

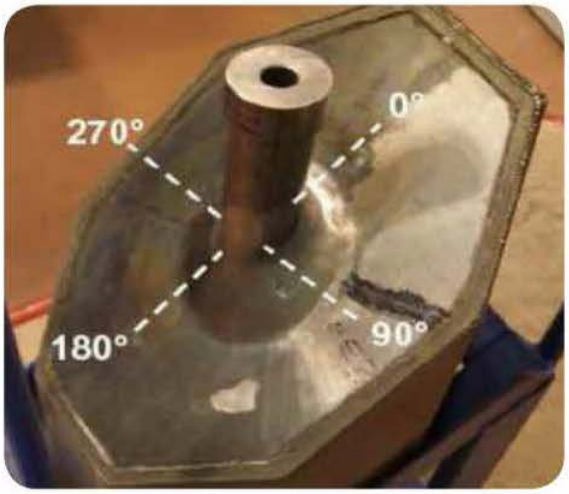
Nozzle UT: Features and Benefits

- Simple, reliable delivery using poles handled from refuel or auxiliary bridge
- Two tools operating in parallel minimize inspection time to provide best vessel occupation time of approximately 12 hours
- Qualification credentials include EPRI demonstration and EDF qualification
- TOFD technique supports detection and sizing
- In-line calibration standard verifies signal quality with each nozzle examined
- Experience with more than 1,500 nozzles inspected

J-Weld ET: Features and Benefits

- Pole-delivered tool from the re-fuel bridge: manually-controlled sweep of weld is simple and reliable
- Mouse probe allows full J-Weld coverage with only two passes
- Detects and determines orientation (circular vs. radial) of anomalies
- Unit contains PTZ camera for VT inspections of the OD of the nozzle and the J-groove weld area
- Quick setup
- Lessons learned from previous deployment incorporated in enhanced tool

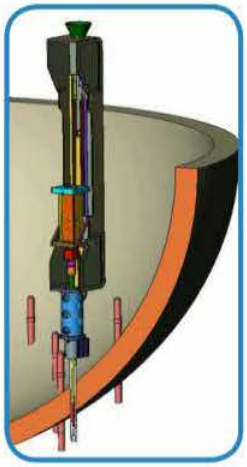
AREVA
forward-looking energy



Mockup for technique demonstration

Manual Mouse-Probe scanner for BMI J-Weld

Nozzle IDET probe



Drawing of tool on BMI nozzle inside vessel

Bare-Metal Visual image of boron deposits from confirmed leaking BMI.

AREVA has the broadest experience with BMI/BMN inspection and repair within the industry.

For more information contact AREVA NDE-Solutions Regional Sales Manager at
regional.manager@areva.com

U.S.: Eddie Ivins
Office: +1 434 832 3781 Cell: +1 434 841 3562

France: Olivier Moulin
Office: +33 14 978 4095 Cell: +33 62 879 6555

Germany: Florian Senne
Office: +49 9131 900 96766 Cell: +49 151 14568545

7/13 **ANP:U-369-V2-13-ENG**

From:	Anchondo, Isaac
To:	Werner, Greg; Kopriva, Ron
Cc:	Drake, James; George, Gerond; Sifre, Wayne; Jayroe, Peter; Taylor, Nick; Thomas, Fabian; Dodson, Douglas; Farnholtz, Thomas; Vegel, Anton; Clark, Jeff; Alley, David
Subject:	RE: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal
Date:	Tuesday, September 20, 2016 11:26:00 AM
Attachments:	Davis-Besse LLTF Report.pdf

See listing of Records Already Available to Public for this attachment.

(I was working on this response already so I'll provide it as a reply to all)

Here is some food for thought in regards to the images shown during the morning meeting as we move forward in reviewing the licensee's actions. The Davis-Bessee Lessons Learned Task Force report provides the following in the observations and conclusions section.

> The NRC and the industry regarded boric acid deposits on the RPV head as an issue that required attention; however, the NRC and industry did not regard the presence of the boric acid deposits on the RPV head as a significant safety concern because they expected that boric acid crystals would form from flashing steam and such crystals would not cause significant corrosion of RPV heads. For example, the NRC and industry were concerned that the presence of boric acid deposits, from CRDM flange leakage in the case of B&W PWR plants, could obscure the indications of VHP nozzle leakage. While dry boric acid crystals would not be expected to result in significant corrosion rates, representative testing of nozzle leakage indicated that corrosion rates from boric acid solutions could be in the range of 4 inches per year. These rates of corrosion could occur at primary system leakage rates that are significantly lower than the typical PWR plant technical specification limit, namely, at a rate too small to directly measure with the current leakage detection systems. Even at somewhat lower rates of corrosion, properly implemented boric acid corrosion control programs may not lead licensees to detect VHP nozzle leaks before significant RPV head degradation could occur. The results of these tests, while known within the NRC, were not widely recognized by the NRC staff.

Furthermore, Information Notice 86-108, Supplement 2

On August 7, 1987, after an unplanned shutdown, Salem Unit 2 was brought to a cold shutdown condition.

> Inspection teams entered the containment building to look for reactor coolant leaks that would account for the increased radioactivity in containment air that was noted before the shutdown. The team assigned to the reactor head area found boric acid crystals on a seam in the ventilation cowling surrounding the reactor head area. The licensee then removed some of the cowling and insulation and discovered a mound of boric acid residue at one edge of the reactor vessel head. A pile of rust-colored boric acid crystals 3 feet by 5 feet by 1 foot high had accumulated on the head, and a thin white film of boric acid crystals had coated several areas of the head and extended 1 to 2 feet up the control rod mechanism housings. The source of the boric acid was reactor coolant leakage through three pinholes in the seal weld at the base of the threaded connection (conoseal) for thermocouple instrumentation. During the previous operating period, reactor coolant leakage had not exceeded 0.4

gallon per minute (gpm).

Corrosion damage to the reactor vessel head was caused by borated water that had dripped from the ventilation supports onto the head. The licensee found nine corrosion pits in the ferritic steel vessel head. The pits were 1 to 3 inches in diameter and 0.4 to 0.36 inch deep. In the corroded area, the minimum thickness of the head as specified by design could have been 7 inches, while the actual wall thickness was 8 inches. Calculations performed by the licensee and Westinghouse confirmed that the affected areas still met ASME Code requirements.

As Jeff mentioned, the licensee will have to justify the structural integrity of the affected nozzle J-welds but the vessel head itself is also of concern. The licensee will have to perform a corrosion evaluation addressing the head, bolts, etc. via their Boric Acid Corrosion Control Program

(b)(5)

Comments/Corrections?

Thanks,

Isaac Anchondo

Reactor Inspector
U.S. Nuclear Regulatory Commission | Region IV
Division of Reactor Safety | Engineering Branch 2
(817) 200-1152

From: Werner, Greg
Sent: Tuesday, September 20, 2016 11:20 AM
To: Kopriva, Ron <Ron.Kopriva@nrc.gov>
Cc: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>; George, Gerond <Gerond.George@nrc.gov>; Sifre, Wayne <Wayne.Sifre@nrc.gov>; Jayroe, Peter <Peter.Jayroe@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Farnholtz, Thomas <Thomas.Farnholtz@nrc.gov>; Vegel, Anton <Anton.Vegel@nrc.gov>; Clark, Jeff <Jeff.Clark@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Subject: FW: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal
Importance: High

Ron,

See the attached pictures. Please get with the residents and the licensee to discuss what you would like see and provide any recommendations you might have for the residents to look at until you get onsite next week (that is the lastest information I had regarding your ISI inspection). Nick is also working on some Qs and As and I will probably ask you to take a

look at them as well.

AS A REMINDER, we have NO idea of the scope of the degradation, so let's not get too excited. What will be really important is when the licensee does a detailed head inspection and what they find. So, please share with caution.

Thanks,
Greg

From: Taylor, Nick
Sent: Tuesday, September 20, 2016 10:34 AM
To: Werner, Greg <Greg.Werner@nrc.gov>
Subject: Fwd: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal

Nick Taylor
Chief, Projects Branch B
(972) 921-6398
Nick.taylor@nrc.gov

From: "Thomas, Fabian" <Fabian.Thomas@nrc.gov>
Subject: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal
Date: 20 September 2016 08:05
To: "Taylor, Nick" <Nick.Taylor@nrc.gov>, "Proulx, David" <David.Proulx@nrc.gov>, "Dodson, Douglas" <Douglas.Dodson@nrc.gov>

Nick,
Please see the attached photos.

These are pictures of the east side of the reactor head vessel, taken last night after the removal of the blanket (NUCON) insulation and side mirror insulation.

The licensee's RPV Visual Inspection procedure/activity is scheduled to complete at ~9:00 PM tonight (09/20/16) according to the Outage Schedule in the OCC. However, based on the delayed start of this activity on yesterday, I am almost positive that this will slip by at least 24 hours. Based on my conversation with the dayshift OCC Manager, the head condition will not be fully assessed until the RPV inspection activity is completed.

Also, Mode 6 has slipped due to the aforementioned delays in the insulation removal and issues encountered with the Large Equipment Lift outside of containment. Mode 6 is scheduled for 02:00 on 09/21/16, but the OCC Manager is sure that it will slip to 09/22/16.

I haven't had a chance to discuss these with the Boric Acid Engineer yet, but I work with licensing to get something set up ASAP.

I will give you a call shortly to discuss.

Thanks,

Fabian

From:	Anchondo, Isaac
To:	Werner, Greg; Kopriva, Ron
Cc:	Drake, James
Subject:	RE: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal
Date:	Tuesday, September 20, 2016 12:59:00 PM

Ron,

Jeff's observation embodies the discussions that you will need to have with the licensee. As required by CC N-729, a relevant indication needs to be disposition by the CC itself so the licensee will have to be careful how they go about cleaning the head. The accumulation of boric acid around the rim of the nozzle cavity, as noted by Jeff, becomes a relevant indication per CC requirements. So the licensee needs to address this issue per the VE acceptance criteria.

3142 Acceptance
-3142.1 Acceptance by VE

a) A component whose VE confirms the absence of relevant conditions shall be acceptable for continued service.

b) A component whose VE detects a relevant condition shall be unacceptable for continued service until the requirements of -3142.1(b)(1), (b)(2), and (c) below are met.
   1. Components with relevant conditions require further evaluation. This evaluation shall include determination of the source of the leakage and correction of the source of leakage in accordance with -3142.3.
   2. All relevant conditions shall be evaluated to determine the extent, if any, of degradation. The boric acid crystals and residue shall be removed to the extent necessary to allow adequate examinations and evaluation of degradation, and a subsequent VE of the previously obscured surfaces shall be performed, prior to return to service, and again in the subsequent refueling outage. Any degradation detected shall be evaluated to determine if any corrosion has impacted the structural integrity of the component. Corrosion that has reduced component wall thickness below design limits shall be resolved through repair /replacement activity in accordance with IWA-4000.

c) A nozzle whose VE indicates relevant conditions indicative of possible nozzle leakage shall be unacceptable for continued service unless it meets the requirements of -3142.2 or -3142.3.

FCS performed what was consider removing the boric acid to the extent necessary to allow a subsequent examination. The problem was that the boric acid was stuck to the head pretty good, and therefore, that boric acid remained as "relevant indications" that would had to be rejected by the CC. Long story short, FCS had to make the case that the leakage was representative of running down the head and had accumulated around the rim of the nozzles instead of a leak from the J-groove weld accumulating up the nozzle to the rim of the cavity.

By the look of the pictures provided, CNS will have a harder time justifying the BA accumulation and disposition it via N-729.

I do have training next week (PWR Simulator) but I'll be taking it at night. I should be able to talk to you in the morning if you would like to discuss anything as your inspection goes along.

Let me know if you have any questions.

Isaac

From: Werner, Greg
Sent: Tuesday, September 20, 2016 12:03 PM
To: Kopriva, Ron <Ron.Kopriva@nrc.gov>
Cc: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>
Subject: RE: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal
Importance: High

(b)(5)

I know that Isaac and Jim both have concerns about how Wolf Creek will disposition other possible leak locations, so it will be really important to see how WC dispositions other penetrations where boric acid is present, especially in close proximity to the leaking seal weld. Isaac was going to send you some information and/or concerns that we expressed to FCS associated with their head inspection.

Greg

From: Werner, Greg
Sent: Tuesday, September 20, 2016 11:20 AM
To: Kopriva, Ron <Ron.Kopriva@nrc.gov>
Cc: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>; George, Gerond <Gerond.George@nrc.gov>; Sifre, Wayne <Wayne.Sifre@nrc.gov>; Jayroe, Peter <Peter.Jayroe@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Farnholtz, Thomas <Thomas.Farnholtz@nrc.gov>; Vegel, Anton <Anton.Vegel@nrc.gov>; Clark, Jeff <Jeff.Clark@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Subject: FW: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal
Importance: High

Ron,

See the attached pictures. Please get with the residents and the licensee to discuss what you would like see and provide any recommendations you might have for the residents to look at until you get onsite next week (that is the lastest information I had regarding your ISI inspection). Nick is also working on some Qs and As and I will probably ask you to take a

look at them as well.

AS A REMINDER, we have NO idea of the scope of the degradation, so let's not get too excited. What will be really important is when the licensee does a detailed head inspection and what they find. So, please share with caution.

Thanks,
Greg

From: Taylor, Nick
Sent: Tuesday, September 20, 2016 10:34 AM
To: Werner, Greg <Greg.Werner@nrc.gov>
Subject: Fwd: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal

Nick Taylor
Chief, Projects Branch B
(972) 921-6398
Nick.taylor@nrc.gov

From: "Thomas, Fabian" <Fabian.Thomas@nrc.gov>
Subject: Wolf Creek RX Vessel Head Pictures - As-Found during Mirror Insulation Removal
Date: 20 September 2016 08:05
To: "Taylor, Nick" <Nick.Taylor@nrc.gov>, "Proulx, David" <David.Proulx@nrc.gov>, "Dodson, Douglas" <Douglas.Dodson@nrc.gov>

Nick,
Please see the attached photos.

These are pictures of the east side of the reactor head vessel, taken last night after the removal of the blanket (NUCON) insulation and side mirror insulation.

The licensee's RPV Visual Inspection procedure/activity is scheduled to complete at ~9:00 PM tonight (09/20/16) according to the Outage Schedule in the OCC. However, based on the delayed start of this activity on yesterday, I am almost positive that this will slip by at least 24 hours. Based on my conversation with the dayshift OCC Manager, the head condition will not be fully assessed until the RPV inspection activity is completed.

Also, Mode 6 has slipped due to the aforementioned delays in the insulation removal and issues encountered with the Large Equipment Lift outside of containment. Mode 6 is scheduled for 02:00 on 09/21/16, but the OCC Manager is sure that it will slip to 09/22/16.

I haven't had a chance to discuss these with the Boric Acid Engineer yet, but I work with licensing to get something set up ASAP.

I will give you a call shortly to discuss.

Thanks,

Fabian

The remaining five pages of this draft withheld under ex5.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD
ARLINGTON, TX 76011-4511

[Date]

MEMORANDUM TO: Kriss Kennedy, Regional Administrator

THRU: Troy Pruett, Director
Division of Reactor Projects

FROM: Nick Taylor, Chief
Projects Branch B

SUBJECT: MANAGEMENT DIRECTIVE 8.3 EVALUATION FOR WOLF CREEK GENERATING STATION

(b)(5)

DOCUMENT NAME: R:_MD 8.3 Decision\[year]\[document name]
ADAMS ACCESSION NUMBER:

■ SUNSI Review By: NHT		ADAMS ■ Yes ☐ No	☐ Publicly Available ■ Non-Publicly Available		■Non-Sensitive ☐ Sensitive		Keyword:
OFFICE	RIV:C/PBB	D:DRS	D:DRP				
NAME	NTaylor	AVegel	TWPruett				
SIGNATURE	NHT						
DATE	9/7/16	9/ /16	9/ /16				

OFFICIAL RECORD COPY

Enclosure 1

From:	Graves, Samuel
To:	Taylor, Nick; Alley, David; Anchondo, Isaac; Drake, James; Werner, Greg
Cc:	Dodson, Douglas; Thomas, Fabian
Subject:	RE: FW: NRC Questions regarding Penetration 77
Date:	Friday, September 16, 2016 6:25:26 AM
Attachments:	image001.png

1-page attachment withheld in full under ex4.

Nick,

A thought. With this type of interest perhaps a simple communication plan might be in order? I'm not sure what the criteria (for DRP) is for a comm. plan, but we have drafted them for items with less interest before just to ensure everyone who "might" be interested would have a place to go to get the most current "official" positions.

Just a thought.

Sam

From: Taylor, Nick
Sent: Thursday, September 15, 2016 2:48 PM
To: Alley, David <David.Alley@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Graves, Samuel <Samuel.Graves@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

All,

FYI – I just got off the phone with the EDO's office, who had called to ask about the "ASME code non-compliance" and "improper repairs to the vessel head" at Wolf Creek (as relayed to them by our regional management after the morning meeting here yesterday I think).

I let them know the following:

- That there is no current safety issue given that the plant is shut down and won't see power operation for at least 2 months, and that we will have ample opportunity to inspect the head and the licensee's actions before restart
- Regarding the code issue – I let them know that the staff is still having dialogue about what the code requires for these penetration leaks, and that we are still waiting for the licensee to answer some questions before we determine whether or not a compliance issue exists

Please let me know if I've communicated anything in error. I look forward to more discussion on this as the facts become more clear. DRP management has asked that we provide status periodically as the issue develop.

Thanks,

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects

USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

From: Alley, David
Sent: Thursday, September 15, 2016 2:12 PM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

No apology necessary. Your focus is exactly in the right spot which is the safety significant spot.

Dave

From: Anchondo, Isaac
Sent: Thursday, September 15, 2016 3:07 PM
To: Alley, David <David.Alley@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

Dave, I apologize for forgetting to acknowledge that the question was already out there. I was just trying to stress that our regulations, intent of the code, etc, point to adequate pressure retaining capabilities which is the threaded joint not the seal weld

(b)(5)

Look forward to Keith's conclusion!

Isaac

From: Alley, David
Sent: Thursday, September 15, 2016 1:52 PM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Graves, Samuel <Samuel.Graves@nrc.gov>

Subject: RE: FW: NRC Questions regarding Penetration 77

All,
Keith Hoffman is working diligently to come to a conclusion regarding our opinion on the code compliance of the clamp. He may get done this PM. We probably will still want to have the licensee go through their basis for code compliance, irrespective of Keith's findings.

Isaac,
I can't remember whether you were on the phone call last Saturday. If so you may remember that I asked them about their basis, given the amount of leakage, for saying that the threads were ok. In my opinion we have already asked the question that you wish to pursue and that we absolutely should follow up on that question. At this point, I am not proposing that the threads are bad, only that it is a worthwhile question.

Dave

From: Anchondo, Isaac
Sent: Thursday, September 15, 2016 2:39 PM
To: Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

(b)(5)

For reference, here's the technical rationale (in part) of NUREG-0800 in regards to threaded fasteners (Class 1, 2, and 3) and therefore a light on the intent of mechanical connections.

- GDCs 1 and 30 require that SSCs important to safety be designed, fabricated, erected, tested and inspected to quality standards commensurate with the importance of the safety functions to be performed. GDC 14 requires that the RCPB be designed, fabricated, erected, and tested in a manner that provides assurance of an extremely low probability of abnormal leakage, rapidly propagating failure, or gross rupture. The RCPB, provides a barrier to fission products, a confined volume for the inventory of reactor coolant, and flow paths to facilitate core cooling. **Threaded fasteners and mechanical joints form an integral part of maintaining pressure boundary integrity and are essential for withstanding normal loading**

and any transient load created during abnormal or accident conditions. The failure of fasteners in a system could result in loss of fluid in the system and jeopardize safe operation of the plant. Conformance with criteria of the ASME Code, Section III and the regulatory positions of RG 1.65 satisfies, in part, the requirements of GDC 1, 14, and 30 by providing assurance that threaded fasteners will be designed, fabricated, and tested to established and proven standards and, thereby, minimizing the likelihood of failure of the pressure boundary.

- GDC 31 requires that the RCPB be designed with sufficient margin to ensure that when stressed under operating, maintenance, testing, and postulated accident conditions the boundary behaves in a nonbrittle manner and the probability of rapidly propagating fracture is minimized. 10 CFR Part 50, Appendix G establishes fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary to ensure that there are adequate margins of safety during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the pressure boundary may be subjected over its service lifetime. **Threaded fasteners and mechanical joints are integral to the design of the RCPB. Application of the requirements of Appendix G ensures that threaded fasteners in the RCPB will behave in a nonbrittle manner, minimizing the probability of rapidly propagating fracture and thereby satisfying the requirements of GDC 31.**

I agree with having a call with the licensee, and in addition to Jim's points, we would have to get a clarification on the intent of the CSCA as far as pressure retaining function.

From: Drake, James
Sent: Thursday, September 15, 2016 11:46 AM
To: Taylor, Nick <Nick.Taylor@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

Nick,

Right now we do not have enough information to come to a more aligned regulatory position. There are several potential approaches on the issue and there may be other documents out there that we have not found. I think we need to have the meeting with the licensee to have them explain in detail how they determined that the CSCA's are Code compliant. Once we have that information, we can evaluate and come to a regulatory position.

The CSCA's do not appear to be a safety issue, they are designed to Class 1 standards, they have the required strength, and we are not aware of any problems with leakage from the clamps. Westinghouse completed the stress analysis and there is no problem. However, we have not verified the results.

Where we are currently at is: Is the use of Canopy Seal Clamp Assemblies allowable by Code and has Wolf Creek complied with all regulatory requirements when they installed them.

Exemption 5 - Pre-Decisional Draft Information

From: Dodson, Douglas
To: Thomas, Fabian
Cc: Taylor, Nick; Dodson, Douglas
Subject: SRI Turnover
Date: Wednesday, August 31, 2016 9:30:37 PM

Fabian,

(b)(5)

Doug

Page 023 of 240

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Exemption 5 - Pre-Decisional Draft Information

From: Dodson, Douglas
To: Taylor, Nick
Cc: Proulx, David; Janicki, Steven; Thomas, Fabian; Singal, Balwant; Dodson, Douglas
Subject: Wolf Creek Status
Date: Wednesday, October 12, 2016 8:54:28 AM

Wolf Creek Status for October 12

- Outage Parameters:
  Mode – Defueled (no mode)
  RCS Temperature – 99˚F
  RCS Pressure – Depressurized
  Inventory – 23' above the flange—slightly below 23' for the very beginning of the lift of the core barrel (Level References: 23' above fuel in vessel – 239.8", lowered inventory – 160.1", reactor vessel flange – 100.1", reduced inventory – 64.1", top of hot leg – 29", ¾ loop – 21.75", mid-loop – 14.5", bottom of hot leg – 0")
  RCS Time to Boil: N/A
  SFP Time to 200˚F: 16 hours
  Containment Status – Open
  Fuel Moves – None in progress

- Plant Shutdown Risk: Yellow
  Reactivity Management – Green
  Core Decay Heat Removal – N/A
  Spent Fuel Decay Heat Removal – Green (EDG and ESW train B returned to available)
  RCS Inventory – N/A
  Electrical Power Sources – Yellow (with 'B EDG not yet operable and an offsite qualified circuit, XNB01, East bus, and #7 transformer OOS)
  Containment Closure – N/A
  Radiation Monitoring and Ventilation – Green

- TS LCOs: None

- Other Work Activities:

  The station is continuing with NDE of reactor vessel bottom nozzles and NDE of reactor vessel J-welds. Water jet peening is expected to begin following the NDE effort (not likely in the next 24 hours).

  New pictures of the reactor vessel head post dry cleaning (taken by Ron Kopriva) have been uploaded to CERTREC for review awareness. The residents intend to perform an inspection of the head following wet cleaning and obtain additional pictures at that point.

  The station is in the process of performing PMTs associated with 'B' ESW and the 'B' EDG. Notably, the 'B' EDG 24-hour run is expected to begin later this shift. During the maintenance run(s) of the 'B' EDG the 'B' EDG did not trip within its overspeed trip setpoint (twice). Ultimately, the licensee determined that a setscrew needed to be milled down. The licensee informed me that maintenance was performed on associated equipment that could have impacted the setting—though, the licensee is confirming this information for us. Additionally, the EDG tripped on reverse power during synchronization. The issue was determined to be a human performance issue (the

operator did not load the EDG quick enough), additional briefings were conducted, and the EDG was successfully synched and loaded. The licensee is expecting to perform a human performance investigation later today/tonight.

Three CRDMs have been removed for cleaning and to facilitate clamp installation.

The east bus and XNB01 are currently out of service for ongoing maintenance associated with the #7 transformer and demolition of the old Waverly line.

- Other items of interest: (UPDATE) A total of 4 or 5 total steam generator tubes are expected to be plugged. The licensee is nearing completion of 100% eddy current testing of all four steam generator hot leg tubesheets. The licensee will be performing in-situ testing (pressure testing) for the two indications that were identified. Ron Kopriva is following these activities. (BACKGROUND from 10/11) A single circumferential indication of primary water stress corrosion cracking was identified within the hot leg tubesheet in steam generator 'D' (tube R19, C38); this will require an eddy current scope expansion of the 'D' steam generator hot tubesheet inspections to complete 100 % of these locations. A single circumferential indication of outside diameter stress corrosion cracking was identified at the top of the hot leg tube sheet on steam generator 'C' tube (R41, C70); this will require an eddy current scope expansion of the 'C' steam generator tube sheet inspections to complete 100% of these locations. The licensee is evaluating these results. The residents have passed the CR to Ron Kopriva for review and awareness.

  There was an OFN entry in the last 24 hours for a 1 cup hydraulic fluid spill from a forklift. The issue was determined to be minor and not reportable.

- Other Inspections/Audits: Ron Kopriva is here for ISI inspections and is expected to be in the area through October 21 or later.

- Significant Forecasted Weather: None.

- Coverage and Other Visits: Doug and Fabian are onsite.

Exemption 5 - Pre-Decisional Draft Information

From:	Dodson, Douglas
To:	Taylor, Nick
Cc:	Proulx, David; Janicki, Steven; Thomas, Fabian; Singal, Balwant; Dodson, Douglas
Subject:	Wolf Creek Status
Date:	Tuesday, October 11, 2016 8:48:00 AM
Attachments:	[Untitled].pdf [Untitled].pdf

Wolf Creek Status for October 11

- Outage Parameters:
  Mode – Defueled (no mode)
  RCS Temperature – 99˚F
  RCS Pressure – Depressurized
  Inventory – 23' above the flange—slightly below 23' for the very beginning of the lift of the core barrel (Level References: 23' above fuel in vessel – 239.8", lowered inventory – 160.1", reactor vessel flange – 100.1", reduced inventory – 64.1", top of hot leg – 29", ¾ loop – 21.75", mid-loop – 14.5", bottom of hot leg – 0")
  RCS Time to Boil: N/A
  SFP Time to 200˚F: 15.8hours
  Containment Status – Open
  Fuel Moves – None in progress

- Plant Shutdown Risk: Yellow
  Reactivity Management – Green
  Core Decay Heat Removal – N/A
  Spent Fuel Decay Heat Removal – Yellow (this is yellow with the 'B' SFP cooling train OOS for 'B' train maintenance)
  RCS Inventory – N/A
  Electrical Power Sources – Yellow (this is yellow with the 'B' onsite class IE train OOS for maintenance and with an offsite qualified circuit, XNB01, OOS)
  Containment Closure – N/A
  Radiation Monitoring and Ventilation – Green

- TS LCOs: None

- Other Work Activities:

  The station is performing NDE of reactor vessel bottom nozzles and will then perform NDE of reactor vessel J-welds. Over the weekend the station performed vacuuming of the reactor vessel, visual inspections of the reactor vessel, and reactor vessel nozzle examinations of the cold legs.

  The station is in the process of filling and venting 'B' ESW and working to restore 'B' train equipment. Notably, the 'B' EDG 24-hour run is expected to begin in around the next 24 hours.

  The station is continuing work to disassemble and repair the normal charging pump (non-safety related). Recall that the pump failed when it was run in runout conditions during the reactor vessel head lift and filling of the refuel pool (the station was in Mode 6 at the time, and the normal charging pump was not being credited for shutdown risk mitigation). The station has performed flushes to ensure any FME has been cleared

from the system—some small FME particulate was identified in the discharge piping, balance line, and recirculation line (pictures are attached). An additional unknown substance, described as granular in appearance and of rust/goldish coloring (CR 108061) was identified in the 'A' steam generator hot leg and 'C' steam generator cold leg bowls. The residents are working to obtain these pictures and determining if these issues are related.

Over the weekend the station removed the reactor head plenum and performed CRDM and coil stack inspections. Rust was identified at the lifting lug to CRDM thread interface, and some wastage was noted associated with CRDMs 49 and 59; CR 108154 notes that there were no signs indicative of boron leakage. I will request that the licensee put video inspection and picture data and the applicable CR on Certrec. The station will be evaluating this inspection data today and working with Westinghouse to determine necessary actions. Under-the-head UTs and head cleaning are not expected to occur imminently.

Water jet peening preparations continue.

The east bus is currently out of service for ongoing maintenance associated with the #7 transformer and demolition of the old Waverly line. Over the weekend the station restored the Benton transmission line.

- Other items of interest: A single circumferential indication of primary water stress corrosion cracking was identified within the hot leg tubesheet in steam generator 'D' (tube R19, C38); this will require an eddy current scope expansion of the 'D' steam generator hot tubesheet inspections to complete 100 % of these locations. A single circumferential indication of outside diameter stress corrosion cracking was identified at the top of the hot leg tube sheet on steam generator 'C' tube (R41, C70); this will require an eddy current scope expansion of the 'C' steam generator tube sheet inspections to complete 100% of these locations. The licensee is evaluating these results. The residents have passed the CR to Ron Kopriva for review and awareness.

  On October 9, 2016, while the reactor was defueled, during installation of a test lead connection into a test card during performance of "Solid State Protection System Train B Response Time" testing, a spark was observed that caused numerous control room annunciators, the 'B' reactor trip breaker to open, and the AUTO SI BLOCK bistable to illuminate. The station determined that the signal was invalid and changed the procedure to install the test card after the test lead had already been installed into the card.

- Other Inspections/Audits: Ron Kopriva is here for ISI inspections and is expected to be in the area through October 21 or later.

- Significant Forecasted Weather: There is a chance of thunderstorms today and tonight.

- Coverage and Other Visits: Doug is onsite. Fabian will be returning to the office Wednesday October 12.

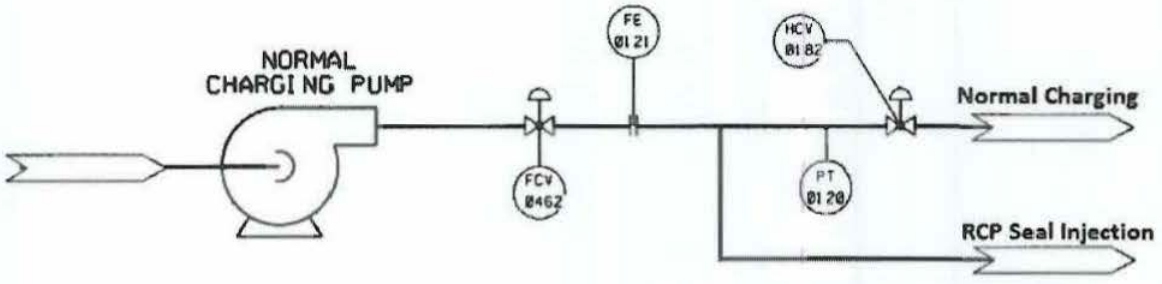
9/24/16 NCP runout event

Problem:
On 9/24/16 the Normal Charging Pump was being used to flood up the refueling pool through the normal charging line following removal of the Reactor Vessel Head. Approximately four minutes after Operations increased charging flow, the NCP tripped on time overcurrent. A subsequent attempt to start the NCP was performed around two hours later, but the motor tripped on instantaneous.

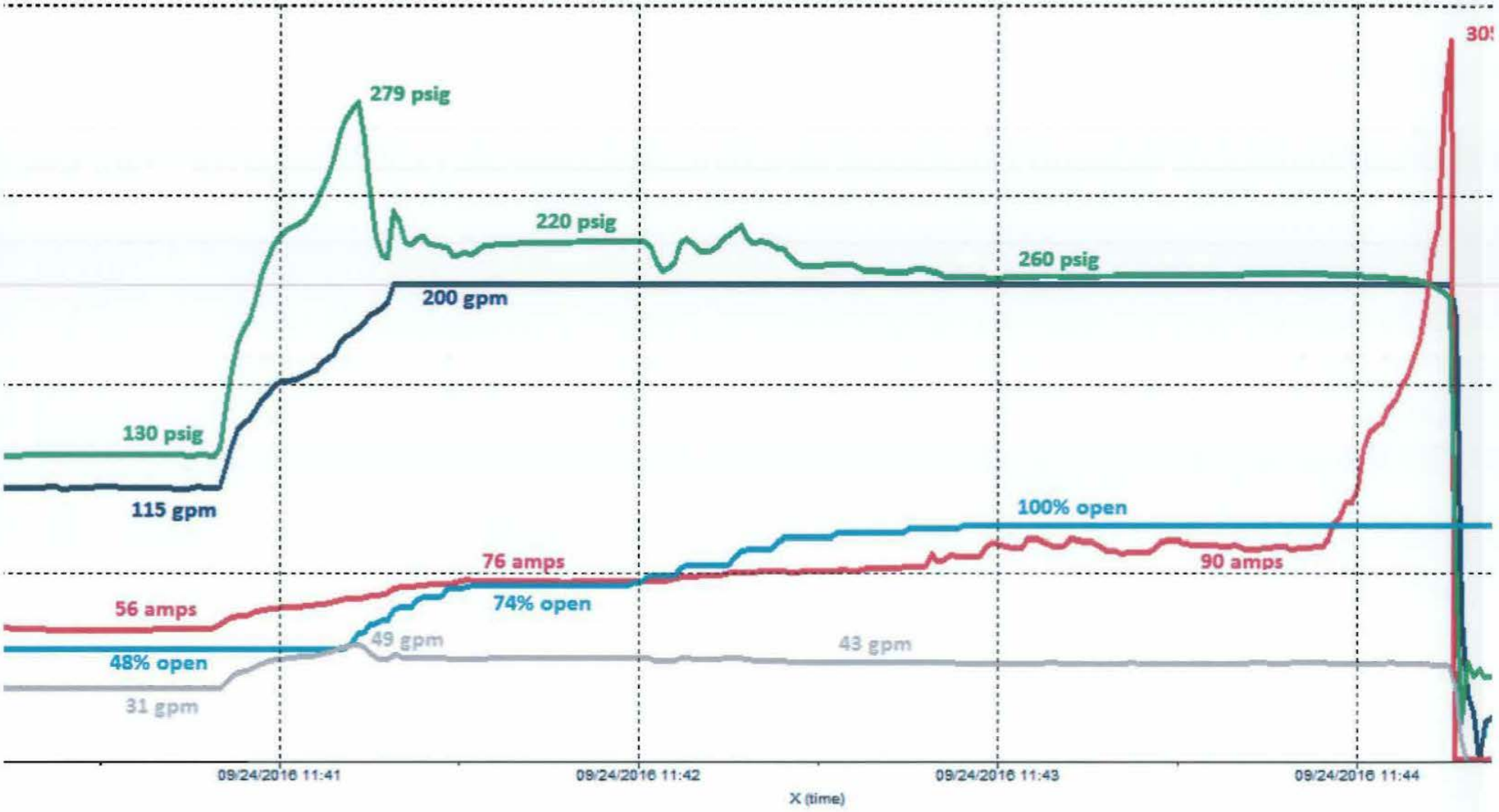
Facts:
- NCP runout flow is 210 gpm and motor full load amps is 75 amps (Vendor Technical Manual M-090-00058).
- BGFI121 has a flow range of 0-200 gpm with acceptable (green band) flow between 45-120 gpm and unacceptable (red band) from 150-200 gpm (Total Plant Setpoint Document WCRE-01)

Discussion:
At 11:40, charging flow was increased from 115 gpm to 200 gpm (BGF121, blue) by opening BGFCV462, NCP Discharge Flow Control Valve. This is observed by an increase in charging header pressure (BGP120, green) from 130 psig to 379 psig. Charging header pressure decreases down to 220 psig as BGHCV182, Charging Header Flow Control Valve, is opened (BGY182, grey) to reduce RCP seal injection flow. It is typical practice to jog open BGFCV462 and then BGHCV182 in small increments in order to lessen the impact of increasing charging flow. When BGHCV182 is opened to 74% open, charging flow goes off-scale high at 200 gpm. At 11:42, BGHCV182 was taken to full open, but the increase in actual flow is not known due to BGF121 being off-scale high. Since the NCP is a centrifugal pump, actual flow would likely not be more than 210 gpm even with little system backpressure. The NCP operated in this condition for approximately two minutes before the motor tripped.

Based on a review of the trends, the NCP was operated in a condition for which it was never designed (past pump runout flow).



DNA History Plot



MP DISCH HDR F — WC-EDNA1.NPIS.BGI0001 NCP RUNNING CURRENT

MP DISCH HDR P — WC-EDNA1.NPIS.BGY0182 CHG PMP TO REGEN HX VLV

TAL SEAL INJECTION

Attached to CR 108146

NCP Drain and Flush Results to date

During the initial draining of the system on 10/3/16 when the Clearance order was hung, filters were used to capture any debris from the drain hose. Debris was observed and appeared to be metallic in nature.

BGV0821, NCP Balance Line Casing Drain debris

BGV0820, NCP Discharge Side Casing Drain

BGV0460, NCP Discharge Drain Valve

Based on the material observed during the drain down of the system, a flush plan was developed. A flush of the balance line piping was performed on 10/7/16 by flowing through vent valve BGV0818 and draining out BGV0459 first and then BGV0821 second.

Flush through BGV0818 to BGV0459

Flush through BGV0818 to BGV0821

Next, the internals of the discharge check valve, BG8497, were removed to allow flush water to flow freely through the body of the check valve. The flush of the NCP discharge piping from drain valve BGV0013 to drain valve BGV0460. After the flush, additional material was removed from the body of the check valve during the re-installation of the internals.

First Flush from BGV0013 to BGV0460

Second Flush from BGV0013 to BGV0460

Material removed from body of check valve BG8497

A change to the Clearance Order was made to allow flushing downstream of the NCP discharge isolation valve, BG8388, which was closed under the original CO. The flush was performed on 10/8/16 from local high point BGV0379 to downstream drain valve BGV0461. The CO change also allowed BG8388 to be opened in order to flush from BGV0379 to upstream drain valve BGV0460.

Flush through BGV0379 to BGV0461

Flush through BGV379 to BGV0460

TOP PBG04 OB 10-10-2010 Grant Buford

Exemption 5 - Pre-Decisional Draft Information

From: Dodson, Douglas
To: Taylor, Nick
Cc: Proulx, David; Janicki, Steven; Thomas, Fabian; Singal, Balwant; Dodson, Douglas
Subject: Wolf Creek Status
Date: Wednesday, October 05, 2016 8:49:00 AM

Wolf Creek Status for October 5

- Outage Parameters:
  Mode – Defueled (no mode)
  RCS Temperature – 99˚F
  RCS Pressure – Depressurized
  Inventory – Approximately 22' above the flange—slightly below 23' for the very beginning of the lift of the core barrel (Level References: 23' above fuel in vessel – 239.8", lowered inventory – 160.1", reactor vessel flange – 100.1", reduced inventory – 64.1", top of hot leg – 29", ¾ loop – 21.75", mid-loop – 14.5", bottom of hot leg – 0")
  RCS Time to Boil: N/A
  SFP Time to 200˚F: 11.4 hours
  Containment Status – Closed (closed in preparation for the core barrel lift)
  Fuel Moves – None in progress

- Plant Shutdown Risk: Yellow
  Reactivity Management – Green
  Core Decay Heat Removal – N/A
  Spent Fuel Decay Heat Removal – Yellow (this is yellow with the 'B' SFP cooling train OOS for maintenance)
  RCS Inventory – N/A
  Electrical Power Sources – Yellow (this is yellow with the 'B' onsite class IE train OOS for maintenance and with an offsite qualified circuit OOS)
  Containment Closure – N/A
  Radiation Monitoring and Ventilation – Green

- TS LCOs: None

- Other Work Activities: Nozzle dams have been installed.

  Containment ESW piping replacements continue.

  Water jet peening mobilization continues.

  'B' train equipment, the Waverly transmission line, and the east bus are out of service for maintenance.

- Other items of interest: (UPDATE) SFP temperature instrumentation has been restored (a failed diode associated with the PN010 inverter was replaced) and temperature is approximately 94˚F. (From 10/4 status) Non-safety related "Instrument AC Power" inverter PN010 failed during an attempt to start it up following maintenance yesterday. Two of the impacted loads are the spent fuel pool temperature transmitters. The transmitters feed the "SFP Temp Hi" annunciator, which is currently lit. Normally, the annunciator would be lit when SFP temperature exceeds 130˚F. The shutdown risk assessment applicable bases states that spent fuel pool temperature shall not be

allowed to exceed 155˚F. The station is currently monitoring SFP 'A' HX outlet temperature, which is currently approximately 81˚F, and adding 12˚F to determine an approximate SFP temperature. The 12˚F temperature difference was obtained based on trending and comparison of the SFP temperature and the HX outlet temperature for the conditions at the time of trending. The residents questioned operations on how it is ensuring that the 12˚F temperature difference assumption remains valid, and the shift manager stated that the relevant parameters that would impact the temperature difference would not be expected to change.

Four reactor vessel bolts and one nut did not pass QC inspections. The station is evaluating the condition to determine a repair/replacement plan. Three of the bolts were located adjacent to each other, but the individuals I talked to did not know where the bolts were specifically located on the vessel. The residents have requested additional information (pictures) from Regulatory Affairs.

The OCC Shift Update states, "The final decision has been made that the RPV head visual inspections are complete. Decision has been made to perform a volumetric UT exam under the head. Twelve areas of interest will be examined."

The control room saw some non-safety related electrical system momentary alarms at 1910 yesterday. The system operator reported that a breaker had opened on the Benton line (presumably because of a lightning strike) and appropriately reclosed. The shift manager indicated that the Benton transmission line (1 of 2 that was in service) was never lost, and walkdowns were completed by the station that did not identify any additional issues.

- Resident Tracking: 'B' train ESW hot spot/corona tracking found on cable in electrical manhole (cable supplies XNG06, which is associated with 'B' ESW pump house loads); the equipment is currently OOS for maintenance (107912). An emergent megger of the cable was performed and satisfactory. Engineering is evaluating allowing tape repair of the cables for all three phases.

  Fissures identified on the 'B' phase bus side rosette of NB00216 (1.5" crack in the upper copper tulip of the rosette)—the station determined that the equipment is inoperable. Degraded potting material in rosettes of multiple other cubicles were identified. Fissures were also identified on bus rosettes of NB00202 'A' phase bus side and NB00206 'C' phase bus side—the station determined the equipment is inoperable. The NB002 bus and associated equipment is currently OOS for maintenance (CR 107913 and 107930).

  Broken mounting bolt on NG0202 on the rear cubicle door (seismic concern)—the station determined that the equipment is inoperable (CR 107883).

- Other Inspections/Audits: Ron Kopriva will be onsite Thursday this week for ISI inspections (in the area later today).

- Significant Forecasted Weather: Thunderstorms are expected later today/tonight.

- Coverage and Other Visits: Doug is onsite. Fabian is at Callaway for his objectivity visit.

Exemption 5 - Pre-Decisional Draft Information

From: Dodson, Douglas
To: Taylor, Nick
Cc: Proulx, David; Lyon, Fred; Janicki, Steven; Thomas, Fabian; Dodson, Douglas
Subject: Wolf Creek Status
Date: Tuesday, September 27, 2016 8:54:00 AM

Wolf Creek Status for September 27

- Outage Parameters:
  Mode – 6
  RCS Temperature – Approximately 96˚F
  RCS Pressure – Depressurized
  Inventory – Approximately 394 inches (Level References: 23' above fuel in vessel – 239.8", lowered inventory – 160.1", reactor vessel flange – 100.1", reduced inventory – 64.1", top of hot leg – 29", ¾ loop – 21.75", mid-loop – 14.5", bottom of hot leg – 0")
  RCS Time to Boil: 10.7 hours
  SFP Time to Boil: 13 hours
  Containment Status – Open (capable of closure in 14 minutes)
  Fuel Moves – 57 assemblies (of 193) had been moved as of 0600 and moves are in progress (scheduled completion on 9/29 around 1200)

- Plant Shutdown Risk: Green
  Reactivity Management – Green
  Core Decay Heat Removal – Green
  Spent Fuel Decay Heat Removal – Green
  RCS Inventory – Green
  Electrical Power Sources – Green
  Containment Closure – Green
  Radiation Monitoring and Ventilation – Green

- TS LCOs: None

- Other Work Activities: Head inspection activities continue today, and cleaning is expected to occur tomorrow.

  'B' EDG, 'B' ESW, 'B' batteries, and Waverly transmission line out of service. 'A' train components are operable, therefore no TS entries are required. All shutdown risks also remain green.

- Items of Interest: The station did not maintain one boron injection flow path on Sunday 9/25/16 from 0943 through approximately 1400 (Mode 6, flooded up at the time). During this time the 'B' EDG was removed from service, which powers the "Immediate Borate to Charging Pump Suction," BGHV8104 valve. The credited boration flow path at the time was through the BGHV8104 valve, and a dedicated operator was not locally stationed as required by station procedure. The licensee documented a CR for the failure to have a dedicated operator in place, but the station did not document that shutdown risk changed. It appears that risk would have been red at the time. The residents will be following up on this issue further.

  There was an off-normal procedure entry yesterday for a minor 1 gallon crane hydraulic fluid leak to asphalt that was determined to be minor. The fluid was remediated, no

other agencies are expected to be contacted, and the issue does not appear to be reportable.

- Other Inspections/Audits: Ron Kopriva is onsite this week for ISI inspections.
- Significant Forecasted Weather: None
- Coverage and Other Visits: Doug and Fabian are onsite.

Exemption 5 - Pre-Decisional Information

From:	Dodson, Douglas
To:	Taylor, Nick
Cc:	Proulx, David; Janicki, Steven; Thomas, Fabian; Dodson, Douglas; Singal, Balwant
Subject:	Wolf Creek Status
Date:	Monday, October 03, 2016 8:44:00 AM

Wolf Creek Status for October 3

- Outage Parameters:
  Mode – Defueled (no mode)
  RCS Temperature – 99˚F
  RCS Pressure – Depressurized
  Inventory – Mid-loop (Level References: 23' above fuel in vessel – 239.8", lowered inventory – 160.1", reactor vessel flange – 100.1", reduced inventory – 64.1", top of hot leg – 29", ¾ loop – 21.75", mid-loop – 14.5", bottom of hot leg – 0")
  RCS Time to Boil: N/A
  SFP Time to 200˚F: 11 hours
  Containment Status – Open (capable of closure in 14 minutes)
  Fuel Moves – None in progress

- Plant Shutdown Risk: Yellow
  Reactivity Management – Green
  Core Decay Heat Removal – N/A
  Spent Fuel Decay Heat Removal – Yellow (this is yellow with the 'B' SFP cooling train OOS for maintenance)
  RCS Inventory – N/A
  Electrical Power Sources – Yellow (this is yellow with the 'B' onsite class IE train OOS for maintenance and with an offsite qualified circuit OOS)
  Containment Closure – N/A
  Radiation Monitoring and Ventilation – Green

- TS LCOs: None

- Other Work Activities: The XNB01 transformer, which is supplying the safety-related NB01 bus currently, will be removed from service for maintenance later today. To remove it from maintenance the 'A' EDG will started to supply load to the NB01 bus. Then, after the XNB01 bus is removed from service the XNB02 bus will be used to supply offsite power to the NB01 bus.

  Preliminary reactor vessel head inspections have been completed, and gross decontamination activities have been completed. 11 areas were identified for further inspection (could not be conclusively stated that identified boric acid was from the canopy seal weld leak). The station appears to be pursuing relief from additional inspection for this outage. Clamps are expected to be installed on penetration #77 and four additional locations.

  Containment ESW piping replacements continue.

  Water jet peening mobilization continues.

  Head inspection activities continue today, and cleaning is expected to occur tomorrow.

'B' EDG, 'B' ESW, 'B' batteries, and the Waverly transmission line are out of service.

- Other Inspections/Audits: Ron Kopriva may be onsite this week for ISI inspections (his plans were in flux at my last update last week).
- Significant Forecasted Weather: None
- Coverage and Other Visits: Doug is onsite. Fabian is at Callaway for his objectivity visit.

Exemption 5 - Pre-Decisional Draft Information

From: Dodson, Douglas
To: Taylor, Nick
Cc: Thomas, Fabian; Lyon, Fred; Janicki, Steven; Proulx, David; Dodson, Douglas
Subject: Wolf Creek Status
Date: Wednesday, August 31, 2016 9:26:00 AM

Wolf Creek Status for August 31, 2016

- Reactor Power: Ascending from approximately 97 percent to approximately 100 percent. The licensee reduced power to approximately 97 percent this morning to facilitate full flow non-safety auxiliary feedwater pump testing.

  The plant is evaluating reducing power to 97 percent later today to facilitate full flow non-safety auxiliary feedwater pump testing since the first test was not completed (details below).

- CDF/LERF Risks: Green/green

- RCS Unidentified Leakage: No measurement yet for August 31.

  Reviews of the containment particulate monitor paper recorders show a slow increasing trend for activity (please see the paragraph below from yesterday's RCS leakage summary email). The trend appears to be continuing to increase slowly, and I would estimate that it has now increased over a decade in the last month or two. The licensee is evaluating its plans for a containment entry. The residents have an additional meeting with the licensee to review trends and related information at 1000 this morning.

  [From the 8/30 1304 email, "RCS Unidentified Leakage and Radiation Monitor Spiking/Trends"] Based on our questions associated with containment particulate monitor trending (radiation monitor spiking associated with monitors 31 and 32), the licensee just informed us that they have confirmed that containment iodine particulate counts have slowly increased nearly a decade in the last two months (we have been watching the trend in the control room on our plant status walkdowns and noted that the trend appeared to be increasing, and we asked the licensee to evaluate the data and let us know if we were correct). During our recent discussions of containment cooler standpipe leakage data with the licensee we questioned whether the containment cooler standpipe leakage trend was an upward trend in the last two months—originally the licensee did not think there was a trend. The licensee documented CR 106763 today for both of these issues (please see attached) and engineering is recommending a containment entry at least by the next scheduled entry (in two weeks) to do additional looks for leakage.

- =7 Day LCOs: [UPDATE] At 1325 on August 27, 2016, the station was performing control room envelope pressurization testing and identified that with the 'B' train of the control room emergency ventilation system (CREVS) aligned in the control room ventilation isolation signal (CRVIS) lineup the control room envelope could only be pressurized to a maximum of 0.17 inches of water—the TS limit is 0.25 inches of water. At 1325 on August 27, 2016, the station entered TS 3.7.10, a 7 day action statement. The 'A' train CREVS had been tested on August 26, 2016, in the CRVIS lineup and the control room envelope was pressurized to 0.3471 inches water, so the station had

confidence that the control room envelope is operable—another confirmatory test was performed and verified 'A' train CREVS operability and control room envelope operability (0.3414 inches of water on the second test). The station identified that the 'A' train control room air conditioning unit (SGK04A) discharge damper was not fully closed and was the suspected largest contributor to the 'B' train CREVS inoperability. Maintenance was completed overnight associated with the damper, and CREVS testing to restore 'B' train to operable is expected to be completed today. The residents will be following this testing today.

The station is evaluating whether or not to complete the non-safety auxiliary feedwater pump full flow test later today. If this test is performed, the TDAFW is inoperable during the test and the station would enter TS 3.7.5 (72 hour action statement).

- Other Noteworthy Work: None

- Items of Interest: During implementation of the non-safety auxiliary feedwater full flow test this morning the 'C' SBO diesel started and closed onto the SBO bus (PB005) as expected, and the 'B' SBO diesel started but did not close onto the bus. The 'B' SBO presumably failed to close due to a time out alarm, and based on previous experience the station believes the alarm can be reset and then the 'B' SBO would be expected to close onto the bus. The full flow test procedure did not have procedure steps for clearing the time out alarm and a second attempt. The residents plan to observe any additional SBO/NSAFWP testing.

- Other Inspections/Audits: None

- Significant Forecasted Weather: Thunderstorms are likely today.

- Coverage and Other Visits: Doug and Fabian are onsite and in the area. Fabian has weekend coverage.

From:	Dodson, Douglas
To:	Taylor, Nick
Cc:	Thomas, Fabian; Dodson, Douglas
Subject:	Containment Entry
Date:	Friday, September 09, 2016 7:04:46 PM

Nick,

I just wanted to give you a heads-up that I completed the initial containment entry this afternoon—I was not able to get into the RCS loop areas as we ran out of time and licensee resources for controlling the areas (currently posted as LHRAs) and because I wanted to ensure that we first got an up close look at the head and entered the reactor cavity. With respect to the canopy seal weld issue, I was able to gain reference for some of the pictures that I will ask the licensee to put on Certrec Monday from their entry yesterday. I did not see anything actively leaking in the areas of concern. Additionally, I noted that the containment coolers and drip pans did not exhibit more than very minor apparent boric acid. Finally, areas outside the loops (all elevations) and the portions of the loops that I could see from the loop boundaries did not appear to exhibit any indications of pressure boundary leakage or more-than-minor or significant packing/threaded connection/etc. RCS leakage. In general, the appearance of containment was good.

My plan is to complete a containment entry with Fabian Monday (focus on the loop areas) as plant clean-up/containment work are not expected to significantly commence until later next week.

Please let me know if you have any questions.

Thanks and have a great weekend,

Doug

From: Anchondo, Isaac
To: Proulx, David
Subject: Correction - Morning Meeting
Date: Wednesday, October 12, 2016 9:02:00 AM

Dave,

I stand corrected. I have a (b)(6) at 10AM so I won't be making it to the morning meeting. With that said, I spoke to Jay Collins just now and they are awaiting for more information from the licensee. They haven't made a decision yet but he did mentioned that the RR submittal lacks details (i.e., will they be performing additional inspections on the following outages, current inspection details, etc.)

In other hands, even though they have an understanding of what the licensee will be doing, they need the details officially provided in a written request. These are my words as I understood Jay, but he's a reviewer and is not coming as a branch position.

Thanks,

Isaac Anchondo

Reactor Inspector
U.S. Nuclear Regulatory Commission | Region IV
Division of Reactor Safety | Engineering Branch 2
(817) 200-1152

From:	Werner, Greg
To:	Taylor, Nick; Proulx, David
Cc:	Janicki, Steven; Drake, James; Anchondo, Isaac
Subject:	EB2 BC Comments
Date:	Wednesday, October 05, 2016 11:01:00 AM
Attachments:	Wolf Creek Vessel Head Nozzle Leakage 10-4-16.docx
Importance:	High

Nick and Dave,

I just had a few comments that you should consider.

Thanks,
Greg Werner

Wolf Creek Reactor Vessel Head Nozzle Leakage and Corrosion

Key Messages

- **Wolf Creek completed a technical specification (TS) required shutdown of the reactor on Friday, September 2, 2016, in order to locate and repair the source of elevated reactor coolant system leakage. The source of the leak was determined to be a leaking canopy seal weld on a core exit thermocouple penetration nozzle above the reactor vessel head.**

- **Upon initial inspection on September 19, indication of carbon steel corrosion was noted on the reactor vessel head. The corrosion appears to be limited to a small sector of the reactor vessel head and surrounding structures below the leaking penetration.**

- **Following the shut down the licensee began a planned refueling outage. The licensee moved the reactor vessel head to the inspection stand and is evaluating of the impact of the leakage and corrosion. The licensee plans to repair the leaking nozzle using an approved canopy seal clamp assembly. The NRC will continue to monitor the licensee's progress as the head is cleaned and the licensee characterizes the condition of the head, which is expected to be completed by approximately 10/10/2016.**

Facts

- The resident inspectors monitored reactor coolant system leakage throughout the operating cycle. Data indicated a steady very small leak rate (approximately 0.05 gallons per minute), that suddenly began to increase on August 31, 2016. On September 2, 2016, Wolf Creek observed RCS unidentified leakage in excess of 1.35 gallons per minute (gpm), exceeding the TS limit of 1.0 gpm. As a result, the licensee initiated a TS required shutdown on September 2, 2016. After the shutdown, the leak rate was recalculated to be approximately 0.8 gpm (something < 1 gpm).

- Following shutdown and containment entry, the source of the leak was identified as the canopy seal weld on penetration 77 above the reactor vessel head, which serves one of the core exit thermocouples. Leakage through the threaded mechanical joint serving the core exit thermocouple nozzle assembly is not considered pressure boundary leakage.

- Following the shutdown, the licensee stayed down and commenced their refueling outage, which is planned for 55 days. During this outage, the licensee plans to repair the leaking penetration by installing an approved canopy seal clamp assembly (CSCA). Previous minor leaks on mechanical joints on the reactor vessel head have been repaired with the same device. There are currently 10 CSCAs installed on vessel head nozzle assemblies. In addition to installing a CSCA on penetration nozzle 77 (the cause of this shutdown), the licensee has identified four additional susceptible penetrations (spare cap locations, which comprise 7 of the 10 currently installed CSCAs) that will have CSCAs installed during this outage to preclude future leakage.

- The reactor vessel head is the original head and is approximately 30 years old. The licensee has periodically inspected the head for leakage in accordance with their approved in-service inspection program. The last such inspection was in the sSpring 2015 refueling outage.

- The initial inspections have not identified any damage to the reactor vessel head itself, although additional cleaning activities must be completed to observe the bare metal condition of the head. These inspections are expected to be completed by approximately 10/10/2016. The licensee has, however, identified 12 penetration nozzles in the area of the leak with boric acid building around the bottom penetration interface with the head. The licensee has determined that the boric acid building cannot be definitively determined to be from the leakage from Penetration 77. As a result, the licensee intends to volumetrically examine ~~each of the 12~~11 of the affected penetrations to ensure that none of

these penetrations have active leaks. The licensee is planning to request relief from doing a volumetric inspection of Penetration 77. At this time, we do not know the basis for the pending relief request.

- A Region IV Division of Reactor Safety inspectors ~~from the Division of Reactor Safety~~ will be onsite again this week and the following 2 weeks to assist the resident inspectors in the follow up of these issues, as well as perform the scheduled ISI inspections and observe portions of the water jet peening activities on various locations of the reactor vessel.

- The licensee indicated that the additional activities associated with head cleaning, volumetric inspections, and installation of the CSCA clamps will not impact their outage schedule. Water jet peening is the critical path for this outage.

From:	Dodson, Douglas
To:	Taylor, Nick
Subject:	FW: EN52218 retraction
Date:	Friday, October 21, 2016 2:30:55 PM
Attachments:	EN52218 retraction.doc

FYI. I am guessing you already saw this and got my message.

From: Hauth Larry W [mailto:lahauth@WCNOC.com]
Sent: Friday, October 21, 2016 10:10 AM
To: Hoc, HOO X <HOO.Hoc@nrc.gov>
Cc: Lane Roger L <rolane@WCNOC.com>; Dodson, Douglas <Douglas.Dodson@nrc.gov>
Subject: [External_Sender] EN52218 retraction

Attached is the event notification worksheet for Wolf Creek's retraction of EN 52218 Tech Spec Required shutown.

APF 26A-001-03 Rev. 02

NRC FORM 361
(12-2000)

U.S. NUCLEAR REGULATORY COMMISSION
OPERATIONS CENTER

REACTOR PLANT
EVENT NOTIFICATION WORKSHEET

EN # 52218

NRC OPERATION TELEPHONE NUMBER: PRIMARY – 301-816-5100 OR 800-532-3469*, BACKUPS – (1ST) 301-951-0550 OR 800-449-3694*
(2ND) 301-415-0550 AND (3RD) 301-415-0553 *Licensees who maintain their own ETS are provided these telephone numbers.

NOTIFICATION TIME	FACILITY OR ORGANIZATION	UNIT	NAME OF CALLER	CALL BACK #
09/02/2016 11:29 [ET]	WOLF CREEK	1	LARRY HAUTH	620-364-8831 x4802

EVENT TIME & ZONE	EVENT DATE	POWER / MODE BEFORE	POWER / MODE AFTER
08:08 [CDT]	09/02/2016	100% / POWER OPERATION	0% / HOT STANDBY

EVENT CLASSIFICATIONS			1-Hr. Non-Emergency 10 CFR 50.72(b)(1)					(v)(A) Safe S/D Capability	AINA
	GENERAL EMERGENCY	GEN/AAEC			TS Deviation	ADEV		(v)(B) RHR Capability	AINB
	SITE AREA EMERGENCY	SIT/AAEC	4-Hr. Non-Emergency 10 CFR 50.72(b)(2)					(v)(C) Control of Rad Release	AINC
	ALERT	ALE/AAEC	X	(i)	TS Required S/D	ASHU		(v)(D) Accident Mitigation	AIND
	UNUSUAL EVENT	UNU/AAEC		(iv)(A)	ECCS Discharge to RCS	ACCS		(xii) Offsite Medical	AMED
	50.72 NON-EMERGENCY	(see next column)		(iv)(B)	RPS Actuation (scram)	ARPS		(xiii) Loss Comm/Asmt/Resp	ACOM
	PHYSICAL SECURITY (73.71)	DDDD		(xi)	Offsite Notification	APRE		**60-Day Optional 10 CFR 50.73(a)(1)**	
	MATERIAL/EXPOSURE	B???	8-Hr. Non-Emergency 10 CFR 50.72(b)(3)					Invalid Specified System Actuation	AINV
	FITNESS FOR DUTY	HFIT		(ii)(A)	Degraded Condition	ADEG	**Other Unspecified Requirement (Identify)**		
	OTHER UNSPECIFIED REQMT	(see last column)		(ii)(B)	Unanalyzed Condition	AUNA			NONR
	INFORMATION ONLY	NINF		(iv)(A)	Specified System Actuation	AESF			NONR

DESCRIPTION

Include: Systems affected, actuations and their initiating signals, causes, effect of event on plant, actions taken or planned, etc (Continue on back)

TECHNICAL SPECIFICATION REQUIRED SHUTDOWN

"While operating in MODE 1 at 100 percent rated thermal power and placing Excess Letdown in service for Reactor Coolant System (RCS) leak detection, RCS operational leakage exceeded 1 gpm [gallon per minute] unidentified leakage as identified by performing RCS Water Inventory Balance using the Nuclear Plant Information System Computer. This required the entry into Technical Specification (TS) Limiting Condition of Operation (LCO) 3.4.13 Condition B at 0808 [CDT] on 9/2/16. The associated action is to place the unit into Mode 3 in 6 hours. Trending of containment sump level indicates the leakage is inside containment with the exact location within containment unknown. Containment inspection is being performed to try and identify the source of Reactor Coolant System leakage. NRC Resident Inspector has been notified. Re-alignment of the Letdown System back to its normal arrangement has subsequently reduced RCS leak rate to 0.521 gpm at 0652 CDT on 9/2/16.

"Unusual or Not Understood - Leak Location is not known at this time."

Maximum leak rate recorded was 1.358 gpm. The leak was first discovered at 08/31/16 at 1519 CDT.
Safety Related Equipment not operational - Reactor Vessel Level Indicating System (TS 3.3.3).

NOTIFICATIONS	YES	NO	WILL BE
NRC RESIDENT	X		
STATE(s)		X	
LOCAL		X	
OTHER GOV AGENCIES		X	
MEDIA/PRESS RELEASE		X	

ANYTHING UNUSUAL OR NOT UNDERSTOOD?
☒ YES (explain above) ☐ NO

DID ALL SYSTEMS FUNCTION AS REQUIRED?
☒ YES ☐ NO (explain above)

MODE OF OPERATION UNTIL CORRECTED: 3

ESTIMATED RESTART DATE: N/A

ADDITIONAL INFO ON BACK? ☒ YES ☐ NO

RADIOLOGICAL RELEASES: **CHECK OR FILL IN APPLICABLE ITEMS** ***(specific details/explanations should be covered in event description).***

	LIQUID RELEASE		GASEOUS RELEASE		UNPLANNED RELEASE		PLANNED RELEASE		ONGOING		TERMINATED
	MONITORED		UNMONITORED		OFFSITE RELEASE		T.S. EXCEEDED		PM ALARMS		AREAS EVACUATED
	PERSONNEL EXPOSED OR CONTAMINATED				OFFSITE PROTECTIVE ACTIONS RECOMMENDED				* State release path in description		

	Release Rate (Ci/sec)	% T.S. LIMIT	HOO GUIDE	Total Activity (Ci)	% T.S. LIMIT	HOO GUIDE
Noble Gas			**0.1 Ci/sec**			**1000 Ci**
Iodine			**10 uCi/sec**			**0.01 Ci**
Particulate			**1 uCi/sec**			**1 mCi**
Liquid (*excluding tritium and dissolved noble gases*)			**10 uCi/min**			**0.1 Ci**
Liquid (tritium)			**0.2 Ci/min**			**5 Ci**
Total Activity						

	PLANT STACK	CONDENSER/AIR EJECTOR	MAIN STEAM LINE	SG BLOWDOWN	OTHER
RAD MONITOR READINGS					
ALARM SETPOINTS					
% T.S. LIMIT (*if applicable*)					

RCS OR SG TUBE LEAKS: **CHECK OR FILL IN APPLICABLE ITEMS:** ***(specific details/explanations should be covered in event description)***

LOCATION OF THE LEAK (*e.g., SG #, valve, pipe, etc*)

LEAK RATE	UNITS: gpm/gpd	T.S. LIMITS	SUDDEN OR LONG-TERM DEVELOPMENT

LEAK START DATE	TIME	COOLANT ACTIVITY AND UNITS:	PRIMARY	SECONDARY

LIST OF SAFETY RELATED EQUIPMENT NOT OPERATIONAL

EVENT DESCRIPTION (*Continued from front*)

* * * EVENT RETRACTED ON 10/21/16 AT 11:01 EDT FROM LARRY HAUTH TO JEFF HERRERA

Wolf Creek Nuclear Operating Corporation is retracting the 10 CFR 50.72(b)(2)(i) notification based on subsequent review of the event. The calculation of unidentified leak rate which triggered entry into the Mode 3 Required Action Statement was performed immediately after placing RCS Excess Letdown in service. An evaluation of the leak rate calculation determined that the leak rate was invalid due to performance of the RCS water inventory balance during non-steady state operating conditions. This was contrary to the requirements of TS Surveillance Requirement 3.4.13.1, as this test was performed while charging and letdown flows were being stabilized following the alignment of excess letdown. A walk down of the Excess Letdown system while inservice determined no leakage. Subsequent RCS water inventory balances performed with Excess Letdown in service under steady state operating conditions while in Mode 3 at normal operating pressure and temperature determined the maximum calculated unidentified leak rate was 0.675 gpm.

After the plant entered Mode 3 a non-RCS pressure boundary leak was identified during equipment walk downs on a seal weld from the reactor vessel head core exit thermocouple nozzle assembly 77.

The leakage did not impact the ability to shut down the unit. No TS limits were exceeded during this event.

Therefore, the plant shutdown to investigate and correct leakage past the seal weld of a threaded connection does not meet the reporting requirements of 10 CFR 50.72.

The NRC Resident Inspector has been notified.

From:	Warnick, Greg
To:	Taylor, Nick; Thomas, Fabian
Cc:	Pruett, Troy; Vegel, Anton; Proulx, David; Henderson, Christopher; Langelier, Michael
Subject:	FW: Event Notice: 09/02/2016
Date:	Friday, September 02, 2016 11:32:01 AM
Attachments:	Events.pdf

FYI

-----Original Message-----
From: Hoc, HOO X
Sent: Friday, September 02, 2016 11:28 AM
To: Hoc, HOO X <HOO.Hoc@nrc.gov>
Subject: Event Notice: 09/02/2016

EN 52218 - Wolf Creek TS Required Shutdown due to unidentified RCS leakage.

Headquarters Operations Officer
U.S. Nuclear Regulatory Commission
Phone: 301-816-5100
Fax: 301-816-5151
email: hoo.hoc@nrc.gov
secure e-mail: (b)(6)

Power Reactor Event # 52218

Site: WOLF CREEK **Notification Date / Time:** 09/02/2016 11:29 (EDT)
Unit: 1 **Region:** 4 **State :** KS **Event Date / Time:** 09/02/2016 08:08 (CDT)
Reactor Type: [1] W-4-LP **Last Modification:** 09/02/2016
Containment Type: DRY AMB

NRC Notified by: LARRY HAUTH **Notifications:** GREG WARNICK R4DO
HQ Ops Officer: STEVEN VITTO
Emergency Class: NON EMERGENCY
10 CFR Section:
50.72(b)(2)(i) PLANT S/D REQD BY TS

Unit	Scram Code	RX Crit	Init Power	Initial RX Mode	Curr Power	Current RX Mode
1	N	Yes	100	Power Operation	0	Hot Standby

!!! This is a draft document, do not release to the public !!!

TECHNICAL SPECIFICATION REQUIRED SHUTDOWN

"While operating in MODE 1 at 100 percent rated thermal power and placing Excess Letdown in service for Reactor Coolant System (RCS) leak detection, RCS operational leakage exceeded 1 gpm [gallon per minute] unidentified leakage as identified by performing RCS Water Inventory Balance using the Nuclear Plant Information System Computer. This required the entry into Technical Specification (TS) Limiting Condition of Operation (LCO) 3.4.13 Condition B at 0808 [CDT] on 9/2/16. The associated action is to place the unit into Mode 3 in 6 hours. Trending of containment sump level indicates the leakage is inside containment with the exact location within containment unknown. Containment inspection is being performed to try and identify the source of Reactor Coolant System leakage. NRC Resident Inspector has been notified. Re-alignment of the Letdown System back to its normal arrangement has subsequently reduced RCS leak rate to 0.521 gpm at 0652 CDT on 9/2/16.

"Unusual or Not Understood - Leak Location is not known at this time."

Maximum leak rate recorded was 1.358 gpm. The leak was first discovered at 08/31/16 at 1519 CDT.
Safety Related Equipment not operational - Reactor Vessel Level Indicating System (TS 3.3.3).

****

From:	Drake, James
To:	Anchondo, Isaac; Werner, Greg; Kopriva, Ron; Graves, Samuel
Subject:	FW: HAVE YOU HEARD ANY DETAILS On THIS JEFF???
Date:	Monday, September 12, 2016 7:41:18 AM

FYI

From: Alley, David
Sent: Thursday, September 08, 2016 7:17 PM
To: Butcavage, Alexander <Alexander.Butcavage@nrc.gov>; Poehler, Jeffrey <Jeffrey.Poehler@nrc.gov>
Cc: Walker, Shakur <Shakur.Walker@nrc.gov>; Drake, James <James.Drake@nrc.gov>
Subject: RE: HAVE YOU HEARD ANY DETAILS On THIS JEFF???

Al,
Right now we at headquarters are taking a step back to make sure we are supporting region IV rather than horning in.

I have copied Jim Drake on this email as he is the one from whom I have been getting most of my information.

Given that this has now become part of the refueling outage, I suspect that additional info will be slow in coming for at least a few days.

One comment from Jim was that the leak rate from this one is much higher than what he has seen in the past. Could be interesting in that it may be necessary to consider (or maybe demonstrate) the integrity of the threaded connection which forms the pressure boundary.

If we want to do something for the MECC call – which I support – I would favor Region IV take the lead.

Dave

From: Butcavage, Alexander
Sent: Thursday, September 08, 2016 2:33 PM
To: Poehler, Jeffrey <Jeffrey.Poehler@nrc.gov>
Cc: Alley, David <David.Alley@nrc.gov>; Walker, Shakur <Shakur.Walker@nrc.gov>
Subject: RE: HAVE YOU HEARD ANY DETAILS On THIS JEFF???

Thanks Jeff and Dave....

Sounds like it's the latch assembly to the CRDM adapter joint.... Or.... travel housing cap weld to the travel housing itself.... if correct weld nomenclature is being used....(Canopy seal)

Wonder if any RCS fluid got down into annulus space???? Or...did it evaporate as it happened?

The seal weld areas are ones I find that site people sometimes tend to move by quickly.... as in some

cases, it is extremely difficult to get to….and not a hospitable environment.

It is one of my favorite areas to do a sample spot check during Boric Acid walk-downs….if scaffolding is in place and available.

Will Headquarters put some OE out on the issue or perhaps a topic for the MEC call on 21 Sept???

Would be interesting to see how much BA was found and what amount of leakage was showing up in the RCS leakage calcs in the Control Room logs…and …if in fact that is how they got to this leak????

Or……was it just…. we looked everywhere else and there was nothing found??? In other words, this was the look location of last resort??

I often wondered if the leak monitoring programs for RCS leakage are sensitive enough to make them think about leakage from welds on the upper or lower head area….(which is probably the last place anyone wants to look…and usually cannot do during the run although from my travels, I suspect that some lower head areas appear to be accessible by remote crawler camera)…. and what amount of leakage form a pin hole in the seal weld or other type on the lower head would it take to show up in the Control room leakage monitoring logs assuming there are no active fuel leaks ??

Also…was it 10 furmanite clamps or other???? AND, what type evals were done for impact of weight of clamps on exiting components and support structures?

My apologies if I am jumping the process gun here…I have 2 ISI's coming up in Oct. that include the Boric Acid walk-down and at least one CRDM UT inspection at (Harris)

Again…. Thanks for the feedback…..AL

From: Poehler, Jeffrey
Sent: Thursday, September 08, 2016 1:10 PM
To: Alley, David <David.Alley@nrc.gov>; Butcavage, Alexander <Alexander.Butcavage@nrc.gov>
Cc: Collins, Jay <Jay.Collins@nrc.gov>
Subject: RE: HAVE YOU HEARD ANY DETAILS On THIS JEFF???

Thanks,

Jeff

From: Alley, David
Sent: Thursday, September 08, 2016 1:05 PM
To: Poehler, Jeffrey <Jeffrey.Poehler@nrc.gov>; Butcavage, Alexander <Alexander.Butcavage@nrc.gov>
Cc: Collins, Jay <Jay.Collins@nrc.gov>

Subject: RE: HAVE YOU HEARD ANY DETAILS On THIS JEFF???

I am pretty sure I started on a response to this yesterday and didn't get it sent.

Leak is in a canopy seal weld. Pressure boundary is a threaded joint. Weld is just for leak tightness. Weld is stainless to stainless using stainless filler. Wolf Creek was going to go into an outage in a couple weeks. They just are starting the outage early. Initial thoughts are to use a mechanical clamp but region IV will be looking into that approach. They apparently have something like 10 mechanical clamps already installed.

Dave

From: Poehler, Jeffrey
Sent: Wednesday, September 07, 2016 2:09 PM
To: Butcavage, Alexander <Alexander.Butcavage@nrc.gov>
Cc: Collins, Jay <Jay.Collins@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Subject: RE: HAVE YOU HEARD ANY DETAILS On THIS JEFF???

No, I had not. Copied folks from the branch that handles upper head penetrations.

Jeff

From: Butcavage, Alexander
Sent: Wednesday, September 07, 2016 1:09 PM
To: Poehler, Jeffrey <Jeffrey.Poehler@nrc.gov>
Subject: HAVE YOU HEARD ANY DETAILS On THIS JEFF???

NRC Says Wolf Creek Leak Caused By Reactor Vessel Head Penetration Nozzle Issue.

WIBW-TV Topeka, KS (9/6, Palmer, 78K) reported on its website that NRC Public Affairs Officer Victor Dricks "told 13 NEWS the leak was not caused by a bad weld as some reports have indicated. Dricks said 'The leak was in a penetration nozzle at the top of the reactor vessel.'" But the issue was not related to the weekend earthquake affecting seven states, nor did any radiation escape the facility from the water leak. "On a related topic, Wolf Creek officials are meeting with Nuclear Regulatory officials in Arlington, Texas On Sept. 21 to discuss what they called, '...an apparent violation in maintaining emergency diesel generators at the plant.'" Officials "said that a generator failed 3 hours into a 24-hour run due to a faulty electrical component, however, there was no danger, because other means were available to supply emergency power to the plant if needed." The Texas meeting will determine whether additional inspections and oversight are needed.

From:	Werner, Greg
To:	Drake, James; Anchondo, Isaac
Subject:	FW: Relief request coming from Wolf Creek
Date:	Wednesday, October 05, 2016 10:41:57 AM
Attachments:	image001.png

FYI

From: Taylor, Nick
Sent: Wednesday, October 05, 2016 10:22 AM
To: Singal, Balwant <Balwant.Singal@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Cc: Proulx, David <David.Proulx@nrc.gov>; Janicki, Steven <Steven.Janicki@nrc.gov>; Pruett, Troy <Troy.Pruett@nrc.gov>; Clark, Jeff <Jeff.Clark@nrc.gov>
Subject: Relief request coming from Wolf Creek

All,

I just got off the phone with the reg affairs manager at Wolf Creek (Cindy Hafenstine). She was calling to correct one thing they told us yesterday. They have apparently decided to request relief from performing the volumetric inspection on Penetration 77 only (not all 12). She did not know the basis for the request, nor did she know when they would be ready to submit the request. This was an early heads up that it is coming.

I'll share any information I receive on this as soon as I get it.

Thanks,

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects
USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

From:	Dodson, Douglas
To:	Taylor, Nick
Cc:	Proulx, David; Kopriva, Ron; Thomas, Fabian
Subject:	FW: WC HP Printer Install
Date:	Friday, October 14, 2016 10:29:52 AM
Attachments:	[Untitled].pdf

Nick,

This is an update on the pictures that were previously placed on Certrec and contained images of two CRDM lifting lugs with wastage around the base of the visible portions of the lifting lugs. Attached is a representative image of the pressure boundary associated with the CRDM. The blue "vent plug" is torqued to 25 ft-lbs, and the vent plug creates a seal at the bottom portion of the blue plug. The lifting lug, which is not shown in the attached image, would be installed directly above the "vent plug," but the lifting lug serves no pressure boundary function.

Engineering is proposing (the proposal has not yet been accepted by the outage scope addition group) to remove the lifting lugs that exhibited wastage and inspect the associated "vent plugs" to determine if they were adequately torqued and/or are degraded, and replace as necessary. Engineering is also proposing to remove the other 51 CRDM lifting lugs and ensure "vent plugs" are adequately torqued and show no signs of leakage (without removing the "vent plugs").

Engineering informed me that there is some Watts Barr 1 operating experience associated with one of these "vent plugs" coming loose and resulting in a dropped rod and subsequent shutdown.

Please let me know if you have any questions.

Thanks,

Doug

-----Original Message-----
From: WC HP [mailto:WC.HP@nrc.gov]
Sent: Friday, October 14, 2016 9:43 AM
To: Dodson, Douglas <Douglas.Dodson@nrc.gov>
Subject: WC HP Printer Install

Please open the attached document. This document was digitally sent to you using an HP Digital Sending device.

From:	Dodson, Douglas
To:	Taylor, Nick
Subject:	FW: WC HP Printer Install
Date:	Tuesday, October 04, 2016 1:44:00 PM
Attachments:	[Untitled].pdf

Nick,

Attached is the work order associated with the stud and nut that failed inspection. The WO includes language from the CR and operability screening, but it did not appear to provide any substantial new information. I thought I would provide it in the spirit of information sharing for those interested.

I have also requested pictures or an in-person look at the stud and nut that are described.

I will keep you updated.

Doug

-----Original Message-----
From: WC HP [mailto:WC.HP@nrc.gov]
Sent: Tuesday, October 04, 2016 1:36 PM
To: Dodson, Douglas <Douglas.Dodson@nrc.gov>
Subject: WC HP Printer Install

Please open the attached document. This document was digitally sent to you using an HP Digital Sending device.

WOLF CREEK NUCLEAR OPERATING CORPORATION

WO # 16-418198-000

Date Required :
Action Code : EN ENGINEERING EVALUATION
WR # : 16-118471 **CCD:**
Requester/Ext : SCHWINGHAMER, F W / 00107838 / 4474

Late Date : N/A
Mode Restraint : TO BE DETERMINED
Date Generated : 10/04/2016
Priority : 2C79

Asset : RBB01

Asset Desc : REACTOR VESSEL
System : BB **Asset Safety Class** : SR
Asset Location : 2201 GENERAL FLOOR AREA -231 RX BLDG ELEV 1998-6 AREA 1
FID : 1 **SPV** : N

EQ Harsh :

Governing Code: **Code Class:** **Program:** **R/R Plan** :

Work Description : **Work Safety Class** : SR

ESC #61 - Reactor stud and Nut failed QC inspection During reactor vessel stud cleaning stud 30 and nut 39 failed the QC inspection. This will need to be evaluated by the engineer.

Assigned Planner : ENGINEERING, ROOM 210

Equipment Operable Re-Evaluation
Equipment Operable(Y/N) _____

Ref:_____
Time Limit:_____

Permission To Start:

_____/_____

_____/_____

Supplemental Work Activity:
Is work activity being performed by Supplemental Worker(s) (e.g. Non WCNOC Employee)?
Yes _____ **No** _____ **If, answered No, then N/A the next two steps.**

IF Yes,
THEN is work activity a qualified task in accordance with WCNOC Training Program?
Yes _____ **No** _____ **N/A** _____ **If, answered Yes, then N/A the next step.**

IF No (not a qualified task),
THEN the Responsible Work Group Supervisor SHALL ensure that the appropriate verifications are identified within the Work Order in accordance with AI 16C-007 Work Order Planning and approve proceeding with this work activity:

_____
Responsible Work Group Supervisor

WOLF CREEK NUCLEAR OPERATING CORPORATION

WO # 16-418198-000

FORMS - APF 22C-008-01 SHEET

Documents Verified latest revision and changes included: _____/_____

WOLF CREEK NUCLEAR OPERATING CORPORATION

WO # 16-418198-000

Step : 1 **Craft :** ENG **Crew :** **Est Persons :** 1 **Est Hrs :** 1.00

Actl Persons : ____ **Actl Hrs :** _____

Work Instructions

Reactor stud and Nut failed QC inspection During reactor vessel stud cleaning stud 30 and nut 39 failed the QC inspection. This will need to be evaluated by the engineer.

WOLF CREEK NUCLEAR OPERATING CORPORATION

WO # 16-418198-000

M&TE No.	Cal Due Date	Range/Scale	M&TE No.	Cal Due Date	Range/Scale

As Found Condition:

Cause of Failure

Work Summary

WOLF CREEK NUCLEAR OPERATING CORPORATION

WO # 16-418198-000

Worker(s) Printed Name:	Worker(s) Signature:	Sig Init:	Date:

Work Completion Date: _____

SM/SE/SFT Notified: _____

Work Group Supervisor : _____

Feedback

Work Order Planning (pick 1):

O 1 - This is a "quality" Work Order

O 2 - Clarification Required

O 3 - Enhancements Suggested

O 4 - Changes Required to Complete the Work

If 2, 3 or 4 are selected, describe what would need to be improved for this to be a "quality" Work Order:

_____

_____

_____ /

Initial and Date

WOLF CREEK NUCLEAR OPERATING CORPORATION

WO # 16-418198-000

Notes

Subject: OPERABILITY **Entered By:** SHAFE **Date:** 10/03/2016

What is the defect/degraded nonconforming condition?

During reactor vessel stud cleaning stud 30 and nut 39 failed the QC inspection.

What SSC is affected by the deficiency?

Reactor Vessel RBB01

What is the design/safety function of the affected SSC?

USAR Section 5.3.3:

The reactor vessel is cylindrical with a welded hemispherical bottom head and a removable, bolted, flanged, and gasketed hemispherical upper head. The reactor vessel flange and head are sealed by two hollow metallic 0-rings. Seal leakage is detected by means of two leakoff connections: one between the inner and outer ring and one outside the outer 0-ring. The vessel contains the core, core support structures, control rods, and other parts directly associated with the core. The reactor vessel closure head contains head adapters. These head adapters are tubular members, attached by partial penetration welds to the

underside of the closure head. The upper end of these adapters contains Acme threads for the assembly of control rod drive mechanisms or instrumentation adapters. The seal arrangement at the upper end of these adapters consists of a welded flexible canopy seal. Inlet and outlet nozzles are located symmetrically around the vessel. Outlet nozzles are arranged on the vessel to facilitate optimum layout of the RCS equipment. The inlet nozzles are tapered from the coolant loop vessel interfaces to the vessel inside wall to reduce loop pressure drop.

The bottom head of the vessel contains penetration nozzles for connection and entry of the nuclear incore instrumentation. Each nozzle consists of a tubular member made of either an Inconel or an Inconel-stainless steel composite tube. Each tube is attached to the inside of the bottom head by a partial penetration weld.

Internal surfaces of the vessel which are in contact with primary coolant are

weld overlay with 0.125 inch minimum of stainless steel or Inconel.

The reactor vessel is designed and fab

Subject: OPERABILITY **Entered By:**SHAFE **Date:** 10/03/2016

ricated in accordance with the requirements of the ASME Code, Section III. Principal design parameters of the reactor vessel are given in Table 5.3-2. The reactor vessel is shown in Figure 5.3-1.

What effect/or potential effect does the deficiency have on the affected SSC?s ability to perform its intended design/safety function?

The SSC?s is functional because:

With Stud 30 and Nut 39 failing QC inspection, the Reactor Vessel is INOPERABLE and this condition needs to be evaluated by Engineering for a plan to resolve the issue.

Extent of condition? Where does this condition exist?

Inspection of RV studs and nuts is ongoing and will identify any further deficiencies.

References?

USAR 5.3.3

Subject: RESOLUTION **Entered By:**DAGIEFE1 **Date:** 10/04/2016

RV Stud #30 should be replaced with a spare stud in the warehouse (SR90451141) -

four(4) are available in the warehouse at locations B2110701B and B2110802A. Only one is needed to be moved and placed in the rack currently holding RV Stud #30. The new stud will need to have the number 30 for identification.

RV Nut #39 should be replaced with a spare nut in the warehouse (SR90450362) at location B6130203B. One nut needs to be moved from the warehouse and placed onto RV stud #39. The new nut will need to have the number 39 for identification.

The RV Stud #30 and RV Nut #39 that did not pass inspection should be moved to a storage location. Both items have been cleaned and can be refurbished for later use in the RV, if needed.

[NOTE: There is a ISI Calibration RV nut currently in storage in the locked area of the New Radwaste Building. This is not to be mistakenly used as a replacement nut for the Reactor vessel. It contains calibration slots that are not easily seen.]

Subject: Supervisor Review **Entered By:**CAGARCI **Date:** 10/04/2016

Spare parts are available. Approved.

WOLF CREEK NUCLEAR OPERATING CORPORATION

WO # 16-418198-000

Tool List

Tool Description	Request Number	Tool No	Qty	Tool Room	Row/Bin

*** * * End of Report (1849152) * * ***

From:	Dodson, Douglas
To:	Taylor, Nick
Cc:	Proulx, David; Thomas, Fabian; Kopriva, Ron
Subject:	FW: WC HP Printer Install
Date:	Friday, October 14, 2016 10:32:39 AM
Attachments:	[Untitled].pdf

Nick,

As discussed, attached is yesterday's site update (so it is slightly out of date), which specifically discusses some of the ongoing head work.

Please let me know if you have any questions.

Thanks,

Doug

-----Original Message-----
From: WC HP [mailto:WC.HP@nrc.gov]
Sent: Friday, October 14, 2016 9:43 AM
To: Dodson, Douglas <Douglas.Dodson@nrc.gov>
Subject: WC HP Printer Install

Please open the attached document. This document was digitally sent to you using an HP Digital Sending device.

From:	Drake, James
To:	Taylor, Nick; Proulx, David; Werner, Greg; Dodson, Douglas; Thomas, Fabian
Cc:	Pick, Greg; Anchondo, Isaac
Subject:	FW: Wolf creek - WCNOC response to verbal RAI for relief request 14R-03 (CAC No. MF8456)
Date:	Thursday, October 20, 2016 2:39:37 PM

Are you available for a call?

Jim

From: Alley, David
Sent: Thursday, October 20, 2016 2:37 PM
To: Drake, James <James.Drake@nrc.gov>
Subject: FW: Wolf creek - WCNOC response to verbal RAI for relief request 14R-03 (CAC No. MF8456)

From: Alley, David
Sent: Thursday, October 20, 2016 3:36 PM
To: Collins, Jay <Jay.Collins@nrc.gov>; Lingam, Siva <Siva.Lingam@nrc.gov>
Cc: Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>; Singal, Balwant <Balwant.Singal@nrc.gov>
Subject: RE: Wolf creek - WCNOC response to verbal RAI for relief request 14R-03 (CAC No. MF8456)

Paragraph 3 of section "Evaluation of Vessel Closure Head Visual Examination Results" says "There were relevant conditions in close proximity to many nozzles". Based on definitions in the code case this puts all those nozzles in need of inspection. Given that they say "in close proximity" indicates to me that they may not understand "relevant condition" as if there is a gap between the annulus and the "problem" in my mind the problem may not be evidence of leakage and, therefore, not relevant.

Based on what they have said, I agree with Jay that at least an internal call is needed.

Dave

From: Collins, Jay
Sent: Thursday, October 20, 2016 3:18 PM
To: Lingam, Siva <Siva.Lingam@nrc.gov>
Cc: Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>; Singal, Balwant <Balwant.Singal@nrc.gov>
Subject: RE: Wolf creek - WCNOC response to verbal RAI for relief request 14R-03 (CAC No. MF8456)

Greetings,

In my opinion, this is completely inadequate to address the question. If the annuluses of these

nozzles are not clear of boric acid or corrosion product, regardless of how the inspector thought it got there, then the nozzle has a relevant condition of possible nozzle leakage. Per N-729-1, supplemental examinations are required under -3200(b). I request at least an internal phone call this afternoon.

Jay

-3142.2 Acceptance by Supplemental Examination.
A nozzle with relevant conditions indicative of possible nozzle leakage shall be acceptable for continued service if the results of supplemental examinations [-3200(b)] meet the requirements of -3130.

-3141 General
(c) Relevant conditions for the purposes of the VE shall include areas of corrosion, boric acid deposits, discoloration, and other evidence of nozzle leakage.

From: Lingam, Siva
Sent: Thursday, October 20, 2016 2:55 PM
To: Collins, Jay <Jay.Collins@nrc.gov>
Cc: Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Singal, Balwant <Balwant.Singal@nrc.gov>
Subject: Wolf creek - WCNOC response to verbal RAI for relief request 14R-03 (CAC No. MF8456)

Attached please find the licensee's response for nozzles with boric acid (other than 12 nozzles) for your review/evaluation for RR 14R-03..

From: Stone Lucille M [mailto:lurocke@WCNOC.com]
Sent: Thursday, October 20, 2016 2:33 PM
To: Lingam, Siva <Siva.Lingam@nrc.gov>
Subject: [External_Sender] FW: WCNOC response to verbal RAI for relief request 14R-03

From: Stone Lucille M
Sent: Thursday, October 20, 2016 1:27 PM
To: 'balwant.singal@nrc.gov'; 'nick.taylor@nrc.gov'; 'ron.kopriva@nrc.gov'
Subject: WCNOC response to verbal RAI for relief request 14R-03

All,

Here is electronic copy. Hard copies in the mail.

Lu Stone
WCNOC Licensing

From:	Drake, James
To:	Kopriva, Ron
Cc:	Werner, Greg; Anchondo, Isaac A; Alley, David
Subject:	Fw: Wolf Creek Leakage Update
Date:	Saturday, September 03, 2016 7:46:02 AM
Attachments:	5459.avi

Ron,

Heads up this may impact the refuel outage.

I will keep you posted.

Enjoy the holiday.

Jim

James F. Drake
Email: James.Drake@nrc.gov
Office phone:817-276-6558
Cell phone:(b)(6)

From: Henderson, Christopher
Sent: Saturday, September 3, 2016 12:28 AM
To: Taylor, Nick
Cc: Proulx, David; Thomas, Fabian; Drake, James
Subject: Wolf Creek Leakage Update

Nick

Prior to depart the site for the night Wolf Creek identified leakage in the canopy area of the CRD. Video 5459.avi provides a prospect of the leak location on the CRD on penetration 77. Additionally, the station was preparing to place excessive letdown into service to valid if there is leakage from the system into containment. The station sample the CCW and the results were less than minimum detectable activity. Also, all temperature and pressure parameters where within normal operational values. This provides assures there is no inter-system leakage occurring. The station was in the process evaluate the results obtain from the QC post transient walkdowns to determine if leakage in the canopy area of the CRD area is pressure boundary leakage and confirm whether or not there is leakage for the excessive letdown system. The station was continue with the TS shutdown to Mode 5, if the station determines there no pressure boundary leakage they will transation to a non-TS shutdown to Mode 5 and conduct repairs. A discussion was not made at prior to leave whether they will start the refueling outage early or conduct repairs and restart.

They should be contacting you in the morning to sent up a phone call to discuss their results with the Agency.

My current plan is to be back on site around 10:30 to 11:00 and stay as long as need on Saturday to support Fabian.

Chris

Christopher Henderson
US Nuclear Regulatory Commission
Resident Inspector
Cooper Nuclear Station
Office: 402-825-3371
Cell: (b)(6)
Pager: (b)(6)

Wolf Creek Reactor Vessel Head Nozzle Leakage and Corrosion

Key Messages

- **Wolf Creek completed a technical specification (TS) required shutdown of the reactor on Friday, September 2, 2016, in order to locate and repair the source of elevated reactor coolant system leakage. The source of the leak was determined to be a leaking canopy seal weld on a core exit thermocouple penetration nozzle above the reactor vessel head.**

- **Upon initial inspection on September 19, indication of carbon steel corrosion was noted on the reactor vessel head. The corrosion appears to be limited to a small sector of the reactor vessel head and surrounding structures below the leaking penetration.**

- **Following the shut down the licensee began a planned refueling outage. The licensee moved the reactor vessel head to the inspection stand and is evaluating of the impact of the leakage and corrosion. The licensee plans to repair the leaking nozzle using an approved canopy seal clamp assembly. The NRC will continue to monitor the licensee's progress as the head is cleaned and the licensee characterizes the condition of the head, which is expected to be completed by approximately 10/10/2016.**

Facts

- The resident inspectors monitored reactor coolant system leakage throughout the operating cycle. Data indicated a steady very small leak rate (approximately 0.05 gallons per minute), that suddenly began to increase on August 31, 2016. On September 2, 2016, Wolf Creek observed RCS unidentified leakage in excess of 1.35 gallons per minute (gpm), exceeding the TS limit of 1.0 gpm. As a result, the licensee initiated a TS required shutdown on September 2, 2016.

- Following shutdown and containment entry, the source of the leak was identified as the canopy seal weld on penetration 77 above the reactor vessel head, which serves one of the core exit thermocouples. Leakage through the threaded mechanical joint serving the core exit thermocouple nozzle assembly is not considered pressure boundary leakage.

- Following the shutdown, the licensee stayed down and commenced their refueling outage, which is planned for 55 days. During this outage, the licensee plans to repair the leaking penetration by installing an approved canopy seal clamp assembly (CSCA). Previous minor leaks on mechanical joints on the reactor vessel head have been repaired with the same device. There are currently 10 CSCAs installed on vessel head nozzle assemblies. In addition to installing a CSCA on penetration nozzle 77 (the cause of this shutdown), the licensee has identified four additional susceptible penetrations that will have CSCAs installed during this outage to preclude future leakage.

- The reactor vessel head is the original head and is approximately 30 years old. The licensee has periodically inspected the head for leakage in accordance with their approved in-service inspection program. The last such inspection was in the Spring 2015 refueling outage.

- The initial inspections have not identified any damage to the reactor vessel head itself, although additional cleaning activities must be completed to observe the bare metal condition of the head. These inspections are expected to be completed by approximately 10/10/2016. The licensee has, however, identified 12 penetration nozzles in the area of the leak with boric acid building around the bottom penetration interface with the head. The licensee has determined that the boric acid building cannot be definitively determined to be from the leakage from Penetration 77. As a result, the licensee intends to volumetrically examine each of the 12 affected penetrations to ensure that none of these penetrations have active leaks.

Contact: Nick Taylor, Chief, Reactor Projects Branch B
(817) 200-1141

November 30, 2016

- Region IV inspectors from the Division of Reactor Safety will be onsite again this week to assist the resident inspectors in the follow up of these issues, as well as perform scheduled ISI inspections.

Contact: Nick Taylor, Chief, Reactor Projects Branch B
(817) 200-1141

November 30, 2016

From:	Lingam, Siva
To:	Kopriva, Ron; Anchondo, Isaac
Cc:	Werner, Greg
Subject:	FW: Wolf Creek Relief Requests 14R-03 and 14R-04 (CAC No. MF8456)
Date:	Wednesday, October 19, 2016 2:40:05 PM
Attachments:	Volumetric Leakage Path.pptx

From: Collins, Jay
Sent: Wednesday, October 19, 2016 3:37 PM
To: Lingam, Siva <Siva.Lingam@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>
Cc: Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>
Subject: RE: Wolf Creek Relief Requests 14R-03 and 14R-04 (CAC No. MF8456)

Attached is Stephen Cumblidge's slides explaining the volumetric leak path assessment. If you have any questions please let us know.

Jay

-----Original Appointment-----
From: Lingam, Siva
Sent: Wednesday, October 19, 2016 7:44 AM
To: Lingam, Siva; Taylor, Nick; Collins, Jay; Tsao, John; Drake, James; Dodson, Douglas; Thomas, Fabian; Proulx, David
Cc: Pascarelli, Robert; Alley, David
Subject: Wolf Creek Relief Requests 14R-03 and 14R-04 (CAC No. MF8456)
When: Wednesday, October 19, 2016 12:00 PM-1:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: HQ-OWFN-10B06-12p

Please note the following to discuss the subject RRs at the request of Nick Taylor:

Bridge No.:	877-935-1422
Passcode:	(b)(6) followed by #
Date:	October 19, 2016 (Wednesday)
Time:	12:00 PM (Eastern Time)

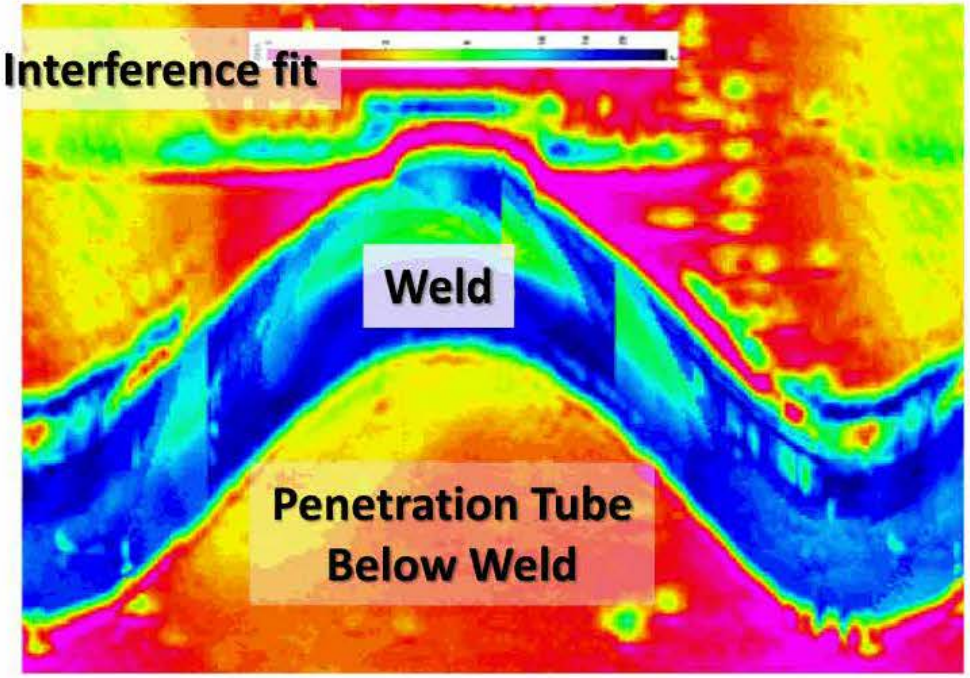
We are still waiting for the licensee's report providing justification for not inspecting the nozzle penetrations other than 12 nozzles mentioned in the subject RRs. This is what I gathered from my BC who participated in the conference call held on October 17, 2016, at 5:00 PM (Eastern).

Volumetric Leakage Path Assessment

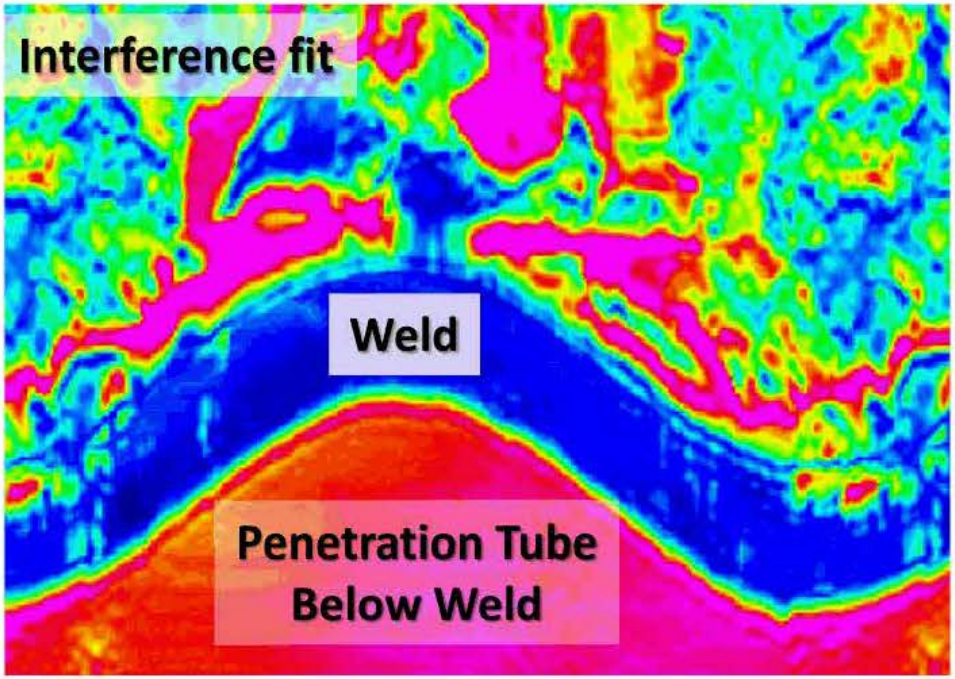
Ultrasonic inspections performed to see flaws in welds and penetration tubes need to scan above and below the weld, as the weld is not straight.

This scanning, as an unintentional byproduct, produces images from the ultrasound reflecting from the interference fit region.

It did not take long for people to figure out that leaking nozzles produced different patterns in the interference fit than non-leaking nozzles.



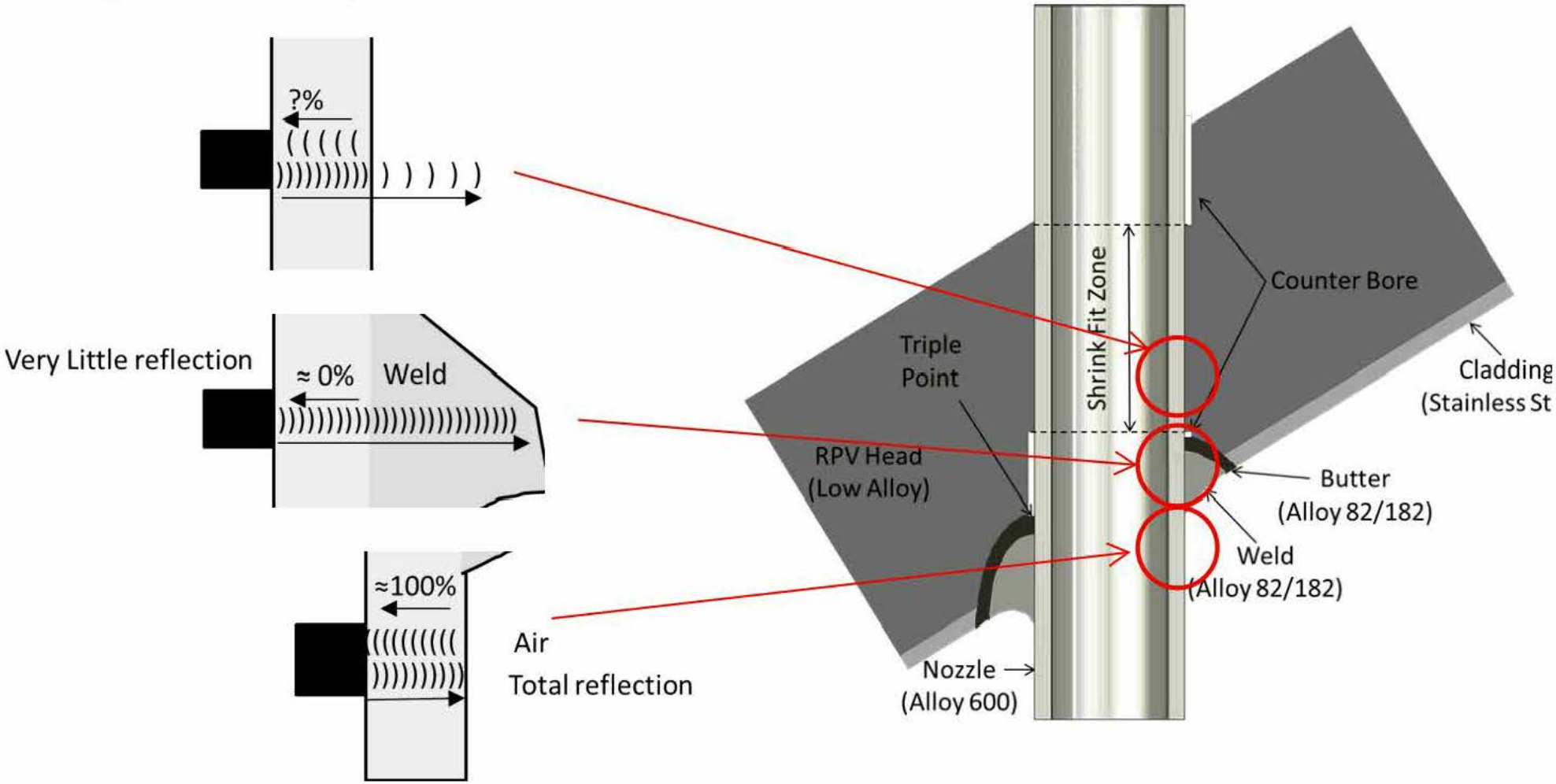
No Leak



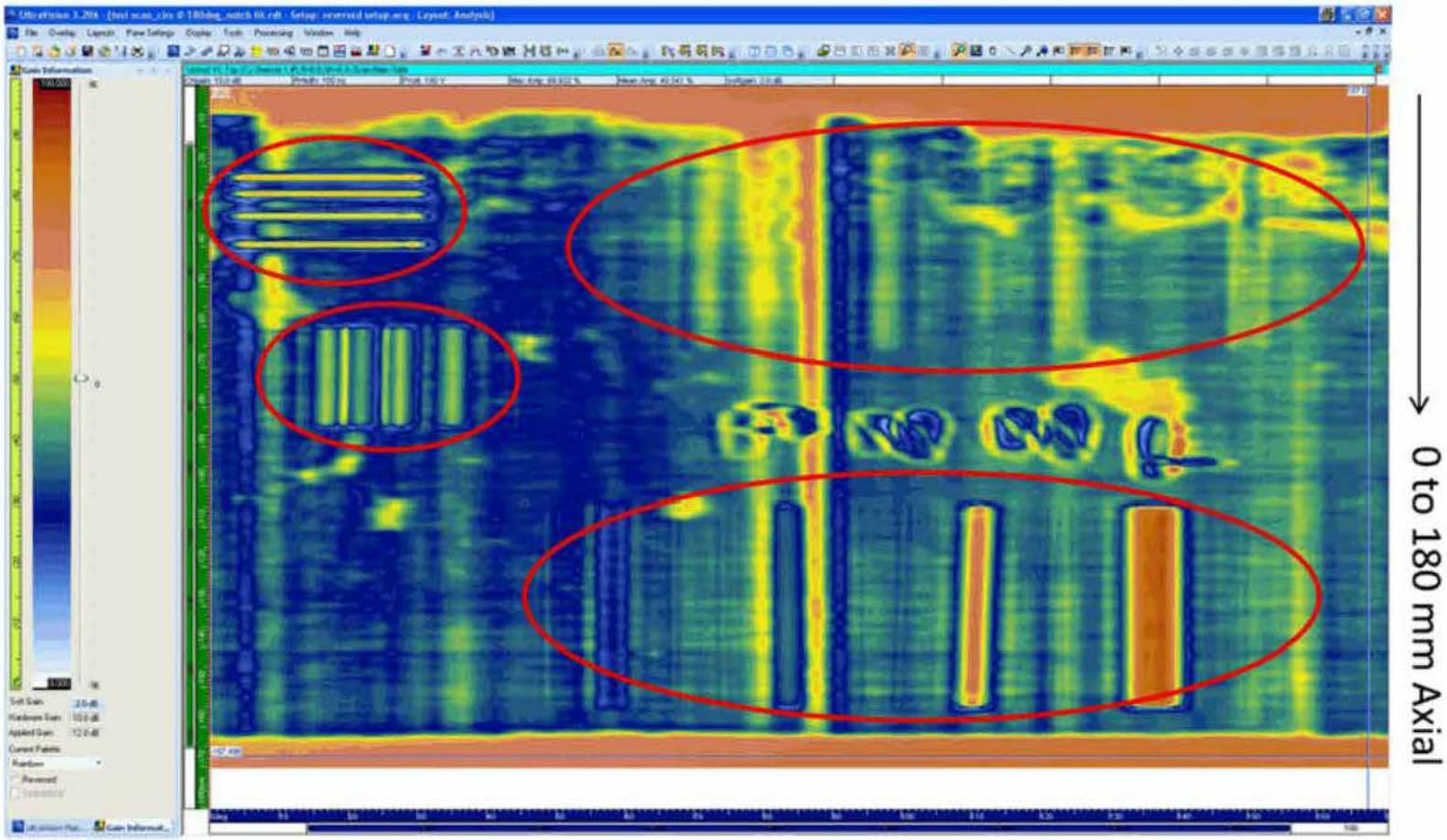
Leak

So, what is going on?

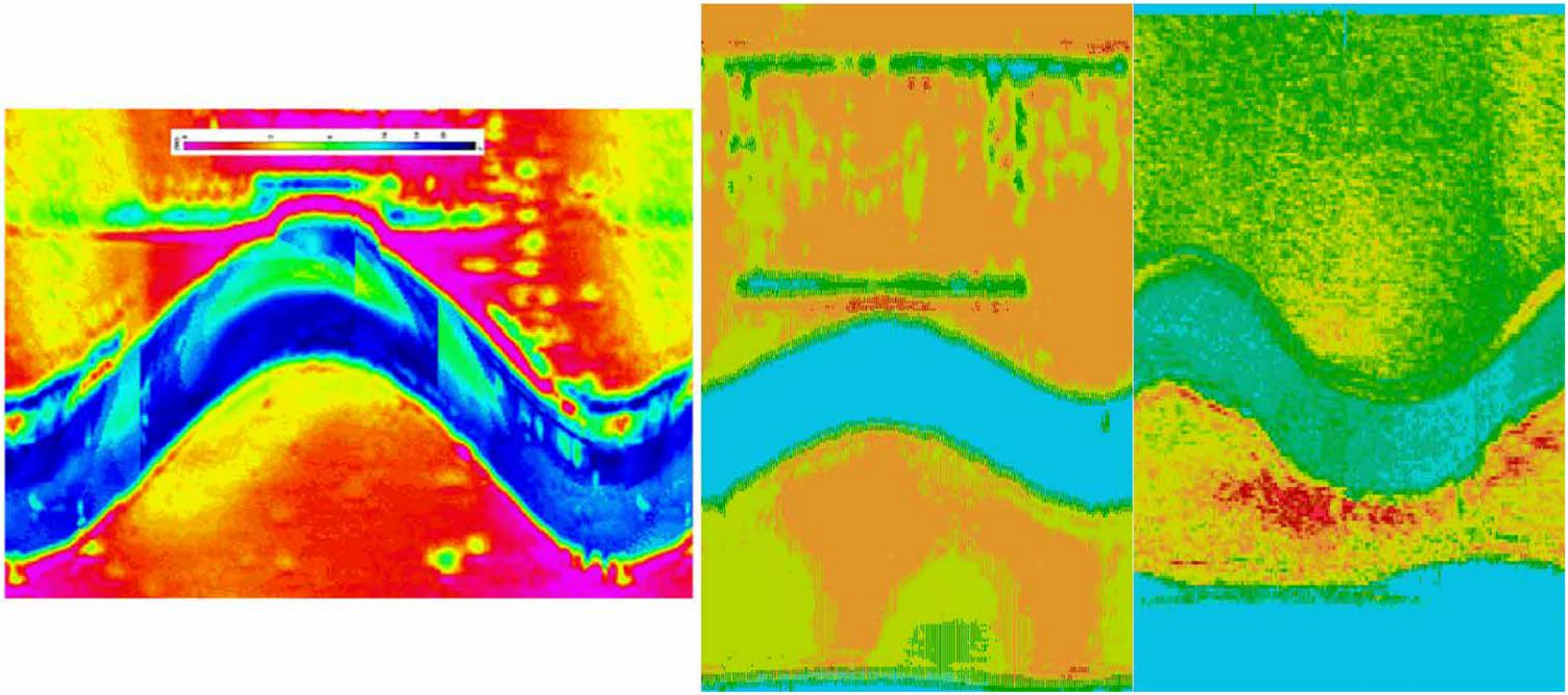
Some reflection and some transmission will occur at the interference fit. The amount of sound reflected is affected by the local tightness of the fit, the local smoothness of the metals, and the local presence of boric acid.



Ultrasound is sensitive to changes in the interference fit as the two metal surfaces are in tight contact. The surfaces were not made mirror-smooth prior to the interference fit, so some odd features will be present. Even so, notches, deep scratches, and a contractor scribing “PNNL” in an interference fit can be clearly detected.



Interference fits without leaks can still have odd features, depending on the smoothness and how the data was collected. False positives are possible if there are gouges and false negatives are possible if thee is little boric acid present.

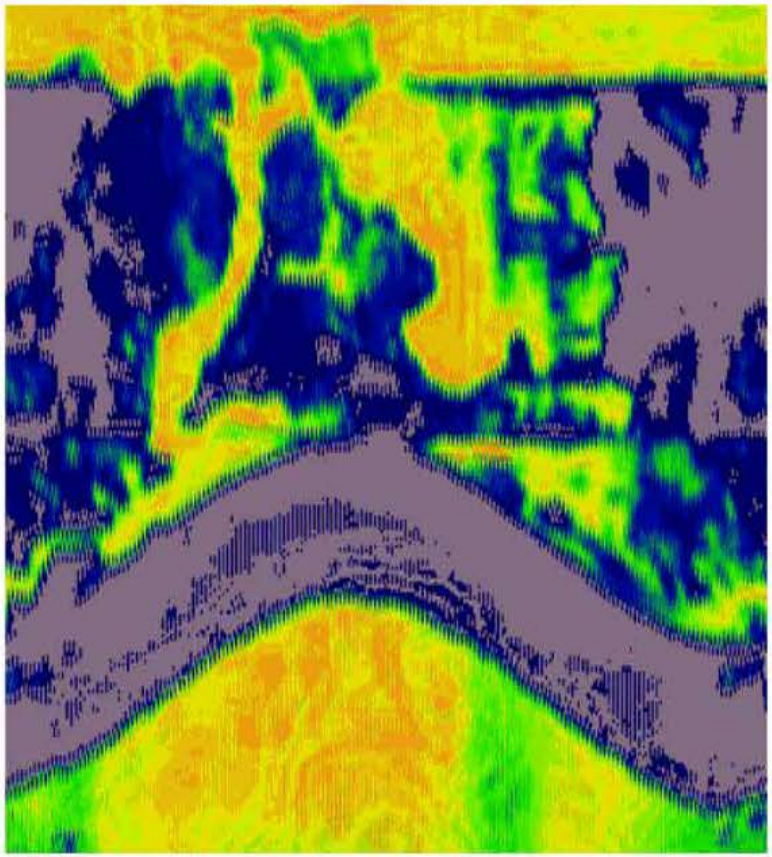


Interference fits with no leakage present

Leaks can produce odd patterns in the ultrasonic examinations of the interference fit.

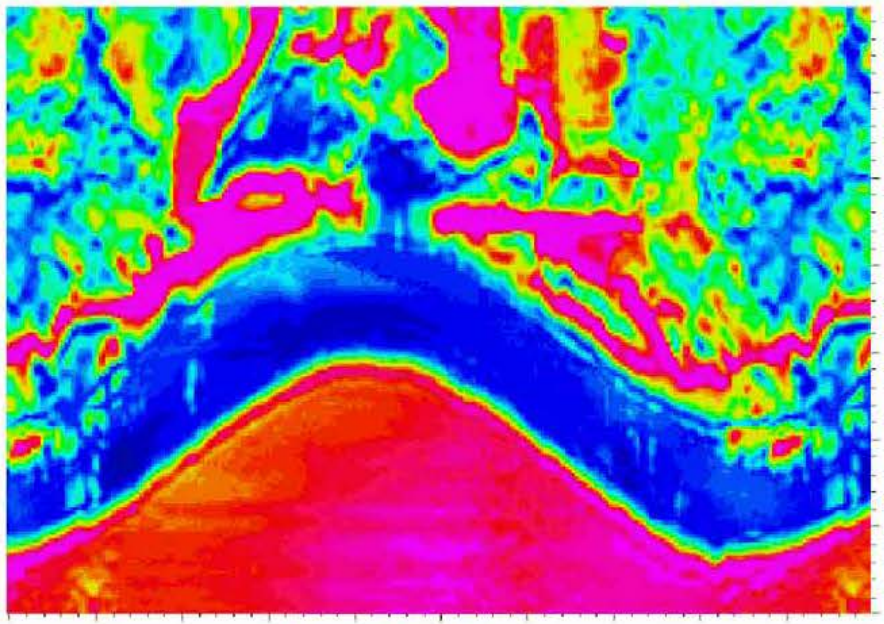
The random-looking patterns imaged by the volumetric leak path assessments can be reproduced. The general pattern remains the same, although different frequencies or methods (Zero degree vs. TOFD) may result in some differences.

Westinghouse Data

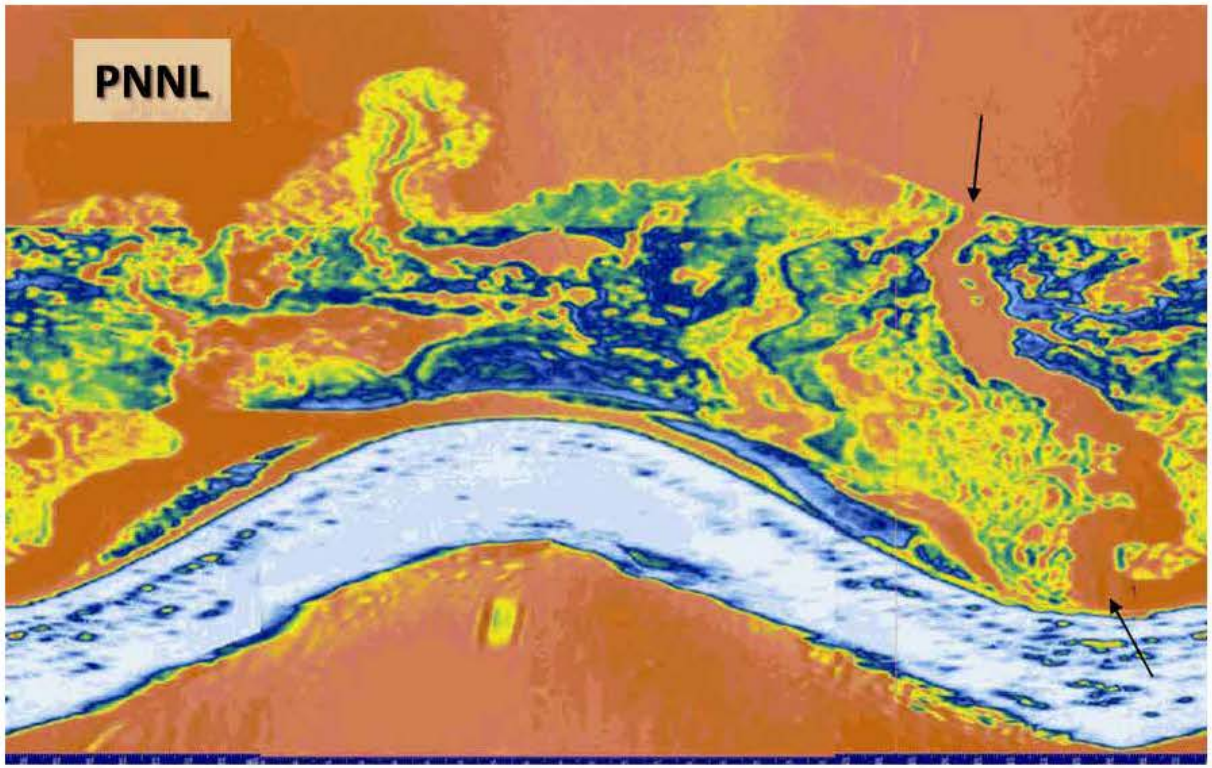


Wetted Side

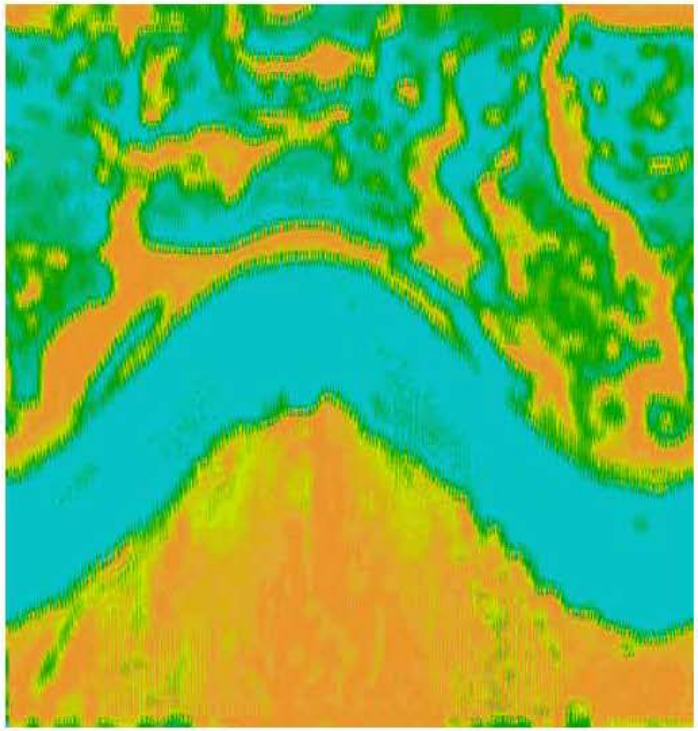
PNNL 2.25 MHz Data

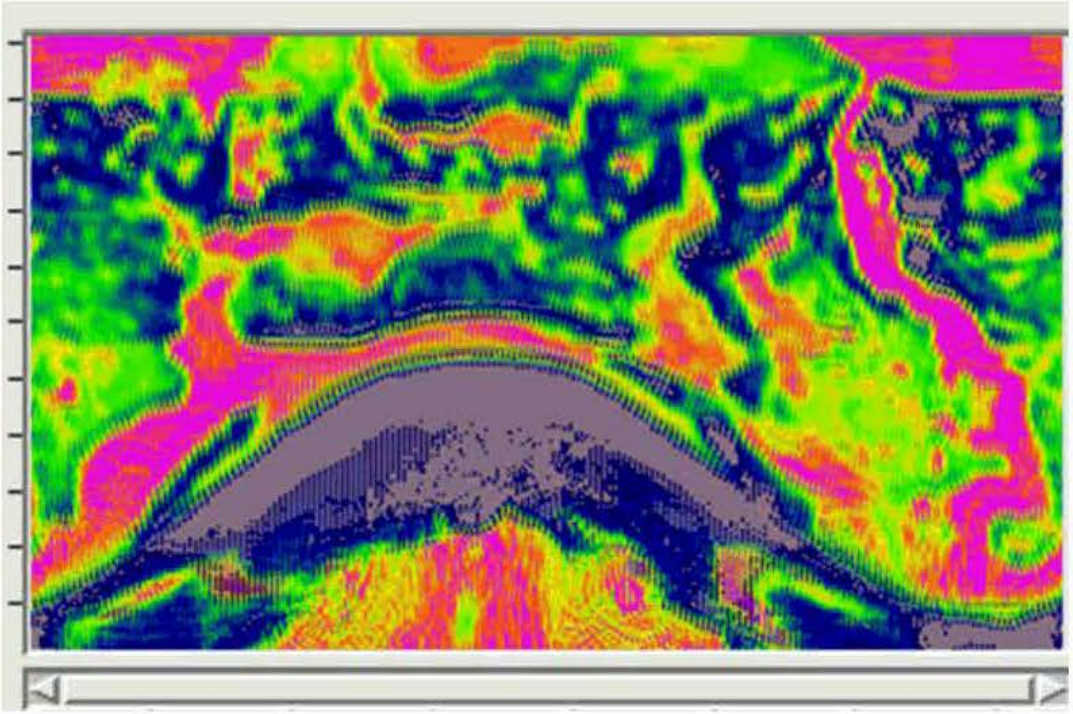


Wetted Side



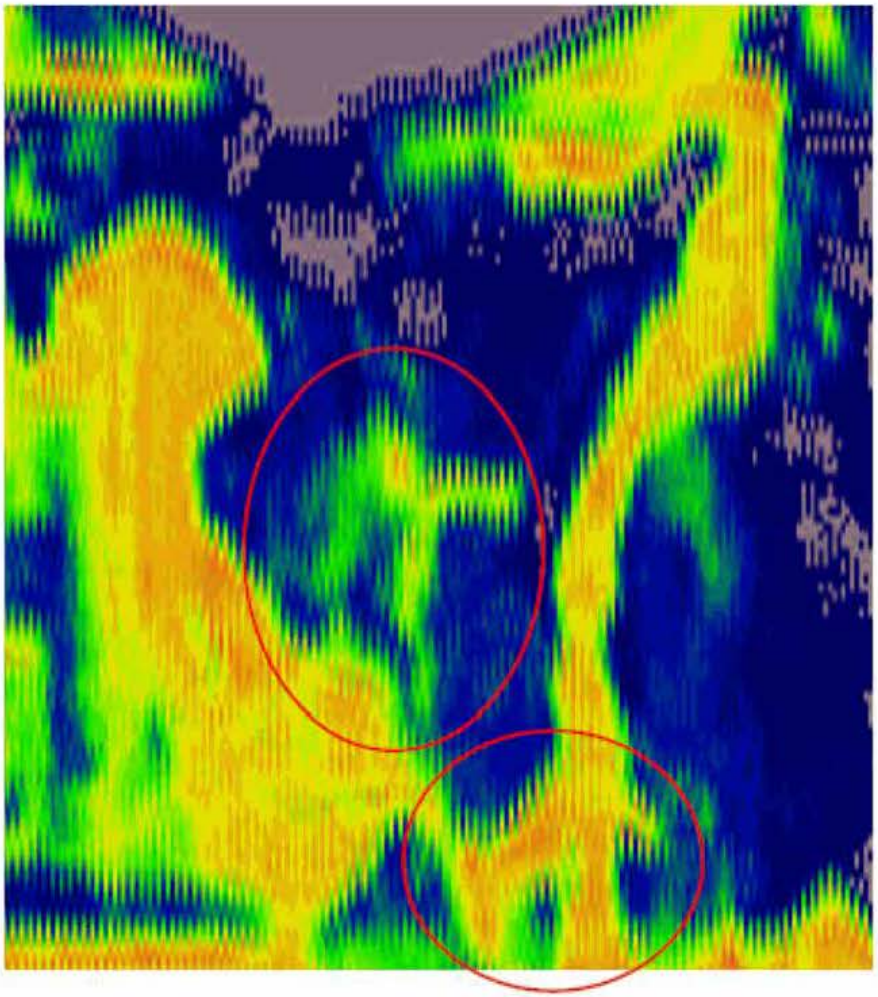
In this case PNNL used a 5 MHz zero-degree probe to inspect the interference fit. Their results closely match industry scans of the same nozzle, with higher resolution and greater sensitivity.

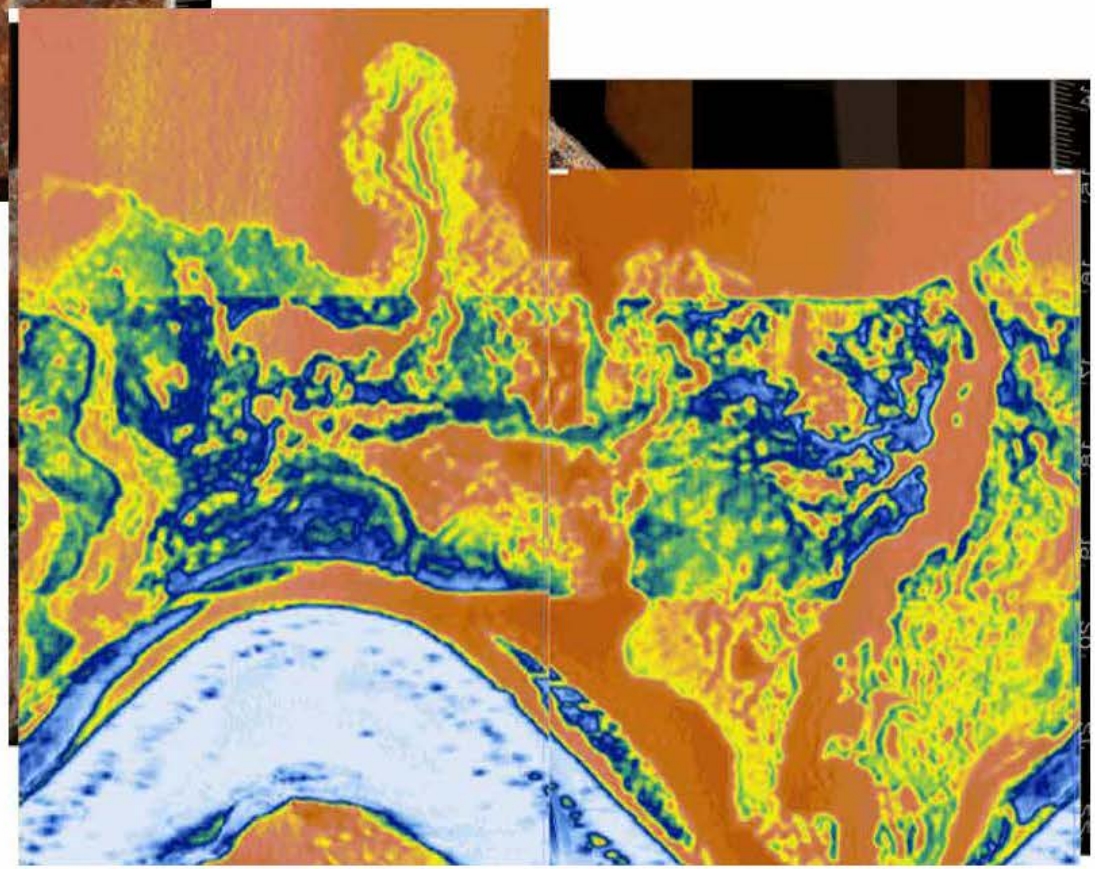




The patterns in the UT images are apparently caused by the presence and absence of boric acid deposits that couple ultrasound through the interference fit.

135 Degrees





The High resolution data closely matches the boric acid pattern in Nozzle 63 from North Anna. Reflections come from areas with little or no boric acid and areas with more boric acid are detectable as areas of greater transmission.

Conclusions

Volumetric Leakage Path Assessments can be effectively used to detect boric acid in the interference fit

Volumetric leak path Assessments can give ambiguous results, but has been largely reliable

ASME has decided not to qualify Volumetric Leakage Path Assessments

Further Reading:

- Ultrasonic Phased Array Assessment of the Interference Fit and Leak Path of the North Anna Unit 2 Control Rod Drive Mechanism Nozzle 63 with Destructive Validation
- NUREG/CR-6996 Nondestructive and Destructive Examination Studies on Removed-from-Service Control Rod Drive Mechanism Penetrations
- Materials Reliability Program: Volumetric Leak Path Assessment for Vessel Upper Head Penetrations (MRP-249)

From:	Werner, Greg
To:	Drake, James; Anchondo, Isaac
Subject:	FW: Wolf Creek Vessel Head Nozzle Leakage 10-4-16.docx
Date:	Wednesday, October 05, 2016 10:42:51 AM
Attachments:	Wolf Creek Vessel Head Nozzle Leakage 10-4-16.docx

I'm reviewing now, and if needed will make suggested edits.

From: Werner, Greg
Sent: Wednesday, October 05, 2016 10:13 AM
To: Werner, Greg <Greg.Werner@nrc.gov>
Subject: Fwd: Wolf Creek Vessel Head Nozzle Leakage 10-4-16.docx

-------- Original Message --------
From: "Taylor, Nick" <Nick.Taylor@nrc.gov>
Date: Tue, October 04, 2016 4:54 PM -0500
To: "Werner, Greg" <Greg.Werner@nrc.gov>
Subject: Wolf Creek Vessel Head Nozzle Leakage 10-4-16.docx

Greg,

Please see the attached one-pager. Would welcome any changes / additions you have to clarify the story. Please reply back with a markup if you see needed changes. Please also cc David Proulx on your reply, as I will be traveling tomorrow to Callaway.

David – after receiving Greg's comments, please provide (as a draft ☺) to Troy and Kriss for their comments prior to sending to other stakeholders (Jeremy Bowen, Victor Dricks, Bill Maier, Balwant, etc).

Thanks,
Nick

From:	Drake, James
To:	Clark, Jeff; Vegel, Anton; Lantz, Ryan; Pruett, Troy
Cc:	Werner, Greg; Anchondo, Isaac; Taylor, Nick; Dodson, Douglas; Thomas, Fabian; Proulx, David; Kopriva, Ron; Lingam, Siva
Subject:	Internal call with NRR concerning Wolf Creek Head inspection relief request
Date:	Thursday, October 20, 2016 5:14:21 PM

We had a call with Dave Alley's group to discuss the licensee's recent submittal to support the relief requests they have pending for Relief from the Requirements of ASME Code Case N-729-1.

Based on the wording used in the submittal, there is concern that the licensee may not have properly followed the requirements of the Code case.

Per the code, 3140 INSERVICE VISUAL EXAMINATIONS (VE) -3141 General (c) Relevant conditions for the purposes of the VE (visual examination) shall include areas of corrosion, boric acid deposits, discoloration, and other evidence of nozzle leakage.

The NRC considers any relevant condition in the annulus region between the nozzle and head surface that cannot be removed by light cleaning activities to be a relevant condition of possible nozzle leakage.

The code states in part, "(c) A nozzle whose VE indicates relevant conditions indicative of possible nozzle leakage shall be unacceptable for continued service unless it meets the requirements of -3142.2 or -3142.3.
-3142.2 Acceptance by Supplemental Examination. A nozzle with relevant conditions indicative of possible nozzle leakage shall be acceptable for continued service if the results of supplemental examinations [-3200(b)] meet the requirements of -3130. 3130 is the Inservice Volumetric And Surface Examinations.

In the submittal the licensee uses the term "relevant condition," then goes on the state in part, "Rough cleaning was performed using a vacuum cleaner. The suction created by the vacuum cleaner was minimal and incapable of removing particulate from surfaces…"

The licensee made the following the statements;

"The logic used in evaluating the penetrations with relevant conditions was the ability to determine visually that the accumulation could not have come from the partial penetration weld or a nozzle crack."

"There were relevant conditions in close proximity to many nozzles as well as a large percentage of the vessel head surface not included in the examination areas adjacent to the nozzles. These encompassed various forms of relevant conditions, but none were/are indicative of pressure boundary leakage from the vessel closure head."

Based on this information, we are setting up a call with the licensee for 0930 central, 1030 eastern time to discuss the process they used in applying the code case and determine if they have just used the terms incorrectly but did properly apply the code case and disposition the indications correctly. Understanding this is necessary before considering approval of the relief request.

Siva Lingam is arranging the logistics for the conference call.

Jim

James F. Drake
James F. Drake
Office phone: 817-200-1558
Cell Phone: (b)(6)

From:	Taylor, Nick
To:	Werner, Greg; Kopriva, Ron
Cc:	Pruett, Troy; Vegel, Anton; Lantz, Ryan; Clark, Jeff; Proulx, David; Janicki, Steven
Subject:	Internal communications at Wolf Creek re head corrosion / plans
Date:	Monday, October 03, 2016 11:50:21 AM
Attachments:	Wolf Creek communications.pdf

All,

I'm still working on setting up a call with the licensee tomorrow. But Doug provided the attached today from the licensee's CAP and internal outage newsletters. I added the red comment boxes.

Thanks,
Nick

Wolf Creek Nuclear Operating Corporation

00107686 Condition Report

AR #: 00107686 **Severity Type:** CR **Level:** **Due Date:** **Status:** H/APPR **Status Date:** 09/29/2016

AR Subject: STS PE-040E Relevant Conditions **Age In Days:** 0

Owed To Name:

Owed To Department:

Owed To Alert Group: WC SRT

Origination Date: 09/29/2016

Initiator: HALL, JOHN F

Orig Department: 0060030 - Heffron Jason

Condition Report Summary:

Type	AR#-Assign#-Sub-Assign#	Owed/Assign To	Due Date	Status
CR	00107686	WC SRT		H/APPR
RTFQ	00107686-01	OPS REVIEW		ACC/PRI
RER	00107686-02	RER REVIEW		ACC/PRI

Attachments:

CR Detail

Asset/Equip: RBB01 **Work Request:**

Description: During the performance of STS PE-040E, Step 8.2 the following relevant conditions were noted. Penetration Condition 77 Leak located on the north face of the lower canopy seal weld. Significant boron accumulation on housing, nozzle and at the penetration to head interface. Boron at head interface had rust color indicative of corrosion. Rust bloom noted on head adjacent to boron accumulation. 71 Significant boron accumulation on housing, nozzle and at the penetration to head interface. Boron had rust color indicative of corrosion. Rust bloom noted on head adjacent to boron accumulation. 70 Significant boron accumulation on housing, nozzle and at the penetration to head interface. Boron had rust color indicative of corrosion. Rust bloom noted on head adjacent to boron accumulation. 59 Significant boron accumulation on housing, nozzle and at the penetration to head interface. 47 Significant boron accumulation on housing, nozzle and at the penetration to head interface. 46 Significant boron accumulation on housing, nozzle and at the penetration to head interface. 58 Significant boron accumulation on housing, nozzle and at the penetration to head interface. Some boron discoloration noted. 63 Rust colored boron accumulation noted on 90 degree side of nozzle. Recommend the BACC Engineer evaluate for further corrective actions. Boron accumulation also noted on head, CRDM penetration nozzles, canopy seal welds and housings from approximately 50 degrees to 180 degrees. Recommend this area be cleaned to remove boron. Remainder of head should be vacuumed to remove dust/loose boron particles as directed by the BACC Engineer.

Immediate Concern: N **SM Notified:** N/A **Init DNC:** N

Immediate Actions:
Discussed with Engineering

Extent of condition:
Specific to RBB01 closure head

Recommended Resolution:
Clean and evaluate.

Screening Review

Operability: 4 INOPERABLE
Based on several indications of rust colored boron from the head, there is insufficient evidence that the head can continue to perform tis function. Ref TS 3.4.13

Reportable: Y RER initiated to evaluate past operability.

Environmental Issue: N

Daily Howl
RF21

Oct. 2, 2016 — Day 16

Nuclear Safety

Shutdown Safety Risk Condition:

YELLOW

The plant is **YELLOW** for Shutdown Safety Risk Condition. Spent fuel pool decay heat removal and electrical power sources are **YELLOW**.

Protected Train "A"

- NB01 — 4.16 kV engineered safety feature (ESF) bus
- XNB01/MA104F — 4.16 kV ESF transformer and its associated relays
- NG01/03 — safety-related 480 V switchgear
- NN01/03 — vital 120 V AC power supply
- NK01/03 — vital 120 V DC power supply
- #7 transformer, 13-48 breaker & 13-23 disconnect
- Rose Hill and Benton 345 kV lines and east bus
- A emergency diesel generator
- A spent fuel pool cooling pump
- A component cooling water
- A essential service water
- SGK05A/B — Class 1E electric equipment HVAC
- SGK04A — control room HVAC
- PG19G/NG02A — Low Voltage System 480 V
- B and C service water pumps and associated power supplies, SL3, SL31 and PG20

Critical & Important Path Activities Due Next 24 Hours

- Continue water jet peening mobilization
- Drain down to midloop

Update on outage activities

The plant is defueled. The safety shutdown risk remains Yellow due to only one train of spent fuel pool cooling available and the "B" train electrical power sources outage (NB02).

Yesterday, personnel liifted the self-propelled modular transporter to the deck of the equipment hatch.

Yesterday, we resumed moving items into containment to support the water jet peening project, including the first walkway for the bridge that is being built to support this work.

Also during the last shift, we completed the "D" containment cooler piping demolition, and determinated the XNB02 transformer and placed the grounds to support the safety-related electrical work.

Critical path activities continue to be water jet peening mobilization, as well as reactor coolant system drain down to midloop to support steam generator work. Once we reach midloop, we are able to start work on air-operated valves that require the plant in that condition. Other important work due in the next 12 hours incudes wrapping up "B" residual heat removal, component cooling water, emergency diesel generator and essential service water work.

Looking ahead to next week, the switchyard project team will begin work to re-route the Waverly/LaCygne line and install the new motor-operated line disconnect switch.

EIT continues focus on reactor vessel head

The Emergent Issues Team continues to determine the right plan to resolve the issues associated with the reactor vessel head.

The preliminary reactor vessel head inspections are complete, and the team has identified 11 areas for further inspection. We are pursuing two parallel paths. The first is to pursue inspection relief from the Nuclear Regulatory Commission and the second is to prepare for additional inspections.

We are required to perform a visual inspection of the reactor vessel head every outage to verify there are no leaking penetrations. In a typical outage, we would look at the head and verify there is no

"EIT" continued on page 2.

"EIT" continued from page 1.

boric acid build-up that would indicate a leak. This outage, however, our inspection was impacted by the leaking canopy seal weld at penetration #77. When we performed the visual inspection, we identified 11 locations where we could not conclusively state that the boric acid was from the canopy seal weld leak and not from a leaking penetration. This result prevents us from completing the inspection satisfactory. Therefore, we are pursuing relief from additional inspection for this outage.

If we do not receive relief from the NRC, we need to be prepared to perform the additional inspections, which will require us to look under the head to verify the boric acid is coming from the penetration #77. Therefore, we are also pursuing ultrasonic testing of selected reactor vessel head penetrations.

While the upper plenum is removed, clamps will be installed on the location of the leaking canopy seal weld, penetration #77, and four additional locations. The plan is to complete these activities within the water jet peening window.

Proper storage of radioactive material is important for all

On Friday, a worker notified Radiation Protection of higher than expected dose and peak dose rate when logging out of the radiological controlled area. This is a good example of a questioning attitude and radiation worker behavior.

Upon further investigation, a 15-gallon bottle with an attached HEPA-type filter was found inappropriately stored in room 1405 on the 2026' elevation of the auxiliary building. The bottle was resurveyed by RP and found to have a one foot reading of 20 mRem/hr (meeting the criteria for a Radiation Area) and room 1405 was not posted as such.

Subsequently, the bottle was moved to an appropriately posted storage area (see condition report 107705). We have procedures and processes to ensure that we inform and protect all personnel from any potential hazards, including exposure from radioactive material.

When performing your work duties, please remember that when you place potentially radioactive materials in any container (bottles, bags, boxes, etc.) that it is your responsibility to ensure that RP personnel are notified so that the container can be surveyed, labeled and stored in an appropriate manner.

Your assistance and participation in the proper control of radioactive material is important for everyone's protection.

Card readers important for access control & accountability

Last week, a multiplexer that supports several Security card readers failed, and one of those readers was outside containment. While most card readers do not allow individuals to enter through a door unless you have the appropriate access, the card reader in containment does not control a door. When the card reader in question was out of service, some workers were under the impression that Security had been contacted and that it was acceptable to allow workers to enter without any logging. This was not the case and against expectations.

Workers are required to verify they have access before entering a controlled area. If the card reader is unavailable, then a Security guard is required to manually check your access levels.

Additionally — and most importantly — personnel accountability in containment is managed through card reader records. By bypassing any kind of check-in process, we did not have an accurate record of who was in containment during this time. If evacuation would have been necessary, we would have been challenged to verify that all workers were out of the area.

In the event of a card reader failure, workers are to contact Security and wait for further instruction. Do not enter the area without direct communication from an officer.

Obey warning lights & flagging

Recently, workers have been observed continuing to pass through the southeast turbine building crane bay when the red warning lights were flashing.

The lights are an indicator that the cranes above the north and/or south crane bays are in use. They are a warning to workers that overhead work is in progress and they should use an alternate entrance/exit.

Questions? Ken Thompson, ext. 4033.

Daily Howl RF21

Oct. 1, 2016 — Day 15

Nuclear Safety

Shutdown Safety Risk Condition:

YELLOW

The plant is **YELLOW** for Shutdown Safety Risk Condition. Spent fuel pool decay heat removal and electrical power sources are **YELLOW**.

Protected Train "A"

- NB01 — 4.16 kV engineered safety feature (ESF) bus
- XNB01/MA104F — 4.16 kV ESF transformer and its associated relays
- NG01/03 — safety-related 480 V switchgear
- NN01/03 — vital 120 V AC power supply
- NK01/03 — vital 120 V DC power supply
- #7 transformer, 13-48 breaker & 13-23 disconnect
- Rose Hill/Benton 345 kV lines and east bus
- A emergency diesel generator
- A spent fuel pool cooling pump
- A component cooling water
- A essential service water
- SGK05A/B — Class 1E electric equipment HVAC
- SGK04A — control room HVAC
- PG19G/NG02A — Low Voltage System 480 V
- B and C service water pumps and associated power supplies, SL3, SL31 and PG20

Critical & Important Path Activities Due Next 24 Hours

- Quality crane operators
- Continue water jet peening mobilization

Update on outage activities

The plant is defueled. The safety shutdown risk remains Yellow due to only one train of spent fuel pool cooling available and the "B" train electrical power sources outage (NB02).

During the last shift the team completed gross decontamination of the reactor head and reopened the equipment hatch. Crews completed valve work prior to the NG/NB outage. Scaffolding was built for the "A" containment cooler work inside containment and the demolition of GN line piping continues.

Steve Smith provides an outage update and discusses the switchyard reliability upgrades with Project Manager Tony Harris and Switchyard Coordinator Warren Brandt.

The team worked through a solution to continue mobilizing water jet peening equipment into containment. PSC Nuclear and Wolf Creek engineers completed a thorough structural integrity analysis of removing one top brace on the Big Blue support structure. The brace was removed to allow large trusses and containers to be lifted by crane to the equipment hatch and set onto the SPMT, from which they can be driven into containment.

We qualifed two crane operators to support the lifts for resuming water jet peening mobilization, which is the critical path activity. Important path work includes continuing the essential service water piping replacement project inside containment, de-energizing the 4.16 kV engineered safety feature bus and safety-related 480 V switchgear (NB/NG) for maintenance. Additionally, crews will continue with "B" train residual heat removal, component cooling water and essential service water work.

The Emergent Issues Response team continues to determine the right plan to support further decontamination for repairing the reactor vessel head. The switchyard reliability upgrade will resume early next week with installation of the open phase detection cabinets and rerouting the Waverly line to the north end.

Be safe and courteous in parking lots

Recently, multiple observations have shown poor parking lot etiquette, including using cell phones while walking, driving too fast and not using the safe walkways and sidewalks.

Follow the designated safe walk paths and refrain from cutting across the parking lot. They are in place for your safety, and often are a clear pathway to and from buildings and vehicles. Follow posted signs, such as one-way signs, and use caution when entering and exiting parking lots.

Give pedestrians the right of way and slow down through parking lots and on plant access roads. At shift turnovers, be courteous to co-workers exiting parking lots.

From:	Hoffman, Keith
To:	Drake, James; Anchondo, Isaac; Werner, Greg; Taylor, Nick; Alley, David
Cc:	Lyon, Fred; Dodson, Douglas; Proulx, David; Thomas, Fabian; Tsao, John; Kopriva, Ron; Kalikian, Roger
Subject:	NRR Position on the use of Canopy Seal Clamp Assemblies
Date:	Friday, September 16, 2016 6:44:14 AM
Attachments:	2008 10 15 08 Material Engineering Counterpart Call Summary - Attachment - CSCA.pdf 2008 10 15 08 Material Engineering Counterpart Call Summary.doc

As we all suspected this could not have been the first time the issue of Canopy Seal Clamp Assemblies (CSCA) has come up because we have found many instances of licensees that are using or have used them in the past. We have found that the issue came up back in 2008 and just as we did the NRC Staff struggled with whether the use of the CSCA was acceptable. The issue was discussed at a Materials Engineering Counterparts Call on 10/15/2008. The attached PDF file shows a document that describes the CSCA and its design and usage. The WORD file shows a summary of the discussion and a position on the use of the CSCA that was developed by Ted Sullivan. The decision they reached in 2008 was that using Appendix J of Section XI the use of the CSCA was a maintenance activity that did not require a Repair/Replacement Plan.

Prior to finding the call summary, we had reached a conclusion that meeting the criteria of

NB-3671.7 Sleeve Coupled and Other Patented Joints. Mechanical joints, for which no standards exist, and other patented joints may be used provided the requirements of (a), (b), and (c) below are met.
(a) Provision is made to prevent separation of the joints under all Service Loadings.
(b) They are accessible for maintenance, removal, and replacement after service.
(c) Either of the following two criteria are met.
(1) A prototype joint has been subjected to performance tests to determine the safety of the joint under simulated service conditions. When vibration, fatigue, cyclic conditions, low temperature, thermal expansion, or hydraulic shock is anticipated, the applicable conditions shall be incorporated in the tests. The mechanical joints shall be sufficiently leak tight to satisfy the requirements of the Design Specifications.
(2) Joints are designed in accordance with the rules of NB-3200.

Would be sufficient to permit the use of the clamp because it meets ASME Section III.

Bottom line is that based on our research into the code and precedent, the use of this particular patented joint (clamp) in this particular location is Code compliant. EPNB is considering whether this needs to be further documented in a Generic Communication so that it is more readily apparent to folks in the future.

This does not resolve the question of, given the significant leakage observed, is pressure boundary integrity maintained or have the threads been damaged to a point where structural integrity is not maintained.

Keith M. Hoffman
Materials Engineer
NRR/DE/EPNB
(301)415-1294

From:	Thomas, Fabian
To:	Taylor, Nick; Proulx, David; Janicki, Steven
Cc:	Dodson, Douglas; Thomas, Fabian
Subject:	RCS Leakage Info
Date:	Thursday, September 01, 2016 4:55:47 PM
Attachments:	CR# 106763.pdf CR# 106822.pdf Control Room Logs from 08-29-16 to 09-01-16.pdf Containment Rad Monitor Trends.pdf

---

Nick,

Please see the attached per your request.

Also, in having walked down the control panels as of 4:20 PM today, containment temps are still steady (~110 degrees F on all 4 containment cooler inlet air temps); containment humidity parameters haven't change, and containment atmospheric pressure still reading ~0 PSIG on both channels. The containment particulate rad monitors particulate readings have decreased slightly over the past several hours (see GTN0311 – blue, and GTN0321 – black on containment rad monitor trend attachment) – 5.76E-9 vs 1.99E-9 micro curries/mL, and 3.69E-9 vs 1.47E-9 micro curries/mL, respectively. I haven't observed any parameters thus far that would cause any concern for now.

I have also forwarded the call in number for tomorrow's meeting to our licensing POC.

Please feel free to call me if you have any other questions or concerns (469) 475-3694.

Thanks,
Fabian


NPIS - B
A: STBY B: ACT
MODE: 1 AUTO
POWER OPER
ALM
12 Trend
SPDS
S
C4
H4
P4
Z4
I4
9/01/16
16:09:14
Trending
Realtime Data
Start Time: 8/31/2016 16:09:14
End Time: 9/01/2016 16:09:14
Archive Sample Rate: 10 seconds
Real-Time Sample Rate: 1 second
Trend Markers: OFF
GTN0331
6.19E-16 UCI/CC GOOD
GTN0221
6.48E-16 UCI/CC GOOD
GTN0311
1.99E-09 UCI/CC HALM
GTN0321
1.47E-09 UCI/CC GOOD
GTN0223
3.63E-06 UCI/CC GOOD
GTN0333
2.00E-06 UCI/CC GOOD
GTN0313
3.41E-06 UCI/CC GOOD
GTN0323
7.73E-06 UCI/CC GOOD
1.00E-06
1.00E-07
1.00E-07
1.00E-07
1.00E-05
1.00E-05
1.00E-05
6.67E-07
6.67E-08
6.67E-08
6.67E-08
6.67E-06
6.67E-06
6.67E-06
3.33E-07
3.33E-08
3.33E-08
3.33E-08
3.33E-06
3.33E-06
3.33E-06
0.00
0.00
0.00
0.00
0.00
0.00
0.00
9/01/16 0:00
9/01/16 8:00
9/01/16

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/29/2016 12:00:00 AM	STS BB-006 results are: 0.040 gpm Total Identified Leakage, 0.042 gpm Total Unidentified Leakage and 0.185 gpm Total T/S Identified Leakage. NCP 95gpm letdown, 2 hours	0	jagrube	mablow	RO
8/29/2016 12:00:00 AM	Continued the Watch Mode: 1, 3561.05 MWt, 1236.8 MWe. Major Equipment Problems: 'B' Train CREVIS is inoperable Major Tech Spec Action Statements in effect: 3.7.10	0	tidunlo	mablow	CRS
8/29/2016 12:01:00 AM	Commenced STS SE-001 "POWER RANGE ADJUSTMENT TO CALORIMETRIC".	0	tidunlo	mablow	CRS
8/29/2016 12:01:00 AM	Commenced STN KC-008 "FIRE ALARM CONTROL PANEL KC-008 DAILY CHECK".	0	tidunlo	mablow	CRS
8/29/2016 12:02:00 AM	Stopped SGG01B, "FUEL BLDG SUPPLY AIR UNIT" iaw SYS GG-200.	0	tidunlo	mablow	CRS
8/29/2016 12:03:00 AM	Stopped SGL01, "AUXILIARY BLDG. SUPPLY AIR UNIT" iaw SYS GG-200.	0	tidunlo	mablow	CRS
8/29/2016 12:04:00 AM	Stopped CGL03A, "AUX/FUEL BLDG NORMAL EXHAUST FAN" iaw SYS GG-200.	0	tidunlo	mablow	CRS
8/29/2016 12:05:00 AM	Completed STS AL-201C "TURBINE DRIVEN AUXILIARY FEEDWATER SYSTEM INSERVICE VALVE TEST" SAT.	0	tidunlo	mablow	CRS
8/29/2016 12:09:00 AM	Started CGG02B, "EMERGENCY EXHAUST FAN"iaw SYS GG-200.	0	tidunlo	mablow	CRS
8/29/2016 12:17:00 AM	Completed STS BB-006 "RCS WATER INVENTORY BALANCE USING THE NPIS COMPUTER" SAT.	0	tidunlo	mablow	CRS
8/29/2016 12:18:00 AM	Commenced STS PE-004 "AUX BUILDING AND CONTROL ROOM PRESSURE TEST".	0	kylaubn	mablow	SE
8/29/2016 12:23:00 AM	Completed STN KC-008 "FIRE ALARM CONTROL PANEL KC-008 DAILY CHECK" SAT.	0	tidunlo	mablow	CRS
8/29/2016 12:31:00 AM	Placed rod control in manual iaw STS SE-001.	0	tidunlo	mablow	CRS
8/29/2016 12:48:00 AM	Restored rod control to auto iaw STS SE-001.	0	tidunlo	mablow	CRS
8/29/2016 12:54:00 AM	Placed GTRE0031 in bypass for filter change, IAW CHS AX-G02. Reference T.S. 3.3.6 Function 3 Condition A and T.S. 3.4.15.b. No actions required GTRE0032 operable.	0	tidunlo	mablow	CRS
8/29/2016 12:54:00 AM	Placed GGRE0028 in bypass for filter change, IAW CHS AX-G02. T.S. 3.3.8 Function 3 Not Applicable - No Fuel Movement in Progress.	0	tidunlo	mablow	CRS
8/29/2016 12:54:00 AM	Placed GTRE0033 in bypass for filter change, IAW CHS AX-G02. Complying with ODCM Table 3-2 Function 2.a Action 41. Containment purge not in progress. This entry was planned.	0	tidunlo	mablow	CRS
8/29/2016 12:54:00 AM	Placed GKRE0004 in bypass for filter change, IAW CHS AX-G02. ****Entered T.S. 3.3.7 Function 3 Condition A~****. 7 days to restore. This entry was planned.	0	tidunlo	mablow	CRS
8/29/2016 12:55:00 AM	Completed STS SE-001 "POWER RANGE ADJUSTMENT TO CALORIMETRIC" SAT.	0	tidunlo	mablow	CRS
8/29/2016 12:58:00 AM	Systems Operations Generation, Greg called with daily totals of 29485 Gross, 836 Aux, and 28649 Net.	0	tidunlo	mablow	CRS
8/29/2016 12:58:00 AM	GERE0092 OOS during the performance of SYS GE-122 with CGV038 open. ****Entered T.R. 3.3.18 Function 1 Condition A.1 and A.2.1~****. This entry was planned.	0	tidunlo	mablow	CRS
8/29/2016 1:01:00 AM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	tidunlo	mablow	CRS
8/29/2016 1:02:00 AM	Stopped CGE01A, "CONDENSER AIR REMOVAL FILTRATION FAN" IAW SYS GE-122.	0	madekat	mablow	RO
8/29/2016 1:20:00 AM	Restored GKRE0004 to service. ****Exited T.S. 3.3.7 Function 3 Condition A~****.	0	tidunlo	mablow	CRS
8/29/2016 1:20:00 AM	Restored GTRE0033 to service.	0	tidunlo	mablow	CRS
8/29/2016 1:20:00 AM	Restored GGRE0028 to service.	0	tidunlo	mablow	CRS
8/29/2016 1:20:00 AM	Restored GGRE0027 to service.	0	tidunlo	mablow	CRS
8/29/2016 1:20:00 AM	Restored GTRE0031 to service.	0	tidunlo	mablow	CRS
8/29/2016 1:21:00 AM	Placed GKRE0005 in bypass for filter change, IAW CHS AX-G02. ****Entered T.S. 3.3.7 Function 3 Condition A~****. 7 days to restore. This entry was planned.	0	tidunlo	mablow	CRS
8/29/2016 1:21:00 AM	Placed GTRE0032 in bypass for filter change, IAW CHS AX-G02. Reference T.S. 3.3.6 Function 3 Condition A and T.S. 3.4.15.b. No actions required GTRE0031 operable.	0	tidunlo	mablow	CRS
8/29/2016 1:21:00 AM	Placed GTRE0022 in bypass for filter change, IAW CHS AX-G02. Complying with ODCM Table 3-2 Function 2.a Action 41. Containment purge not in progress. This entry was planned.	0	tidunlo	mablow	CRS
8/29/2016 1:24:00 AM	Received alarm 61B, Process Rad Hi. GTRE31 particulate in Alarm due to spiking. Alarms immediately reset. ODMI 2015-07	0	tidunlo	mablow	CRS
8/29/2016 1:24:00 AM	Stopped SGF01, "MAIN STEAM ENCLOSURE BLDG S. A. UNIT" iaw SYS GF-120.	0	tidunlo	mablow	CRS
8/29/2016 1:25:00 AM	Stopped CGF03A, "MAIN STEAM ENCL. BLDG EXHAUST FAN" iaw SYS GF-120.	0	tidunlo	mablow	CRS
8/29/2016 1:28:00 AM	Received alarm 61B, Process Rad Hi. GTRE31 particulate in Alarm due to spiking. Alarms immediately reset. ODMI 2015-07	0	tidunlo	mablow	CRS
8/29/2016 1:30:00 AM	Received alarm 61B, Process Rad Hi. GTRE31 particulate in Alarm due to spiking. Alarms immediately reset. ODMI 2015-07	0	tidunlo	mablow	CRS
8/29/2016 1:39:00 AM	Restored GKRE0005 to service. ****Exited T.S. 3.3.7 Function 3 Condition A~****.	0	tidunlo	mablow	CRS
8/29/2016 1:39:00 AM	Restored GTRE0032 to service.	0	tidunlo	mablow	CRS
8/29/2016 1:39:00 AM	Restored GTRE0022 to service.	0	tidunlo	mablow	CRS
8/29/2016 1:42:00 AM	Received alarm 61B, Process Rad Hi. GTRE32 particulate in Alarm due to spiking. Alarms immediately reset. ODMI 2015-07	0	tidunlo	mablow	CRS
8/29/2016 2:59:00 AM	Completed STS CR-001 "SHIFT LOG FOR MODES 1 2 AND 3" SAT.	0	tidunlo	mablow	CRS
8/29/2016 3:00:00 AM	Commenced STS CR-001 "SHIFT LOG FOR MODES 1 2 AND 3".	0	tidunlo	mablow	CRS
8/29/2016 3:03:00 AM	Started CKA01B, "INSTRUMENT AND SERVICE AIR COMPRESSOR" iaw SYS KA-121.	0	tidunlo	mablow	CRS
8/29/2016 3:03:00 AM	Stopped CKA01C, "INSTRUMENT AND SERVICE AIR COMPRESSOR".	0	tidunlo	mablow	CRS
8/29/2016 3:23:00 AM	NRC phone check SAT.	0	tidunlo	mablow	CRS
8/29/2016 3:27:00 AM	Depressurized RHR header from 320 PSIG to 50 PSIG IAW SYS EJ-323. Depressurized SI from 300 PSIG to 50 PSIG IAW SYS EM-002.	0	jagrube	mablow	RO
8/29/2016 3:47:00 AM	Diluted the RCS 130 gallons for Tavg control IAW beginning of shift Reactivity Brief.	0	tidunlo	mablow	CRS
8/29/2016 4:24:08 AM	Entry into and exit for 3.3.7 independent SRO verification and bases review completed.	0	mablow	mablow	SM
8/29/2016 4:24:22 AM	Entry into TR 3.3.18. independent SRO verification and bases review completed.	0	mablow	mablow	SM
8/29/2016 4:51:00 AM	GERE0092 OOS for filter change. ****Entered T.R. 3.3.18 Function 1 Condition A.1 and A.2.1~****. This entry was planned.	0	tidunlo	mablow	CRS
8/29/2016 4:56:00 AM	Restored GERE0092 to service. ****Exited T.R. 3.3.18 Function 1 Condition A.1 and A.2.1~****.	0	tidunlo	mablow	CRS

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/29/2016 5:00:00 AM	****Entered Tech. Spec. 3.7.4-**** Complying with Condition A.1. Equipment taken out of service: 'A' ARV is OOS for planned maintenance. Restore to service in 7 days ref CO # C21 D-AB-N-029. This entry was planned. The current Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	tidunlo	mablow	CRS
8/29/2016 5:00:00 AM	Added ABPV0001, SG A ATOMSPHERIC RELIEF VALVE <FR> <CAT 1 AOV PROGRAM VALVE> <AFFECTS CONTAINMENT/CLOSURE INTEGRITY> <LOCATION ON AB226DBB-10 AND AB020EBD-8> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT> to the EOL. Reason: 'A' ARV is OOS for planned maintenance. Restore to service in 7 days ref CO # C21 D-AB-N-029, T/S 3.7.4 The Current Risk Assessment was reviewed.	0	tidunlo	mablow	CRS
8/29/2016 5:39:10 AM	"A" Service Water strainer dp is 1.65 psid.	0	japankr	mablow	SITE
8/29/2016 5:42:31 AM	Clearance Order: C21 D-AB-N-029 Tags Verified Hung	0	kylaubn		CO
8/29/2016 5:42:56 AM	Clearance Order: C21 D-KA-A-014 Tags Verified Hung	0	kylaubn		CO
8/29/2016 5:43:46 AM	Clearance Order: C21 D-KA-N-014 Tags Verified Hung	0	kylaubn		CO
8/29/2016 6:05:00 AM	Started CGF03A, "MAIN STEAM ENCL. BLDG EXHAUST FAN" iaw SYS GF-120.	0	tidunlo	mablow	CRS
8/29/2016 6:06:00 AM	Started SGF01, "MAIN STEAM ENCLOSURE BLDG S. A. UNIT" iaw SYS GF-120.	0	tidunlo	mablow	CRS
8/29/2016 6:15:00 AM	Completed STN FP-224 "FIRE DOOR POSITION VERIFICATION - CLOSED UNLOCKED UNALARMED" SAT.	0	tidunlo	mablow	CRS
8/29/2016 6:19:00 AM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	tidunlo	mablow	CRS
8/29/2016 6:29:00 AM	Entry into 3.7.4 independent SRO verification and bases review completed.	0	mablow	mablow	SM
8/29/2016 6:30:00 AM	Assumed Radwaste Watch	0	wihorn1	lahauth	TREAT
8/29/2016 6:30:00 AM	Commenced STS EN-007B "CONTAINMENT SPRAY TRAIN B VOID MONITORING AND VENTING".	0	kylaubn	mablow	SE
8/29/2016 6:30:00 AM	Assumed the Water Treatment Watch.	0	nicrisp	lahauth	TREAT
8/29/2016 7:00:00 AM	Relieved as SM by L Hauth.	0	mablow	mablow	SM
8/29/2016 7:00:00 AM	Assumed the Aux watch.	0	jedoidg	mablow	AUX
8/29/2016 7:00:00 AM	Assumed the Turbine Bldg watch.	0	ruhancy	lahauth	TURB
8/29/2016 7:00:00 AM	Assumed the CRS watch.	0	shafe	lahauth	CRS
8/29/2016 7:00:00 AM	Relieved as SE by Reeves.	0	kylaubn	mablow	SE
8/29/2016 7:00:00 AM	Assumed the BOP watch.	0	kechris	lahauth	RO
8/29/2016 7:00:00 AM	Assumed watch as Work Control SRO, STA, and Crew Challenger.	0	glreeve	lahauth	SE
8/29/2016 7:00:00 AM	Relieved as BOP by Christesen.	0	trtillm	lahauth	RO
8/29/2016 7:00:00 AM	Relieved as CRS by Shafer.	0	tidunlo	lahauth	CRS
8/29/2016 7:00:00 AM	Assumed the Shift Manager watch.	0	lahauth	lahauth	SM
8/29/2016 7:00:00 AM	Assumed the RO watch.	0	roplumm	lahauth	RO
8/29/2016 7:00:00 AM	Assumed the Site watch.	0	jcallen1	lahauth	SITE
8/29/2016 7:00:00 AM	Relieved as RO by Plummer.	0	jagrube	lahauth	RO
8/29/2016 7:14:00 AM	Initiated transfer of FDT 'A' 21% to FDT 'B' @ 70% IAW SYS HB-126	0	wihorn1	lahauth	TREAT
8/29/2016 7:33:00 AM	Started processing RHUT 'B' @ 15% to SLWMT 'A' @ 80% IAW SYS HB-141/HB-145	0	wihorn1	lahauth	TREAT
8/29/2016 7:37:00 AM	Commenced Discharge of LTSDS tanks 'A' @ 36% and 'B' @ 87% to WWT Basins. IAW SYS HF-141; LRP# U1LC 2016-039	0	nicrisp	lahauth	TREAT
8/29/2016 7:45:00 AM	Placed GDT #6 on recirc for chemistry sample @ 46psig IAW SYS HA-200	0	wihorn1	lahauth	TREAT
8/29/2016 7:57:00 AM	Secured the Transfer of FDT 'A' @ 8% to FDT 'B' @ 85%, IAW SYS HB-126. Transferred 1,478 gallons	0	wihorn1	lahauth	TREAT
8/29/2016 7:58:00 AM	Placed FDT 'B' on Recirc @ 85%, IAW SYS HB-126	0	wihorn1	lahauth	TREAT
8/29/2016 7:59:00 AM	Commenced STN FP-211 "DIESEL FIRE PUMP 1FP01PB MONTHLY OPERATION AND FUEL LEVEL CHECK". WO 16-412934-000	0	glreeve	lahauth	SE
8/29/2016 8:00:00 AM	Received alarm 61C, Process Rad Mon Fail. Entered ALR. Source of alarm GTRE31 particulate check source test fail. Performed source check and alarm reset. Exited ALR.	0	shafe	lahauth	CRS
8/29/2016 8:35:00 AM	Commenced Discharge of WWT Basin 'A' @ 83.7 inches. to LSP. LRP# U1LC 2016-039, COAF# 6871, EOF# 105	0	nicrisp	lahauth	TREAT
8/29/2016 8:36:00 AM	Notified Sys Ops-Transmission, Scott, that Site Watch is entering the switchyard.	0	kechris	lahauth	RO
8/29/2016 8:37:00 AM	Placed SLWMT 'B' on service @ 5% and removed SLWMT 'A' from service @ 90% for 1,695 gallons IAW SYS HF-203	0	wihorn1	lahauth	TREAT
8/29/2016 8:57:57 AM	Clearance Order: C21 D-WM-N-009 Tags Verified Hung	0	glreeve		CO
8/29/2016 8:59:00 AM	Due to securing Main Steam Enclosure Exhaust ventillation IAW SYS GF-120 to support STS PE-004, the thermal power program is no longer conservative. Commencing monitoring of thermal power using average of PRNIs and Delta T power less than or equal to 100% RTP for primary monitoring.	0	shafe	lahauth	CRS
8/29/2016 9:04:00 AM	Stopped SGF01, "MAIN STEAM ENCLOSURE BLDG S. A. UNIT" IAW SYS GF-120 to support STS PE-004.	0	shafe	lahauth	CRS
8/29/2016 9:05:00 AM	Stopped CGF03A, "MAIN STEAM ENCL. BLDG EXHAUST FAN" IAW SYS GF-120 to support STS PE-004.	0	shafe	lahauth	CRS
8/29/2016 9:08:00 AM	FDT 'B' pH SAT @ 5.8 per J. Dorsey	0	wihorn1	lahauth	TREAT
8/29/2016 9:10:00 AM	Secured FDT 'B' recirc IAW SYS HB-126	0	wihorn1	lahauth	TREAT
8/29/2016 9:10:11 AM	Clearance Order: C21 D-AN-N-014 Approved to Hang	0	glreeve		CO
8/29/2016 9:23:00 AM	Pumped down RCDT level from 49% to 22% and pressure from 16 psig to 4 psig IAW SYS HB-120	0	wihorn1	lahauth	TREAT
8/29/2016 9:30:00 AM	Stopped CDA01A, "WATER BOX VENTING PUMP".	0	shafe	lahauth	CRS
8/29/2016 9:30:00 AM	Turbine watch found the "A" Condenser Water Box Vent Pump not running with switch in the "Run" position. Reset the supply breaker, and the pump subsequently tripped again. WR# 16-117898.	0	shafe	lahauth	CRS
8/29/2016 9:35:00 AM	Started CDA01B, "WATER BOX VENTING PUMP" IAW SYS DA-110.	0	shafe	lahauth	CRS
8/29/2016 9:36:00 AM	Jarred Luedke, Communications Group, called to indicate that siren WW1, Coffey County Lake South, will be out-of-service for routine maintenance. Reviewed AP 26A-001, REPORTABLE EVENTS - EVALUATION AND DOCUMENTATION, Attachment E, REPORTABILITY FOR LOSS OF SIRENS. One siren being out-of-service does not constitute a major loss of emergency assessment capability.	0	glreeve	lahauth	SE
8/29/2016 9:36:00 AM	Notified Sys Ops-Transmission, Scott that Site Watch is exiting the switchyard.	0	shafe	lahauth	CRS
8/29/2016 9:36:00 AM	Chemistry reports GDT #6 sampled	0	wihorn1	lahauth	TREAT
8/29/2016 10:02:00 AM	Secured WGC 'B' from recirc IAW SYS HA-200	0	wihorn1	lahauth	TREAT
8/29/2016 10:03:00 AM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	shafe	lahauth	CRS

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/29/2016 10:25:00 AM	Requested a PROMPT Operability determination from Engineering to support restoring the B train CREVS to OPERABLE status. STS PE-004 shows we are able to obtain 0.306 in H20 with the control room missile door (door 36042) closed.	0	lahauth	lahauth	SM
8/29/2016 10:39:00 AM	Completed STS EN-007B "CONTAINMENT SPRAY TRAIN B VOID MONITORING AND VENTING" SAT. WO 16-413018-000	0	glreeve	lahauth	SE
8/29/2016 10:40:00 AM	Secured processing RHUT 'B' @ 7% to SLWMT 'B' @ 20% for 2,543 gallons IAW SYS HB-141/HB-145	0	wihorn1	lahauth	TREAT
8/29/2016 10:57:00 AM	Re: 09:36 entry. M. Pearson, Communications Group, called to indicate that siren WW1, Coffey County Lake South, has been restored to service and tested - SAT.	0	glreeve	lahauth	SE
8/29/2016 11:02:00 AM	Commenced STN SP-122 "CHANNEL CALIBRATION CONTAINMENT PURGE SYSTEM RADIATION MONITOR GT RE-0022". WO 16-412481-000	0	glreeve	lahauth	SE
8/29/2016 11:03:58 AM	Clearance Order: C21 D-AN-N-014 Tags Verified Hung	0	glreeve		CO
8/29/2016 11:13:00 AM	Placed GTRE0022 in bypass for performance of STN SP-122. Referenced ODCM Table 3-2, no ODCM entry required as GTRE033 remains Functional.	0	shafe	lahauth	CRS
8/29/2016 11:42:00 AM	Started CGF01A, "CONDENSER AIR REMOVAL FILTRATION FAN" IAW SYS GE-122.	0	shafe	lahauth	CRS
8/29/2016 11:55:00 AM	Restored GERE0092 to service Functional after opening CGV038 IAW SYS GE-122. ****Exited T.R. 3.3.18 Function 1 Condition A.1 and A.2.1~****.	0	shafe	lahauth	CRS
8/29/2016 11:56:00 AM	Started CGF03A, "MAIN STEAM ENCL. BLDG EXHAUST FAN" IAW SYS GF-120.	0	shafe	lahauth	CRS
8/29/2016 11:56:00 AM	Completed STS CH-033 "PRIMARY TO SECONDARY LEAKAGE DETERMINATION" SAT . Results as follows: Primary to Secondary leakrate: <3.77E-1 gpd Leakrate: <5.90E-3 uCi/min Total Inleakage: 7.5 cfm Air: 1.9 cfm N2: 5.6 cfm	0	shafe	lahauth	CRS
8/29/2016 11:57:00 AM	Secured Discharge of LTDS Tanks 'A' @ 26% and 'B' @ 25% to WWT Basins. IAW SYS HF-141	0	nicrisp	lahauth	TREAT
8/29/2016 11:58:00 AM	Started SGF01, "MAIN STEAM ENCLOSURE BLDG S. A. UNIT".	0	shafe	lahauth	CRS
8/29/2016 12:00:00 PM	The Thermal Power Program is now the primary method of monitoring RTP after start up of Main Steam Enclosure ventillation.	0	shafe	lahauth	CRS
8/29/2016 12:03:00 PM	Depressurized RHR header from 300 PSIG to 55 PSIG IAW SYS EJ-323. Depressurized SI from 290 PSIG to 25 PSIG IAW SYS EM-002.	0	shafe	lahauth	CRS
8/29/2016 12:19:00 PM	Placed WGC 'A' and GDT #4 on service in prep for RHUT 'A' eduction IAW SYS HA-200	0	wihorn1	lahauth	TREAT
8/29/2016 12:21:00 PM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	shafe	lahauth	CRS
8/29/2016 12:22:00 PM	Secured Discharge of WWT Basin 'A' @ 39.8 inches. IAW SYS WT-100. Discharged 87,800 gal.	0	nicrisp	lahauth	TREAT
8/29/2016 12:29:00 PM	Placed Recombiner 'A' on service in prep for RHUT 'A' eduction IAW SYS HA-401	0	wihorn1	lahauth	TREAT
8/29/2016 12:33:00 PM	(ref 10:25 entry) My request for a PROMPT OPERABILITY DETERMINATION from earlier today is cancelled. After discussion, we have determined our best approach to resolving the issue with SGK04B is to repair GKD081 with SGK04B inoperable, then test and restore the unit to operable. Our plan is: 1. Prepare a procedure with instructions for use of a dedicated operator for controlling GKD081 while SGK04A is operable. 2. Start SGK04A, which will OPEN GKHZ0029B, the operator for GKD081. 3. Ensure dedicated operator is in place. 4. Remove power from GKHZ0029B using a Local Control, with the damper open. 5. Secure SGK04A. 6. Repair GKD081. This will require declutching the electric operator from GKHZ0029B. 7. Reclutch and re-engage the operator for GKD081. 8. Restore power to GKHZ0029B. 9. Perform PMT for SGK04A and GKHZ0029B. 10. Perform STS PE-004 for B train CREVS. 11. Perform STS PE-004 for A train CREVS.	0	lahauth	lahauth	SM
8/29/2016 12:36:00 PM	Placed WGC 'B' on service as motive force. Eduction of RHUT 'A' has commenced IAW SYS HA-201	0	wihorn1	lahauth	TREAT
8/29/2016 12:38:00 PM	Started 1FP001PB, "DIESEL DRIVEN FIRE PUMP" IAW STN FP-211.	0	shafe	lahauth	CRS
8/29/2016 12:42:00 PM	RHUT 'A' eduction secured	0	wihorn1	lahauth	TREAT
8/29/2016 12:47:00 PM	Completed STS CH-022 "BORIC ACID TANK A BORON CONCENTRATION DETERMINATION" SAT .	0	shafe	lahauth	CRS
8/29/2016 12:47:00 PM	Completed STS CH-026 "REACTOR COOLANT CHLORIDE FLUORIDE AND DISSOLVED OXYGEN DETERMINATION" SAT .	0	shafe	lahauth	CRS
8/29/2016 12:47:00 PM	Completed STS CH-025 "REACTOR COOLANT DOSE EQUIVILANT IODINE DETERMINATION" SAT .	0	shafe	lahauth	CRS
8/29/2016 12:47:00 PM	Completed STS CH-024 "REACTOR COOLANT DOSE EQUIVALENT XE-133 DETERMINATION" SAT .	0	shafe	lahauth	CRS
8/29/2016 12:48:00 PM	Secured WGC 'B' IAW SYS HA-201	0	wihorn1	lahauth	TREAT
8/29/2016 12:59:00 PM	Completed SYS OPS-001 "WEEKLY EQUIPMENT ROTATION AND READINGS" SAT.	0	shafe	lahauth	CRS
8/29/2016 1:03:00 PM	A BAT boron concentration is 7546 ppm per Chemistry sample taken at 0805 by Royal.	0	shafe	lahauth	CRS
8/29/2016 1:04:00 PM	RCS boron concentration is 174 ppm per Chemistry sample taken at 0810 by Royal.	0	shafe	lahauth	CRS
8/29/2016 1:05:00 PM	Pressurizer Liquid Space boron concentration is 175 ppm per Chemistry sample taken at 1220 by Royal.	0	shafe	lahauth	CRS
8/29/2016 1:08:00 PM	Stopped PBG02A, "BORIC ACID TRANSFER PUMP" IAW skill of the craft.	0	shafe	lahauth	CRS
8/29/2016 1:19:00 PM	Secured SLWMT 'A' recirc IAW SYS HF-203	0	wihorn1	lahauth	TREAT
8/29/2016 1:20:00 PM	Stopped 1FP001PB, "DIESEL DRIVEN FIRE PUMP" IAW STN FP-211.	0	shafe	lahauth	CRS
8/29/2016 1:40:00 PM	Terry Romig is now a dedicated individual while Train B Emergency Exhaust heater breaker is off IAW AP 26C-004.	0	shafe	lahauth	CRS
8/29/2016 1:47:00 PM	Stopped CGG02B, "EMERGENCY EXHAUST FAN" IAW SYS GG-200.	0	shafe	lahauth	CRS
8/29/2016 1:48:00 PM	Terry Romig is no longer a dedicated individual. Ref 1340 log entry.	0	shafe	lahauth	CRS
8/29/2016 1:51:00 PM	Started CGL03B, "AUX/FUEL BLDG NORMAL EXHAUST FAN" IAW SYS GG-200.	0	shafe	lahauth	CRS
8/29/2016 1:57:00 PM	Started SGG01B, "FUEL BLDG SUPPLY AIR UNIT" IAW SYS GG-200.	0	shafe	lahauth	CRS
8/29/2016 1:58:00 PM	Started SGL01, "AUXILIARY BLDG. SUPPLY AIR UNIT" IAW SYS GG-200.	0	shafe	lahauth	CRS
8/29/2016 2:00:00 PM	Notified of an issue affecting Fire Brigade qualification for personnel attending training on two dates in March 2016. One fire brigade member on shift lost his qualification, he has been replaced with a qualified fire brigade member. Reviewing this issue for possible reportability.	0	lahauth	lahauth	SM
8/29/2016 2:15:00 PM	Vendor filled the N2 storage tank to 149 inches per SYS NT-110.	0	kechris	lahauth	RO

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/29/2016 2:31:00 PM	Mike Prock stationed as a dedicated individual while heater breaker is off for Train B Control Room Pressurization Fan IAW SYS GK-121. Ref AP 26C-004.	0	shafe	lahauth	CRS
8/29/2016 2:34:00 PM	Chemistry reports GDT #4 sampled	0	wihorn1	lahauth	TREAT
8/29/2016 2:37:00 PM	Stopped CGK04B, "CONTROL ROOM PRESSURIZATION FAN" IAW SYS GK-121.	0	shafe	lahauth	CRS
8/29/2016 2:38:00 PM	Started SGK02, "CONTROL-BLDG SUPPLY AIR UNIT" IAW SYS GK-121.	0	shafe	lahauth	CRS
8/29/2016 2:38:00 PM	Started CGK01A, "CONTROL BUILDING EXHAUST FAN" IAW SYS GK-121.	0	shafe	lahauth	CRS
8/29/2016 2:39:00 PM	Mike Prock is no longer dedicated individual after closing heater breaker for Train B Control Room Pressurization Fan.	0	shafe	lahauth	CRS
8/29/2016 2:40:00 PM	(ref 14:00 entry) In discussion with licensing, determined that the issue with Fire Brigade qualification is not reportable to the NRC. An RER will be initiated. The issue is associated with TIN: FB 1231421, course offering 69857 on 3/3/16 and course offering 69858 on 3/10/16.	0	lahauth	lahauth	SM
8/29/2016 2:40:00 PM	Stopped CGK03B, "CONTROL ROOM FILTRATION FAN" IAW SYS GK-121.	0	shafe	lahauth	CRS
8/29/2016 2:42:00 PM	Started CGK02A, "ACCESS CONTROL EXHAUST FAN" IAW SYS GK-121.	0	shafe	lahauth	CRS
8/29/2016 2:48:00 PM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	shafe	lahauth	CRS
8/29/2016 2:49:00 PM	Completed STS CH-009 "WASTE GAS DECAY TANK CURIE CONTENT SURVEILLANCE" SAT.	0	shafe	lahauth	CRS
8/29/2016 2:58:00 PM	Secured WGC 'A' IAW SYS HA-200	0	wihorn1	lahauth	TREAT
8/29/2016 3:19:00 PM	Completed STS PE-004 "AUX BUILDING AND CONTROL ROOM PRESSURE TEST" SAT. (Train B)	0	glreeve	lahauth	SE
8/29/2016 3:37:00 PM	(ref 11:55 entry) Performed independent review of TR 3.3.18 exit	0	lahauth	lahauth	SM
8/29/2016 3:54:00 PM	Commenced STS AB-201D "ATMOSPHERIC RELIEF VALVE INSERVICE VALVE TEST" Partial for return to service of "A" Atmospheric Relief Valve. WO 16-413026-000 and WO 16-411624-001.	0	shafe	lahauth	CRS
8/29/2016 4:06:00 PM	Commenced STN SP-001 "PROCESS RADIATION MONITORING SYSTEM SOURCE CHECK". Partial in support of Gas Decay Tank Release Permit U1GB2016-100.	0	shafe	lahauth	CRS
8/29/2016 4:26:10 PM	Clearance Order: C21 D-AN-N-014 Tags Verified Removed	0	glreeve		CO
8/29/2016 4:39:00 PM	Completed STN SP-001 "PROCESS RADIATION MONITORING SYSTEM SOURCE CHECK" SAT. Partial in support of GRP U1GB2016-100	0	shafe	lahauth	CRS
8/29/2016 4:48:00 PM	***Entered Tech. Spec. 3.7.5.~**** Complying with Condition B. Equipment taken out of service: TDAFWP inoperable while AUHV001 has N2 isolated for STS AB-201D. This entry was planned. The Operational Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	shafe	lahauth	CRS
8/29/2016 4:53:00 PM	Entry into Tech Spec 3.7.5 Condition B (ref 16:48) independent SRO verification and bases review completed.	0	lahauth	lahauth	SM
8/29/2016 5:00:00 PM	Secured Radwaste Watch	0	wihorn1	lahauth	TREAT
8/29/2016 5:00:00 PM	Late Entry: Secured the Water Treatment Watch.	1	micrisp	mablow	TREAT
8/29/2016 5:00:00 PM	****Exited Tech. Spec. 3.7.5~**** Condition B. N2 has been restored to TDAFW pump. TDAFW pump is Operable.	0	shafe	lahauth	CRS
8/29/2016 5:30:00 PM	Started PEF01A, "ESSENTIAL SERV. WATER PUMP" IAW SYS EF-200 to support PMT WO 16-411708-000..	0	shafe	lahauth	CRS
8/29/2016 5:32:00 PM	Exit from Tech Spec 3.7.5 independent SRO verification completed.	0	lahauth	lahauth	SM
8/29/2016 5:46:00 PM	Diluted the RCS 140 gallons for Tavg control IAW beginning of shift Reactivity Brief.	0	shafe	lahauth	CRS
8/29/2016 5:56:42 PM	"A" Service Water 1.6 psid	0	jeallen1	lahauth	SITE
8/29/2016 5:59:00 PM	Completed STN FP-211 "DIESEL FIRE PUMP 1FP01PB MONTHLY OPERATION AND FUEL LEVEL CHECK" SAT.	0	shafe	lahauth	CRS
8/29/2016 6:21:00 PM	Completed STS AB-201D "ATMOSPHERIC RELIEF VALVE INSERVICE VALVE TEST" SAT.	0	shafe	lahauth	CRS
8/29/2016 6:21:00 PM	****Exited Tech. Spec. 3.7.4~**** Condition A.1. ABPV001 is Operable. All PMTs complete Satisfactorily.	0	shafe	lahauth	CRS
8/29/2016 6:21:00 PM	Returned ABPV0001, "SG A ATOMSPHERIC RELIEF VALVE <FR> <CAT 1 AOV PROGRAM VALVE> <AFFECTS CONTAINMENT/CLOSURE INTEGRITY> <LOCATION ON AB226DBB-10 AND AB020EBD-8> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT>", to service. All PMTs completed sat.	0	shafe	lahauth	CRS
8/29/2016 6:28:00 PM	Stopped PAN01A, "DEMINERALIZED WATER TRANSFER PUMP" IAW skill of the craft.	0	shafe	lahauth	CRS
8/29/2016 6:32:43 PM	Clearance Order: C21 D-KA-A-014 Tags Verified Removed	0	glreeve		CO
8/29/2016 6:34:49 PM	Clearance Order: C21 D-KA-N-014 Tags Verified Removed	0	glreeve		CO
8/29/2016 6:35:00 PM	Exit from TS 3.7.4 independent SRO verification completed.	0	lahauth	lahauth	SM
8/29/2016 6:36:41 PM	Clearance Order: C21 D-AB-N-029 Tags Verified Removed	0	glreeve		CO
8/29/2016 7:00:00 PM	Relieved as CRS by T. Dunlop.	0	shafe	lahauth	CRS
8/29/2016 7:00:00 PM	Relieved as RO by Tillman.	0	roplumm	lahauth	RO
8/29/2016 7:00:00 PM	Assumed the Turbine watch.	0	jchudso	lahauth	TURB
8/29/2016 7:00:00 PM	Assumed the extra RO watch.	0	jagrube	mablow	RO
8/29/2016 7:00:00 PM	Reviewed the logs prior to assuming the watch and assumed the CRS watch.	0	tidunlo	mablow	CRS
8/29/2016 7:00:00 PM	Assumed the Site watch.	0	tialexa	lahauth	SITE
8/29/2016 7:00:00 PM	Assumed the Aux watch.	0	rischoe	lahauth	AUX
8/29/2016 7:00:00 PM	Reviewed the logs prior to assuming the watch and assumed the SM watch.	0	mablow	mablow	SM
8/29/2016 7:00:00 PM	Assumed the SE watch.	0	kylaubn	mablow	SE
8/29/2016 7:00:00 PM	Assumed the RO watch.	0	trtillm	mablow	RO
8/29/2016 7:00:00 PM	Assumed the BOP watch.	0	madekat	mablow	RO
8/29/2016 7:00:00 PM	Relieved as BOP by Dekat.	0	kechris	lahauth	RO
8/29/2016 7:00:00 PM	Relieved as Work Control SRO and STA by K. Laubner.	0	glreeve	lahauth	SE
8/29/2016 7:00:00 PM	Relieved as SM by M Blow.	0	lahauth	lahauth	SM
8/29/2016 7:34:49 PM	Clearance Order: C21 D-AB-N-028 Approved to Hang	0	kylauhn		CO
8/29/2016 7:45:00 PM	SM CONCERN: A Air Compressor has a leak on a braised fitting, will require new CO and a weld package repair.	0	mablow	mablow	SM
8/29/2016 7:45:00 PM	Added ABPV0004, SG D ATOMSPHERIC RELIEF VALVE <FR> <CAT 1 AOV PROGRAM VALVE> <AFFECTS CONTAINMENT/CLOSURE INTEGRITY> <LOCATION ON AB229DBB-10 AND AB023EBD-8> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT> to the EOL. Reason: 'D' ARV is OOS for planned maintenance. Restore to operable in 7 days. Ref CO C21 D-AB-N-28. Ref T/S 3.7.4. The Current Risk Assessment was reviewed.	0	tidunlo	mablow	CRS

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/29/2016 7:45:00 PM	****Entered Tech. Spec. 3.7.4~**** Complying with Condition A.1. Equipment taken out of service: 'D' ARV is OOS for planned maintenance. Restore to operable in 7 days. Ref CO C21 D-AB-N-28. This entry was planned. The current Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	tidunlo	mablow	CRS
8/29/2016 7:45:00 PM	Commenced STS AL-210C "TDAFW PUMP INSERVICE CHECK VALVE TEST".	0	tidunlo	mablow	CRS
8/29/2016 7:51:03 PM	Clearance Order: C21 D-WM-N-010 Approved to Hang	0	kylaubn		CO
8/29/2016 8:09:00 PM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	tidunlo	mablow	CRS
8/29/2016 8:17:00 PM	Commenced STS MT-018 "WEEKLY INSPECTION OF 125 VDC LEAD-CALCIUM BATTERIES".	0	kylaubn	mablow	SE
8/29/2016 8:21:06 PM	Clearance Order: C21 D-AB-N-028 Tags Verified Hung	0	kylaubn		CO
8/29/2016 8:42:00 PM	IAW AI 22C-013, I have authorized I&C to perform LC on GTRE@@ which is behind protected train signs. Risk was evaluated.	0	mablow	mablow	SM
8/29/2016 8:55:00 PM	Commenced STN AC-002 "WEEKLY TURBINE TEST".	0	tidunlo	mablow	CRS
8/29/2016 9:01:00 PM	Stationed Mike Beard as dedicated operator to maintain TDAFWP operable iaw STS AL-210C section 8.1.	0	tidunlo	mablow	CRS
8/29/2016 9:15:00 PM	Completed STS MT-018 "WEEKLY INSPECTION OF 125 VDC LEAD-CALCIUM BATTERIES" SAT.	0	kylaubn	mablow	SE
8/29/2016 9:18:00 PM	Secured M. Beard as dedicated operator iaw STS AL-210C section 8.1.	0	tidunlo	mablow	CRS
8/29/2016 9:25:00 PM	Stationed M. Beard as dedicated operator to maintain TDAFWP operable iaw STS AL-210C section 8.2.	0	tidunlo	mablow	CRS
8/29/2016 9:30:00 PM	Aux Watch placed the CVCS cation bed in service IAW SYS BG-202.	0	madekat	mablow	RO
8/29/2016 9:37:00 PM	Secured M. Beard as dedicated operator iaw STS AL-210C section 8.2.	0	tidunlo	mablow	CRS
8/29/2016 9:58:00 PM	Commenced STS AB-201D "ATMOSPHERIC RELIEF VALVE INSERVICE VALVE TEST". Partial for AB PV-004, WO#'s 16-411617-001 and 16-411624-001.	0	tidunlo	mablow	CRS
8/29/2016 10:00:00 PM	Commenced STS BB-006 "RCS WATER INVENTORY BALANCE USING THE NPIS COMPUTER".	0	tidunlo	mablow	CRS
8/29/2016 10:00:00 PM	Removed the CVCS cation bed from service, final D/P 15.4 psid IAW SYS BG-202.	0	tidunlo	mablow	CRS
8/29/2016 10:15:00 PM	Depressurized RHR header from 280 PSIG to 50 PSIG IAW SYS EJ-323. Depressurized SI from 210 PSIG to 50 PSIG IAW SYS EM-002.	0	trtillm	mablow	RO
8/29/2016 10:24:00 PM	Deborated the RCS using BTRS for 1.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	tidunlo	mablow	CRS
8/29/2016 10:26:00 PM	Completed STS AL-210C "TDAFW PUMP INSERVICE CHECK VALVE TEST" SAT.	0	tidunlo	mablow	CRS
8/29/2016 10:44:00 PM	Stopped PEF01A, "ESSENTIAL SERV. WATER PUMP" iaw SYS EF-202.	0	tidunlo	mablow	CRS
8/29/2016 10:57:00 PM	Completed STN AC-002 "WEEKLY TURBINE TEST" SAT.	0	tidunlo	mablow	CRS
8/29/2016 11:08:00 PM	***Entered Tech. Spec. 3.7.5.~**** Complying with Condition B. Equipment taken out of service: TDAFWP inoperable while ALHV006 has N2 isolated for STS AB-201D. This entry was planned. The Operational Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	tidunlo	mablow	CRS
8/29/2016 11:25:00 PM	Notified Sys Ops-Transmission, Greg that personnel are entering the switchyard.	0	tidunlo	mablow	CRS
8/29/2016 11:28:00 PM	****Exited Tech. Spec. 3.7.5~**** Condition B. N2 has been restored to TDAFW pump. TDAFW pump is Operable.	0	tidunlo	mablow	CRS
8/29/2016 11:37:00 PM	****Exited Tech. Spec. 3.7.4~**** Condition A.1. STS AB-201D and all pmt's have been completed sat for AB PV-0004.	0	tidunlo	mablow	CRS
8/29/2016 11:37:00 PM	Returned ABPV0004, "SG D ATOMSPHERIC RELIEF VALVE <FR> <CAT 1 AOV PROGRAM VALVE> <AFFECTS CONTAINMENT/CLOSURE INTEGRITY> <LOCATION ON AB229DBB-10 AND AB023EBD-8> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT>", to service. STS AB-201D and all pmt's have been completed sat.	0	tidunlo	mablow	CRS
8/29/2016 11:44:00 PM	Entry into and exit 3.7.4 and 3.7.5 independent SRO verification and bases review completed.	0	mablow	mablow	SM
8/29/2016 11:50:46 PM	Clearance Order: C21 D-AL-T-006 Approved to Hang	0	kylaubn		CO
8/29/2016 11:57:58 PM	Clearance Order: C21 D-GF-N-020 Approved to Hang	0	kylaubn		CO
8/30/2016 12:00:00 AM	Continued the Watch Mode: 1, 3560.95 MWt, 1234.6 MWe. Major Equipment Problems: 'B' Train CREVIS is OOS. Major Tech Spec Action Statements in effect: T/S 3.7.10	0	tidunlo	mablow	CRS
8/30/2016 12:00:00 AM	Completed STN FP-440 "FIRE DOOR VISUAL INSPECTION" SAT. For 15-439970-001	0	fhthire	jocamp	CRS
8/30/2016 12:01:00 AM	Commenced STS NB-005 "BREAKER ALIGNMENT VERIFICATION".	0	tidunlo	mablow	CRS
8/30/2016 12:01:00 AM	Commenced STN KC-008 "FIRE ALARM CONTROL PANEL KC-008 DAILY CHECK".	0	tidunlo	mablow	CRS
8/30/2016 12:01:00 AM	Commenced STS SE-001 "POWER RANGE ADJUSTMENT TO CALORIMETRIC".	0	tidunlo	mablow	CRS
8/30/2016 12:01:00 AM	Commenced STS RE-012 "QPTR DETERMINATION".	0	tidunlo	mablow	CRS
8/30/2016 12:05:00 AM	Clearance Order: C21 D-KA-N-015 Approved to Hang	0	kylaubn		CO
8/30/2016 12:10:00 AM	Completed STN KC-008 "FIRE ALARM CONTROL PANEL KC-008 DAILY CHECK" SAT.	0	tidunlo	mablow	CRS
8/30/2016 12:15:00 AM	Completed STS RE-012 "QPTR DETERMINATION" SAT.	0	tidunlo	mablow	CRS
8/30/2016 12:34:00 AM	Notified Sys Ops-Transmission, Greg that personnel are exiting the switchyard.	0	tidunlo	mablow	CRS
8/30/2016 12:40:00 AM	STS BB-006 results are: 0.046 gpm Total Identified Leakage, 0.062 gpm Total Unidentified Leakage and 0.191 gpm Total T/S Identified Leakage. NCP, 95 gpm letdown, 2 hrs	0	trtillm	mablow	RO
8/30/2016 12:52:00 AM	Systems Operations Generation, Greg called with daily totals of 29440 Gross, 853 Aux, and 28587 Net.	0	tidunlo	mablow	CRS
8/30/2016 12:57:00 AM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	tidunlo	mablow	CRS
8/30/2016 1:00:00 AM	Completed STS AB-201D "ATMOSPHERIC RELIEF VALVE INSERVICE VALVE TEST" SAT. Partial for AB PV-004, WO#'s 16-411617-001 and 16-411624-001.	0	tidunlo	mablow	CRS
8/30/2016 1:17:00 AM	Placed rod control in manual iaw STS SE-001.	0	tidunlo	mablow	CRS
8/30/2016 1:19:00 AM	Completed STS BB-006 "RCS WATER INVENTORY BALANCE USING THE NPIS COMPUTER" SAT.	0	tidunlo	mablow	CRS
8/30/2016 1:39:00 AM	Removed GTRE0021B from service for filter change. Complying with ODCM Table 3-2 Function 1.a Action 40. ****Entered TR 3.3.3 Function 5 Condition D.~**** 72 hours to restore. This entry was planned.	0	tidunlo	mablow	CRS
8/30/2016 1:49:00 AM	Restored rod control to auto iaw STS SE-001.	0	tidunlo	mablow	CRS
8/30/2016 1:52:00 AM	Restored GTRE0021B to service following filter change. ****Exited TR 3.3.3 Function 5~**** Condition D.	0	tidunlo	mablow	CRS
8/30/2016 1:52:00 AM	Removed GTRE0021A from service for filter change. Complying with ODCM Table 3-2 Function 1.b, 1.c Action 43. This entry was planned.	0	tidunlo	mablow	CRS
8/30/2016 1:53:00 AM	Clearance Order: C21 D-AP-N-006 Approved to Hang	0	kylaubn		CO

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/30/2016 1:55:00 AM	Completed STS SE-001 "POWER RANGE ADJUSTMENT TO CALORIMETRIC" SAT.	0	tidunlo	mablow	CRS
8/30/2016 1:58:00 AM	Restored GTRE0021A to service following filter change.	0	tidunlo	mablow	CRS
8/30/2016 2:10:00 AM	Commenced STN SP-001 "PROCESS RADIATION MONITORING SYSTEM SOURCE CHECK". Partial for HF RE-45, COAF U1LB2016-047.	0	tidunlo	mablow	CRS
8/30/2016 2:15:00 AM	Completed STN SP-001 "PROCESS RADIATION MONITORING SYSTEM SOURCE CHECK" SAT. Partial for HF RE-45, COAF U1LB2016-047.	0	tidunlo	mablow	CRS
8/30/2016 2:32:00 AM	Completed STS CR-001 "SHIFT LOG FOR MODES 1 2 AND 3" SAT.	0	tidunlo	mablow	CRS
8/30/2016 3:00:00 AM	Commenced STS CR-001 "SHIFT LOG FOR MODES 1 2 AND 3".	0	tidunlo	mablow	CRS
8/30/2016 3:00:00 AM	Completed STS NB-005 "BREAKER ALIGNMENT VERIFICATION" SAT.	0	tidunlo	mablow	CRS
8/30/2016 3:33:00 AM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	tidunlo	mablow	CRS
8/30/2016 4:30:00 AM	Commenced STN TCA-001 "MANUAL TIME CRITICAL ACTION TIMING".	0	kylaubn	mablow	SE
8/30/2016 5:00:00 AM	Added ABPV0003, SGC ATOMSPHERIC RELIEF VALVE <FR> <CAT 1 AOV PROGRAM VALVE> <AFFECTS CONTAINMENT/CLOSURE INTEGRITY> <LOCATION ON AB228DBB-10 AND AB022EBD-8> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT> to the EOL. Reason: 'C' ARV is OOS for planned maintenance. Restore in 7 days Ref CO C21 D-KA-N015 and T/S 3.7.4. Restore iaw work instructions. The Current Risk Assessment was reviewed.	0	tidunlo	mablow	CRS
8/30/2016 5:00:00 AM	****Entered Tech. Spec. 3.7.5~**** Complying with Condition B.1. Equipment taken out of service: TDAFWP is OOS for planned maintenance. Restore to operable in 72 hours. Ref CO C21 KA-N-15, C21 AL-T-006. This entry was planned. The current Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	tidunlo	mablow	CRS
8/30/2016 5:00:00 AM	****Entered Tech. Spec. 3.7.4~**** Complying with Condition A.1. Equipment taken out of service: 'C' ARV is OOS for planned maintenance. Restore in 7 days Ref CO C21 D-KA-N015. This entry was planned. The current Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	tidunlo	mablow	CRS
8/30/2016 5:00:00 AM	Added AL, AUXILIARY FEEDWATER SYSTEM to the EOL. Reason: Entered the following valves in the EOL iaw STN TCA-001. ALV0056, ALV0061, ALV0066, ALV0070. The Current Risk Assessment was reviewed.	0	tidunlo	mablow	CRS
8/30/2016 5:00:00 AM	Added PAL02, AUX FEEDWATER PUMP---TURBINE DRIVEN <FR> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT> to the EOL. Reason: TDAFWP is OOS for planned maintenance. Restore to operable in 72 hours. Ref CO C21 KA-N-15, C21 AL-T-006. Restoration iaw work instructions. Ref T/S 3.7.5. The Current Risk Assessment was reviewed.	0	tidunlo	mablow	CRS
8/30/2016 5:05:00 AM	"A" Service water strainer DP is 1.6	0	jawyatt	mablow	SITE
8/30/2016 5:23:00 AM	Returned AL, "AUXILIARY FEEDWATER SYSTEM", to service. ALV0056, ALV0061, ALV0066, ALV0070 have been restored to the locked open position.	0	tidunlo	mablow	CRS
8/30/2016 6:01:00 AM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	tidunlo	mablow	CRS
8/30/2016 6:22:00 AM	Clearance Order: C21 D-AB-N-028 Tags Verified Removed	0	mablow		CO
8/30/2016 6:24:00 AM	Clearance Order: C21 D-GF-N-020 Tags Verified Hung	0	mablow		CO
8/30/2016 6:26:00 AM	Clearance Order: C21 D-WM-N-010 Tags Verified Hung	0	kylaubn		CO
8/30/2016 6:27:00 AM	Entry into 3.7.4, 3.7.5 independent SRO verification and bases review completed.	0	mablow	mablow	SM
8/30/2016 6:27:00 AM	IAW AI 22C-013, I have authorized MEL to perform breaker verification which is behind protected train signs. Risk was evaluated.	0	mablow	mablow	SM
8/30/2016 6:30:00 AM	Assumed the Treatment Systems/RW watch.	0	mafeldh	mablow	TREAT
8/30/2016 6:30:00 AM	Assumed the Water Treatment Watch.	0	nicrisp	jocamp	TREAT
8/30/2016 6:30:00 AM	Clearance Order: C21 D-AP-N-006 Tags Verified Hung	0	kylaubn		CO
8/30/2016 6:43:00 AM	Clearance Order: C21 D-AL-T-006 Tags Verified Hung	0	kylaubn		CO
8/30/2016 7:00:00 AM	Assumed the BOP.	0	almeyer1	mablow	RO
8/30/2016 7:00:00 AM	Assumed the Turbine watch.	0	aalucas	mablow	TURB
8/30/2016 7:00:00 AM	Stationed as the extra RO.	0	geturne	jocamp	RO
8/30/2016 7:00:00 AM	Assumed the WCSRO and STA watch.	0	thfairc	jocamp	CRS
8/30/2016 7:00:00 AM	Relieved as Aux Watch by Parsons.	0	rischoe	jocamp	AUX
8/30/2016 7:00:00 AM	Relieved as SE by Faircloth.	0	kylaubn	mablow	SE
8/30/2016 7:00:00 AM	Assumed the CRS watch.	0	daghols	jocamp	CRS
8/30/2016 7:00:00 AM	Relieved as CRS by Gholson.	0	tidunlo	mablow	CRS
8/30/2016 7:00:00 AM	Assumed the SM watch.	0	jocamp	jocamp	SM
8/30/2016 7:00:00 AM	Relieved as SM by Camp.	0	mablow	mablow	SM
8/30/2016 7:00:00 AM	Assumed the aux watch.	0	maparso	jocamp	AUX
8/30/2016 7:00:00 AM	Assumed the RO watch.	0	jostone	mablow	RO
8/30/2016 7:00:00 AM	Relieved as RO by Stone.	0	trtillm	mablow	RO
8/30/2016 7:00:00 AM	Assumed the Site watch.	0	daheyn	mablow	SITE
8/30/2016 7:00:00 AM	Relieved as BOP by A. Meyer.	0	madekat	mablow	RO
8/30/2016 7:46:00 AM	Commenced Discharge of LTDS Tank 'B' @ 71% to WWT Basing. IAW SYS HF-141; LRP# U1LC 2016-039	0	nicrisp	jocamp	TREAT
8/30/2016 7:48:00 AM	Initiated discharge of SLWMT 'A' @ 90% to environs IAW SYS HF-203 U1LB 2016-047	0	mafeldh	jocamp	TREAT
8/30/2016 7:49:00 AM	Commenced STN FP-440 "FIRE DOOR VISUAL INSPECTION". Partial for 15-409970-001	0	thfairc	jocamp	CRS
8/30/2016 7:51:00 AM	Commenced STS PE-004 "AUX BUILDING AND CONTROL ROOM PRESSURE TEST". PMT for "B" train CRVES	0	daghols	jocamp	CRS
8/30/2016 8:00:00 AM	Started processing FDT 'B' @ 85% to SLWMT 'B' @ 21% IAW SYS HB-143/HB-145	0	mafeldh	jocamp	TREAT
8/30/2016 8:02:00 AM	Initiated draining RHUT 'B' @ 8% to WHUT @ 6% IAW SYS HE-206	0	mafeldh	jocamp	TREAT
8/30/2016 8:09:00 AM	Depressurized RHR header from 310 PSIG to 50 PSIG IAW SYS EJ-323. Depressurized SI from 260 PSIG to 50 PSIG IAW SYS EM-002.	0	almeyer1	jocamp	RO

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/30/2016 8:19:00 AM	Clearance Order: C21 D-KA-N-015 Tags Verified Hung	0	thfairc		CO
8/30/2016 8:28:00 AM	Initiated discharge of GDT #6 @47psig to environs U1GB2016-100 IAW SYS HA-204	0	mafeldh	jocamp	TREAT
8/30/2016 8:31:00 AM	Diluted the RCS 140 gallons for Tavg control IAW beginning of shift Reactivity Brief.	0	daghols	jocamp	CRS
8/30/2016 8:33:00 AM	Notified Sys Ops-Transmission, Scott that Site Watch is entering the switchyard.	0	daghols	jocamp	CRS
8/30/2016 8:39:00 AM	Started CCA01A, "STEAM PACKING EXHAUSTER BLOWER "A" IAW SYS OMT-001.	0	almeyer1	jocamp	RO
8/30/2016 8:40:00 AM	Stopped CCA01B, "STEAM PACKING EXHAUSTER BLOWER "B" IAW SYS OMT-001. Sealing Steam exhaust vacuum stabilized at 17.5 inches water.	0	almeyer1	jocamp	RO
8/30/2016 8:45:00 AM	Commence draining the DDHUT to a Hic/Liner IAW SYS HB-155	0	mafeldh	jocamp	TREAT
8/30/2016 8:55:00 AM	Commenced SYS OMT-001 "OPERATIONS MONTHLY TASKS".	0	daghols	jocamp	CRS
8/30/2016 9:02:00 AM	Notified Sys Ops-Transmission, Scott that Site Watch is exiting the switchyard.	0	daghols	jocamp	CRS
8/30/2016 9:29:00 AM	Commenced STN PE-068 "PERIODIC TESTING OF AIR OPERATED VALVES".	0	thfairc	jocamp	CRS
8/30/2016 9:45:00 AM	Received phone call from aux building that BL-V033 (RMW to CVCS components) located in the VCT valve room has a leak of approximately 90 dpm. It appears that the leakoff in bonnet has been bent downward while scaffolding was being constructed in the area. Scaffolding work has been secured in room and supervisor directed to see shift manager prior to recommencing. Valve has been backseated with info tag attached to valve. Leakage has stopped. CR# 106770, WO 16-417212-000	0	daghols	jocamp	CRS
8/30/2016 9:46:00 AM	Clearance Order: C21 D-KA-A-015 Approved to Hang	0	thfairc		CO
8/30/2016 10:03:00 AM	RCS boron concentration is 171 ppm per Chemistry sample taken at 0815 by Mayes.	0	daghols	jocamp	CRS
8/30/2016 10:03:00 AM	Completed STS CH-023 "BORIC ACID TANK B BORON CONCENTRATION DETERMINATION" SAT . Boron concentration is 7578 ppm.	0	daghols	jocamp	CRS
8/30/2016 10:05:00 AM	Secured SLWMT 'A' @ 5% discharge to the environs IAW SYS HF-203. 14,408 gallons discharged.	0	mafeldh	jocamp	TREAT
8/30/2016 10:22:00 AM	Secured the DDHUT draining to a Hic/Liner IAW SYS HB-155.	0	mafeldh	jocamp	TREAT
8/30/2016 10:34:00 AM	'A' SW strainer d/p is 1.6 psid	0	daheyn	jocamp	SITE
8/30/2016 10:52:00 AM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief. 6.9 psid on "A" BTRS.	0	daghols	jocamp	CRS
8/30/2016 11:15:00 AM	Closed DAV098 and 108 for troubleshooting low vacuum on waterbox vent pump skid, will monitor for the next two hours. Placed valves on whiteboard.	0	daghols	jocamp	CRS
8/30/2016 11:29:00 AM	Clearance Order: C21 D-KA-A-015 Tags Verified Hung	0	thfairc		CO
8/30/2016 12:12:00 PM	Clearance Order: C21 D-LE-N-036 Approved to Hang	0	thfairc		CO
8/30/2016 12:50:00 PM	Secured GDT #6 @ 5.6 psig discharge to the environs IAW SYS HA-204.	0	mafeldh	jocamp	TREAT
8/30/2016 12:54:00 PM	Aux steam restoration plan has been added to ops focus sheet OOS/degraded and Jeff Isch is working with maint to accelerate the return dates. The SM concern is closed.	0	jocamp	jocamp	SM
8/30/2016 12:58:00 PM	Clearance Order: C21 D-GF-N-020A Approved to Hang	0	thfairc		CO
8/30/2016 12:58:00 PM	Clearance Order: C21 D-GF-N-020A Tags Verified Hung	0	thfairc		CO
8/30/2016 1:23:00 PM	Clearance Order: C21 D-LE-N-036 Tags Verified Hung	0	thfairc		CO
8/30/2016 1:31:00 PM	Clearance Order: C21 D-GF-N-020 Tags Verified Removed	0	thfairc		CO
8/30/2016 1:32:00 PM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	daghols	jocamp	CRS
8/30/2016 1:41:00 PM	Secured Rhut 'B' draining to CRW Sump IAW SYS HE-206 WHUT @ 56%	0	mafeldh	jocamp	TREAT
8/30/2016 1:43:00 PM	Placed Rhut 'B' @ 0% on service in prep for blended flow IAW SYS HE-201.	0	mafeldh	jocamp	TREAT
8/30/2016 1:45:00 PM	Bypassed the Rhut Demins using the manual valves IAW SYS HE-203.	0	mafeldh	jocamp	TREAT
8/30/2016 1:45:00 PM	Commenced SYS HE-203 "RECYCLE EVAPORATOR FEED DEMIN OPERATIONS". Bypassing Rhut Demins	0	mafeldh	jocamp	TREAT
8/30/2016 2:10:00 PM	Removed DAV098 and 108 from white board, no change in waterbox vent pressure (~5.5" HgA), no other valves indicate leakage, will continue to run 3 pumps and monitor pressure.	0	daghols	jocamp	CRS
8/30/2016 2:14:00 PM	Secured MSE HVAC iaw SYS GF-120 to support WO PMTs 14-396198-006/007.	0	daghols	jocamp	CRS
8/30/2016 2:20:00 PM	Commenced blending to "B" RHUT in preps for outage iaw SYS BG-216 for COAF 6877	0	daghols	jocamp	CRS
8/30/2016 2:38:00 PM	Clearance Order: C21 D-HB-N-049 Approved to Hang	0	thfairc		CO
8/30/2016 2:39:00 PM	Clearance Order: C21 D-HB-N-050 Approved to Hang	0	thfairc		CO
8/30/2016 2:57:00 PM	Started MSE HVAC iaw SYS GF-120 after completion of WO 14-396198-006/007 PMTS.	0	daghols	jocamp	CRS
8/30/2016 3:05:00 PM	Secured FDT 'B' @ 6% processing via the Zero System to SLWMT 'B' @ 63% IAW SYS HB-143 & SYS HB-145. 7,119 gallons processed.	0	mafeldh	jocamp	TREAT
8/30/2016 3:18:00 PM	Flushed Tuf membranes & pumped the contents of Tk-1 to FDT 'A' IAW SYS HB-149.	0	mafeldh	jocamp	TREAT
8/30/2016 3:30:00 PM	Clearance Order: C21 D-BL-N-008 Approved to Hang	0	thfairc		CO
8/30/2016 3:42:00 PM	Clearance Order: C21 D-GF-N-020A Tags Verified Removed	0	thfairc		CO
8/30/2016 3:52:00 PM	Added 7333 gals of blended flow to "B" RHUT iaw SYS BG-216, radwaste indicates ~12% "B" RHUT level, will blend another 2000 gals to achieve ~14% in RHUT.	0	daghols	jocamp	CRS
8/30/2016 3:54:00 PM	Recommenced blended flow to "B" RHUT iaw SYS BG-216.	0	daghols	jocamp	CRS
8/30/2016 3:55:00 PM	Clearance Order: C21 D-BL-N-008 Tags Verified Hung	0	thfairc		CO
8/30/2016 4:11:00 PM	Depressurized RHR header from 310 PSIG to 55 PSIG IAW SYS EJ-323. Depressurized SI from 300 PSIG to 50 PSIG IAW SYS EM-002.	0	jostone	jocamp	RO
8/30/2016 4:13:00 PM	Completed STN PE-068 "PERIODIC TESTING OF AIR OPERATED VALVES" SAT.	0	thfairc	jocamp	CRS
8/30/2016 4:27:00 PM	Placed Rhut 'A' @ 17% on service in prep for the flush IAW SYS HE-201.	0	mafeldh	jocamp	TREAT
8/30/2016 4:35:00 PM	Secured blending to RHUT "B" iaw SYS BG-216.	0	daghols	jocamp	CRS
8/30/2016 4:54:00 PM	Deborated the RCS using BTRS for 2.5 minutes at a rate of 75 gpm IAW beginning of shift reactivity brief.	0	daghols	jocamp	CRS
8/30/2016 5:00:00 PM	Late Entry: Secured the Water Treatment Watch.	1	nicrisp	ermarti1	TREAT
8/30/2016 5:00:00 PM	Secured the Treatment Systems/RW watch.	0	mafeldh	mablow	TREAT
8/30/2016 6:10:00 PM	I am making the control room door latch an SM concern. The door is not reliably unlatching to allow ingress and egress. Door 36043.	0	jocamp	jocamp	SM
8/30/2016 7:00:00 PM	Reviewed the logs prior to assuming the watch and assumed the Work Control SRO watch.	0	edpitt	jocamp	SE
8/30/2016 7:00:00 PM	Assumed the SM watch.	0	ermarti1	ermarti1	SM
8/30/2016 7:00:00 PM	Assumed the watch as CRS and STA.	0	mifulle1	jocamp	CRS
8/30/2016 7:00:00 PM	Assumed the RO watch.	0	jumarch	jocamp	RO
8/30/2016 7:00:00 PM	Relieved as WCSRO by Pitt. Relieved of the STA duties by Fuller.	0	thfairc	jocamp	CRS
8/30/2016 7:00:00 PM	Reviewed the logs prior to assuming the watch and assumed the SM U/I watch.	0	stlink	jocamp	SM
8/30/2016 7:00:00 PM	Relieved as SM by Martinson.	0	jocamp	jocamp	SM
8/30/2016 7:00:00 PM	Secured as the Extra RO.	0	geturne	jocamp	RO

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/30/2016 7:00:00 PM	Relieved as BOP by Norman.	0	almeyer1	jocamp	RO
8/30/2016 7:00:00 PM	Relieved as RO by Justin Marchant.	0	jostone	jocamp	RO
8/30/2016 7:00:00 PM	Relieved almeyer1, BOP	0	ronorma	jocamp	RO
8/30/2016 7:00:00 PM	Assumed the turb watch.	0	hinguye	jocamp	TURB
8/30/2016 7:00:00 PM	Assumed the Aux watch.	0	brskile	jocamp	AUX
8/30/2016 7:00:00 PM	Assumed the Site watch.	0	juspeer	jocamp	SITE
8/30/2016 7:38:00 PM	Commenced STN TCA-001 "MANUAL TIME CRITICAL ACTION TIMING", partial for As-Left data collection for ALV0056, ALV00o1, ALV0066, and ALV0071.	0	edpitt	ermarti1	SE
8/30/2016 7:49:00 PM	Commenced STS AB-201D "ATMOSPHERIC RELIEF VALVE INSERVICE VALVE TEST", partial for test of 'C' Atmosphere Relief Valve.	0	ermarti1	ermarti1	CRS
8/30/2016 7:52:00 PM	Commenced STS AL-201C "TURBINE DRIVEN AUXILIARY FEEDWATER SYSTEM INSERVICE VALVE TEST".	0	mifulle1	ermarti1	CRS
8/30/2016 7:54:00 PM	Commenced STS AB-201B "TDAFP STEAM ISOLATION INSERVICE VALVE TEST".	0	mifulle1	ermarti1	CRS
8/30/2016 7:55:00 PM	Commenced STN AL-201 "AUXILIARY FEEDWATER SYSTEM VALVE TEST".	0	mifulle1	ermarti1	CRS
8/30/2016 7:56:00 PM	Commenced STN FC-201 "TDAFW PUMP SYSTEM VALVE TEST".	0	mifulle1	ermarti1	CRS
8/30/2016 8:21:00 PM	ALV0056, ALV0061, ALV0066, ALV0071 cycled IAW STN TCA-01, Time Critical Actions testing.	0	mifulle1	ermarti1	CRS
8/30/2016 8:26:00 PM	Clearance Order: C21 D-GB-B-017 Tags Verified Removed	0	edpitt		CO
8/30/2016 8:29:00 PM	ALV0056, ALV0061, ALV0066, ALV0071 returned to locked open position IAW STN TCA-01, Time Critical Actions testing complete.	0	mifulle1	ermarti1	CRS
8/30/2016 9:02:00 PM	Stationed Lance Link as the dedicated as the dedicated operator for fan start, while conducting corrective maintenance on SGK04A discharge damper.	0	mifulle1	ermarti1	CRS
8/30/2016 9:02:00 PM	Stationed Mike Payne as the dedicated individual at the discharge damper for SGK04A, to support repairs.	0	mifulle1	ermarti1	CRS
8/30/2016 9:02:00 PM	Started SGK04A, "CONTROL ROOM A/C UNIT <TIME CRITICAL ACTION EQUIPMENT>", IAW SYS GK-123 for testing.	0	mifulle1	ermarti1	CRS
8/30/2016 9:09:00 PM	Stationed Brad Skiles as the dedicated individual for securing the SGK04A unit, IAW SYS GK-123.	0	mifulle1	ermarti1	CRS
8/30/2016 9:15:00 PM	Stopped SGK04A, "CONTROL ROOM A/C UNIT <TIME CRITICAL ACTION EQUIPMENT>", IAW SYS GK-123.	0	mifulle1	ermarti1	CRS
8/30/2016 9:16:00 PM	Commenced STS AL-103 "TDAFW PUMP INSERVICE PUMP TEST".	0	mifulle1	ermarti1	CRS
8/30/2016 9:19:00 PM	Secured Brad Skiles as the dedicated individual.	0	mifulle1	ermarti1	CRS
8/30/2016 9:29:00 PM	Completed STN TCA-001 "MANUAL TIME CRITICAL ACTION TIMING", partial for As-Found values for ALV0056, ALV0061, ALV0066, 7 ALV0071, SAT.	0	edpitt	ermarti1	SE
8/30/2016 9:31:00 PM	Completed STN TCA-001 "MANUAL TIME CRITICAL ACTION TIMING", partial for As-Left data for ALV0056, ALV0061, ALV0066, & ALV0071, SAT.	0	edpitt	ermarti1	SE
8/30/2016 10:00:00 PM	Received Alarm 97B "COND PIT SUMP LEV HI". Dispatched Turbine Watch to investigate. Performing ALR 97B.	0	mifulle1	ermarti1	CRS
8/30/2016 10:15:00 PM	Upon investigation, one of the East Turbine bldg sump pumps is on CO# D-LE-N-036. The second East Turbine bldg sump tripped on overcurrent. WO# 16-411481-000. There is a temporary pump being used to pump down the sump manually. Alarm 97B Clear.	0	mifulle1	ermarti1	CRS
8/30/2016 10:22:00 PM	Clearance Order: C21 D-AL-T-006 Tags Verified Removed	0	edpitt		CO
8/30/2016 10:23:00 PM	Clearance Order: C21 D-KA-N-015 Tags Verified Removed	0	edpitt		CO
8/30/2016 10:26:00 PM	Clearance Order: C21 D-WM-N-009 Tags Verified Removed	0	edpitt		CO
8/30/2016 10:43:00 PM	Started SGK04A, "CONTROL ROOM A/C UNIT <TIME CRITICAL ACTION EQUIPMENT>", IAW SYS GK-123.	0	mifulle1	ermarti1	CRS
8/30/2016 10:43:00 PM	Stationed Brad Skiles as the dedicated individual for securing the SGK04A unit, IAW SYS GK-123.	0	mifulle1	ermarti1	CRS
8/30/2016 10:55:00 PM	Mike Payne and Lance Link are no longer dedicated individuals.	0	mifulle1	ermarti1	CRS
8/30/2016 10:57:00 PM	Stopped SGK04A, "CONTROL ROOM A/C UNIT <TIME CRITICAL ACTION EQUIPMENT>", IAW SYS GK-123.	0	mifulle1	ermarti1	CRS
8/30/2016 10:59:00 PM	Secured Brad Skiles as the dedicated operator.	0	mifulle1	ermarti1	CRS
8/30/2016 11:11:00 PM	Aux Watch placed the CVCS cation bed in service IAW SYS BG-202.	0	mifulle1	ermarti1	CRS
8/30/2016 11:46:00 PM	Removed the CVCS cation bed from service, final D/P 15.3 psid IAW SYS BG-202.	0	mifulle1	ermarti1	CRS
8/31/2016 12:00:00 AM	Continued the Watch Mode: 1, 3558.49 MWt, 1232.7 MWe. Major Equipment Problems: None Major Tech Spec Action Statements in effect: TS 3.7.4, 3.7.5, 3.7.10	0	mifulle1	ermarti1	CRS
8/31/2016 12:00:00 AM	Commenced STN KC-008 "FIRE ALARM CONTROL PANEL KC-008 DAILY CHECK".	0	mifulle1	ermarti1	CRS
8/31/2016 12:02:00 AM	Reduced Turbine Load by 2 Trim Clicks, for Tave control.	0	mifulle1	ermarti1	CRS
8/31/2016 12:30:00 AM	Commenced STS SE-001 "POWER RANGE ADJUSTMENT TO CALORIMETRIC".	0	mifulle1	ermarti1	CRS
8/31/2016 12:33:00 AM	Depressurized RHR header from 320 PSIG to 50 PSIG IAW SYS EJ-323. Depressurized SI from 310 PSIG to 50 PSIG IAW SYS EM-002.	0	jumarch	ermarti1	RO
8/31/2016 12:37:00 AM	Commenced STN AP-102 "NSAFP FULL FLOW TEST".	0	mifulle1	ermarti1	CRS
8/31/2016 12:49:00 AM	Completed STN KC-008 "FIRE ALARM CONTROL PANEL KC-008 DAILY CHECK" SAT.	0	mifulle1	ermarti1	CRS
8/31/2016 1:05:00 AM	Completed STS SE-001 "POWER RANGE ADJUSTMENT TO CALORIMETRIC" SAT.	0	mifulle1	ermarti1	CRS
8/31/2016 1:24:00 AM	Reduced Turbine Load by 4 Trim Clicks, for Tave control.	0	mifulle1	ermarti1	CRS
8/31/2016 1:26:00 AM	'A' Pzr B/U Htrs energized in anticipation for down power of plant to support STS AL-103, TDAFW INSERVICE PUMP TEST.	0	mifulle1	ermarti1	CRS
8/31/2016 1:45:00 AM	Started PAL02, "AUX FEEDWATER PUMP---TURBINE DRIVEN <FR> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT>", IAW STS AL-103.	0	mifulle1	ermarti1	CRS
8/31/2016 1:51:00 AM	Reduced Turbine Load by 4 trim clicks.	0	mifulle1	ermarti1	CRS
8/31/2016 1:53:00 AM	Completed STS AL-201C "TURBINE DRIVEN AUXILIARY FEEDWATER SYSTEM INSERVICE VALVE TEST" SAT, for ALHV012.	0	mifulle1	ermarti1	CRS
8/31/2016 2:11:00 AM	Stopped PAL02, "AUX FEEDWATER PUMP---TURBINE DRIVEN <FR> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT>", IAW STS AL-103.	0	mifulle1	ermarti1	CRS
8/31/2016 2:12:00 AM	Completed STS AB-201B "TDAFP STEAM ISOLATION INSERVICE VALVE TEST" SAT.	0	mifulle1	ermarti1	CRS
8/31/2016 2:16:00 AM	****Exited Tech. Spec. 3.7.4~**** Condition A.1.	0	mifulle1	ermarti1	CRS
8/31/2016 2:16:00 AM	Returned ABPV0003, "SGC ATOMSPHERIC RELIEF VALVE <FR> <CAT 1 AOV PROGRAM VALVE> <AFFECTS CONTAINMENT/CLOSURE INTEGRITY> <LOCATION ON AB228DBB-10 AND AB022EBD-8> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT>", to service.	0	ermarti1	ermarti1	SM
8/31/2016 2:16:00 AM	Completed STS AB-201D "ATMOSPHERIC RELIEF VALVE INSERVICE VALVE TEST" SAT, partial for 'C' ARV.	0	mifulle1	ermarti1	CRS
8/31/2016 2:20:00 AM	Completed STN AL-201 "AUXILIARY FEEDWATER SYSTEM VALVE TEST" SAT, partial for ALHV-036.	0	mifulle1	ermarti1	CRS

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/31/2016 2:22:00 AM	Completed STN FC-201 "TDAFW PUMP SYSTEM VALVE TEST" SAT.	0	mifulle1	ermarti1	CRS
8/31/2016 3:00:00 AM	Commenced STS CR-001 "SHIFT LOG FOR MODES 1 2 AND 3".	0	mifulle1	ermarti1	CRS
8/31/2016 3:08:00 AM	Completed STS CR-001 "SHIFT LOG FOR MODES 1 2 AND 3" SAT.	0	mifulle1	ermarti1	CRS
8/31/2016 3:11:00 AM	Systems Operations Generation, Rob called with daily totals of 29433 Gross, 864 Aux, and 28569 Net.	0	mifulle1	ermarti1	CRS
8/31/2016 3:36:00 AM	Started PAL02, "AUX FEEDWATER PUMP---TURBINE DRIVEN <FR> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT>", IAW STS AL-103.	0	mifulle1	ermarti1	CRS
8/31/2016 3:43:00 AM	Stopped PAL02, "AUX FEEDWATER PUMP---TURBINE DRIVEN <FR> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT>", IAW STS AL-103.	0	mifulle1	ermarti1	CRS
8/31/2016 3:44:00 AM	Clearance Order: C21 D-KJ-N-010 Approved to Hang	0	edpitt		CO
8/31/2016 4:35:00 AM	Commenced Turbine unload at 2.4MW/min, in OPEN LOOP to establish reactor power </=97%, IAW STN AP-102, NSAFP FULL FLOW TEST.	0	mifulle1	ermarti1	CRS
8/31/2016 4:37:00 AM	Placed control rods in MANUAL. CB 'D' is at 228 steps.	0	mifulle1	ermarti1	CRS
8/31/2016 4:40:00 AM	Inserted CB 'D' to 216 steps for Tave control.	0	mifulle1	ermarti1	CRS
8/31/2016 4:47:00 AM	Inserted CB 'D' to 206 steps for Tave control.	0	mifulle1	ermarti1	CRS
8/31/2016 4:52:00 AM	Turbine load decrease is secured. Turbine load is 1196MWe.	0	mifulle1	ermarti1	CRS
8/31/2016 4:52:00 AM	Inserted CB 'D' to 202 steps for Tave control.	0	mifulle1	ermarti1	CRS
8/31/2016 5:00:00 AM	Established Thermal Power at 96.67%, RX PWR TEN MIN MOV AVG is 3445.6MWth.	0	mifulle1	ermarti1	CRS
8/31/2016 5:31:00 AM	Commenced STS CH-032 "CONDENSATE STORAGE TANK TOTAL CURIE CONTENT DETERMINATION".	0	mifulle1	ermarti1	CRS
8/31/2016 5:35:00 AM	Alarm 61C, 'PROCESS RAD MON FAIL', in. Performed ALR 61C, alarm not clear. WO# 15-409963-001.	0	mifulle1	ermarti1	CRS
8/31/2016 5:51:00 AM	Completed STS AL-103 "TDAFW PUMP INSERVICE PUMP TEST" SAT.	0	ermarti1	ermarti1	SM
8/31/2016 5:51:00 AM	Returned PAL02, "AUX FEEDWATER PUMP---TURBINE DRIVEN <FR> <TIME CRITICAL ACTION EQUIPMENT> <FR=FIRE RISK SIGNIFCANT COMPONENT>", to service.	0	ermarti1	ermarti1	SM
8/31/2016 5:51:00 AM	****Exited Tech. Spec. 3.7.5-**** Condition B.1.	0	ermarti1	ermarti1	SM
8/31/2016 5:56:00 AM	****Entered Tech. Spec. 3.7.5-**** Complying with Condition B.1. Equipment taken out of service: TDAFWP is OOS for STN AP-102, NSAFP FULL FLOW TEST . Restore to operable in 72 hours. This entry was planned. The current Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	mifulle1	ermarti1	CRS
8/31/2016 6:04:00 AM	Clearance Order: C21 D-AP-N-006 Tags Verified Removed	0	ermarti1		CO
8/31/2016 6:25:00 AM	New SM Concern- The 'B' SBO failed to synch to the bus during the performance of STN AP-102. CR#106804	0	jocamp	jocamp	SM
8/31/2016 6:30:00 AM	Assumed the Treatment Systems/RW watch.	0	mafeldh	ermarti1	TREAT
8/31/2016 6:30:00 AM	Assumed Treatment Systems Water Treatment Watch	0	kidonoh	ermarti1	TREAT
8/31/2016 6:44:00 AM	****Exited Tech. Spec. 3.7.5-**** Condition B.1.	0	mifulle1	ermarti1	CRS
8/31/2016 6:47:00 AM	Entry into and exit from TS 3.7.5 independent SRO verification and bases review completed.	0	ermarti1	ermarti1	SM
8/31/2016 6:47:00 AM	Exit from TS 3.7.4 independent SRO verification completed.	0	ermarti1	ermarti1	SM
8/31/2016 6:55:00 AM	Service Water strainer A differential pressure was 1.6 psid at 2030 and 0500	0	juspeer	ermarti1	SITE
8/31/2016 6:58:00 AM	Controls rods are in auto.	0	mifulle1	ermarti1	CRS
8/31/2016 7:00:00 AM	Assumed the Aux watch.	0	nameffo	ermarti1	AUX
8/31/2016 7:00:00 AM	Assumed the CRS watch.	0	daghols	ermarti1	CRS
8/31/2016 7:00:00 AM	Relieved as SM by Camp.	0	ermarti1	ermarti1	SM
8/31/2016 7:00:00 AM	Assumed the turbine watch.	0	josauer	ermarti1	TURB
8/31/2016 7:00:00 AM	Stationed extra SRO.	0	wabrand	ermarti1	SE
8/31/2016 7:00:00 AM	Relieved as Work Control SRO by Faircloth.	0	edpitt	ermarti1	SE
8/31/2016 7:00:00 AM	Assumed the SM watch.	0	jocamp	jocamp	SM
8/31/2016 7:00:00 AM	Assumed the WCSRO and STA watch.	0	thfairc	ermarti1	CRS
8/31/2016 7:00:00 AM	Assumed the BOP watch.	0	jostone	ermarti1	RO
8/31/2016 7:00:00 AM	Relieved by jostone, BOP	0	ronorma	ermarti1	RO
8/31/2016 7:00:00 AM	Assumed the RO watch.	0	geturne	jocamp	RO
8/31/2016 7:00:00 AM	Relieved as RO by Turner.	0	jumarch	ermarti1	RO
8/31/2016 7:00:00 AM	Secured as the SM U/I.	0	stlink	ermarti1	SM
8/31/2016 7:00:00 AM	Assumed the Site watch.	0	aalucas	ermarti1	SITE
8/31/2016 7:05:00 AM	Raised Main Generator reactive load 20 MVARs per request from Westar Energy Transmission System Operator, Scott	0	mifulle1	ermarti1	CRS
8/31/2016 7:05:00 AM	Added TP-12 sizzling, CR 106785 as an SM concern. The TP has been flagged off.	0	jocamp	jocamp	SM
8/31/2016 7:35:00 AM	Started Discharging LTDS 'B' @ 64% to WT Basin 'B' IAW SYS HF-141	0	kidonoh	ermarti1	TREAT
8/31/2016 8:00:00 AM	Assumed the RO.	0	almeyer1	ermarti1	RO
8/31/2016 8:00:00 AM	Stationed as the extra RO.	0	geturne	jocamp	RO
8/31/2016 8:00:00 AM	Relieved as RO by A Meyer.	0	geturne	jocamp	RO
8/31/2016 8:09:00 AM	Withdrew Control Bank " D " 1.5 steps to 209.5 steps withdrawn for axial offset control IAW beginning of shift Reactivity Brief.	0	daghols	ermarti1	CRS
8/31/2016 8:18:00 AM	Commenced raising power to 100% iaw GEN 00-004.	0	daghols	ermarti1	CRS
8/31/2016 8:18:00 AM	Withdrew 2 steps on CB "D" to 212 steps.	0	daghols	ermarti1	CRS
8/31/2016 8:26:00 AM	Commenced loading turbine at 0.5 MW/min iaw GEN 00-004.	0	daghols	jocamp	CRS
8/31/2016 8:30:00 AM	Placed WT Basin 'A' @ 44 in. On Service Removing WT Basin 'B' @ 110 in. IAW SYS WT-100	0	kidonoh	jocamp	TREAT
8/31/2016 8:36:00 AM	Placed WT Basin 'B' @ 100 in. On Recirc with Mixer On IAW SYS WT-100	0	kidonoh	jocamp	TREAT
8/31/2016 8:40:00 AM	Commenced STN FP-440 "FIRE DOOR VISUAL INSPECTION". Door 36043.	0	wabrand	jocamp	SE
8/31/2016 8:51:00 AM	Control bank "D" is 225 steps.	0	daghols	jocamp	CRS
8/31/2016 8:51:00 AM	Main generator output is 1211.1 MWe.	0	daghols	jocamp	CRS
8/31/2016 8:53:00 AM	Control bank "D" is at parked position of 228 steps.	0	daghols	jocamp	CRS
8/31/2016 9:01:00 AM	Deborated the RCS using BTRS for 3 minutes at a rate of 80 gpm IAW beginning of shift reactivity brief.	0	daghols	jocamp	CRS
8/31/2016 9:01:00 AM	Assumed the extra SRO watch.	0	tidunlo	jocamp	CRS
8/31/2016 9:09:00 AM	Depressurized RHR header from 310 PSIG to 50 PSIG IAW SYS EJ-323. Depressurized SI from 300 PSIG to 50 PSIG IAW SYS EM-002.	0	jostone	jocamp	RO

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/31/2016 9:10:00 AM	Added 7 gals of Acid to WT Basin 'B' pH @ 9.4 IAW SYS WT-150	0	kidonoh	jocamp	TREAT
8/31/2016 9:12:00 AM	Deborated the RCS using BTRS for 3 minutes at a rate of 80 gpm IAW beginning of shift reactivity brief.	0	daghols	jocamp	CRS
8/31/2016 9:22:00 AM	Sys Ops, Larry, called for status update on raising load.	0	daghols	jocamp	CRS
8/31/2016 9:22:00 AM	Deborated the RCS using BTRS for 4 minutes at a rate of 80 gpm IAW beginning of shift reactivity brief.	0	daghols	jocamp	CRS
8/31/2016 9:23:00 AM	Clearance Order: C21 D-KJ-N-010 Tags Verified Hung	0	tidunlo		CO
8/31/2016 9:30:00 AM	Checked WT Basin 'B' pH @ 7.5. Turned Mixers Off and Call Chemistry Laura Swisher to have them Sample the Basin for Release. IAW SYS WT-100	0	kidonoh	jocamp	TREAT
8/31/2016 9:32:00 AM	Justin from SyS Transmission called for two personnel to enter swyd for drawing reviews/walkdowns.	0	daghols	jocamp	CRS
8/31/2016 9:33:00 AM	Deborated the RCS using BTRS for 4 minutes at a rate of 80 gpm IAW beginning of shift reactivity brief.	0	daghols	jocamp	CRS
8/31/2016 9:40:00 AM	Deborated the RCS using BTRS for 4 minutes at a rate of 80 gpm IAW beginning of shift reactivity brief.	0	daghols	jocamp	CRS
8/31/2016 9:44:00 AM	Clearance Order: C21 D-SR-N-011 Tags Verified Removed	0	tidunlo		CO
8/31/2016 9:48:00 AM	Deborated the RCS using BTRS for 4 minutes at a rate of 80 gpm IAW beginning of shift reactivity brief.	0	daghols	jocamp	CRS
8/31/2016 9:49:00 AM	Communications Group, called to indicate that siren JW1,Jacob Creek, will be out-of-service for routine maintenance. Reviewed AP 26A-001, REPORTABLE EVENTS - EVALUATION AND DOCUMENTATION, Attachment E, REPORTABILITY FOR LOSS OF SIRENS. One siren being out-of-service does not constitute a major loss of emergency assessment capability.	0	tidunlo	jocamp	CRS
8/31/2016 10:00:00 AM	Secured the extra SRO watch.	0	tidunlo	jocamp	CRS
8/31/2016 10:02:00 AM	Completed STN FP-450 "FIRE DAMPER INSPECTION AND DROP TEST" SAT.	0	thfaire	jocamp	CRS
8/31/2016 10:05:00 AM	****Entered TR 3.3.18~**** Complying with Condition A.2.1. Equipment taken out of service: GE RE-92 non-functional to support STS PE-004, Grab samples required once per 24 hours. This entry was planned. The current Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	daghols	jocamp	CRS
8/31/2016 10:06:00 AM	Reduce RCDT level from 51% to 22% & pressure from 17 psig to 5 psig IAW SYS HB-120.	0	mafeldh	jocamp	TREAT
8/31/2016 10:06:00 AM	****Entered TR 3.3.18~**** Complying with Condition A.1. Equipment taken out of service: GE RE-92 non-functional to support STS PE-004. Restore in 48 hrs.. This entry was planned. The current Risk Assessment was reviewed. Current risk management actions are appropriate for the current conditions. No additional actions are needed.	0	daghols	jocamp	CRS
8/31/2016 10:06:00 AM	Added GERE0092, COND AIR RMVL SYS RADIATION DETECTOR to the EOL. Reason: GE RE-92 removed from service in accordance with SYS GE-122 to support STS PE-004. TR 3.3.18. 24 grab samples required. The Current Risk Assessment was reviewed.	0	daghols	jocamp	CRS
8/31/2016 10:11:00 AM	Commenced STN IC-245 "CALIBRATION OF RHR/SIS HOT LEG RECIRC FLOW LOOP".	0	thfaire	jocamp	CRS
8/31/2016 10:12:00 AM	Stopped CGE01A, "CONDENSER AIR REMOVAL FILTRATION FAN" IAW SYS GE-122 to support STS PE-004..	0	geturne	jocamp	RO
8/31/2016 10:21:00 AM	Adjusted Turbine Load 4 Trim Clicks Up	0	daghols	jocamp	CRS
8/31/2016 10:22:00 AM	Adjusted Turbine Load 8 Trim Clicks Up	0	daghols	jocamp	CRS
8/31/2016 10:29:00 AM	Adjusted Turbine Load 4 Trim Clicks Up	0	daghols	jocamp	CRS
8/31/2016 10:32:00 AM	Adjusted Turbine Load 4 Trim Clicks Up	0	daghols	jocamp	CRS
8/31/2016 10:33:00 AM	Stopped CGL03B, "AUX/FUEL BLDG NORMAL EXHAUST FAN" IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 10:33:00 AM	Stopped SGL01, "AUXILIARY BLDG. SUPPLY AIR UNIT"IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 10:34:00 AM	Stopped SGG01B, "FUEL BLDG SUPPLY AIR UNIT" IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 10:34:00 AM	Inserted CB "D" one step to 227 steps for Tavg control.	0	daghols	jocamp	CRS
8/31/2016 10:41:00 AM	Commenced STS MT-024A "FUNCTIONAL TEST OF 480 AND 120 VOLT MOLDED CASE CIRCUIT BREAKERS". IAW 15-406641-033 for PG019GDF6.	0	thfaire	jocamp	CRS
8/31/2016 10:41:00 AM	Adjusted Turbine Load 4 Trim Clicks Up	0	daghols	jocamp	CRS
8/31/2016 10:42:00 AM	Commenced STS MT-024A "FUNCTIONAL TEST OF 480 AND 120 VOLT MOLDED CASE CIRCUIT BREAKERS". IAW 15-406641-032 for PG019GDF3.	0	thfaire	jocamp	CRS
8/31/2016 10:43:00 AM	Stopped CGF03A, "MAIN STEAM ENCL. BLDG EXHAUST FAN" IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 10:43:00 AM	Stopped SGF01, "MAIN STEAM ENCLOSURE BLDG S. A. UNIT" IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 10:44:00 AM	Stopped SGK02, "CONTROL-BLDG SUPPLY AIR UNIT" IAW STS PE-004 .	0	geturne	jocamp	RO
8/31/2016 10:44:00 AM	Stopped CGK01A, "CONTROL BUILDING EXHAUST FAN" STS PE-004.	0	geturne	jocamp	RO
8/31/2016 10:48:00 AM	Stopped CGK02A, "ACCESS CONTROL EXHAUST FAN" STS PE-004.	0	geturne	jocamp	RO
8/31/2016 10:48:00 AM	Clearance Order: C21 D-HB-N-050 Tags Verified Hung	0	thfaire		CO
8/31/2016 10:57:00 AM	Clearance Order: C21 D-HB-N-049 Tags Verified Hung	0	thfaire		CO
8/31/2016 10:58:00 AM	Started CGG02B, "EMERGENCY EXHAUST FAN" IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 11:14:00 AM	Notified Sys Ops-Transmission, Justin that Site Watch is entering the switchyard.	0	daghols	jocamp	CRS
8/31/2016 11:20:00 AM	Started CGK04B, "CONTROL ROOM PRESSURIZATION FAN" IAW SYS GK-122 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 11:21:00 AM	Started CGK03B, "CONTROL ROOM FILTRATION FAN" IAW SYS GK-122 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 11:21:00 AM	Completed STN FP-440 "FIRE DOOR VISUAL INSPECTION" SAT. IAW WO 16-417211-000 partial for 36043.	0	thfaire	jocamp	CRS
8/31/2016 11:31:00 AM	Notified Sys Ops-Transmission, Justin that Site Watch is exiting the switchyard.	0	daghols	jocamp	CRS
8/31/2016 11:36:00 AM	SM Concern UPDATE: The Control Room door has been fixed and is operating properly. SM Concern closed.	0	thfaire	jocamp	CRS
8/31/2016 11:38:00 AM	Adjusted Turbine Load 2 Trim Clicks Up	0	daghols	jocamp	CRS
8/31/2016 11:45:00 AM	Secured extra SRO.	0	wabrand	jocamp	CRS
8/31/2016 12:00:00 PM	CB "D" now at 219 steps; adjusted for Tavg control	0	daghols	jocamp	CRS
8/31/2016 12:14:00 PM	Returned CGK04B, "CONTROL ROOM PRESSURIZATION FAN", to service. "B" train CREVS restored to operable status, acceptance criteria met per STS PE-004.	0	daghols	jocamp	CRS
8/31/2016 12:14:00 PM	****Exited Tech. Spec. 3.7.10~**** Condition A. Acceptance criteria for STS PE-004 has been met for "B" train CREVS.	0	daghols	jocamp	CRS
8/31/2016 12:14:00 PM	Exited emergent work to support B CREVS.	0	jocamp	jocamp	SM
8/31/2016 12:39:00 PM	Added MFP B HPU pump 5B, CR 106786, as an SM concern.	0	jocamp	jocamp	SM
8/31/2016 12:43:00 PM	Completed STS CH-026 "REACTOR COOLANT CHLORIDE FLUORIDE AND DISSOLVED OXYGEN DETERMINATION" SAT .	0	daghols	jocamp	CRS
8/31/2016 12:43:00 PM	RCS boron concentration is 168 ppm per Chemistry sample taken at 0945 by Swisher.	0	daghols	jocamp	CRS
8/31/2016 12:43:00 PM	Completed STS CH-021 "SPENT FUEL POOL BORON CONCENTRATION DETERMINATION" SAT . Boron concentration is 2470 ppm.	0	daghols	jocamp	CRS

LOGDATE	ENTRY	LATEENTRY	ALIASER	SS	USERTYPE
8/31/2016 12:43:00 PM	Completed STS CH-031 "REACTOR MAKEUP WATER STORAGE TANK AND/OR OUTSIDE TEMPORARY TANK TOTAL CURIE CONTENT DETERMINATION" SAT .	0	daghols	jocamp	CRS
8/31/2016 12:44:00 PM	Exit from 3.7.10 independent SRO verification completed.	0	jocamp	jocamp	SM
8/31/2016 12:54:00 PM	Commenced STS BB-006 "RCS WATER INVENTORY BALANCE USING THE NPIS COMPUTER".	0	daghols	jocamp	CRS
8/31/2016 1:04:00 PM	Stationed Matt Parsons as dedicated Operator IAW SYS GG-200.	0	geturne	jocamp	RO
8/31/2016 1:05:00 PM	Stopped CGG02B, "EMERGENCY EXHAUST FAN" IAW SYS GG-200 and restoration section of STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:10:00 PM	Matt Parson is no longer stationed as Dedicated operator IAW SYS GG-200.	0	geturne	jocamp	RO
8/31/2016 1:20:00 PM	Started SGG01B, "FUEL BLDG SUPPLY AIR UNIT" IAW SYS GG-200 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:21:00 PM	Started SGL01, "AUXILIARY BLDG. SUPPLY AIR UNIT" IAW SYS GG-200 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:23:00 PM	Completed STN IC-245 "CALIBRATION OF RHR/SIS HOT LEG RECIRC FLOW LOOP" SAT.	0	thfaire	jocamp	CRS
8/31/2016 1:26:00 PM	Started SGK02, "CONTROL-BLDG SUPPLY AIR UNIT" IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:28:00 PM	Started 1FP001PA, "MOTOR DRIVEN FIRE PUMP iaw SYS FP-293 to support fire protection PMTs.	0	daghols	jocamp	CRS
8/31/2016 1:30:00 PM	Relieved as Water Treatment by Ryan Gilbert.	0	kidonoh	jocamp	TREAT
8/31/2016 1:30:00 PM	Assumed the Water Treatment Watch	0	rygilbe	jocamp	TREAT
8/31/2016 1:34:00 PM	Started CGF03A, "MAIN STEAM ENCL. BLDG EXHAUST FAN" IAW SYS GF-120 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:35:00 PM	Started SGF01, "MAIN STEAM ENCLOSURE BLDG S. A. UNIT" IAW SYS GF-120 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:36:00 PM	Started CGE01A, "CONDENSER AIR REMOVAL FILTRATION FAN" IAW SYS GE-122 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:37:00 PM	Started CGK01A, "CONTROL BUILDING EXHAUST FAN" IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:37:00 PM	Started CGK02A, "ACCESS CONTROL EXHAUST FAN" IAW STS PE-004.	0	geturne	jocamp	RO
8/31/2016 1:43:00 PM	Restored GTRE0022 to service. STN SP-122 is complete.	0	daghols	jocamp	CRS
8/31/2016 1:50:00 PM	****Exited TR 3.3.18~**** Condition A.2.1. GERE92 restored iaw SYS GE-122.	0	daghols	jocamp	CRS
8/31/2016 1:50:00 PM	Returned GFRE0092, "COND AIR RMVL SYS RADIATION DETECTOR", to service. Restored per SYS GE-122.	0	daghols	jocamp	CRS
8/31/2016 1:50:00 PM	****Exited TR 3.3.18~**** Condition A.1. GERE92 restored iaw SYS GE-122.	0	daghols	jocamp	CRS
8/31/2016 1:57:00 PM	Completed STN SP-122 "CHANNEL CALIBRATION CONTAINMENT PURGE SYSTEM RADIATION MONITOR GT RE-0022" SAT. WO 16-412481-000	0	thfaire	jocamp	CRS
8/31/2016 2:00:00 PM	Clearance Order: C21 D-FP-N-020 Tags Verified Removed	0	thfaire		CO
8/31/2016 2:19:00 PM	Stationed Matt Parsons as dedicated operator IAW SYS GK-121.	0	geturne	jocamp	RO
8/31/2016 2:19:00 PM	Commenced STS PE-002 "CHARCOAL ADSORBENT SAMPLING FOR NUCLEAR SAFETY RELATED UNITS".	0	thfaire	jocamp	CRS
8/31/2016 2:20:00 PM	Suspended the Recirc of WWT Basin 'B' @ 100", IAW SYS WT-100. Chemistry Reports pH is 7.7	0	rygilbe	jocamp	TREAT
8/31/2016 2:24:00 PM	Clearance Order: C21 D-LE-N-036 Tags Verified Removed	0	thfaire		CO
8/31/2016 2:24:00 PM	Stopped CGK04B, "CONTROL ROOM PRESSURIZATION FAN" IAW SYS GK-121 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 2:25:00 PM	Matt Parsons is no longer stationed as dedicated operator IAW SYS GK-121	0	geturne	jocamp	RO
8/31/2016 2:26:00 PM	Stopped CGK03B, "CONTROL ROOM FILTRATION FAN" IAW SYS GK-121 to support STS PE-004.	0	geturne	jocamp	RO
8/31/2016 2:27:00 PM	Communications Group called, JW1, Jacobs Creek, was returned to service.	0	thfaire	jocamp	CRS
8/31/2016 2:32:00 PM	Started CCG01A, "CONDENSER VACUUM PUMP" iaw SYS CG-120 to support SYS OMT-001.	0	daghols	jocamp	CRS
8/31/2016 2:34:00 PM	Stopped CCG01B, "CONDENSER VACUUM PUMP" iaw SYS CG-120.	0	daghols	jocamp	CRS
8/31/2016 2:53:00 PM	Returned SQ064, "LOOSE-PARTS MONITORING PANEL", to service. Retest per STS CR-001 SAT.	0	daghols	jocamp	CRS
8/31/2016 2:53:00 PM	****Exited TR 3.3.13~**** Condition A.1. Loose parts is functional, retest per STS CR-001 is complete.	0	daghols	jocamp	CRS
8/31/2016 3:04:00 PM	Made App R light A-39 an SM concern.	0	jocamp	jocamp	SM
8/31/2016 3:12:00 PM	Completed STN AP-102 "NSAFP FULL FLOW TEST" for no credit, CR #106804	0	daghols	jocamp	CRS
8/31/2016 3:19:00 PM	STS BB-006 results are: 0.061 gpm Total Identified Leakage, 0.227 gpm Total Unidentified Leakage and 0.206 gpm Total T/S Identified Leakage. NCP, 96 gpm letdown, 2 hrs	0	almeyer1	jocamp	RO
8/31/2016 4:14:00 PM	Stopped 1FP001PA, "MOTOR DRIVEN FIRE PUMP" iaw SYS FP-293.	0	daghols	jocamp	CRS
8/31/2016 4:26:00 PM	Commenced STN SP-001 "PROCESS RADIATION MONITORING SYSTEM SOURCE CHECK". Partial for GRP 2016-102.	0	daghols	jocamp	CRS
8/31/2016 4:55:00 PM	Completed STS PE-004 "AUX BUILDING AND CONTROL ROOM PRESSURE TEST" SAT.	0	thfaire	jocamp	CRS
8/31/2016 5:00:00 PM	Secured the Water Treatment Watch	0	rygilbe	jocamp	TREAT
8/31/2016 5:00:00 PM	Secured the Treatment Systems/RW watch.	0	mafeldh	jocamp	TREAT
8/31/2016 5:03:00 PM	Depressurized RHR header from 300 PSIG to 50 PSIG IAW SYS EJ-323. Depressurized SI from 300 PSIG to 50 PSIG IAW SYS EM-002.	0	jostone	jocamp	RO
8/31/2016 5:13:00 PM	Completed STN SP-001 "PROCESS RADIATION MONITORING SYSTEM SOURCE CHECK" SAT, partial for GRP 2016-102	0	daghols	jocamp	CRS
8/31/2016 5:13:00 PM	STS BB-006 results are: 0.043 gpm Total Identified Leakage, 0.219 gpm Total Unidentified Leakage and 0.188 gpm Total T/S Identified Leakage. NCP, 96 gpm letdown, 2 hrs, confirmatory.	0	almeyer1	jocamp	RO
8/31/2016 5:23:00 PM	Clearance Order: C21 D-KJ-N-010A Approved to Hang	0	thfaire		CO
8/31/2016 5:30:00 PM	Service water strainer dp checked twice per shift both times dp was 1.6.	0	aalucas	jocamp	SITE
8/31/2016 5:38:00 PM	Diluted the RCS 140 gallons for Tavg control IAW beginning of shift Reactivity Brief.	0	daghols	jocamp	CRS
8/31/2016 5:42:00 PM	Clearance Order: C21 D-KJ-N-010A Tags Verified Hung	0	thfaire		CO
8/31/2016 5:45:00 PM	Started CGT02, "MINI PURGE EXH. FAN" iaw SYS GT-120, commenced purging ctmt per GRP 2016-102.	0	daghols	jocamp	CRS
8/31/2016 5:53:00 PM	Received ALR 61B, "Process Rad Hi", for GTRE22 and 33, both monitors are in ALERT, expected for purging ctmt with higher activity levels due to leakage into ctmt, both monitors are within setpoints for permit.	0	daghols	jocamp	CRS
8/31/2016 5:56:00 PM	Clearance Order: C21 D-KJ-N-010 Tags Verified Removed	0	thfaire		CO
8/31/2016 6:02:00 PM	Completed STS BB-006 "RCS WATER INVENTORY BALANCE USING THE NPIS COMPUTER" SAT. Total Unidentified leakage rate from initial and confirmatory checks is 0.223 gpm. ODMI 2015-07 and CR 106763 have been implemented/written for for identifying leak, isolate,and repair. Aux building walkdown has been completed for this shift. Currently repair scheduled for outage, will continue to monitor with a ctmt walkdown entry scheduled for tomorrow.	0	daghols	jocamp	CRS
8/31/2016 7:00:00 PM	Assumed the Aux Watch	0	adbalze	jocamp	AUX

LOGDATE	ENTRY	LATEENTRY	ALUSER	SS	USERTYPE
8/31/2016 7:00:00 PM	Relieved as WCSRO by Pitt. Relieved of the STA duties by Fuller.	0	thfairc	jocamp	CRS
8/31/2016 7:00:00 PM	Assumed the Turbine watch.	0	juspeer	jocamp	TURB
8/31/2016 7:00:00 PM	Assumed the site watch.	0	hinguye	jocamp	SITE
8/31/2016 7:00:00 PM	Reviewed the logs prior to assuming the watch and assumed the SM U/I watch.	0	stlink	ermarti1	SM
8/31/2016 7:00:00 PM	Reviewed the logs prior to assuming the watch and assumed the Work Control SRO watch.	0	edpitt	jocamp	SE
8/31/2016 7:00:00 PM	Assumed the BOP watch.	0	jumarch	jocamp	RO
8/31/2016 7:00:00 PM	Relieved as BOP by Justin Marchant.	0	jostone	jocamp	RO
8/31/2016 7:00:00 PM	Relieved as SM by Martinson.	0	jocamp	jocamp	SM
8/31/2016 7:00:00 PM	Assumed the Watch as CRS and STA.	0	mifulle1	ermarti1	CRS
8/31/2016 7:00:00 PM	Relieved as RO by Norman.	0	almeyer1	jocamp	RO
8/31/2016 7:00:00 PM	Secured as the Extra RO.	0	getume	jocamp	RO
8/31/2016 7:00:00 PM	Relieved as CRS by Fuller.	0	daghols	jocamp	CRS
8/31/2016 7:00:00 PM	Relieved almeyer1, RO	0	ronorma	jocamp	RO
8/31/2016 7:00:00 PM	Assumed the SM watch.	0	ermarti1	ermarti1	SM
8/31/2016 7:01:00 PM	Stopped CGT02, "MINI PURGE EXH. FAN", IAW SYS GT-120.	0	mifulle1	ermarti1	CRS
8/31/2016 7:41:00 PM	Clearance Order: C21 D-LF-N-022 Approved to Hang	0	edpitt		CO
8/31/2016 8:13:00 PM	Placed GKRE0004 in bypass for Calibration of Power Supplies, IAW INC C-1008. ****Entered T.S. 3.3.7 Function 3 Condition A~****, 7 days to restore. This entry was planned.	0	mifulle1	ermarti1	CRS
8/31/2016 8:29:00 PM	Diluted the RCS 140 gallons for Tavg control IAW beginning of shift Reactivity Brief.	0	mifulle1	ermarti1	CRS
8/31/2016 8:35:00 PM	Clearance Order: C21 D-LF-N-022 Tags Verified Hung	0	edpitt		CO
8/31/2016 8:52:00 PM	Clearance Order: C21 D-FP-N-020A Approved to Hang	0	edpitt		CO
8/31/2016 8:57:00 PM	Clearance Order: C21 D-AB-N-030 Approved to Hang	0	edpitt		CO
8/31/2016 9:07:00 PM	Restored GKRE0004 to service. ****Exited T.S. 3.3.7 Function 3 Condition A~****.	0	mifulle1	ermarti1	CRS
8/31/2016 9:07:00 PM	Placed GGRE0028 in bypass for Calibration of Power Supplies, IAW INC C-1008. T.S. 3.3.8 Function 3 Not Applicable - No Fuel Movement in Progress.	0	mifulle1	ermarti1	CRS
8/31/2016 9:24:00 PM	Clearance Order: C21 D-PS-N-017 Approved to Hang	0	edpitt		CO
8/31/2016 9:26:00 PM	Clearance Order: C21 D-PS-N-017A Approved to Hang	0	edpitt		CO
8/31/2016 9:49:00 PM	Restored GGRE0028 to service.	0	mifulle1	ermarti1	CRS
8/31/2016 9:49:00 PM	Placed GTRE0031 in bypass for Calibration of Power Supplies, IAW INC C-1008. Reference T.S. 3.3.6 Function 3 Condition A and T.S. 3.4.15.b. No actions required GTRE0032 operable.	0	mifulle1	ermarti1	CRS
8/31/2016 10:06:00 PM	Transferred from BAT 'B' to BAT 'A', IAW SYS BG-206. BAT 'A' level was increased from 88% to 93%.	0	mifulle1	ermarti1	CRS
8/31/2016 10:09:00 PM	Started PBG02A, "BORIC ACID TRANSFER PUMP", for placing the 'A' BAT tank on recirculation for chemistry sampling.	0	mifulle1	ermarti1	CRS
8/31/2016 10:17:00 PM	Restored GTRE0031 to service.	0	mifulle1	ermarti1	CRS
8/31/2016 10:20:00 PM	Aux Watch placed the CVCS cation bed in service IAW SYS BG-202.	0	mifulle1	ermarti1	CRS
8/31/2016 10:46:00 PM	Started CGN02B, "CAVITY COOLING FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:46:00 PM	Stopped CGN02A, "CAVITY COOLING FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:47:00 PM	Commenced STS BB-006 "RCS WATER INVENTORY BALANCE USING THE NPIS COMPUTER".	0	mifulle1	ermarti1	CRS
8/31/2016 10:48:00 PM	Started CGL03A, "AUX/FUEL BLDG NORMAL EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:48:00 PM	Secured CGL03B, "AUX/FUEL BLDG NORMAL EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:50:00 PM	Stopped SGG01B, "FUEL BLDG SUPPLY AIR UNIT", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:51:00 PM	Started SGG01A, "FUEL BLDG SUPPLY AIR UNIT", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:54:00 PM	Removed the CVCS cation bed from service, final D/P 15.4 psid IAW SYS BG-202.	0	mifulle1	ermarti1	CRS
8/31/2016 10:57:00 PM	Started CGF03B, "MAIN STEAM ENCL. BLDG EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:57:00 PM	Stopped CGF03A, "MAIN STEAM ENCL. BLDG EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:58:00 PM	Started CGE01B, "CONDENSER AIR REMOVAL FILTRATION FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:58:00 PM	Stopped CGE01A, "CONDENSER AIR REMOVAL FILTRATION FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:59:00 PM	Started CGK01B, "CONTROL BUILDING EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 10:59:00 PM	Stopped CGK01A, "CONTROL BUILDING EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 11:00:00 PM	Started CGK02B, "ACCESS CONTROL EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 11:00:00 PM	Started CGH01A, "RADWASTE BLDG EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 11:00:00 PM	Stopped CGK02A, "ACCESS CONTROL EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 11:01:00 PM	Stopped CGH01B, "RADWASTE BLDG. EXHAUST FAN", IAW SYS OMT-001.	0	mifulle1	ermarti1	CRS
8/31/2016 11:11:00 PM	Deborated the RCS using BTRS for 3 minutes at a rate of 50 gpm IAW beginning of shift reactivity brief.	0	mifulle1	ermarti1	CRS
8/31/2016 11:12:00 PM	Placed GTRE0033 in bypass for Calibration of Power Supplies, IAW INC C-1008. Complying with ODCM Table 3-2 Function 2.a Action 41. Containment purge not in progress. This entry was planned.	0	mifulle1	ermarti1	CRS
8/31/2016 11:24:00 PM	Clearance Order: C21 D-BL-N-008 Tags Verified Removed	0	edpitt		CO
8/31/2016 11:26:00 PM	Restored GTRE0033 to service.	0	mifulle1	ermarti1	CRS
8/31/2016 11:41:00 PM	Entry into and exit from TS 3.3.7 independent SRO verification and bases review completed.	0	ermarti1	ermarti1	SM
8/31/2016 11:54:00 PM	A SW strainer DP is 1.6 psid.	0	hinguye	ermarti1	SITE
8/31/2016 11:57:00 PM	Placed GTRE0031 in bypass for filter change, IAW CHS AX-G02. Reference T.S. 3.3.6 Function 3 Condition A and T.S. 3.4.15.b. No actions required GTRE0032 operable.	0	mifulle1	ermarti1	CRS

00106763 Condition Report

AR #: 00106763 **Severity Type:** CAQ **Level:** FFAN **Due Date:** 10/01/2016 **Status:** APPROVED **Status Date:** 09/01/2016

AR Subject: Increasing trend in GTRE31/32 activity **Age In Days:** 0

Owed To Name: DEES, DAVID L **Origination Date:** 08/30/2016

Owed To Department: 3124000 - Dees David **Initiator:** BUSSARD, GRANT W

Owed To Alert Group: **Orig Department:** 4020020 - Crow Bart

Condition Report Summary:

Type	AR#-Assign#-Sub-Assign#	Owed/Assign To	Due Date	Status
CAQ	00106763	DADEES	10/01/2016	APPROVED
RTFQ	00106763-01	OPS REVIEW		ACC/PRI

Attachments:

Type	CR/ASGN No.	Title
CR	00	CR 106763 TRENDS

CR Detail

Asset/Equip: BB **Work Request:**

Description: A review of GTRE31/32 trends over the last two months has identified a slow increase in activity starting around the end of July. Containment sump leakage, containment cooler standpipe leakage, containment pressure/humidity/temperature, unidentified leak rate trends were also reviewed. An upward trend on the 'C' and 'D' containment cooler standpipe leakage was also identified around the same timeframe (late July early August). A slow increase in the unidentified leak rate (ULR) over the last month has not been observed. In the last week, the ULR has been elevated but no action levels have been reached to date. Potential leak sources in the auxiliary building have already been investigated (e.g. RCS/seal injection vent/drains, CVCS demineralizer drains, BTRS locations, etc.) and corrective actions taken, but the ULR still remains elevated. Recommend containment entry to identify the source of GTRE31/32 activity increase.

Immediate Concern: N **SM Notified:** N/A **Init DNC:** N

Immediate Actions:
Discussed trends with Operations and NRC

Extent of condition:
None.

Recommended Resolution:
Perform a containment entry to identify the source of the activity increase.

Screening Review

Operability: 3 OPER/DNC
A review of GTRE31/32 trends over the last two months has identified a slow increase in activity starting around the end of July.
The affected component is the RCS. RCS leakrate is covered by TS 3.4.13.
RCS leakage is determined daily by STS BB-006. Leakrates are slightly elevated but still within surveillance criteria. ODMI 2015-07 is in place to document plant response to the elevated activity levels and RCS leakrate. Trigger points have been established to determine additional actions. This increase in activity will be compared against the trigger points and additional actions taken as necessary.

The RCS is operable because leakage surveillance criteria is met but degraded due to elevated activity and leakrate. This leakage is unique to the RCS in CTMT.

Reportable:	N
Environmental Issue:	N
Tech Spec Sec 5:	N
Personnel Safety Issue:	N
Reactivity Issue:	N
Impact Risk Assessment:	N
OPS Review:	CAMP, JOHNNEY W
CR/WR Screening:	LINK, STEPHEN L
	WR is not applicable to the identified condition
Significance Cat:	99 - NOT APPLICABLE
Screen/SRT Notes:	

General Notes:

Other Related Information

Assignment Status Summary:

Total Assigns/Subs:	1 - 0
Open Assigns/Subs:	1 - 0
Overdue Assigns/Subs:	0 - 0

Cross References:

Type	Number	Sub Number
ACTION REQUEST	00097350	

Status & Due Date History:

Responsible Person	Date Updated	Status	Due Date
BUSSARD, GRANT W	08/30/2016	INPROG	
BUSSARD, GRANT W	08/30/2016	H/APPR	
DEARINGER, CAROL A	09/01/2016	APPROVED	10/01/2016
LINK, STEPHEN L	08/31/2016	PRE-APRV	

NON QA Record Information:

Rework Issue:	N
Radiological Occurrence:	N
Potential OE:	N
Training Issue:	N
Site Clock Reset:	N
Division Clock Reset:	N
Discovery Code:	03 - OTHER WC PERSONNEL
Critical Equipment Failure:	N

Maintenance Rule: N

Outage Issue: N

Margin Management Issue: N

Culpable Org:

Keywords:

Trend Data:

Work Process	Trend 1	Trend 2	Trend 3	Trend 4
PP	PP	PPH	PPH01	

Evaluation/Checklist

Assignment #: **Due Date:** **Status:** **Status Date:**

Subject: **Age In Days:** **Total Age:**

Assigned To Name:

Assigned To Organization:

Description:

Condition Statement:

Extent of Condition:

Operating Experience:

Evaluation and Conclusion:

Cause:

Extent of Cause:

Safety Significance:

Actions Taken:

Information Sources:

Review and Approvals

QA Review:

Rad Protection Review:

Independent Review:

CARB Review:

CAP Liaison:

Supv. Approval:

Supt. Approval:

Manager Approval:

V.P. Approval:

CEO Approval:

Extentions

# of Extentions:

Extention Notes:

Supv. Ext. Approval:

Supt. Ext. Approval:

Manager Ext. Approval:

V.P. Ext. Approval:

CEO Ext. Approval:

Other Related Information

Assignment Notes: **Updated By** **Last Updated**

References:

EVAL Status & Due Date History:

Plan and Actions

Plan Assignment #: **Status:** **Status Date:**

Plan Subject: **Age In Days:**

Assigned To Name:

Assigned To Organization:

Description:

Action Assignment #: **Action Due Date:** **Status:** **Status Date:**

Action Subject: **Age In Days:**

Assigned To Name:

Assigned To Organization:

Description:

Action Category:

LTCA:

Schedule Requirement:

RCMS #:

Commitment:

Commit To Agency:

Work Performed:

Review and Approvals

Independent Review:

CARB Review:

CAP Liaison:

Supv. Approval:

Supt. Approval:

Manager Approval:

V.P. Approval:

CEO Approval:

Extensions

# of Extensions:

Extension Notes:

Supv. Ext. Approval:

Supt. Ext. Approval:

Manager Ext. Approval:

V.P. Ext. Approval:

CEO Ext. Approval:

Other Related Plan and Action Information

Plan Assignment Notes: **Updated By** **Last Updated**

Action Assignment Notes:

Plan Completion Notes:

Action Completion Notes:

Plan Cross Reference: **Type** **Number** **Sub Number**

Action Cross Reference:

Plan Status and Due Date History:

Responsible Person	Date Updated	Status	Due Date

Action Status and Due Date History:

Responsible Person	Date Updated	Status	Due Date

Effectiveness Follow-up

EFU Assignment #: **EFU Due Date:** **Status:** **Status Date:**

EFU Subject: **Age In Days:**

Assigned To Name:

Assigned To Organization:

Description:

EFU Effective:

Review and Approvals

Independent Review:

CARB Review:

CAP Liaison:

Supv. Approval:

Supt. Approval:

Manager Approval:

V.P. Approval:

CEO Approval:

Extensions

# of Extensions:

Extension Notes:

Supv. Ext. Approval:

Supt. Ext. Approval:

Manager Ext. Approval:

V.P. Ext. Approval:

CEO Ext. Approval:

Other Related Information

Assignment Notes: **Updated By** **Last Updated**

Cross References:

EFU Status and Due Date History:

00106822 Condition Report

AR #: 00106822 **Severity Type:** CR **Level:** **Due Date:** **Status:** PRE-APRV **Status Date:** 09/01/2016

AR Subject: STS BB-006 results- elevated RCS leakage **Age In Days:** 0

Owed To Name:

Owed To Department:

Owed To Alert Group: WC SRT

Origination Date: 09/01/2016

Initiator: MARTINSON, ERIC W

Orig Department: 3122070 - Crew F SM

Condition Report Summary:

Type	AR#-Assign#-Sub-Assign#	Owed/Assign To	Due Date	Status
CR	00106822	WC SRT		PRE-APRV
RTFQ	00106822-01	OPS REVIEW		ACC/PRI

Attachments:

CR Detail

Asset/Equip:

Work Request:

Description: STS BB-006 results on 9/1/16 indicate an unidentified leak rate of .188 gpm. Table 2 Action Levels 2 and 3 are exceeded.

Immediate Concern: Y **SM Notified:** Y **Init DNC:** N

Immediate Actions:

Extent of condition:

Recommended Resolution:

Screening Review

Operability: 3 OPER/DNC
This condition was previously evaluated by CR#106763 with no indication that the condition has changed. SR 3.4.13.1 requirements are met.
TS 3.4.13

Reportable: N

Environmental Issue: N

Tech Spec Sec 5: N

Personnel Safety Issue: N

Reactivity Issue: N

Impact Risk Assessment: N

OPS Review: MARTINSON, ERIC W

CR/WR Screening: LINK, STEPHEN L
WR is not applicable to the identified condition

Significance Cat: 99 - NOT APPLICABLE

Screen/SRT Notes:

General Notes:

Other Related Information

Assignment Status Summary:

Total Assigns/Subs:	1 - 0
Open Assigns/Subs:	1 - 0
Overdue Assigns/Subs:	0 - 0

Cross References:

Status & Due Date History:

Responsible Person	Date Updated	Status	Due Date
MARTINSON, ERIC W	09/01/2016	INPROG	
MARTINSON, ERIC W	09/01/2016	H/APPR	
LINK, STEPHEN L	09/01/2016	PRE-APRV	

NON QA Record Information:

Rework Issue:	N
Radiological Occurrence:	N
Potential OE:	N
Training Issue:	N
Site Clock Reset:	N
Division Clock Reset:	N
Discovery Code:	03 - OTHER WC PERSONNEL
Critical Equipment Failure:	N
Maintenance Rule:	N
Outage Issue:	N
Margin Management Issue:	N
Culpable Org:	
Keywords:	
Trend Data:	

Evaluation/Checklist

Assignment #: **Due Date:** **Status:** **Status Date:**

Subject: **Age In Days:** **Total Age:**

Assigned To Name:

Assigned To Organization:

Description:

Condition Statement:

Extent of Condition:

Operating Experience:

Evaluation and Conclusion:

Cause:

Extent of Cause:

Safety Significance:

Actions Taken:

Information Sources:

Review and Approvals

QA Review:

Rad Protection Review:

Independent Review:

CARB Review:

CAP Liaison:

Supv. Approval:

Supt. Approval:

Manager Approval:

V.P. Approval:

CEO Approval:

Extentions

# of Extentions:

Extention Notes:

Supv. Ext. Approval:

Supt. Ext. Approval:

Manager Ext. Approval:

V.P. Ext. Approval:

CEO Ext. Approval:

Other Related Information

Assignment Notes: **Updated By** **Last Updated**

References:

EVAL Status & Due Date History:

Plan and Actions

Plan Assignment #: **Status:** **Status Date:**

Plan Subject: **Age In Days:**

Assigned To Name:

Assigned To Organization:

Description:

Action Assignment #: **Action Due Date:** **Status:** **Status Date:**

Action Subject: **Age In Days:**

Assigned To Name:

Assigned To Organization:

Description:

Action Category:

LTCA:

Schedule Requirement:

RCMS #:

Commitment:

Commit To Agency:

Work Performed:

Review and Approvals

Independent Review:

CARB Review:

CAP Liaison:

Supv. Approval:

Supt. Approval:

Manager Approval:

V.P. Approval:

CEO Approval:

Extensions

# of Extensions:

Extension Notes:

Supv. Ext. Approval:

Supt. Ext. Approval:

Manager Ext. Approval:

V.P. Ext. Approval:

CEO Ext. Approval:

Other Related Plan and Action Information

Plan Assignment Notes: **Updated By** **Last Updated**

Action Assignment Notes:

Plan Completion Notes:

Action Completion Notes:

Plan Cross Reference: **Type** **Number** **Sub Number**

Action Cross Reference:

Plan Status and Due Date History:

Responsible Person	Date Updated	Status	Due Date

Action Status and Due Date History:

Responsible Person	Date Updated	Status	Due Date

Effectiveness Follow-up

EFU Assignment #: **EFU Due Date:** **Status:** **Status Date:**

EFU Subject: **Age In Days:**

Assigned To Name:

Assigned To Organization:

Description:

EFU Effective:

Review and Approvals

Independent Review:

CARB Review:

CAP Liaison:

Supv. Approval:

Supt. Approval:

Manager Approval:

V.P. Approval:

CEO Approval:

Extensions

# of Extensions:

Extension Notes:

Supv. Ext. Approval:

Supt. Ext. Approval:

Manager Ext. Approval:

V.P. Ext. Approval:

CEO Ext. Approval:

Other Related Information

Assignment Notes: **Updated By** **Last Updated**

Cross References:

EFU Status and Due Date History:

From:	Dodson, Douglas
To:	Taylor, Nick; Proulx, David
Cc:	Janicki, Steven; Thomas, Fabian
Subject:	RCS Unidentified Leakage Meeting Update
Date:	Wednesday, August 31, 2016 11:41:18 AM

Nick and David,

I wanted to provide you with an update from our 1000 meeting with engineering to discuss data related to RCS unidentified leakage and radiation monitoring. Specifically, the licensee is putting on Certrec the package that was provided to the residents this morning (available to Nick, David, Steve, and Heather Gepford), and we requested that the licensee also provide the ODMI related to radiation monitor spiking, a couple of relevant CRs, and log entries of radiation monitor spiking. We have asked that the licensee let us know when this information is available on Certrec—it is expected to be on Certrec later today.

The licensee confirmed that chemistry sample trending of gross activity and dose equivalent iodine appeared to take a step change upward in early August (this is one of the plots that will be included on Certrec). Additionally, containment particulate activity (the "GTRE31 activity" graph that will be included on Certrec) appears to have increased since early August. The licensee is currently looking at a containment entry tomorrow to perform general area inspections and inspections of potential problem valves outside the bioshield.

Based on all of the data it appears to me that whatever small RCS unidentified leak that has potentially been present throughout the cycle and causing the periodic containment particulate monitor spikes is slowly degrading and worsening.

Please let me know if you have any questions.

Thanks,

Doug

From:	Drake, James
To:	Taylor, Nick
Subject:	RE: Call with Wolf Creek regarding head inspection
Date:	Monday, October 17, 2016 5:07:21 PM

Nick,

We had an NRC only call this morning to discuss the relief request. There were concerns regarding other potentially relevant indications that were observed in the pictures. HQ was reluctant to process the request until they had a better understanding of the path forward.

Since the licensee had requested approval today, we wanted to inform them that additional time and information were needed.

The licensee understands our concerns and that we are characterizing the indications as "Potential" based on the pictures and no explanatory information.

The licensee stated that the pictures provided were not post inspection, and could cause confusion. They are going to provide a QC report that explains how the indications were dispositioned and their path forward for any relevant indications not specifically addressed in the relief request.

The NRC personnel on the call with Wolf Creek were Robert Pascarelli, Ron Kopriva, and myself.

If you have additional questions, fell free to call me. I will be leaving the office soon, but can be reached on my cell phone.

Jim

James F. Drake
James F. Drake
Office phone: 817-200-1558
Cell Phone: (b)(6)

From: Taylor, Nick
Sent: Monday, October 17, 2016 4:55 PM
To: Drake, James <James.Drake@nrc.gov>; Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Vegel, Anton <Anton.Vegel@nrc.gov>; Clark, Jeff <Jeff.Clark@nrc.gov>; Pruett, Troy <Troy.Pruett@nrc.gov>; Lantz, Ryan <Ryan.Lantz@nrc.gov>
Cc: Tsao, John <John.Tsao@nrc.gov>; Collins, Jay <Jay.Collins@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Lingam, Siva <Siva.Lingam@nrc.gov>
Subject: RE: Call with Wolf Creek regarding head inspection

Hello Jim. My understanding was that there was going to be an NRC-only call to discuss the relief request. I have a number of questions based on my review of the relief request this morning. Has that call already occurred? I left a message with Siva Lingam (who is standing in for Balwant) to that affect as well…

Thanks,
Nick Taylor
Chief, Projects Branch B
972-921-6398

From: Drake, James
Sent: Monday, October 17, 2016 4:51 PM
To: Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Vegel, Anton <Anton.Vegel@nrc.gov>; Clark, Jeff <Jeff.Clark@nrc.gov>; Pruett, Troy <Troy.Pruett@nrc.gov>; Lantz, Ryan <Ryan.Lantz@nrc.gov>
Cc: Tsao, John <John.Tsao@nrc.gov>; Collins, Jay <Jay.Collins@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Subject: Call with Wolf Creek regarding head inspection

We had a conference call with the licensee and discussed our concern with other potentially relevant indications seen in the pictures provided that were not discussed in the relief request.

The licensee stated that they have dispositioned all of the relevant indications on the vessel head and intend to address each of them. The pictures provided were not necessarily post inspection. They are going to draft up a shortened version of the quality control report with how they dispositioned and path forward for any relevant indications they had that are not addressed in the relief request. The specific penetrations were:64,53,75,56,32,15,6,43,67,66, and 54. I let them know that these numbers were our best determinations from the pictures provided, but may not be completely accurate if we were off on the reference positions in the pictures.

The licensee is working on the paper and will call me when they are ready to provide it.

If you have any questions, feel free to contact me on my cell phone tonight or office phone tomorrow.

Jim

James F. Drake
James F. Drake
Office phone: 817-200-1558
Cell Phone: (b)(6)

From:	Drake, James
To:	Werner, Greg
Subject:	RE: Comments on Relief Request 14R-03
Date:	Wednesday, October 19, 2016 10:55:28 AM
Attachments:	image001.png

Ok.

Jim

From: Werner, Greg
Sent: Wednesday, October 19, 2016 10:55 AM
To: Drake, James <James.Drake@nrc.gov>
Subject: RE: Comments on Relief Request 14R-03

Thanks. I will not be on the call. Be sure and take good notes.

From: Drake, James
Sent: Wednesday, October 19, 2016 8:03 AM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Subject: FW: Comments on Relief Request 14R-03

This precipitated the call.

From: Collins, Jay
Sent: Wednesday, October 19, 2016 6:34 AM
To: Taylor, Nick <Nick.Taylor@nrc.gov>; Lingam, Siva <Siva.Lingam@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Cc: Drake, James <James.Drake@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>
Subject: RE: Comments on Relief Request 14R-03

How about a phone call at 11am Central, 12 noon Eastern? Dave Alley is in training today, so that is probably his best time.

From: Taylor, Nick
Sent: Tuesday, October 18, 2016 11:50 PM
To: Collins, Jay <Jay.Collins@nrc.gov>; Lingam, Siva <Siva.Lingam@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Cc: Drake, James <James.Drake@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>
Subject: Comments on Relief Request 14R-03

Good evening everyone,

I'm sorry this has taken so long for me to send out a note with my thoughts on the relief request. I was a busy day today onsite. I am at Wolf Creek, and actually went and stood on the head today, as well as spending a significant chunk of time talking with our ISI and RP inspectors, and spent about 1.5 hours talking with their VP of Engineering this afternoon

(who signed the relief request). I've have a few thoughts to share, and would like to provide them to help inform your decision. Instead of putting them all in an email and possibly creating a lot of email buzz, I think it would be best to get on the phone sometime Wednesday to share my thoughts. It may be that granting relief is the appropriate action – I just want to be sure you all understand some of the things in the request for relief a full view of the actual conditions at the plant.

Please let me know if there is a good time for a short call to discuss on Wednesday. My only "bad" times are between 0830-1100 central time.

Thanks!

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects
USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov

From: Collins, Jay
Sent: Tuesday, October 18, 2016 6:18 AM
To: Taylor, Nick <Nick.Taylor@nrc.gov>; Lingam, Siva <Siva.Lingam@nrc.gov>
Cc: Tsao, John <John.Tsao@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>
Subject: RE: Call with Wolf Creek regarding head inspection

Greetings,

I am doing the I4R-03 relief and John Tsao is doing the I4R-04 relief. If you would like to have a call on the relief requests, we should be available after our branch meeting this morning ends at 10am our time, 9am Central. I am getting an automatic reply for you, so if you would like to do them by email, we could do that, as well. Stephen Cumblidge is making up a nice presentation about the volumetric leak path assessment, if you have questions on that item.

Thanks,
Jay Collins
NRR/DE/EPNB
(301)415-4038

Siva, we will be in O-8B6 for our branch meeting from 9 to 10am.

From:	Graves, Samuel
To:	Anchondo, Isaac
Cc:	Werner, Greg; Drake, James
Subject:	RE: FW: NRC Questions regarding Penetration 77
Date:	Friday, September 16, 2016 6:20:06 AM

Isaac,

Great job. It shows your questioning attitude is shared by many other folks who may have a few more years' experience working these kind of issues.

Sam

From: Anchondo, Isaac
Sent: Thursday, September 15, 2016 2:07 PM
To: Alley, David <David.Alley@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

Dave, I apologize for forgetting to acknowledge that the question was already out there. I was just trying to stress that our regulations, intent of the code, etc, point to adequate pressure retaining capabilities which is the threaded joint not the seal weld.

(b)(5)

Look forward to Keith's conclusion!

Isaac

From: Alley, David
Sent: Thursday, September 15, 2016 1:52 PM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

All,
Keith Hoffman is working diligently to come to a conclusion regarding our opinion on the code compliance of the clamp. He may get done this PM. We probably will still want to have the licensee go through their basis for code compliance, irrespective of Keith's findings.

Isaac,
I can't remember whether you were on the phone call last Saturday. If so you may remember that I asked them about their basis, given the amount of leakage, for saying that the threads were ok. In my opinion we have already asked the question that you wish to pursue and that we absolutely should follow up on that question. At this point, I am not proposing that the threads are bad, only that it is a worthwhile question.

Dave

From: Anchondo, Isaac
Sent: Thursday, September 15, 2016 2:39 PM
To: Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

(b)(5)

For reference, here's the technical rationale (in part) of NUREG-0800 in regards to threaded fasteners (Class 1, 2, and 3) and therefore a light on the intent of mechanical connections.

- GDCs 1 and 30 require that SSCs important to safety be designed, fabricated, erected, tested and inspected to quality standards commensurate with the importance of the safety functions to be performed. GDC 14 requires that the RCPB be designed, fabricated, erected, and tested in a manner that provides assurance of an extremely low probability of abnormal leakage, rapidly propagating failure, or gross rupture. The RCPB, provides a barrier to fission products, a confined volume for the inventory of reactor coolant, and flow paths to facilitate core cooling. **Threaded fasteners and mechanical joints form an integral part of maintaining pressure boundary integrity and are essential for withstanding normal loading and any transient load created during abnormal or accident conditions**. The failure of fasteners in a system could result in loss of fluid in the system and jeopardize safe operation of the plant. Conformance with criteria of the ASME Code, Section III and the regulatory positions of RG 1.65 satisfies, in part, the requirements of GDC 1, 14, and 30 by providing assurance that threaded fasteners will be designed, fabricated, and tested to established and proven standards and, thereby, minimizing the likelihood of failure of the pressure boundary.

- GDC 31 requires that the RCPB be designed with sufficient margin to ensure that when stressed under operating, maintenance, testing, and postulated accident conditions the boundary behaves in a nonbrittle manner and the probability of rapidly propagating fracture is minimized. 10 CFR Part 50, Appendix G establishes fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary to ensure that there are

adequate margins of safety during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the pressure boundary may be subjected over its service lifetime. **Threaded fasteners and mechanical joints are integral to the design of the RCPB. Application of the requirements of Appendix G ensures that threaded fasteners in the RCPB will behave in a nonbrittle manner, minimizing the probability of rapidly propagating fracture and thereby satisfying the requirements of GDC 31.**

I agree with having a call with the licensee, and in addition to Jim's points, we would have to get a clarification on the intent of the CSCA as far as pressure retaining function.

From: Drake, James
Sent: Thursday, September 15, 2016 11:46 AM
To: Taylor, Nick <Nick.Taylor@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

Nick,

Right now we do not have enough information to come to a more aligned regulatory position. There are several potential approaches on the issue and there may be other documents out there that we have not found. I think we need to have the meeting with the licensee to have them explain in detail how they determined that the CSCA's are Code compliant. Once we have that information, we can evaluate and come to a regulatory position.

The CSCA's do not appear to be a safety issue, they are designed to Class 1 standards, they have the required strength, and we are not aware of any problems with leakage from the clamps. Westinghouse completed the stress analysis and there is no problem. However, we have not verified the results.

Where we are currently at is: Is the use of Canopy Seal Clamp Assemblies allowable by Code and has Wolf Creek complied with all regulatory requirements when they installed them.

Until we have Wolf Creek's position on the CSCA and all associated documents, we will be making assumptions and won't be able to make an informed decision.

Jim

From: Taylor, Nick
Sent: Thursday, September 15, 2016 11:17 AM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

All,

I would like to see us have a meeting to get more aligned on code applicability, etc prior to engaging with the licensee or having another substantial discussion at the morning meeting. This issue has come up 3 days in a row now at the morning meeting, and there are a lot of opinions out there on what the code requires, but not a lot of facts from the licensee. I'd like to see us all on the same page prior to communicating with management or the licensee on whether or not the licensee improperly repaired the head, etc.

Thanks,
Nick

From: Anchondo, Isaac
Sent: Thursday, September 15, 2016 10:56 AM
To: Drake, James <James.Drake@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>
Cc: Lyon, Fred <Fred.Lyon@nrc.gov>; Hoffman, Keith <Keith.Hoffman@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>
Subject: RE: FW: NRC Questions regarding Penetration 77

All,

I would like to suggest coming up with an agreeable regulatory path as far as how we are interpreting this issue (i.e, ASME vs TS vs CAP, etc). The end game will have to be whether we agree that the licensee can use the CSCA, and if so, do they need relief to do so.

(b)(5)

> *Criterion 14—Reactor coolant pressure boundary*. The reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture.

I would suggest approaching this issue in terms of corrective actions rather than simply ASME Code compliance. Previous to this leak, the licensee opted to perform a "basic cause evaluation" as part of the approval to install the CSCA. Two statements caught my attention:

"There have been no industry reports of degradation of canopy seal welds resulting in significant leakage flow rates (Ref. 3). Considering the head adapter flange design, leakage through a crack in the non-pressure boundary seal weld would be expected to be limited by the load carrying component, the flange connection threads."

"The Westinghouse hardware failure analysis also included examination of some threaded joints that were removed along with the lower canopy seal welds. There was no evidence of corrosion or cracking on any of the threaded joints that were examined."

(b)(5)

Any comments are welcome.

Thanks,

Isaac Anchondo

Reactor Inspector
U.S. Nuclear Regulatory Commission | Region IV
Division of Reactor Safety | Engineering Branch 2
(817) 200-1152

From: Drake, James
Sent: Thursday, September 15, 2016 7:59 AM
To: Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>
Cc: Lyon, Fred <Fred.Lyon@nrc.gov>; Hoffman, Keith <Keith.Hoffman@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>
Subject: FW: FW: NRC Questions regarding Penetration 77
Importance: High

Interesting responses

From: Muilenburg William T [mailto:wimuile@WCNOC.com
Sent: Thursday, September 15, 2016 7:53 AM
To: Drake, James <James.Drake@nrc.gov>
Subject: [External_Sender] FW: NRC Questions regarding Penetration 77
Importance: High

Jim,
Below are the answers I got to the questions you and Isaac gave me earlier. I've attached the CR associated with the final question as well.
Bill

Questions from 9/12 phone call –

Everyone,

NRC Inspectors Jim Drake and Isaac Anchondo called this morning with the following questions related to our vessel head and penetration 77.

From Jim Drake

1. What code was used to construct the head, B31.7 or Section III? If Section III, what year?
   ASME Section III, 1971 Edition through Winter 1972 Addenda
2. What Code , for ISI, is Wolf Creek currently committed to?
   ASME Section XI 2007 Edition through 2008 Addenda
3. What Class of piping is this penetration?
   The vessel penetration is ASME Class 1. The CRDM housing is a Class 1 component; there is no piping involved. The pressure boundary connection is a threaded mechanical connection with a non-pressure boundary seal weld outside of the threaded connection.
4. Is Code Case N-733 applicable to this condition?
   No, Code Case N-733 is not applicable because this Code Case is applicable to vessel penetration welds and the leak is on the seal weld of the threaded mechanical connection.

From Isaac Anchondo

1. It is noted that there are 10 other penetrations that have these repairs made, was Code Case N-733 applied to those efforts?
   No, see above response. The canopy seal clamp assembly was a modification designed to ASME Section III requirements, so no Code Case was needed for the clamp assembly. The clamp assembly was designed to ASME Section III to assure the stresses in the clamp assembly and the RV and CRDM threaded connections as a result of applying the clamp assembly, did not exceed those allowed for Class 1 components, not because it was sealing

a leak of the non-pressure boundary canopy seal weld.

2. Is there any root cause/apparent cause documents associated with these previous repairs?

   CR 93697, HFAR MA 92-008, WCAP 12088, MED-PCE-11788

Please let me know when the answers to any of these are available so that I can provide a response to the NRC as quickly as possible.

Thanks,
Bill Muilenburg, ext. 4511

From:	Taylor, Nick
To:	Drake, James; Proulx, David
Cc:	Werner, Greg; Anchondo, Isaac; Kopriva, Ron; Alley, David; Collins, Jay; Cumblidge, Stephen; Melfi, Jim
Subject:	RE: FW: Post-cleaning pictures of reactor head uploaded to CERTREC
Date:	Thursday, October 27, 2016 3:56:50 PM

Thanks – didn't I see this scheduled for 2 pm? Maybe that will give us time…

Nick

From: Drake, James
Sent: Thursday, October 27, 2016 2:25 PM
To: Taylor, Nick <Nick.Taylor@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Collins, Jay <Jay.Collins@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>; Melfi, Jim <Jim.Melfi@nrc.gov>
Subject: RE: FW: Post-cleaning pictures of reactor head uploaded to CERTREC

Nick,

The pictures that Wolf Creek has loaded to Certrec now are of the flange area. They won't help with the relief request. Reece said he doesn't think those pictures will be available until late tonight or tomorrow. The 1000 call for the relief request is contingent on them providing the pictures with sufficient time for NRC personnel to review them.

Jim

From: Taylor, Nick
Sent: Thursday, October 27, 2016 1:45 PM
To: Proulx, David <David.Proulx@nrc.gov>
Cc: Drake, James <James.Drake@nrc.gov>
Subject: RE: FW: Post-cleaning pictures of reactor head uploaded to CERTREC

I will try to dial in tomorrow morning but right now I have a meeting scheduled onsite during that time. David, can you represent the branch on this call in case I am unable to join?

Thanks,
Nick

From: Drake, James
Sent: Thursday, October 27, 2016 11:16 AM
To: Alley, David <David.Alley@nrc.gov>; Collins, Jay <Jay.Collins@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>
Cc: Taylor, Nick <Nick.Taylor@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Lingam, Siva <Siva.Lingam@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>
Subject: FW: FW: Post-cleaning pictures of reactor head uploaded to CERTREC

I think I got everyone.

The pictures have been uploaded to item 12 in the 4Q2016 Integrated Inspection folder on CERTREC.

If you do not have access, let me know and I will try to get you added to the list.

Jim

From: Hobby Reece D [mailto:rehobby@WCNOC.com]
Sent: Thursday, October 27, 2016 11:14 AM
To: Drake, James <James.Drake@nrc.gov>
Subject: [External_Sender] FW: Post-cleaning pictures of reactor head uploaded to CERTREC

From: Hobby Reece D
Sent: Thursday, October 27, 2016 7:33 AM

To: Thomas Fabian D; Dodson Douglas E; 'KOPRIVA, Ron A'
Cc: Vickery Brad J; Barraclough Richard M; Good Nicole R; Stone Lucille M; Muilenburg William T; Hafenstine Cynthia R
Subject: Post-cleaning pictures of reactor head uploaded to CERTREC

Fabian, Doug and Ron:

The most-recent pictures taken after the reactor head was cleaned have been uploaded to item 12 in the 4Q2016 Integrated Inspection folder on CERTREC in accordance with your request. Final cleaning of the reactor head is currently scheduled for 1600 on October 30, 2016 but that schedule could change based on the progress of work in the next few days. We will notify the resident inspectors about the schedule for the final cleaning.

Reece

From:	Werner, Greg
To:	Taylor, Nick
Cc:	Drake, James; Anchondo, Isaac
Subject:	RE: Internal communications at Wolf Creek re head corrosion / plans
Date:	Monday, October 03, 2016 2:33:15 PM

Thanks!

From: Taylor, Nick
Sent: Monday, October 03, 2016 2:32 PM
To: Werner, Greg <Greg.Werner@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Subject: RE: Internal communications at Wolf Creek re head corrosion / plans

All,

We are a go for 1:00 pm tomorrow. We are getting a conference bridge set up and will send out an appointment notice. I asked Wolf Creek to load up any available images, evaluations, etc before the call. Not sure if we will get anything….

More to follow,

Nick

From: Werner, Greg
Sent: Monday, October 03, 2016 1:34 PM
To: Alley, David <David.Alley@nrc.gov>
Cc: Taylor, Nick <Nick.Taylor@nrc.gov>
Subject: RE: Internal communications at Wolf Creek re head corrosion / plans

Yes. I will let Nick Taylor know to add you to the appointment and provide any details we might get before then.

Greg

From: Alley, David
Sent: Monday, October 03, 2016 1:18 PM
To: Werner, Greg <Greg.Werner@nrc.gov>
Subject: FW: Internal communications at Wolf Creek re head corrosion / plans

Greg
We would like to be on the call tomorrow.

Dave

From: Tsao, John
Sent: Monday, October 03, 2016 1:29 PM
To: Alley, David <David.Alley@nrc.gov>

Subject: RE: Internal communications at Wolf Creek re head corrosion / plans

Dave, Yes we should be on the call with Wolf Creek tomorrow

From: Alley, David
Sent: Monday, October 03, 2016 1:21 PM
To: Tsao, John <John.Tsao@nrc.gov>
Subject: FW: Internal communications at Wolf Creek re head corrosion / plans

John
Please take a look at this

Greg
Just tried to call – no answer. I am tied up for a while this PM. Might be good for us to be on the call tomorrow

Dave

From: Werner, Greg
Sent: Monday, October 03, 2016 1:08 PM
To: Alley, David <David.Alley@nrc.gov>
Cc: Taylor, Nick <Nick.Taylor@nrc.gov>
Subject: FW: Internal communications at Wolf Creek re head corrosion / plans

FYI. Just giving you a heads up in case WC asks for relief. NO OTHER information other than what is in the attached file, which is part of a CR and an internal WC newsletter. We are planning an informational call with WC sometime tomorrow, would you like to be included on the appointment? We are trying to find out the status of the head cleaning, information on potential relief requests, and how they selected the other 4 penetrations for the clamps.

Greg Werner

From: Taylor, Nick
Sent: Monday, October 03, 2016 11:50 AM
To: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>
Cc: Pruett, Troy <Troy.Pruett@nrc.gov>; Vegel, Anton <Anton.Vegel@nrc.gov>; Lantz, Ryan <Ryan.Lantz@nrc.gov>; Clark, Jeff <Jeff.Clark@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>; Janicki, Steven <Steven.Janicki@nrc.gov>
Subject: Internal communications at Wolf Creek re head corrosion / plans

All,

I'm still working on setting up a call with the licensee tomorrow. But Doug provided the attached today from the licensee's CAP and internal outage newsletters. I added the red comment boxes.

Thanks,
Nick

From:	Drake, James
To:	Alley, David; Collins, Jay; Singal, Balwant; Kalikian, Roger; Tsao, John; Taylor, Nick; Proulx, David; Cumblidge, Stephen; Regner, Lisa; Werner, Greg; Anchondo, Isaac; Kopriva, Ron; Thomas, Fabian
Subject:	RE: Internal NRC Call to Discuss Wolf Creek Relief Request
Date:	Friday, October 28, 2016 12:37:34 PM

I agree.

Jim

From: Alley, David
Sent: Friday, October 28, 2016 12:36 PM
To: Collins, Jay <Jay.Collins@nrc.gov>; Singal, Balwant <Balwant.Singal@nrc.gov>; Kalikian, Roger <Roger.Kalikian@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>; Regner, Lisa <Lisa.Regner@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>
Subject: RE: Internal NRC Call to Discuss Wolf Creek Relief Request

Folks,

I have been through the spreadsheet, the evaluation document and many but not all the photos. I haven't seen anything in the photos that would convince me that only the 12 nozzles had relevant conditions of potential nozzle leakage (or whatever the precise words are). I also didn't see anything that confirms that all the relevant conditions have been removed IAW guidance on the subject. In the spreadsheet and the evaluation document I found the following:

Nothing emanating from the annulus region was confirmed. (from spreadsheet and page 4 of 5 of evaluation document)

Portions of the annulus could be observed without removing all residue and it was determined that this was the extent necessary to allow adequate examination (page 2 of 5 of evaluation document)

Because an adequate examination was performed showing that none of the remaining population of 66 nozzles had nozzle leakage, it was not necessary to completely remove the accumulation present on many nozzles to satisfy the objective of determining the absence of nozzle leakage from a crack in the nozzle or j groove weld. (page 3 of 5 of the evaluation document)

These statements appear to me to indicate that the licensee's actions are not consistent with the code case – I believe that the standard is possible leakage not

confirmed leakage

Thoughts?

Dave

From: Collins, Jay
Sent: Friday, October 28, 2016 11:34 AM
To: Singal, Balwant <Balwant.Singal@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Kalikian, Roger <Roger.Kalikian@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>; Cumblidge, Stephen <Stephen.Cumblidge@nrc.gov>; Regner, Lisa <Lisa.Regner@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>
Subject: RE: Internal NRC Call to Discuss Wolf Creek Relief Request

ASME Code Case N-729-1

Note 1

The VE shall consist of the following:

(a) A direct examination of the bare-metal surface of the entire outer surface of the head, including essentially 100% of

the intersection of each nozzle with the head. If welded or bolted obstructions are present (i.e., mirror insulation,

insulation support feet, shroud support ring/lug), the examination shall include =95% of the area in the region of the

nozzles as defined in Fig. 1 and the head surface uphill and downhill of any such obstructions. The examination may

be performed with insulation in place using remote equipment that provides resolution of the component metal surface

equivalent to a bare-metal direct examination.

(b) The examination may be performed with the system depressurized.

(c) The examination shall be performed with an illumination level and a sufficient distance to allow resolution of lower case

characters not greater than 0.105 in. (2.7 mm) in height.

-----Original Appointment-----
From: Singal, Balwant
Sent: Friday, October 28, 2016 10:17 AM
To: Collins, Jay; Alley, David; Kalikian, Roger; Tsao, John; Drake, James; Taylor, Nick; Proulx, David; Cumblidge, Stephen; Regner, Lisa; Werner, Greg; Anchondo, Isaac; Kopriva, Ron; Thomas, Fabian
Subject: Internal NRC Call to Discuss Wolf Creek Relief Request
When: Friday, October 28, 2016 11:00 AM-12:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Dave Alley's Office

Dave Alley and me received a call from Wolf Creek (Cyndia and Jaimme McCoy) at 9.30 this morning. An internal NRC staff meeting is required to discuss path forward based on information provided during the call.

Bridge No. Info.

866-624-3402

Passcode: (b)(6)

Lisa:

You will need to use Passcode (b)(6) (as initiator of the call). I was not bale to search for conference rooms from home.

I will be out-of-office (b)(6) for about 3 hours and Lisda will be supporting this call.

I can be contacted at (b)(6) for any questions.

Thanks.

From: Dodson, Douglas
To: Taylor, Nick
Cc: Thomas, Fabian
Subject: RE: Mode changes
Date: Monday, October 17, 2016 8:44:40 AM

Nick,

The mode changes are as follows:

Mode 3 – 9/2 @ 1158
Mode 4 – 9/7 @ 0630
Mode 5 – 9/7 @ 1542
Mode 6 – 9/22 @ 2233
Defueled – 9/28 @ 0827
Mode 6 – TBD
Mode 5 – TBD
Mode 4 – TBD
Mode 3 – TBD
Mode 2 – TBD
Mode 1 – TBD

Please let us know if you have any questions.

Thanks,

Doug

From: Taylor, Nick
Sent: Monday, October 17, 2016 7:29 AM
To: Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>
Subject: Mode changes

Doug / Fabian,

Can one of you please dig up the dates/times that the station came through each mode during shutdown? Want to make sure I had my facts right before speaking with Wolf Creek.

Thanks!

Nick Taylor
Chief, Projects Branch B
(972) 921-6398
Nick.taylor@nrc.gov

From:	Werner, Greg
To:	Drake, James
Cc:	Alley, David; Anchondo, Isaac
Subject:	RE: N-733
Date:	Tuesday, September 13, 2016 7:03:31 AM
Importance:	High

Jim,

Please give Dave a call and let's make sure we are all talking the same thing and understand what is being used as the basis for acceptability. Sounds like Fred had a good point about a possible backfit. May want to pull the background info that Fred referenced. Please plan on briefing me next week (are you in?) about path forward.

Thanks,
Greg

From: Drake, James
Sent: Monday, September 12, 2016 4:05 PM
To: Alley, David <David.Alley@nrc.gov>
Cc: Hoffman, Keith <Keith.Hoffman@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Lyon, Fred <Fred.Lyon@nrc.gov>
Subject: RE: N-733

No.

Reading the design change package that they used for the last clamp, they appear to believe they are in compliance with Code because Westinghouse designed the clamping mechanism and provided a stress analysis that indicates they are OK.

Per the Change Package:

"**Codes, Standards, Regulatory and USAR Requirements and Limitations** (req): The CRDM and Capped Latch Housing Assemblies (pressure boundary components) comply with ASME B&PV Code Section III, 1974 Ed. through Winter of 1974 Addenda (Ref. 1).

The nozzle penetrations to the head (head adaptor) were manufactured to ASME Section III, 1971 Ed., Winter 1972 Addenda.

The CRDM Seal Clamp Assembly is analyzed to ASME B&PV Code, Section III, Division 1, 1986 Edition (No addenda) (Ref. 2). The Design Specification for the CRDM Seal Clamp Assembly is certified to ASME B&PV Code, Section III, Division 1, 1971 Ed. up to and including the Winter 1972 Addenda and the 1974 Ed. (Ref. 3). The Design Report for the CRDM Seal Clamp Assembly is certified to ASME B&PV Code, Section III, Division 1, 1986 Edition (No addenda) (Ref. 4)."

"**Design/Configuration Inputs/Assumptions** (req):
Design basis for use of the canopy seal clamp assembly in the capped latch

assembly location is provided by Westinghouse, the owner of the design. Attachment 1 provides the formal acceptance of this condition by Westinghouse until the revision of the design documents is provided."

"**2.8, Inservice Inspection Program**

The reactor vessel closure head is a Section III, Class 1 pressure retaining component. The modification to add the CSCA does not alter the pressure boundary of the component. However, the location of the leakage seal boundary is redefined by the installation of a CSCA, from the canopy seal weld, to the CSCA itself."

"The proposed repair method to encapsulate the canopy seal weld with the CSCA has been evaluated by Westinghouse and determined to be an acceptable repair method."

"The Canopy Seal Clamp Assembly (CSCA) was developed as an alternative to weld overlay leak repairs. The CSCA was approved for Wolf Creek use in 1993 under CP 05017."

"The control rod drive mechanism, capped latch housing, core exit thermocouple (CET), and head adapter cap are connected to a head adapter on the reactor vessel with a threaded joint. The threaded joint provides the pressure retention for the joint. The canopy seals are not pressure retaining and are designed to provide a means to control leaks through the threads. The canopy seal clamp assembly is designed to replace this weld with a mechanical seal thus sealing any weld leaks.

The ASME Code Section III rules for threaded joints in Class 1 piping include the requirement that threaded joints in which the threads provide the only seal shall not be used. These requirements support the determination that the threads provide the pressure retention function of the joint. These requirements also indicate that a seal weld is not the only means to provide a seal against leakage. Alternate means to provide a seal against leaks include gaskets and packing. Examples of the use of gaskets to seal threaded joints include Code Class 1 valves that make use of a threaded joint and a gasket to make the body to bonnet connection."

"Based on these considerations a 10CFR50.59 review is appropriate. A request for alternate criteria under the rules of 10 CFR 50.55a is not required since the change meets the rules of the ASME Code, Sections III and XI.

This 10 CFR 50.59 Applicability Determination (AD) was prepared by Westinghouse Electric Company. The responses are based on Westinghouse review of the subject matter and available plant licensing documentation (UFSAR and Technical Specifications). Experience and judgment was applied

in answering AD Questions 1.2 through 1.7, IV, and V. Because these questions address site-specific documentation not available for Westinghouse review, Wolf Creek should review these Westinghouse responses for concurrence."

"The design and fabrication of the CSCA items defined in Reference 9, Section 4.1.2 as pressure retaining fulfills the requirements of the ASME B&PV Code, Section III, Subsection NB, Class 1 material (Reference 9), for the service involving a pressure range of 14.7 psia
to 2,500 psia and a temperature of 60°F to 650°F (References 9 and 12)"

Jim

From: Alley, David
Sent: Monday, September 12, 2016 3:30 PM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: N-733

Are we sure that N-733 is what they are hanging their hat on?

Dave

From: Anchondo, Isaac
Sent: Monday, September 12, 2016 12:58 PM
To: Drake, James <James.Drake@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: N-733

The attached records to which this email refers are publicly available as ML13263A372, ML003745067, and ML073240650.

All,

I wanted to bring up a couple of things in regards to the OE on these type of leaks and why CC N-733 is not applicable. Attached are two separate RR and a Safety Evaluation (from an additional RR) associated with leaks identified in canopy seal welds. It appears that the industry has addressed this issue by asking relief from portions of IWA-4100, and performing a weld overlay. (You can refer to any of the attach documents to see the applicable IWA-4100 requirements.)

The reason for asking relief from these requirements is due to the fact that the seal weld itself is required by the Code, and as such, the licensee needs to address them via these

IWA-4100 requirements (i.e., defect removal via weld excavation and re-weld). In other words, this is different than a threaded connection in a Class 2 or 3 system that is allowed to leak and the licensee can address it via their CAP program.

As referred in the attached documents, Section III requires the following in regards to seal welds in Class 1 components:

NB-3671.3 Threaded Joints. Threaded joints in which the threads provide the only seal shall not be used. If a seal weld is employed as the sealing medium, the stress analysis of the joint must include the stresses in the weld resulting from the relative deflections of the mated parts.

NB-3227.7 Requirements for Specially Designed Welded Seals

(a) Welded seals, such as omega and canopy seals (NB-4360) shall be designed to meet the pressure induced general primary membrane stress intensity limits specified in this Subsection. Note that the general primary membrane stress intensity varies around the toroidal cross section.

(b) All other membrane and bending stress intensities developed in the welded seals may be considered as secondary stress intensities. The range of these stress intensities combined with the general primary membrane stress intensity may exceed the primary plus secondary stress intensity limit of 3S,, if they are analyzed in accordance with NB-3228.3 as modified below:

(1) In lieu of NB-3228.3(a), the range of the combined primary plus secondary membrane stress intensities shall be 5 3Sm.

(2) NB-3228.3(d) need not apply.

NB-4361 General Requirements

a) Specially designed welded seals are defined as the walls or membranes, such as an omega shaped seal membrane, which confine the fluid in the reactor coolant and associated systems where strength is provided by a separate device.

Therefore, the licensee is required to address this leak via IWA-4100 requirements, an applicable CC, or relief request. OE on this issue demonstrates that industry has gone the relief request route via a weld overlay. Given that a Code Case in an alternative to a Code requirement, CC N-733 would have to be directly related to a threaded joint (NB-3671.3) or specially designed welded seals (NB-3227.7).

If you look at the reply to the inquiry in CC N-733, it states in part, "Reply: It is the opinion of the Committee that a mechanical connection modification that replaces the Category D or branch connection partial penetration weld and provides the primary pressure sealing function of the existing nozzle may be used to mitigate flaws in NPS 2 (DN 50) and smaller nozzles and nozzle partial penetration welds in vessels and piping originally constructed in Section III, Class 1 or Class A or B31.7 Class 1, provided the following requirements are met"

This CC is clearly not applicable to a threaded connection nor a specially designed welded seal. Furthermore, the Code defines a Category D weld as "…welded joins connecting communicating chambers or nozzles to main shells, to spheres, to transitions in diameter, to heads, or to flat sided vessels, and those joints connecting nozzles to communicating chambers." These welds are performed by either butt welded nozzles, full penetration corner welded nozzles, use of deposited weld metal for openings and nozzles, attachment of nozzles using partial penetration welds, or oblique full penetration nozzles as defined by NB-3352.4, "Joints of Category D."

So the licensee cannot use an alternative to an alternative such as using this CC not for Category D welds but for canopy seal welds.

If HQ agrees with this thought process (I included Dave Alley on the email), I think we can say that CC N-733 is not applicable and Wolf Creek has been misapplying it to all of the CRDM/CET repairs.

Any thoughts?!?

Isaac Anchondo

Reactor Inspector
U.S. Nuclear Regulatory Commission | Region IV
Division of Reactor Safety | Engineering Branch 2
(817) 200-1152

From: Anchondo, Isaac
Sent: Thursday, September 08, 2016 3:31 PM
To: Drake, James <James.Drake@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>
Subject: RE: N-733

All,

I think before we can say that the CC is not applicable, we need to get an understanding on how the licensee is classifying this connection in terms of the ASME Code. Subsequently, we need an agency position on the applicability of Section XI for this particular joint. Given that this is not a weld, none of the weld "Examination Categories" are applicable other than B-P, "Pressure Retaining" components which requires a VT-2. Remember that a CC is an alternative to Section XI, and therefore, the licensee should be able to tell us the requirement needing an alternative.

With that said, the following is provided under the general IWA requirements for mechanical joints (2001 Edition),

IWA-4321, "Class 1 Mechanical Joints"

(c) Threaded joints in which the threads provide the only seal shall not be used in Class 1 piping systems. If a seal weld is employed as the sealing medium, the stress analysis of the joint shall include the stresses in the weld resulting from the relative deflections of the mated parts.

This is identical to the construction requirements for Class 1 threaded connections in piping (2001 Edition).

NB-3671.3 Threaded Joints. Threaded joints in which the threads provide the only seal shall not be used. If a seal weld is employed as the sealing medium, the stress analysis of the joint must include the stresses in the weld resulting from the relative deflections of the mated parts.

So the licensee should have a stress analysis for the seal welds to meet Section XI requirements, and in my opinion, CC N-733 is not an applicable alternative to this requirement. I think there needs to be further discussions with the licensee and HQ in regards to the applicability of the Code Case. Attached are a couple of relief request submitted to the NRC in regards to canopy seal weld leakage that used an actual weld overlay because repairs of the canopy seal weld are required by the Code.

P.S.
An additional concern would be that the seal weld provides the seal function while the treated connection provides the structural integrity of the joint. It appears that the licensee is assuming that the seal weld failed but what if the threaded connection is degraded. The clamp does not provide a structural integrity function as stated in the CC.

Mechanical connection assemblies are permitted only for nozzles on which there are substantially no piping reactions, such as pressurizer heater penetrations and openings for instrumentation. The mechanical connection assembly and the vessel or piping location where the mechanical connection assembly is installed shall be designed taking no structural credit for the existing Category D or branch connection partial penetration weld and shall be based on the stress and fatigue requirements of NB-3200.

Let me know if anybody has any questions.

Thanks,

Isaac

From: Drake, James
Sent: Thursday, September 08, 2016 1:54 PM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>
Subject: N-733

Isaac,

I reread the Code case. I think you are correct, Code Case N-733 may not be applicable.

In the reply it states:

a mechanical connection modification that replaces the Category D or branch connection partial penetration weld and provides the primary pressure sealing function of the existing nozzle may be used to mitigate flaws in NPS 2 (DN 50) and smaller nozzles and nozzle partial penetration welds in vessels and piping originally constructed in Section III, Class 1 or Class A or B31.7 Class 1, provided the following requirements are met:

a) *Mechanical connection assemblies are permitted only for nozzles on which there are substantially no piping reactions, such as pressurizer heater penetrations and openings for instrumentation. The mechanical connection assembly and the vessel or piping location where the mechanical connection assembly is installed shall be designed taking no structural credit for the existing Category D or branch connection partial penetration weld and shall be based on the stress and fatigue requirements of NB-3200.*

Another concern:
Per MANDATORY APPENDIX IX, MECHANICAL CLAMPING DEVICES FOR CLASS 2 AND 3 PIPING PRESSURE BOUNDARY
ARTICLE IX-1000
GENERAL
(a) Mechanical clamping devices used as piping pressure boundary may remain in service only until the next refueling outage, at which time the defect shall be removed or reduced to an acceptable size.
(b) These clamping devices may be used on piping and tubing, and their associated fittings and flanges, and the welding ends of pumps, valves, and pressure vessels, except as prohibited by (c) below.
(c) Clamping devices shall not be used on the following:
(1) Class 1 piping;
(2) portions of a piping system that forms the containment boundary;
(3) piping larger than NPS 2 (DN 50) when the nominal operating temperature or pressure exceeds 200°F (95°C) or 275 psig (1 900 kPa);
(4) piping larger than NPS 6 (DN 150).
(d) A Repair/Replacement plan shall be developed in accordance with IWA-4150, and shall identify the defect characterization method, design requirements, and monitoring requirements.
(e) Welding performed as part of the fabrication and installation of the clamping device shall be in accordance with the requirements of IWA-4400. Welding shall be documented on an NIS-2 Form.
(f) The records required by IWA-6000 shall be maintained by the Owner until the clamping device is removed.

I do not know what authorization the licensee used to install these other clamps. This may be another case like the "seal weld enclosures" at STP.
I have asked for any OE on RVH penetration canopy seal weld leaks of this magnitude.

Jim

James F. Drake
James F. Drake
Office phone: 817-200-1558
Cell Phone: (b)(6)

From:	Lyon, Fred
To:	Drake, James; Alley, David
Cc:	Hoffman, Keith; Tsao, John; Werner, Greg; Graves, Samuel; Anchondo, Isaac; Kopriva, Ron; Pascarelli, Robert; Taylor, Nick
Subject:	RE: N-733
Date:	Tuesday, September 13, 2016 5:34:59 AM

One consideration is the licensee's response to BL 2002-01, in which they clearly reference their use of the CSCAs. Since the NRC staff was made aware of their use, and subsequently approved the licensee's response to the BL and to Order EA-03-009, "Issuance of Order Establishing Interim Inspection Requirements for RPV Heads at PWRs," if we now "change our position" on their use, it would be a potential backfit.

From: Drake, James
Sent: Monday, September 12, 2016 5:05 PM
To: Alley, David <David.Alley@nrc.gov>
Cc: Hoffman, Keith <Keith.Hoffman@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Lyon, Fred <Fred.Lyon@nrc.gov>
Subject: RE: N-733

No.

Reading the design change package that they used for the last clamp, they appear to believe they are in compliance with Code because Westinghouse designed the clamping mechanism and provided a stress analysis that indicates they are OK.

Per the Change Package:

"**Codes, Standards, Regulatory and USAR Requirements and Limitations** (req): The CRDM and Capped Latch Housing Assemblies (pressure boundary components) comply with ASME B&PV Code Section III, 1974 Ed. through Winter of 1974 Addenda (Ref. 1).

The nozzle penetrations to the head (head adaptor) were manufactured to ASME Section III, 1971 Ed., Winter 1972 Addenda.

The CRDM Seal Clamp Assembly is analyzed to ASME B&PV Code, Section III, Division 1, 1986 Edition (No addenda) (Ref. 2). The Design Specification for the CRDM Seal Clamp Assembly is certified to ASME B&PV Code, Section III, Division 1, 1971 Ed. up to and including the Winter 1972 Addenda and the 1974 Ed. (Ref. 3). The Design Report for the CRDM Seal Clamp Assembly is certified to ASME B&PV Code, Section III, Division 1, 1986 Edition (No addenda) (Ref. 4)."

"Design/Configuration Inputs/Assumptions (req): Design basis for use of the canopy seal clamp assembly in the capped latch assembly location is provided by Westinghouse, the owner of the design. Attachment 1 provides the formal acceptance of this condition by Westinghouse until the revision of the design documents is provided."

"**2.8, Inservice Inspection Program**

The reactor vessel closure head is a Section III, Class 1 pressure retaining component. The modification to add the CSCA does not alter the pressure boundary of the component. However, the location of the leakage seal boundary is redefined by the installation of a CSCA, from the canopy seal weld, to the CSCA itself."

"The proposed repair method to encapsulate the canopy seal weld with the CSCA has been evaluated by Westinghouse and determined to be an acceptable repair method."

"The Canopy Seal Clamp Assembly (CSCA) was developed as an alternative to weld overlay leak repairs. The CSCA was approved for Wolf Creek use in 1993 under CP 05017."

"The control rod drive mechanism, capped latch housing, core exit thermocouple (CET), and head adapter cap are connected to a head adapter on the reactor vessel with a threaded joint. The threaded joint provides the pressure retention for the joint. The canopy seals are not pressure retaining and are designed to provide a means to control leaks through the threads. The canopy seal clamp assembly is designed to replace this weld with a mechanical seal thus sealing any weld leaks.

The ASME Code Section III rules for threaded joints in Class 1 piping include the requirement that threaded joints in which the threads provide the only seal shall not be used. These requirements support the determination that the threads provide the pressure retention function of the joint. These requirements also indicate that a seal weld is not the only means to provide a seal against leakage. Alternate means to provide a seal against leaks include gaskets and packing. Examples of the use of gaskets to seal threaded joints include Code Class 1 valves that make use of a threaded joint and a gasket to make the body to bonnet connection."

"Based on these considerations a 1OCFR50.59 review is appropriate. A request for alternate criteria under the rules of 10 CFR 50.55a is not required since the change meets the rules of the ASME Code, Sections III and XI.

This 10 CFR 50.59 Applicability Determination (AD) was prepared by Westinghouse Electric Company. The responses are based on Westinghouse review of the subject matter and available plant licensing documentation (UFSAR and Technical Specifications). Experience and judgment was applied in answering AD Questions 1.2 through 1.7, IV, and V. Because these questions address site-specific documentation not available for Westinghouse review, Wolf Creek should review these Westinghouse responses for concurrence."

"The design and fabrication of the CSCA items defined in Reference 9, Section 4.1.2 as pressure retaining fulfills the requirements of the ASME B&PV Code, Section III, Subsection NB, Class 1 material (Reference 9), for the service involving a pressure range of 14.7 psia
to 2,500 psia and a temperature of 60°F to 650°F (References 9 and 12)"

Jim

From: Alley, David
Sent: Monday, September 12, 2016 3:30 PM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Drake, James <James.Drake@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: N-733

Are we sure that N-733 is what they are hanging their hat on?

Dave

From: Anchondo, Isaac
Sent: Monday, September 12, 2016 12:58 PM
To: Drake, James <James.Drake@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>
Subject: RE: N-733

All,

I wanted to bring up a couple of things in regards to the OE on these type of leaks and why CC N-733 is not applicable. Attached are two separate RR and a Safety Evaluation (from an additional RR) associated with leaks identified in canopy seal welds. It appears that the industry has addressed this issue by asking relief from portions of IWA-4100, and performing a weld overlay. (You can refer to any of the attach documents to see the applicable IWA-4100 requirements.)

The reason for asking relief from these requirements is due to the fact that the seal weld itself is required by the Code, and as such, the licensee needs to address them via these IWA-4100 requirements (i.e., defect removal via weld excavation and re-weld). In other words, this is different than a threaded connection in a Class 2 or 3 system that is allowed to leak and the licensee can address it via their CAP program.

As referred in the attached documents, Section III requires the following in regards to seal welds in Class 1 components:

NB-3671.3 Threaded Joints. Threaded joints in which the threads provide the only seal shall not be used. If a seal weld is employed as the sealing medium, the stress analysis of the joint must include the stresses in the weld resulting from the relative deflections of the mated parts.

NB-3227.7 Requirements for Specially Designed Welded Seals

(a) Welded seals, such as omega and canopy seals (NB-4360) shall be designed to meet the pressure induced general primary membrane stress intensity limits specified in this Subsection. Note that the general primary membrane stress intensity varies around the toroidal cross section.

(b) All other membrane and bending stress intensities developed in the welded seals may be considered as secondary stress intensities. The range of these stress intensities combined with the general primary membrane stress intensity may exceed the primary plus secondary stress intensity limit of 3S,, if they are analyzed in accordance with NB-3228.3 as modified below:

(1) In lieu of NB-3228.3(a), the range of the combined primary plus secondary membrane stress intensities shall be 5 3Sm.

(2) NB-3228.3(d) need not apply.

NB-4361 General Requirements

a) Specially designed welded seals are defined as the walls or membranes, such as an omega shaped seal membrane, which confine the fluid in the reactor coolant and associated systems where strength is provided by a separate device.

Therefore, the licensee is required to address this leak via IWA-4100 requirements, an applicable CC, or relief request. OE on this issue demonstrates that industry has gone the relief request route via a weld overlay. Given that a Code Case in an alternative to a Code requirement, CC N-733 would have to be directly related to a threaded joint (NB-3671.3) or specially designed welded seals (NB-3227.7).

If you look at the reply to the inquiry in CC N-733, it states in part, "Reply: It is the opinion of the Committee that a mechanical connection modification that replaces the Category D or branch connection partial penetration weld and provides the primary pressure sealing function of the existing nozzle may be used to mitigate flaws in NPS 2 (DN 50) and smaller nozzles and nozzle partial penetration welds in vessels and piping originally constructed in Section III, Class 1 or Class A or B31.7 Class 1, provided the following requirements are met"

This CC is clearly not applicable to a threaded connection nor a specially designed welded seal. Furthermore, the Code defines a Category D weld as "…welded joins connecting communicating chambers or nozzles to main shells, to spheres, to transitions in diameter, to heads, or to flat sided vessels, and those joints connecting nozzles to communicating

chambers." These welds are performed by either butt welded nozzles, full penetration corner welded nozzles, use of deposited weld metal for openings and nozzles, attachment of nozzles using partial penetration welds, or oblique full penetration nozzles as defined by NB-3352.4, "Joints of Category D."

So the licensee cannot use an alternative to an alternative such as using this CC not for Category D welds but for canopy seal welds.

If HQ agrees with this thought process (I included Dave Alley on the email), I think we can say that CC N-733 is not applicable and Wolf Creek has been misapplying it to all of the CRDM/CET repairs.

Any thoughts?!?

Isaac Anchondo

Reactor Inspector
U.S. Nuclear Regulatory Commission | Region IV
Division of Reactor Safety | Engineering Branch 2
(817) 200-1152

From: Anchondo, Isaac
Sent: Thursday, September 08, 2016 3:31 PM
To: Drake, James <James.Drake@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>
Subject: RE: N-733

All,

I think before we can say that the CC is not applicable, we need to get an understanding on how the licensee is classifying this connection in terms of the ASME Code. Subsequently, we need an agency position on the applicability of Section XI for this particular joint. Given that this is not a weld, none of the weld "Examination Categories" are applicable other than B-P, "Pressure Retaining" components which requires a VT-2. Remember that a CC is an alternative to Section XI, and therefore, the licensee should be able to tell us the requirement needing an alternative.

With that said, the following is provided under the general IWA requirements for mechanical joints (2001 Edition),

IWA-4321, "Class 1 Mechanical Joints"

(c) Threaded joints in which the threads provide the only seal shall not be used in Class 1 piping systems. If a seal weld is employed as the sealing medium, the stress analysis of the joint shall include the stresses in the weld resulting from the relative deflections of the mated parts.

This is identical to the construction requirements for Class 1 threaded connections in piping (2001 Edition).

NB-3671.3 Threaded Joints. Threaded joints in which the threads provide the only seal shall not be used. If a seal weld is employed as the sealing medium, the stress analysis of the joint must include the stresses in the weld resulting from the relative deflections of the mated parts.

So the licensee should have a stress analysis for the seal welds to meet Section XI requirements, and in my opinion, CC N-733 is not an applicable alternative to this requirement. I think there needs to be further discussions with the licensee and HQ in regards to the applicability of the Code Case. Attached are a couple of relief request submitted to the NRC in regards to canopy seal weld leakage that used an actual weld overlay because repairs of the canopy seal weld are required by the Code.

P.S.
An additional concern would be that the seal weld provides the seal function while the treated connection provides the structural integrity of the joint. It appears that the licensee is assuming that the seal weld failed but what if the threaded connection is degraded. The clamp does not provide a structural integrity function as stated in the CC.

Mechanical connection assemblies are permitted only for nozzles on which there are substantially no piping reactions, such as pressurizer heater penetrations and openings for instrumentation. The mechanical connection assembly and the vessel or piping location where the mechanical connection assembly is installed shall be designed taking no structural credit for the existing Category D or branch connection partial penetration weld and shall be based on the stress and fatigue requirements of NB-3200.

Let me know if anybody has any questions.

Thanks,

Isaac

From: Drake, James
Sent: Thursday, September 08, 2016 1:54 PM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>
Cc: Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>
Subject: N-733

Isaac,

I reread the Code case. I think you are correct, Code Case N-733 may not be applicable.

In the reply it states:

a mechanical connection modification that replaces the Category D or branch connection partial penetration weld and provides the primary pressure sealing function of the existing nozzle may be used to mitigate flaws in NPS 2 (DN 50) and smaller nozzles and nozzle partial penetration welds in vessels and piping originally constructed in Section III, Class 1 or Class A or B31.7 Class 1, provided the following requirements are met:

a) *Mechanical connection assemblies are permitted only for nozzles on which there are substantially no piping reactions, such as pressurizer heater penetrations and openings for instrumentation. The mechanical connection assembly and the vessel or piping location where the mechanical connection assembly is installed shall be designed taking no structural credit for the existing Category D or branch connection partial penetration weld and shall be based on the stress and fatigue requirements of NB-3200.*

Another concern:
Per MANDATORY APPENDIX IX, MECHANICAL CLAMPING DEVICES FOR CLASS 2 AND 3 PIPING PRESSURE BOUNDARY
ARTICLE IX-1000
GENERAL
(a) Mechanical clamping devices used as piping pressure boundary may remain in service only until the next refueling outage, at which time the defect shall be removed or reduced to an acceptable size.
(b) These clamping devices may be used on piping and tubing, and their associated fittings and flanges, and the welding ends of pumps, valves, and pressure vessels, except as prohibited by (c) below.
(c) Clamping devices shall not be used on the following:
(1) Class 1 piping;
(2) portions of a piping system that forms the containment boundary;
(3) piping larger than NPS 2 (DN 50) when the nominal operating temperature or pressure exceeds 200°F (95°C) or 275 psig (1 900 kPa);
(4) piping larger than NPS 6 (DN 150).
(d) A Repair/Replacement plan shall be developed in accordance with IWA-4150, and shall identify the defect characterization method, design requirements, and monitoring requirements.
(e) Welding performed as part of the fabrication and installation of the clamping device shall be in accordance with the requirements of IWA-4400. Welding shall be documented on an NIS-2 Form.
(f) The records required by IWA-6000 shall be maintained by the Owner until the clamping device is removed.

I do not know what authorization the licensee used to install these other clamps. This may be another case like the "seal weld enclosures" at STP.
I have asked for any OE on RVH penetration canopy seal weld leaks of this magnitude.

Jim

James F. Drake
James F. Drake
Office phone: 817-200-1558

Cell Phone: (b)(6)

From:	Taylor, Nick
To:	Bowen, Jeremy
Cc:	Werner, Greg
Subject:	RE: QUERY - Wolf Creek Head
Date:	Wednesday, September 28, 2016 8:34:15 AM
Attachments:	image001.png

Thanks Jeremy. We don't have any new imagery to share yet. The licensee is still completing a robotic inspection of the vessel head, which is currently on the head stand. We have requested copies of images taken in the inspection and when we receive them we'll pick through them and provide a representative set of images. The licensee plans to pressure wash the head in the coming days, so I anticipate that later in the week we may also have some better images of the true condition of the head.

A Region IV ISI inspector is also onsite and will be involved in these activities as they transpire. I've copied the branch chief for our Engineering Branch 2 (Greg Werner) here as well in case he has any other status information to offer.

Again, I'll be in touch as soon as we get better information on the condition of the head. In the mean time if you have questions please don't hesitate to call me in my office or on cell (numbers below).

Thanks again,

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects
USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

From: Bowen, Jeremy
Sent: Wednesday, September 28, 2016 7:30 AM
To: Taylor, Nick <Nick.Taylor@nrc.gov>
Subject: QUERY - Wolf Creek Head

Hi Nick,

I have a periodic meeting with the Commission TAs today. Just curious if there was any update on Wolf Creek's head/nozzle.

Thanks,
Jeremy

From:	Werner, Greg
To:	Taylor, Nick
Subject:	RE: Relief request coming from Wolf Creek
Date:	Wednesday, October 05, 2016 10:41:00 AM
Attachments:	image001.png

THANKS!

From: Taylor, Nick
Sent: Wednesday, October 05, 2016 10:22 AM
To: Singal, Balwant <Balwant.Singal@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Cc: Proulx, David <David.Proulx@nrc.gov>; Janicki, Steven <Steven.Janicki@nrc.gov>; Pruett, Troy <Troy.Pruett@nrc.gov>; Clark, Jeff <Jeff.Clark@nrc.gov>
Subject: Relief request coming from Wolf Creek

All,

I just got off the phone with the reg affairs manager at Wolf Creek (Cindy Hafenstine). She was calling to correct one thing they told us yesterday. They have apparently decided to request relief from performing the volumetric inspection on Penetration 77 only (not all 12). She did not know the basis for the request, nor did she know when they would be ready to submit the request. This was an early heads up that it is coming.

I'll share any information I receive on this as soon as I get it.

Thanks,

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects
USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

From:	Anchondo, Isaac
To:	Drake, James; Lyon, Fred; Alley, David
Cc:	Hoffman, Keith; Tsao, John; Werner, Greg; Graves, Samuel; Kopriva, Ron; Pascarelli, Robert; Taylor, Nick
Subject:	RE: WCGS CSCAs - Some Relevant Historical Documents
Date:	Tuesday, September 13, 2016 1:17:00 PM

Jim,

That's the problem I was having with Section XI, because I believe the intent is not to allow a clamp on Class 1 piping that is leaking (i.e., pressure boundary leakage). If this is applicable to a Class 1 threaded connection, then leakage from that threaded connection should be consider pressure boundary leakage which is contrary to the idea that mechanical connections are allowed to leak.

That's why I came out with the conclusion that leakage through a Class 1 threaded connection should be consider pressure boundary leakage. This would correlate with Section III, NA-3254 Boundaries of Jurisdiction.

Isaac

From: Drake, James
Sent: Tuesday, September 13, 2016 12:46 PM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Lyon, Fred <Fred.Lyon@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Cc: Hoffman, Keith <Keith.Hoffman@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>
Subject: RE: WCGS CSCAs - Some Relevant Historical Documents

The other aspect is that in the RAI, Wolf Creek states, "WCNOC fully complies with American Society of Mechanical Engineers (ASME) Section XI requirements, as provided for in 10 CFR 50.55a." This statement is inaccurate because ASME Code does not allow clamps on Class 1 piping.

In addition, they had flaws in ASME Code welds(Canopy Seal Welds) that did not comply with Code.

Jim

From: Anchondo, Isaac
Sent: Tuesday, September 13, 2016 12:39 PM
To: Lyon, Fred <Fred.Lyon@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Cc: Hoffman, Keith <Keith.Hoffman@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>

Subject: RE: WCGS CSCAs - Some Relevant Historical Documents

All,

In bulletin 2002-01, the agency made a decision on the adequacy of the licensee's inspection program not the design approval of the canopy seal weld or CSCAs. As stated in BL 2002-01,

> "Specifically, the required information will enable the NRC staff to determine whether current inspection and maintenance practices for the detection of degradation of the reactor coolant pressure boundary at reactor facilities (similar to that observed at Davis-Besse) provides reasonable assurance that reactor coolant pressure boundary integrity is being maintained. The required information will also enable the NRC staff to determine whether PWR addressee inspection and maintenance practices need to be augmented to ensure that the safety significance of this form of degradation remains low."

Contrary to that, I think the licensee could make the argument that as a result of the staff reviewing Wolf Creek's response in regards to CSCAs, this statement on RIS 2003 could be seen as a backfit.

> "Non-pressure-boundary leaks continue to occur and licensee programs appear to be effective in detecting and correcting these leaks. Because operating experience has revealed that most leaks are from non-pressure-boundary components and the leakage can be readily identified, licensees are confident of finding leaks during plant walkdowns."

In my opinion, and if we continue to disagree with the licensee's usage of CSCAs, it is not a backfit because the staff could have failed to interpret the Code correctly or failed to check on the applicability of the Code in relation to the usage of CSCAs. But again, the intent of the agency's decision was not to approve the usage of CSCA but to make sure the licensee had an inspection program to look for pressure boundary leakage. I would argue that the staff had a concern with how these seal welds were being inspected and not whether the repair method was in compliance with the ASME Code (i.e., outside the scope of Bulletin 2002-01).

As I review all of these documents, I think we are getting into an issue such as STP with the valve caps that prevented the licensee from identifying pressure boundary leakage. We might be under the assumption that a mechanical connection (i.e., threaded connection) is allow to leak, but this might not be correct for Class 1 components. As provided in Section III,

> **NA-3254 Boundaries of Jurisdiction**
>
> (b) Control Rod Drive Housings - Control rod drive housings attached to a reactor vessel shall be considered in the Owner's Design Specifications as a vessel part or appurtenance or as a separate vessel. The rules of Subsection NB shall apply to those portions of the housings forming a pressure-retaining boundary.

Therefore, any leakage through the threaded connection should be address by the Code,

and hence, why a threaded connection is not allowed unless it has a seal weld. This would support a design where the structural integrity and pressure boundary is being provided by the threaded connection, but knowing that a threaded connection could experience minor leakage, a seal weld with a stress evaluation is required for full compliance with the Code. Additionally, that's why Section XI, Appendix IX does not allow a clamp on a Class 1 piping.

So with this line of thinking,

1. Could leakage through a seal weld be consider pressure boundary leakage through the threaded connection?

2. If the CSCA is only replacing the seal function, how will they be able to identify pressure boundary leakage through the threaded connection?

3. I believe this is a more stringent interpretation of the Code, am I outside the intent of the Code?!?

I welcome any thoughts during the call.

Thanks,
Isaac

From: Lyon, Fred
Sent: Tuesday, September 13, 2016 10:37 AM
To: Drake, James <James.Drake@nrc.gov>; Alley, David <David.Alley@nrc.gov>
Cc: Hoffman, Keith <Keith.Hoffman@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Pascarelli, Robert <Robert.Pascarelli@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>
Subject: WCGS CSCAs - Some Relevant Historical Documents

Attached are some relevant historical documents. Thanks, Isaac, for catching my earlier error. Fred

BL 2002-01, Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity, was closed to **RIS 2003-13**:
"NRC Review of Responses to Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity"

BL 2002-02, Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs, was closed to **Order EA-03-009,**
"Issuance of First Revised Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors"

WCNOC's initial response (4/3/02) and 30-day response (5/24/02) to BL 2002-01 both describe their use of CSCAs. I didn't see any mention of CSCAs or clamps in the other documents. These and the NRC staff's subsequent approval of the licensee's actions WRT

the BLs would constitute a potential backfit if we changed the “staff position.”

From:	Taylor, Nick
To:	Drake, James; Graves, Samuel
Cc:	Proulx, David; Werner, Greg; Anchondo, Isaac; Alley, David; Hoffman, Keith; Tsao, John; Lyon, Fred; Dodson, Douglas; Thomas, Fabian
Subject:	RE: Wolf Creek - next steps?
Date:	Wednesday, September 14, 2016 11:09:38 AM
Attachments:	image001.png

Thanks Jim. If you have additional calls with the licensee to talk about this, can you please invite the branch (me & David) and the residents? I think it's important that we all stay synched up on this issue given the substantial possible impact on the outage.

Nick

From: Drake, James
Sent: Wednesday, September 14, 2016 7:41 AM
To: Taylor, Nick <Nick.Taylor@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>
Cc: Proulx, David <David.Proulx@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Hoffman, Keith <Keith.Hoffman@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Drake, James <James.Drake@nrc.gov>; Lyon, Fred <Fred.Lyon@nrc.gov>
Subject: RE: Wolf Creek - next steps?

Nick,

I contacted Wolf Creek (Bill) and told him we would like to have a call to discuss the repair plan. I told him that the initial questions we would like to discuss were:

1. How are you verifying the structural integrity of the mechanical joint given that the leak rate experienced is significantly greater than any you have experienced in the past?
2. What is your plan for the repair of this leak?
3. We would like you the basis of how the canopy seal clamp complies with ASME Code.

In addition, I discussed the concerns we have with respect to the head inspection given the amount of boric acid that is on the head from the penetration 77 leak. Informed him of the problems FCS incurred during their last outage when they had a leak.

Bill said he will forward the questions and other information to the appropriate people and get back to me with a time that they thought they would be ready to discuss these questions.

Jim

From: Taylor, Nick
Sent: Wednesday, September 14, 2016 6:37 AM
To: Drake, James <James.Drake@nrc.gov>; Graves, Samuel <Samuel.Graves@nrc.gov>
Cc: Proulx, David <David.Proulx@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Subject: Wolf Creek - next steps?

Sam & Jim,

Sorry I had to bail early on yesterday's meeting. What was the outcome? Is someone setting up a call with the licensee to get more info? If possible, I'd like to listen in on the call with the licensee so we are all talking from the same page if the licensee balks at all. Also, curious what you came up with as far as questions go…

Thanks,

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects
USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov

From:	Anchondo, Isaac
To:	Lyon, Fred
Subject:	RE: Wolf Creek CSCA"a
Date:	Tuesday, September 13, 2016 9:32:00 AM

This issue got a sudden traction so I understand. Thank you for the support though, I didn't think of these bulletins at all.

From: Lyon, Fred
Sent: Tuesday, September 13, 2016 9:30 AM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>
Subject: RE: Wolf Creek CSCA'a

Yes, I'll check them all just to be complete. I was in too much of a hurry yesterday.

From: Anchondo, Isaac
Sent: Tuesday, September 13, 2016 10:28 AM
To: Lyon, Fred <Fred.Lyon@nrc.gov>
Subject: RE: Wolf Creek CSCA'a

The pertinent BL is the 2002-01 since it talks about the pressure boundary instead of nozzle inspection program (2002-02) which does not involve the seal welds at all. I was interested to see our response to BL 2002-01.

From: Lyon, Fred
Sent: Tuesday, September 13, 2016 9:24 AM
To: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>
Subject: RE: Wolf Creek CSCA'a

Oops. My bad. I got crossed up when I crossed from BL to Orders. It's the licensee's response to 2002-01 (PB) that references CSCAs. However, I must check BL 2002-02, too, since it's more specific to penetration nozzles.

From: Anchondo, Isaac
Sent: Tuesday, September 13, 2016 10:11 AM
To: Lyon, Fred <Fred.Lyon@nrc.gov>
Subject: FW: Wolf Creek CSCA'a

Fred,

Before I cc everybody, I was wondering if Bulletin 2002-01 had an actual response by the NRC. The closeout letters that you provided address BL 2002-02, not -01.

If we did response to BL 2002-01, do you think you can find those? or is the response to 2002-02 consider a response to -01 as well?

Your thoughts.

Isaac

From: Lyon, Fred
Sent: Monday, September 12, 2016 1:38 PM
To: Drake, James <James.Drake@nrc.gov>
Cc: Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Hoffman, Keith <Keith.Hoffman@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>
Subject: RE: Wolf Creek CSCA'a

Other relevant documents attached. I haven't run down the Order trail yet.

From: Lyon, Fred
Sent: Monday, September 12, 2016 1:40 PM
To: Drake, James <James.Drake@nrc.gov>
Cc: Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Hoffman, Keith <Keith.Hoffman@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>
Subject: RE: Wolf Creek CSCA'a

Attachments are publicly available as ML013470108, ML023310171, ML011730035, ML050470151, ML050560035, and ML052090182.

Only found one CRDM canopy seal weld repair using a mechanical clamp - Salem in 1988. The Turkey Point one is containment boundary leakage repaired with a mechanical clamp (though the title says pressure boundary). Saw plenty use of MNSAs. I included the Robinson and Seabrook examples simply because the licensee originally considered mechanical clamps, but then did weld overlays.

From: Drake, James
Sent: Monday, September 12, 2016 1:27 PM
To: Lyon, Fred <Fred.Lyon@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>
Cc: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Hoffman, Keith <Keith.Hoffman@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>
Subject: RE: Wolf Creek CSCA'a

Attachment would help.

Jim

From: Drake, James
Sent: Monday, September 12, 2016 12:13 PM
To: Lyon, Fred <Fred.Lyon@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>

Cc: Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>; Tsao, John <John.Tsao@nrc.gov>; Hoffman, Keith <Keith.Hoffman@nrc.gov>; Taylor, Nick <Nick.Taylor@nrc.gov>; Dodson, Douglas <Douglas.Dodson@nrc.gov>; Thomas, Fabian <Fabian.Thomas@nrc.gov>
Subject: Wolf Creek CSCA'a

I highlighted so interesting statements. Looks like the Westinghouse analysis was only for stresses on the nozzle.

The licensee appears to be treating the entire head adapter as the nozzle.

The first comment in the document will take you to the 50.59 screening the licensee performed.

Jim

James F. Drake
James F. Drake
Office phone: 817-200-1558
Cell Phone: (b)(6)

From:	Taylor, Nick
To:	Alley, David; Drake, James; Melfi, Jim
Cc:	Proulx, David; Werner, Greg; Anchondo, Isaac; Collins, Jay; Kopriva, Ron
Subject:	RE: Wolf Creek Head
Date:	Thursday, October 27, 2016 1:44:22 PM

I think Dave's question is a good one and should probably be answered before we decide to have a call.

Nick

From: Alley, David
Sent: Thursday, October 27, 2016 11:09 AM
To: Drake, James <James.Drake@nrc.gov>; Melfi, Jim <Jim.Melfi@nrc.gov>
Cc: Taylor, Nick <Nick.Taylor@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Collins, Jay <Jay.Collins@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>
Subject: RE: Wolf Creek Head

Jim,
Does this mean that they are going to submit info to us to review in sufficient time that we can review it before the call? Not sure what a call will accomplish until we have looked at their findings.

Dave

From: Drake, James
Sent: Thursday, October 27, 2016 11:55 AM
To: Melfi, Jim <Jim.Melfi@nrc.gov>
Cc: Taylor, Nick <Nick.Taylor@nrc.gov>; Proulx, David <David.Proulx@nrc.gov>; Werner, Greg <Greg.Werner@nrc.gov>; Anchondo, Isaac <Isaac.Anchondo@nrc.gov>; Alley, David <David.Alley@nrc.gov>; Collins, Jay <Jay.Collins@nrc.gov>; Kopriva, Ron <Ron.Kopriva@nrc.gov>
Subject: Wolf Creek Head

Jim,

Wolf Creek just contacted me. They want to have a call tomorrow at 1000 to discuss the head relief request.

They are going to call Siva to set up a bridge.

Jim

James F. Drake
James F. Drake
Office phone: 817-200-1558
Cell Phone: (b)(6)

From:	Henderson, Christopher
To:	Taylor, Nick
Cc:	Drake, James; Thomas, Fabian
Subject:	RE: Wolf Creek Leakage Update
Date:	Saturday, September 03, 2016 12:24:45 PM
Attachments:	[Untitled].pdf

Nick,

Wolf Creek placed excessive letdown in service last night at approximately 2330, and commenced trending RCS leak rate on 9/3 at 0057 in approximately 30 minute increments. As shown in the plot the RCS leak rate trend down to a leak rate from 0.5 to 0.6 gpm. These values were consistent with the values with excessive letdown was not in service. Additionally, walkdowns where completed with excessive letdown system in service and no abnormal conditions were identified.

Chris

From: Drake, James
Sent: Saturday, September 03, 2016 7:43 AM
To: Henderson, Christopher <Christopher.Henderson@nrc.gov>
Subject: Re: Wolf Creek Leakage Update

Thank you Chris.

Jim

James F. Drake
Email: James.Drake@nrc.gov
Office phone:817-276-6558
Cell phone: (b)(6)

From: Henderson, Christopher
Sent: Saturday, September 3, 2016 12:28 AM
To: Taylor, Nick
Cc: Proulx, David; Thomas, Fabian; Drake, James
Subject: Wolf Creek Leakage Update

Nick

Prior to depart the site for the night Wolf Creek identified leakage in the canopy area of the CRD. Video 5459.avi provides a prospect of the leak location on the CRD on penetration 77. Additionally, the station was preparing to place excessive letdown into service to valid if there is leakage from the system into containment. The station sample the CCW and the results were less than minimum detectable activity. Also, all temperature and pressure parameters where within normal operational values. This provides assures there is no inter-system leakage occurring. The station was in the

process evaluate the results obtain from the QC post transient walkdowns to determine if leakage in the canopy area of the CRD area is pressure boundary leakage and confirm whether or not there is leakage for the excessive letdown system. The station was continue with the TS shutdown to Mode 5, if the station determines there no pressure boundary leakage they will transation to a non-TS shutdown to Mode 5 and conduct repairs. A discussion was not made at prior to leave whether they will start the refueling outage early or conduct repairs and restart.

They should be contacting you in the morning to sent up a phone call to discuss their results with the Agency.

My current plan is to be back on site around 10:30 to 11:00 and stay as long as need on Saturday to support Fabian.

Chris

Christopher Henderson
US Nuclear Regulatory Commission
Resident Inspector
Cooper Nuclear Station
Office: 402-825-3371
Cell: (b)(6)
Pager: (b)(6)

From:	Taylor, Nick
To:	Kennedy, Kriss; Morris, Scott; Pruett, Troy; Lantz, Ryan; Vegel, Anton; Clark, Jeff
Cc:	Dricks, Victor; Maier, Bill; Moreno, Angel; Bowen, Jeremy; Lyon, Fred; Pascarelli, Robert; Dodson, Douglas; Thomas, Fabian; Proulx, David; Janicki, Steven; Taylor, Nick; R4DRP-BC; Loveless, David; Phalen, Martin; Elkmann, Paul; R4DRS-BC; Kopriva, Ron; Pascarelli, Robert
Subject:	Summary of Wolf Creek plant status 9-3-16 0900
Date:	Saturday, September 03, 2016 9:24:03 AM
Attachments:	image002.png ASME Code Case N-733.pdf Initial containment walkdown pictures 090216.pdf Penetration 77 Core Exit Thermocouple 090216.JPG Vessel head assembly drawing.pdf Vessel head drawing with leaking penetration marked.pdf Vessel head stack drawing.pdf

---

Good morning everyone,

An update from Wolf Creek… Right now the plant is stable in Mode 3, and they are making preparations to cool down to Mode 5 (new information). Fabian expects that the cooldown will commence sometime this morning as soon as the licensee has finished some setup activities. Last night at 0345 the licensee determined that the LCO for TS 3.4.13 was met (no pressure boundary leakage, unidentified leakage below 1 gpm, identified leakage below 10 gpm, SG tube leakage less than 150 gpd) and exited TS 3.4.13, Condition B.

I have attached a few files that provide a better understanding of the leak site and the configuration of the vessel head. In short, upon direct inspection last night the licensee discovered that the actual leak site is a defect in the canopy seal weld on penetration 77 for a core exit thermocouple. This is not a previously repaired nozzle as originally thought. The leak is substantial as can be seen in the picture attached. We also have a 25 MB video file of the leak, along with additional pictures, at the following location on the S drive:

S:/DRP/Wolf Creek Leak Info/Penetration 77

During a call this afternoon at 1 pm we expect the licensee to describe current plant status, actions they have taken to identify & quantify the source of the RCS leakage, and their plans to maneuver the plant for a repair of the leaking nozzle. We do not yet know what repair method they plan to pursue (code repair, mechanical clamp, or other). Jim Drake has been reviewing the details as they become available, and is reviewing ASME Code Case N-733 which defines the conditions under which the licensee can use a mechanical clamping device to repair such a leak (for reference Wolf Creek has used this repair method on about 10 other penetrations on the head in the past). If you desire to be on the call and have not already received the calendar appointment please let me know and I will forward it to you.

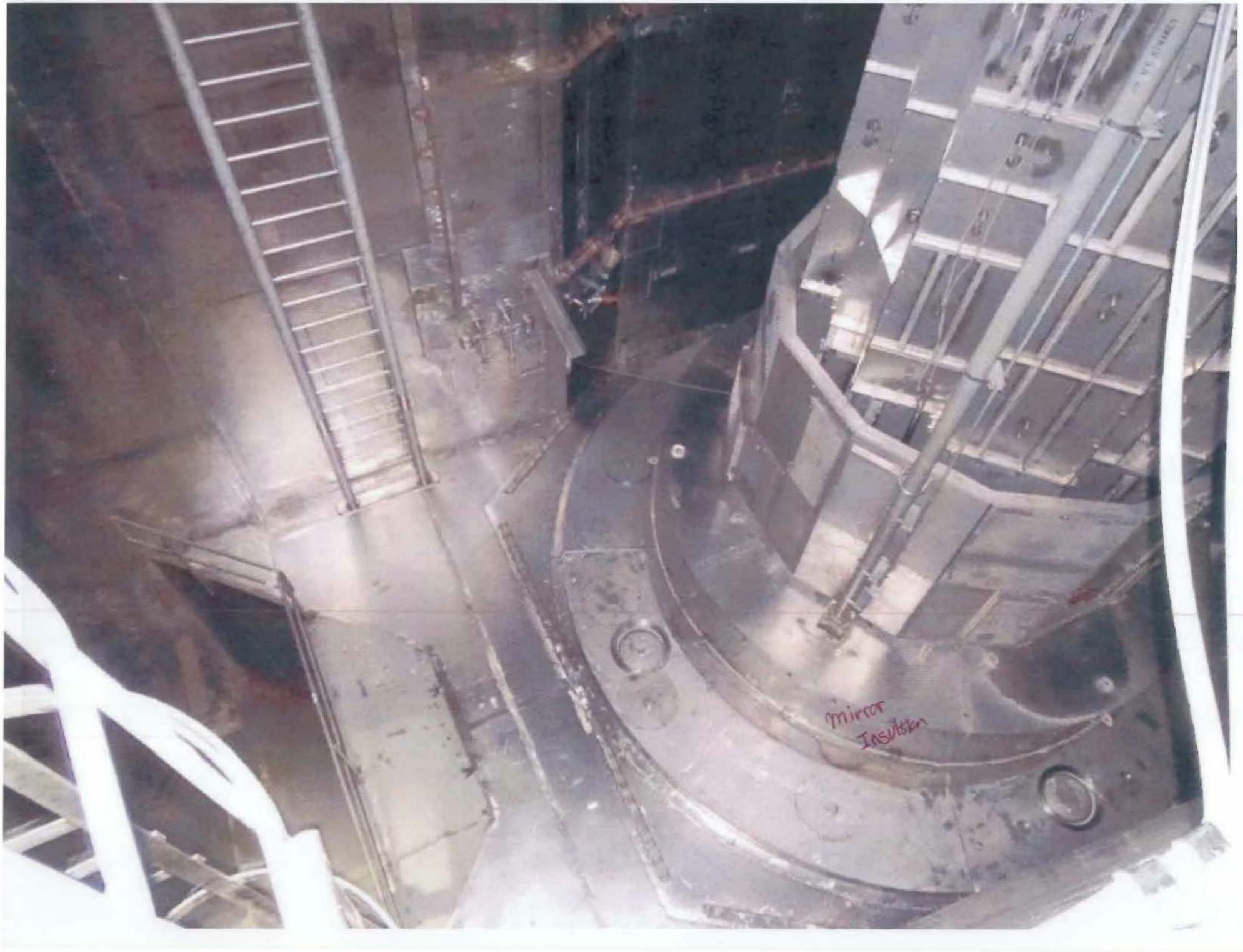
Unrelated to this week's leakage issues – the licensee did feel the Oklahoma earthquake this morning, but the EAL entry criteria were not met (no seismic alarm received), hence no event declared at Wolf Creek. The resident inspector was in the control room at the time of the earthquake and is following up on the licensee's actions, and will do a plant walkdown during the day today.

Fabian Thomas is onsite this morning, and will be relieved early this afternoon by Chris Henderson. Chris heads back to Cooper this evening and Mike Langelier will report to assist Fabian starting tomorrow.

Should you need any additional information please feel free to contact me (via cell phone today, 972-921-6398).

Thanks,

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects
USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov


Mirror
Insulation

Page 188 of 240

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

Page 189 of 240

Withheld pursuant to exemption

(b)(4)

of the Freedom of Information and Privacy Act

From:	Anchondo, Isaac
To:	Werner, Greg
Cc:	Drake, James
Subject:	WC Call
Date:	Tuesday, October 11, 2016 3:15:00 PM
Attachments:	pr222 .pdf

Greg,

As of now, HQ did not approve WC relief request. Primarily because they haven't had the chance to review it in detail. With that said, Jim Collins did read it and felt that their technical justification did not seem to provide the technical rigor to grant them relief. They plan on reviewing it in more detail and will have another call sometime this week.

FYI – The code requires them to perform a surface exam from under the head in addition to the volumetric examination. The licensee is trying to perform a volumetric plus a leak path assessment in lieu of the surface examination.

Let me know if you have any questions.

Thanks,

Isaac Anchondo

Reactor Inspector
U.S. Nuclear Regulatory Commission | Region IV
Division of Reactor Safety | Engineering Branch 2
(817) 200-1152

From:	Thomas, Fabian
To:	Taylor, Nick
Cc:	Dodson, Douglas
Subject:	WC RCS Water Inventory Balance Procedure
Date:	Thursday, September 01, 2016 11:54:40 AM
Attachments:	RCS Water Inventory Balance Procedure (STS BB-006).pdf

---

Nick,

Please see the attached.

Let me know if you have any problems opening this.

Thanks,
Fabian

From:	Lyon, Fred
To:	Drake, James; Alley, David
Cc:	Hoffman, Keith; Tsao, John; Werner, Greg; Graves, Samuel; Anchondo, Isaac; Kopriva, Ron; Pascarelli, Robert; Taylor, Nick
Subject:	WCGS CSCAs - Some Relevant Historical Documents
Date:	Tuesday, September 13, 2016 10:37:03 AM
Attachments:	NRC closeout of BL 2002-02 to RVH Inspection Order.pdf NRC response to WCNOC BL 2002-02.pdf WCNOC 30-day response to BL 2002-01.pdf WCNOC 60-day response to BL 2002-01.pdf WCNOC 60-day response to Order.pdf WCNOC 60-day response to revised Order.pdf WCNOC RAI response for BL 2002-01pdf.pdf RIS 2003-13 Review of BL 2002-01 Responses.pdf WCNOC response to BL 2002-01.pdf

Each attachment is already publicly available, either in NRC's Document Collections, at www.nrc.gov, or in ADAMS. Please see listing of Already Publicly Available Records.

Attached are some relevant historical documents. Thanks, Isaac, for catching my earlier error. Fred

BL 2002-01, Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity, was closed to **RIS 2003-13**:
"NRC Review of Responses to Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity"

BL 2002-02, Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs, was closed to **Order EA-03-009,**
"Issuance of First Revised Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors"

WCNOC's initial response (4/3/02) and 30-day response (5/24/02) to BL 2002-01 both describe their use of CSCAs. I didn't see any mention of CSCAs or clamps in the other documents. These and the NRC staff's subsequent approval of the licensee's actions WRT the BLs would constitute a potential backfit if we changed the "staff position."

From:	Taylor, Nick
To:	Pruett, Troy; Vegel, Anton
Cc:	Dodson, Douglas; Thomas, Fabian; Proulx, David; Janicki, Steven; Taylor, Nick; Clark, Jeff; Lantz, Ryan
Subject:	Wolf Creek MD 8.3
Date:	Wednesday, September 07, 2016 3:35:47 PM
Attachments:	MD83 Analysis for Wolf Creek RCS Leak 9-2-16.docx image003.png

Troy / Tony,

FYI – draft Wolf Creek MD8.3 for tech spec shutdown is attached. In short, we have determined that none of the deterministic criteria were met (including the expanded list in MC 0309) and we believe baseline inspection is adequate to understand the issues herein. I spoke today with David Loveless, and based on our understanding of the leak source, he doesn't think that any associated performance deficiency would be risk significant.

Please let me know if you have a different view or recommended changes to the attached MD 8.3. Once I have your concurrence I plan to take this down to Kriss or Scott for review/discussion.

By process, we could probably exit the MD8.3 process based on no deterministic criteria, but we felt it appropriate to at least offer it up for discussion.

Regarding baseline inspection, Greg Werner's branch is going to look at the licensee's repair plan during the outage ISI inspection (Kopriva), and the residents will be following up on the "trend" of nozzle repairs, age of the head, etc (this will likely be the 11th clamp assembly installed on the head).

Thanks!

Nick Taylor
Chief, Projects Branch B
Division of Reactor Projects
USNRC Region IV
O: (817) 200-1141
C: (b)(6)
E: nick.taylor@nrc.gov

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

From:	Janicki, Steven
To:	Taylor, Nick
Cc:	Proulx, David; Dodson, Douglas; Thomas, Fabian
Subject:	Wolf Creek Pictures
Date:	Thursday, September 15, 2016 9:03:59 AM
Attachments:	DSC04761.jpg DSC04765.jpg DSC04766.jpg DSC04764.jpg DSC04747.jpg DSC04720.jpg DSC04719.jpg DSC04714.jpg

---

Nick,

I found some of the pictures that show the rust that Doug was talking about. I have all the pictures downloaded and will place them in the branch folder so you can quickly scan them if you would like at some point (vice having to click them all individually on Certrec).

Steve.

Respectfully,
Steve Janicki

Nuclear Regulatory Commission
RIV – Division of reactor Projects
Branch B PE
(O) 817-200-1457
(C) (b)(6)
Steven.janicki@nrc.gov

From:	Proulx, David
To:	Kennedy, Kriss; Morris, Scott; Pruett, Troy; Lantz, Ryan; Vegel, Anton; Werner, Greg; Drake, James; Dricks, Victor; Maier, Bill; Moreno, Angel; Bowen, Jeremy; Lyon, Fred; Singal, Balwant; Pascarelli, Robert; Taylor, Nick; Thomas, Fabian; Dodson, Douglas; Kopriva, Ron
Subject:	Wolf Creek Reactor Vessel Head Nozzle Leakage and Corrosion
Date:	Thursday, October 20, 2016 1:41:42 PM
Attachments:	Wolf Creek Vessel Head Nozzle Leakage 10-20-16-rev.docx

Good afternoon,

Please see the attached revised one-pager related to the Wolf Creek reactor vessel head leakage and corrosion.
Feel free to forward to all interested parties. We will continue to update the information as the licensee
completes their cleaning and inspection activities.

If you have any additional questions, please contact me at 817-200-1561.

Very respectfully,

David Proulx
SPE- RPBB
x1561

Wolf Creek Reactor Vessel Head Nozzle Leakage and Corrosion

Key Messages

NOTE: Significant updates annotated by date entered.

- **(10/20/2016) Continuing reactor vessel head inspections have not identified any significant damage to the head itself, although additional cleaning activities must be completed to observe the bare metal condition. The licensee's current schedule shows them completing this cleaning and doing additional visual inspection around 10/24. The licensee is also removing other components from the reactor vessel head assembly (such as CRDM coil stacks) to remove accumulated boron deposits that were carried through the head plenum by ventilation flow.**

- **(10/20/2016) The licensee has completed volumetric examinations of twelve penetration nozzles in the spray area of the leak, which appear to have satisfactory results (the examinations did not reveal any leak paths from inside the vessel). The licensee has requested relief from code-required surface examinations of the penetration welds on the bottom of the head for the twelve affected penetrations. Headquarters is still reviewing the relief request, pending receipt of additional information from the licensee and ongoing inspection efforts by Region IV ISI inspectors who are in the field again this week.**

- **(10/20/2016) The licensee has installed an approved canopy seal clamp assembly (CSCA) on penetration 77, which was the source of the leak requiring the early shutdown of the plant. Additionally, the licensee has installed CSCAs on two other nozzles which were susceptible to future leakage, and is in the progress of installing two more. The licensee has described their plans to evaluate installing CSCAs on all such nozzles in a future outage to mitigate the risk of future leaks above the head.**

- **Wolf Creek completed a technical specification (TS) required shutdown of the reactor on Friday, September 2, 2016, in order to locate and repair the source of elevated reactor coolant system leakage. The source of the leak was determined to be a leaking canopy seal weld on a core exit thermocouple penetration nozzle above the reactor vessel head (penetration 77).**

- **Upon initial inspection on September 19, indication of carbon steel corrosion was noted on the reactor vessel head. The corrosion appears to be limited to a small sector of the reactor vessel head and surrounding structures below the leaking penetration.**

- **Following the shut down the licensee began a planned refueling outage. The licensee moved the reactor vessel head to the inspection stand, where continuing inspection and repairs to the head are being completed.**

Facts

- The resident inspectors monitored reactor coolant system leakage throughout the operating cycle. Data indicated a steady very small leak rate (approximately 0.05 gallons per minute), that suddenly began to increase on August 31, 2016. On September 2, 2016, Wolf Creek observed RCS unidentified leakage in excess of 1.35 gallons per minute (gpm), exceeding the TS limit of 1.0 gpm. As a result, the licensee initiated a TS required shutdown on September 2, 2016.

- Following shutdown and containment entry, the source of the leak was identified as the canopy seal weld on penetration 77 above the reactor vessel head, which serves one of the core exit thermocouples. Leakage through the threaded mechanical joint serving the core exit thermocouple nozzle assembly is not considered pressure boundary leakage.

Contact: Nick Taylor, Chief, Reactor Projects Branch B
(817) 200-1141

November 1, 2016

- Following the shutdown, the licensee decided to commence their refueling outage, which is planned for 55 days.

- The reactor vessel head is the original head and is approximately 30 years old. The licensee has periodically inspected the head for leakage in accordance with their approved in-service inspection program. The last such inspection was in the spring 2015 refueling outage.

- A Region IV Division of Reactor Safety inspector is currently onsite to assist the resident inspectors in the follow up of these issues.

Contact: Nick Taylor, Chief, Reactor Projects Branch B
(817) 200-1141

November 1, 2016

Wolf Creek Reactor Vessel Head Nozzle Leakage and Corrosion

Key Messages

- **Wolf Creek completed a technical specification (TS) required shutdown of the reactor on Friday, September 2, 2016, in order to locate and repair the source of elevated reactor coolant system leakage. The source of the leak was determined to be a leaking canopy seal weld on a core exit thermocouple penetration nozzle above the reactor vessel head.**

- **Upon initial inspection on September 19, indication of carbon steel corrosion was noted on the reactor vessel head itself. Although the extent of the corrosion is not yet known, it appears to be limited to a small sector of the reactor vessel head directly below the leaking penetration.**

- **Following the shut down the licensee began a planned refueling outage. The licensee is in the process of removing the reactor vessel head to conduct an evaluation of the impact of the leakage and is identifying plans for further analysis and appropriate actions, including repair of the leaking nozzle. The NRC will continue to monitor the licensee's progress.**

Facts

- Wolf Creek noted an upward trend in unidentified RCS leakage on August 31, 2016. On September 2, 2016, Wolf Creek observed RCS unidentified leakage in excess of 1.35 gallons per minute (gpm), exceeding the TS limit of 1.0 gpm. As a result, the licensee initiated a TS required shutdown on September 2, 2016.

- The resident inspectors monitored reactor coolant system leakage throughout the operating cycle. Data indicated a steady very small leak rate (approximately 0.05 gallons per minute), that suddenly began to increase on August 31, 2016.

- Following shutdown and containment entry, the source of the leak was identified as the canopy seal weld on penetration 77 on the reactor vessel head, which serves one of the core exit thermocouples. The threaded mechanical joint serving the core exit thermocouple nozzle assembly is not considered pressure boundary leakage.

- Following the shutdown, the licensee remained shutdown to commence their refueling outage, which is planned for 55 days. During this outage, the licensee is evaluating plans to repair the leak using an applicable ASME code allowable methodology. Previous minor leaks on mechanical joints on the reactor vessel head have been repaired with code-approved mechanical clamps. There are 10 of these clamps currently installed on vessel head nozzle assemblies.

- The reactor vessel head is the original head and is approximately 30 years old. The licensee has periodically inspected the head for leakage in accordance with their approved in-service inspection program. The last such inspection was in the Spring 2015 refueling outage.

- The license plans to remove the vessel head and place it on an inspection stand. The reactor vessel head will be cleaned and examined to determine the extent of the corrosion, and if repairs are necessary.

- Region IV inspectors from the Division of Reactor Safety are scheduled to arrive on September 26 to assist the resident inspectors inspection of this issue.

Contact: Nick Taylor, Chief, Reactor Projects Branch B
(817) 200-1141

November 2, 2016

From:	Hafenstine Cynthia R
To:	Singal, Balwant; "siva.lingman@nrc.gov"
Cc:	Muilenburg William T; Tougaw Dennis E; Barraclough Richard M
Subject:	[External_Sender] Wolf Creek - Draft revision of Relief Request Document Number WO 16-0052
Date:	Wednesday, October 12, 2016 5:10:49 PM
Attachments:	WO16-0052R5dt.pdf

Attached is our current draft revision of the relief request. We have not yet incorporated the questions listed in the draft RAI that you provided.

We would like to have a call on Thursday at 1:00 pm Eastern Time / Noon Central Time. Please let me know if that will work for you.

We appreciate your support in getting this document revised to support our request.

Thanks,
Cindy Hafenstine
Office 620-364-4204
Cell (b)(6)

Cleveland Reasoner
Site Vice President

October 11, 2016
WO 16-0052

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

Reference: Letter from J. H. McCoy to USNRC dated February 23, 2016, Wolf Creek Generating Station Inservice Inspection Plan and 10 CFR 50.55a Requests 14R-01 and 14R-02 for the Fourth Inservice Inspection Program Interval.

Subject: Docket No. 50-482: Relief Request Number I4R-03, Request for Relief from Paragraph-3200(b) of ASME Code Case N-729-1 for Reactor Vessel head Penetration Nozzle Welds and Relief Request I4R-04, Request for Relief from the Requirements of ASME Code Case N-729-1

Gentlemen:

During the current twenty-first refueling outage the reactor vessel head penetration nozzles were examined in accordance with Code Case N-729-1 and both Wolf Creek Generating Station (WCGS) Inservice Inspection (ISI) and Boric Acid Programs. A canopy seal weld leak led to the shutdown of the plant. The resulting boric acid accumulation from the canopy seal weld leak covered a portion of the head which is the subject of the head inspection. The boric acid accumulation prevents adequate visual inspection of 12 nozzles because the canopy seal weld related boron would mask any boron from a nozzle leak. Wolf Creek Nuclear Operating Corporation (WCNOC) is confident that the observed deposits were the result of the canopy seal weld leak. Several head to nozzle interface areas were obscured such that adequate visual inspections are not possible on the top side of the head. Because of this, WCNOC will be performing a supplemental examination of the obscured nozzles from the underside of the head in accordance with Code Case N-729-1. WCNOC is requesting relief from the requirement to perform a surface examination of the partial penetration due to hardship without a compensating increase in the level of quality or safety.

Therefore, pursuant to 10 CFR 50.55a(z)(2), WCNOC hereby requests NRC approval of the attached relief request for the WCGS, Inservice Inspection (ISI) Program, fourth ten-year interval. The attachment identifies the affected components, applicable American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME) Code requirements, reason for request, proposed alternative, and basis for proposed alternative. The alternatives are proposed to be applied during Interval 4, which began September 3, 2015 and ends September 2, 2025.

The provisions of this relief are applicable to Refueling Outage 21 only. WCNOC will return to the normal inspection protocol for the remainder of ISI Interval 4, which began September 3, 2015 and ends on September 2, 2025 (Reference 1). WCNOC requests approval of this request by October 14, 2016, to support restart from the current refueling outage.

In addition, pursuant to 10 CFR 50.55a(z)(2), Wolf Creek Nuclear Operating Corporation (WCNOC) hereby requests Nuclear Regulatory Commission (NRC) approval of 10 CFR 50.55a Request Number I4R-04 for the Fourth Ten-Year Interval of WCNOC's Inservice Inspection (ISI) Program. The attached 10 CFR 50.55a Request (I4R-04) requests relief from certain ASME Code Case N-729-1 requirements for examination of reactor vessel head penetration welds. (Attachment 2) This request is similar to that requested in the Third Ten Year Interval of WCNOC's Inservice Inspection (ISI) that was accepted by ML 12353A241.

The Code of Federal Regulations 10 CFR 50.55a(g)(6)(ii)(D)(1) requires that examinations of the reactor vessel head be performed in accordance with ASME Code Case N-729-1 subject to conditions specified in paragraphs 10 CFR 50.55a(g)(6)(ii)(D)(2) through (6). The vendor chosen by WCNOC to perform these examinations is unable to meet required examination coverage below the J-groove weld on two control rod drive mechanism (CRDM) penetrations. Both of these CRDM penetrations are configured such that the volumetric examination distance required by N-729-1 cannot be met. Attachment 2 to this letter, 10 CFR 50.55a Request I4R-04, documents the ultrasonic coverage limitations.

WCNOC had intended to request this relief prior to planned inspections in Refueling Outage 23 but the circumstances described above have required that the examination of one of the subject penetrations be performed at this time during Refueling Outage 21. Therefore, WCNOC requests approval of the attached 10 CFR 50.55a Request I4R-04 by October 14, 2016, to support inspection and restart from Refueling Outage 21, which is now scheduled to complete November 14, 2016.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4171, or Cynthia R. Hafenstine (620) 364-4204.

Sincerely,

Cleveland Reasoner

COR/rlt

Attachments: 1) 10 CFR 50.55a Request Number I4R-03
2) 10 CFR 50.55a Request Number I4R-04

cc: K. M. Kennedy (NRC), w/a
B. K. Singal (NRC), w/a
N. H. Taylor (NRC), w/a
Senior Resident Inspector (NRC), w/a

Wolf Creek Nuclear Operating Corporation

10 CFR 50.55a Request I4R-03

Relief Requested In Accordance with 10 CFR 50.55a(z)(2)
(6 Pages)

10 CFR 50.55a Request Number I4R-03

Relief Requested
In Accordance with 10 CFR 50.55a(z)(2)

Alternative provides an acceptable level of quality and safety

- ASME Code Component(s) Affected

Component:	Reactor Vessel Closure Head (RVCH) Nozzles
Code Class:	Class 1
Examination Category:	B-P
Code Item Number:	B4.10 (Code Case N-729-1, Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial-Penetration Welds, Section XI, Division 1)
Description:	Control Rod Drive Mechanism (CRDM) Nozzles Core Exit Thermocouple Nozzle Assy (CETNA) Nozzles 12 Penetration Nozzles – Numbers 20, 27, 35, 40, 46, 47, 58, 59, 63, 70, 71, and 77 a
Size:	4.00 Inch (Nominal Outside Diameter)
Material:	RVCH SA533 Grade B, Class 1 Nozzle SB 167 N06600 (Alloy 600) Alloy 82/182 weld material

2. Applicable code Edition and Addenda

   - American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section XI, 2007 Edition through 2008 Addenda
   - Code Case N-729-1 as conditioned by 10 CFR 50.55a(g)(6)(ii)(D)

3. Applicable Code Requirement

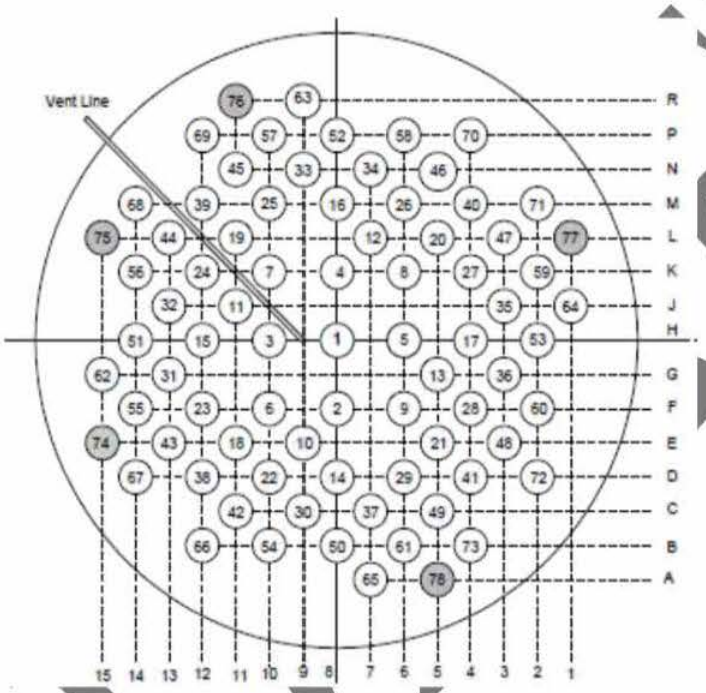
   10 CFR 50.55a(g)(6)(ii)(D)(1) requires that examinations of the reactor vessel head be performed in accordance with ASME Code Case N-729-1 subject to the conditions specified in paragraphs 10 CFR 50.55a(g)(6)(ii)(D)(2) through (6).

   Paragraph -3200(b) of code Case N-729-1 states:

   > *The supplemental examination performed to satisfy -3142.2 shall include volumetric examination of the nozzle tube and **surface examination of the partial-penetration weld,** (emphasis added) or surface examination of the nozzle tube inside surface, the partial penetration weld, and nozzle tube outside surface below the weld, in accordance with Fig. 2, or the alternative examination area or volume shall be analyzed to be acceptable in accordance with Appendix I. The supplemental examinations shall be used to determine the extent of the unacceptable conditions and the need for corrective measures, analytical evaluation, or repair / replacement activity.*

4. Reason for Request

Based on visual examination (VE), deposits resulting from leakage in the canopy seal weld on penetration 77 are on the Reactor Vessel Closure Head. These deposits are dispersed on the reactor head in such a way that it is evident they resulted from the spray pattern, or spray deflection, from the canopy seal weld leak. Other observations noted were: 1) the condition of the head which only had surface rust present rather than wastage; 2) the color and location of these deposits were consistent with spray following the crud burst that was then oxidized by exposure to the atmosphere; 3) there was a layer of white boric acid on top of the deposits in a similar pattern indicating that clean borated water had followed the same path; and 4) no penetrations other than those in the path of the spray/deflection show any abnormal indications.



INSERT FIGURE SHOWING PENETRATION LOCATIONS

With this evidence indicating the condition resulted from the canopy seal weld leak above the head the deposits still obscure the head and prevent the required VE from being performed on the affected penetrations. WCNOC will perform supplemental examinations of the affected penetrations.

Twelve penetrations require supplemental examination in accordance with code requirements. Per paragraph -3200(b) of N-729-1 these supplemental examinations "*…shall include volumetric examination of the nozzle tube and surface examination of the partial-penetration weld,…".*

WCNOC does not have the internal resources to conduct the volumetric and surface examinations as required by Code Case N-729-1 – 3200(b). A third party vendor has been contracted to perform the examinations. The options for the surface examination of the

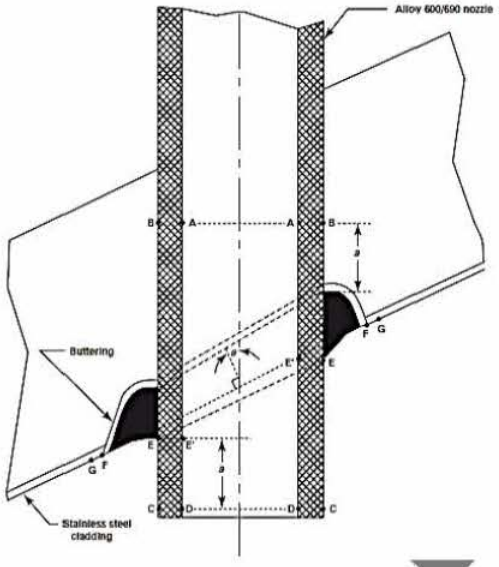
partial penetration weld are: 1) the dye penetrant technique or 2) the eddy current technique. The dye penetrant technique carries an estimated dose of proximately 1500 mRem (1.5 REM) per nozzle, approximately 18 REM for the entire task. The vendor selected to perform the volumetric examination of the nozzle tube has remotely operated tooling available to perform the surface examination of the partial penetration weld using the Eddy Current technique; however, there are few personnel qualified to operate this equipment. It is estimated that the surface examination of the partial penetration weld using the Eddy Current technique would result in approximately 2.5 Rem of additional exposure.

The volumetric examination of the nozzle tube will be performed with remotely operated tooling that is mounted on a manually positioned tool stand. In order to perform the supplemental volumetric examination of 12 penetrations, 13 entries under the RV closure head are required. The first entry is estimated to take approximately 10 minutes accumulating 408 mRem of exposure. The remaining entries are estimated to take approximately 2 minutes each yielding 81 mRem of exposure or 979.2 mRem for a total of 1387.2 mRem. In order to perform the surface examination of the partial penetration weld using the Eddy Current technique, an additional 13 entries under the RV closure head would be required, resulting in a projection of two times the dose accumulated for the leak path assessment and volumetric exam approach.

The vendor has estimated the time required to perform the volumetric examinations as 7 days (3 days of equipment set up, 2 days to perform examinations [12 nozzles at 6 nozzles per day], and 2 days of equipment teardown). In order to perform the surface examination of the partial penetration weld with Eddy Current, an additional 6 days would be required, as the process can only complete 2 examinations per 12 hour shift. (there are only enough qualified personnel to cover one shift).

5. Proposed Alternative and Basis for Use

WCNOC proposes to perform a demonstrated volumetric leak path assessment (in addition to the volumetric examination) in lieu of the surface examination of the partial penetration weld. The leak path assessment can be performed in tandem with the nozzle tube volumetric exams and will not add any additional dose. This combination (volumetric examination of the nozzle tube and volumetric leak path assessment) will provide confirmation that all of the deposits observed on the RV closure head were a result of the canopy seal weld leak. WCNOC believes that the combination of the volumetric exams and the leak path assessment will provide an acceptable level of confidence in the condition of each penetration. This is because, as shown in the figure below, the two examinations will verify there are no indications in the nozzle tube and verify that there has been no leakage in the penetration tube to RVCH interface.



The volumetric exam is the area from points A-B-C-D. The leak path assessment will cover the interface between the nozzle and the carbon steel head to at least 2" above the J-groove weld. Performing the leak path assessment in lieu of the surface examination of the J-groove weld will demonstrate that the boric acid deposits observed on the exterior of the head were a result of the canopy seal weld leak.

WCNOC will conduct the volumetric and leak path assessments. The table below lists the type of probe used and the distance above the weld measured in 2013 using the axially shooting TOFD transducer. All of the 0° UT data axial coverage was at least 2 inches above the top of the J-groove weld.

Penetration No.	θ (degrees)	Exam Probe	2013 Coverage Obtained Above Weld (Axial Shooting) in inches
20	24.8	Combo-2	3.22
27	26.2	OHS	3.64
35	30.3	Combo-2	3.00
40	34.0	Combo-2	3.44
46	35.2	Combo-2	3.04
47	35.2	Combo-2	2.76
58	38.7	Combo-2	2.80
59	38.7	Combo-2	3.12
63	44.3	Combo-2	2.60
70	45.9	Combo-2	2.96
71	45.9	Combo-2	3.20
77	48.7	OHS	3.32

BE VERY SPECIFIC REGARDING EXAMS TO BE PERFORMED – WHAT PROBES, Zero Degree Etc, and details of coverage – **Follow-up comment from our PM**

The Open Housing Scanner (OHC) uses Type PSC-24 TOFD 5 MHz transducers with a refracted angle of 55° for the circumferential shooting and a refracted angle of 40° for the axial shooting.

The Combo-2 blade probes use Type PSC-23.5 TOFD 6.2 MHz transducers with a refracted angle of 57° for the circumferential shooting and a refracted angle of 44° for the axial shooting.

In both the OHC and Combo-2 probes, the search units utilized for the 0° longitudinal wave examination have a nominal frequency of 2.25 MHz.

WCNOC has examined the RCVH previously in 2006 and 2013 and has never identified any degradation of the RCVH. The data from the examinations performed in RF21 will be compared to the data from the previous exams. This comparison will show any change in the leak path data.

WCNOC will clean the RCVH and perform a supplemental VE of the twelve penetrations prior to the returning the RVCH to service in Refueling Outage 21 and also in Refuel 22 to confirm that there continues to be no indication of leakage through these penetrations. Following these exams WCNOC will return, in Refueling Outage 23, to the normal inspection process required by the code for the duration of the Fourth ISI Interval.

WCNOC believes that the estimated additional dose (2.5 – 18 REM depending on method used), the added time, and cost associated with the surface examination of the partial penetration welds will not provide any additional benefit over the proposed Leak Path Assessment and Volumetric examination.

Therefore performing surface examination of the partial penetration welds does not result in a compensating increase in the level of quality or safety.

6. Duration of Proposed Alternative

The proposed alternative will be utilized during WCNOC Refueling Outage 21 only. WCNOC will return to the normal inspection protocol for the remainder of ISI Interval 4, which began September 3, 2015 and ends on September 2, 2025.

7. Precedent

8. References

1. ASME Boiler and Pressure Vessel Code Case N-729-1 "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds Section XI, Division 1"
2. NUREG CR 7142, "Ultrasonic Phased Array Assessment of the Interference Fit and Leak Path of the North Anna Unit 2 Control Rod Drive Mechanism Nozzle 63 with Destructive Validation
3. WDI-T J-0-03-P, "Ultrasonic Testing of Interference Fit Samples for Leak Path Detection (PWROG PA-MSC-0532)"

Wolf Creek Nuclear Operating Corporation

10 CFR 50.55a Request I4R-04
Request for Relief from the Requirements of ASME Code Case N-729-1
(13 Pages)

10 CFR 50.55a Request I4R-04

Request for Relief from the Requirements of ASME Code Case N-729-1

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(2) Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety

1. ASME Code Components Affected

Code Class:	1
Reference:	ASME Code Case N-729-1 / 10 CFR 50.55a(g)(6)(ii)(D)
Item No.:	B4.20
Description:	UNS N06600 Nozzles and UNS N06082 or UNS W86182 Partial-Penetration Welds in Head. Reactor vessel head control rod drive mechanism (CRDM) penetration nozzle base material and J-groove weld that attaches the nozzle base material to the underside of the head for penetration nozzles 77 and 78.

2. Applicable Code Edition and Addenda

ASME Code Section XI, 2007 Edition through 2008 Addenda, as augmented by ASME Code Case N-729-1 (Reference 1), "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial-Penetration Welds Section XI, Division 1," as amended by 10 CFR 50.55a(g)(6)(ii)(D).

3. Applicable Code Requirement

10 CFR 50.55a(g)(6)(ii)(D)(1) requires that examinations of the reactor vessel head be performed in accordance with ASME Code Case N-729-1 subject to the conditions specified in paragraphs 10 CFR 50.55a(g)(6)(ii)(D)(2) through (6).

Paragraph -2500 of Code Case N-729-1 states, in part:

> If obstructions or limitations prevent examination of the volume or surface required by Figure 2 for one or more nozzles, the analysis procedure of Appendix I shall be used to demonstrate the adequacy of the examination volume or surface for each such nozzle. If Appendix I is used, the evaluation shall be submitted to the regulatory authority having jurisdiction at the plant site.

Figure 2 in ASME Code Case N-729-1, as referenced by paragraph -2500, requires that the volumetric or surface examination coverage distance below the toe of the J-groove weld (i.e. dimension "a") be 1.5 inches for incidence angle, θ, less than or equal to 30 degrees; 1 inch for incidence angle, θ, greater than 30 degrees; or to the end of the tube, whichever is less. These coverage requirements are applicable to Wolf Creek Generating Station (WCGS) reactor vessel head penetrations as shown in Table 1.

Table 1: WCGS Reactor Vessel Head Penetration Coverage Requirements

Penetration Numbers	Incidence Angle, θ (degrees)	Required Coverage, "a" (inches)
1 to 29	≤ 30	1.5
30 to 78	> 30	1.0

4. Reason for Request

Due to physical configuration of certain reactor vessel head penetration nozzles, full examination volume required by ASME Code Case N-729-1 Table 1 cannot be achieved for reactor vessel head penetration nozzles 77 and 78, therefore, use of Mandatory Appendix I is requested in accordance with 10 CFR 50.55a(g)(6)(ii)(D)(6).

Reactor vessel head CRDM penetrations at WCGS have two styles of ends, referred to as Type "X" and Type "Y" (Figure 1). Penetrations 1 through 73 are Type "Y" that are essentially a smooth wall cylinder with a radius at the outer diameter and inner diameter. Penetrations 74 through 78 have a threaded outside diameter and an internal taper.

The design of reactor vessel head penetration nozzles 74 through 78, referred to as Type "X", (Figure 1) includes a threaded section, approximately 1.19 inch in length at the bottom of the nozzles. These penetrations are located at the 48.7 degree location. The dimensional configuration at this location is such that the distance from the lowest point at the toe of the J-groove weld to the top of the threaded region could be less than the required coverage dimension "a" shown in Figure 2 of ASME Code Case N-729-1. Therefore, deviation from the required inspection coverage is sought for reactor vessel head penetrations 77 and 78, as the required coverage for these two penetrations cannot be obtained.

The table below lists the coverage obtained on nozzles 74-76 during the 2006/2013 exams performed per NRC Order EA-03-009 (2006) and N-729-1 (2013).

Note: The lower measurement in 2006 was performed using circumferential shooting TOFD transducers while the 2013 measurements were accomplished using axial shooting TOFD transducers. While the table below shows different coverage values it is noted in the 2013 exam report that the "Lower extent comparison using Channel 2 data shows no change from 2006 to 2013 measurements."

Penetration No.	θ (degrees)	N-729-1 Required Exam Coverage (inches)	2006 Inspection Coverage Obtained (inches)	2013 Inspection Coverage Obtained (inches)
74	48.7	1.0	1.04	1.00
75	48.7	1.0	1.08	1.08
76	48.7	1.0	1.12	1.00

The physical process of welding results in slightly different weld sizes/contours being applied to each component. (This was a manual welding process, and it is not physically possible for a human to apply the exact same amount of weld metal to each component.) This is acceptable as long as the minimum design weld size or contour is met. When access is limited (as the case on the downhill side of the peripheral penetrations), this condition is magnified. This is the case in penetrations 77 and 78, as more weld metal was applied to the downhill portion of the weld, resulting in less of the penetration (below the toe of the weld and above the threads) being available for examination.

For the initial examinations of reactor vessel head penetration welds performed in accordance with Reference 6, a similar request was previously submitted for inability to examine the required examination volume (References 3 and 4). This previous request was approved by the NRC in Reference 5. For the examinations performed in 2013 in accordance with Reference 1, as conditioned by 10 CFR 50.55a, another similar request was submitted and approved (references 7, 8, & 9).

5. Proposed Alternative and Basis for Use

As an alternative to the volumetric and surface examination coverage requirements shown as dimension "a" in Figure 2 of ASME Code Case N-729-1, WCGS proposes the use of attainable ultrasonic examination distances shown in Table 2. The required examination coverage dimension for the other penetrations will be met or exceeded.

Table 2: WCGS Inspection Coverage Obtained for CRDM Penetrations Having Limited Coverage

Penetration No.	θ (degrees)	N-729-1 Required Exam Coverage (inches)	2006 Inspection Coverage Obtained (inches)	2013 Inspection Coverage Obtained (inches)
77	48.7	1.0	0.6	.6
78	48.7	1.0	0.88	.64

Appendix I of ASME Code Case N-729-1 provides the analysis procedure for evaluation of an alternative examination area or volume to that specified in Figure 2 of Code Case N-729-1 if impediments prevent examination of the complete zone. Section I-1000 of ASME Code Case N-729-1 requires, for alternative examination zones below the J-groove weld, that analyses shall be performed using at least the stress analysis method (Section I-2000) or the deterministic fracture mechanics analysis method (Section I-3000) to demonstrate that the applicable criteria are satisfied. The techniques described in Section I-2000 were validated in WCAP-16589-P (Reference 2). The stress analysis in WCAP-16589-P was reviewed. The stress analysis was performed using the design weld dimensions specific to Wolf Creek. This analysis demonstrated that the hoop and axial stresses on the nozzle inside and outside surfaces remain below 20 ksi (tensile) over the entire region outside the alternative examination zone. When the WCAP-16589-P analysis was compared to the requirements of Section I-2000, Stress Analysis, it was determined that the requirements of I-2000 were met. The fracture mechanics analysis in WCAP-16589-P was also reviewed and compared to the requirements of I-3000. Since the alternative examination zone is below the J-groove weld, the applicable requirements are those of I-3200. The operating temperature of the head has not changed since the analysis in WCAP-16589-P was performed. After the review and comparison, it was determined that the technique described in Method 1 of I-3200 was met by the WCAP, except that the source used for crack growth rate was EPRI MRP-55, Revision 1, not Appendix O of the 2004 Edition of Section XI. However, since the same formula for crack growth rate is used in both EPRI MRP-55 and Appendix O, there is no technical difference, and WCAP-16589-P does meet the technical requirements for I-3200(a).

It is also noted that for alternative examination zones that eliminate portions of Figure 2 examination zone below the J-groove weld, that I-1000 requires only the analysis method of either I-2000 or I-3000 to be performed Although not required, the deterministic fracture mechanics analysis described in Section I-3000 was also validated in Reference 2.

5.1 Stress Analysis in Accordance with ASME Code Case N-729-1 Section I-2000

Section I-2000 of ASME Code Case N-729-1 requires that plant-specific analysis demonstrate that the hoop and axial stresses remain below 20 kips per square inch (ksi) (tensile) over the entire region outside the alternative examination zone but within the examination zone defined in Figure 2 of the Code Case.

The distance below the J-groove weld that requires examination, as determined by the point at which the CRDM penetration hoop stress distribution for the operating stress levels is less than 20 (ksi) tension, was obtained from Appendix A of Reference 2. Note that hoop stresses during steady state operation are much greater than the axial stresses.

The hoop stress distribution plots for penetrations 77 and 78 are provided in Figure 2 of this submittal. The hoop stress distribution plots in Figure 2 indicate that the minimum achievable inspection coverage below the bottom of the J-groove weld insures stresses remain below 20 ksi tensile over the entire region outside the alternative examination zone but within the examination zone defined in Figure 2 of ASME Code Case N-729-1. The hoop stress distribution plots display the downhill side as this is more limiting. Also, stress distribution plots shown are for the inside and outside surface. Table 3 summarizes the distance from below the toe of the downhill side J-groove weld to where both the inside and outside surface hoop stress drops below 20 ksi for penetrations 77 and 78.

Table 3: Distance Below Toe of Downhill Side J-Groove Weld Where Hoop Stress is Less Than 20 KSI

Penetration Nozzle No.	Source	Distance Below Toe of Downhill Side J-Groove Weld Where Hoop Stress < 20 ksi (inch)
77 and 78	Figure 2	0.30

5.2 Deterministic Fracture Mechanics Analysis in Accordance with ASME Code Case N-729-1 Section I-3200, Method 1

A fracture mechanics analysis was performed and documented in Reference 2. The analysis demonstrates that a potential axial crack in the unexamined zone will not grow to the toe of the J-groove weld prior to the examination frequency specified in Table 1 of ASME Code Case N-729-1.

(NOTE: WCAP-16589-P was prepared prior to approval to use Code Case N-729-1. WCAP-16589-P referenced EPRI MRP-55 as the source for the crack growth formula used in the analysis, not Appendix O as required by Code Case N-729-1. However, since the same formula for crack growth rate is used in both EPRI MRP-55 and Appendix O, there is no technical difference, and WCAP-16589-P does meet the technical requirements for I-3200(a).)

(1) The following table provides the dimensions for nozzles 77 and 78 for both the designed and as-built configurations. The actual weld height was measured using the ultrasonic test data and is listed for the as-built dimension.

Penetration Nozzle Number	As-designed (inches)	As-built (inches)
77	1.46	1.98
78	1.46	2.04

The flaw evaluation in WCAP-16589-P is based on the as-designed J-groove weld dimensions which assumed a smaller weld throat than the as-built condition. Often, the as-built fillet weld dimension on the downhill side of the CRDM nozzle is larger than the as-designed dimension because of access issues during fabrication. When the weld extends further down the outside surface of the head penetration nozzle due to a larger than as-designed fillet, it does not negatively affect the distance below the J-groove weld required for coverage. An assessment was performed on similar CRDM design/configuration and showed that larger as-built J-groove welds have a reduced stress profile relative to smaller welds and also required lesser distance below the weld bottom for a transition to below 20 ksi. The cases considered were for weld heights of 1.46", 2.35" and 2.97" which were analyzed to determine their resulting stress profiles below the weld. The 20 ksi criterion is reached in shorter distance for the larger fillet welds. Therefore, the 1.46" as-design dimension bounds the as-built dimensions of the CRDM nozzles for the current flaw evaluation.

The fracture mechanics analysis was performed using input from the previously discussed stress analysis. The results of the analysis are shown as flaw tolerance charts, which can be used to determine minimum required inspection coverage. This insures that any flaws initiated below the weld, in the region of the penetration nozzle not being inspected, would not reach the bottom of the weld before the next inspection. The flaw tolerance chart for penetrations 77 and 78 is presented in Figure 3.

The flaw tolerance chart in Figure 3 demonstrates that a postulated through-wall flaw at the bottom edge of the proposed alternative examination zone will not grow to the toe of the J-groove weld within an inspection interval of four refueling cycles. The crack growth prediction shows greater than six effective full power years (EFPY) of operation required to grow the postulated flaw to the toe of the weld. Additionally, the assumed initial upper extremity locations of axial through-wall flaws are conservative based on achievable inspection coverage, because the assumed upper crack extremities are located within the achievable inspection zone.

Examination of portions of the nozzle significantly below the J-groove weld is not pertinent to the phenomena of concern, which include leakage through the J-groove weld and circumferential cracking in the nozzle above the J-groove weld. In all cases, the measured coverage is adequate to allow WCGS to continue to operate prior to the hypothetical flaws reaching the J-groove weld. In accordance with 10 CFR 50.55a(g)(6)(ii)(D) requirements, the next required examination would be completed prior to potential flaw propagation into the J-groove welds.

5.3 Surface Examination

10 CFR 50.55a(g)(6)(ii)(D)(3) states in part that "if a surface examination is being substituted for a volumetric examination on a portion of a penetration nozzle that is

below the toe of the J-groove weld, the surface examination shall be of the inside and outside wetted surface of the penetration nozzle not examined volumetrically."

To reduce personnel radiation exposure, the nozzles are typically inspected using remotely operated volumetric examination equipment. Although dye penetrant testing of threaded surfaces is possible, it is not practical. The threaded outside diameter (OD) makes a dye penetrant examination on the lower section of the penetration impractical because of excessive bleed out from the threads. Eddy current examination would similarly not be effective due to the threaded configuration. Current known radiation levels under the reactor vessel head are 4.5 Rem/hr at the bottom of 1 CRDM nozzle. This could result in an exposure of approximately 1.5 Rem per nozzle using 4500 mRem/hr and 20 minutes/nozzle. At this time our estimates of dose rates (based on recent measurements in the area) range from 4.5 Rem/hr to 10 Rem/hr at the bottom of the CRDM nozzles, the expected dose ranges from approximately 1.5 Rem to 3.3 Rem per nozzle to perform surface examination.

Therefore, no alternative is proposed for the two CRDM nozzles with limited examination coverage below the J-groove weld.

Shielding to some extent is possible but would do little to reduce the overall whole body submersion exposure of 2400 mRem/hr as shown in survey WCNOC-1610-0192. Therefore it would be impractical to install shielding at this location, due to the additional dose consumed installing being greater than the resultant savings.

6. Duration of Proposed Alternative

The alternative requirements of this request will be applied for the remaining duration of the current 4th 10-year Inservice Inspection (ISI) Interval which ends on September 2, 2025.

7. Precedents

Similar relief requests have been granted to the following plants:

- NRC Safety Evaluation dated December 22, 2009, for San Onofre Nuclear Generating Station, Units 2 and 3, "Relief Request ISI-3-29, Request for Relief from Inspection Requirements of ASME Code Case N-729-1 for Control Element Drive Mechanism Penetrations (TAC Nos. ME0768 and ME0769)" (ML093441035)

- NRC Safety Evaluation dated March 3, 2011, for Braidwood Station Units 1 and 2, and Byron Station Units 1 and 2, "Relief Request from ASME Code Case N-729-1 Requirements for Examination of Reactor Vessel Head Penetration Welds (TAC Nos. ME3510, ME3511, ME3512 and ME3513)" (ML110590921)

- NRC Safety Evaluation dated January 4, 2013, for Wolf Creek Generating Station, "Wolf Creek Generating Station – Request for Relief No. I3R-07 for the Third 10-Year Inservice Inspection Program Interval (TAC No. ME9078)

8. References

1. ASME Code Case N-729-1, "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial-Penetration Welds, Section XI, Division 1," March 28, 2006.

2. WCAP-16589-P, Revision 0, "Structural Integrity Evaluation of Reactor Vessel Upper Head Penetrations to Support Continued Operation: Wolf Creek," August 2006.

3. WCNOC letter ET 06-0035 from T. J. Garrett, WCNOC, to USNRC, "Relaxation Request from the First Revised NRC Order EA-03-009 Regarding Requirements for Nondestructive Examination of Nozzles Below the J-Groove," October 5, 2006.

4. WCNOC letter ET 06-0048 from T. J. Garrett, WCNOC, to USNRC, "Additional Information Related to the First Revised NRC Order EA-03-009 Regarding Requirements for Nondestructive Examination of Nozzles Below the J-Groove," November 1, 2006.

5. NRC letter from D. Terao, USNRC, to R. A. Muench, WCNOC, "Wolf Creek Generating Station – Request to Relax Nondestructive Examination of Reactor Pressure Vessel Head Penetration Nozzles in First Revised Order EA-03-009 (TAC NO. MD3210)," December 7, 2006.

6. NRC letter EA-03-009, "Issuance Of First Revised NRC Order (EA-03-009) Establishing Interim Inspection Requirements For Reactor Pressure Vessel Heads At Pressurized Water Reactors," February 20, 2004.

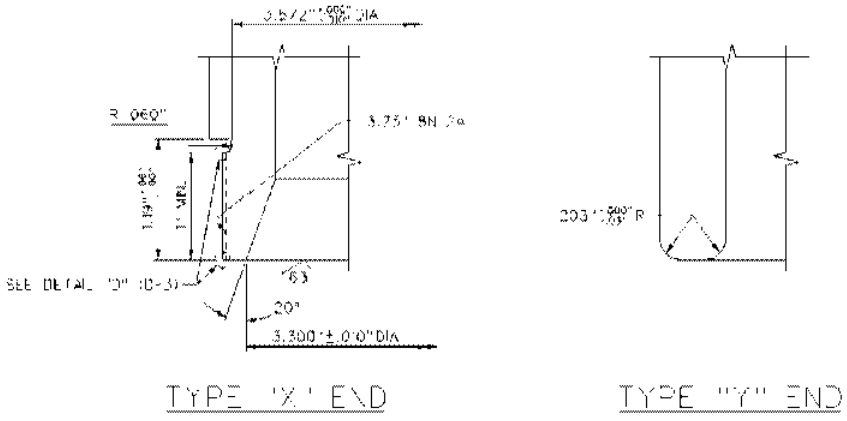
7. WCNOC letter ET 12-0010 from J. P. Broschak, WCNOC, to USNRC, "10 CFR 50.55a Request Number 13R-07, Relief from ASME Code Case N-729-1 Requirements for Examination Of Reactor Vessel Head Penetration Welds," July 2, 2012.

8. WCNOC letter ET 12-0024 from J. P Broschak, WCNOC, to USNRC, "Response to Request for Additional Information Regarding 10 CFR 50.55a Request Number I3R-07 " Relief from ASME Code Case N-729-1 Requirements for Examination of Reactor Vessel Head Penetration Welds," October 15, 2012.

9. NRC letter from M. T. Markley, USNRC, to M. W. Sunseri, WCNOC, "Wolf Creek Generating Station - Request for Relief No. I3R-07 for the Third 10 Year Inservice Inspection Program Interval (TAC NO. ME9078)," January 4, 2013.

Figure 1

WCGS Reactor Vessel Head Penetration Ends



Detail of the threaded and tapered portions of Penetrations 74, 75, 76, 77, and 78 referred to as "Type X" and the end of Penetrations 1 through 73, referred to as "Type Y."

Figure 2

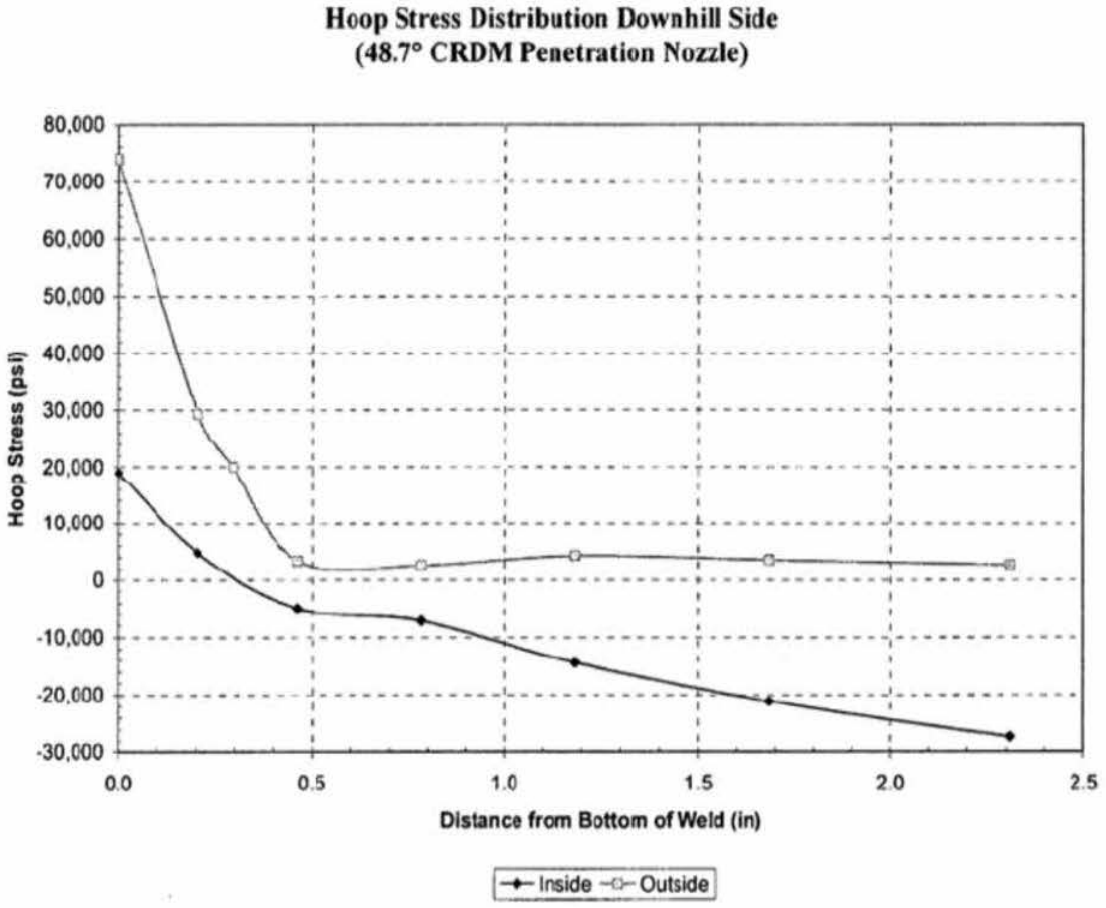

Hoop Stress Distribution Downhill Side
(48.7° CRDM Penetration Nozzle)
Hoop Stress (psi)
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
-10,000
-20,000
-30,000
0.0
0.5
1.0
1.5
2.0
2.5
Distance from Bottom of Weld (in)
Inside
Outside

Figure 3

Crack Growth Prediction for WCGS for Through-Wall Longitudinal Flaws Located in the 48.7° Row of CRDM Penetrations, Downhill Side

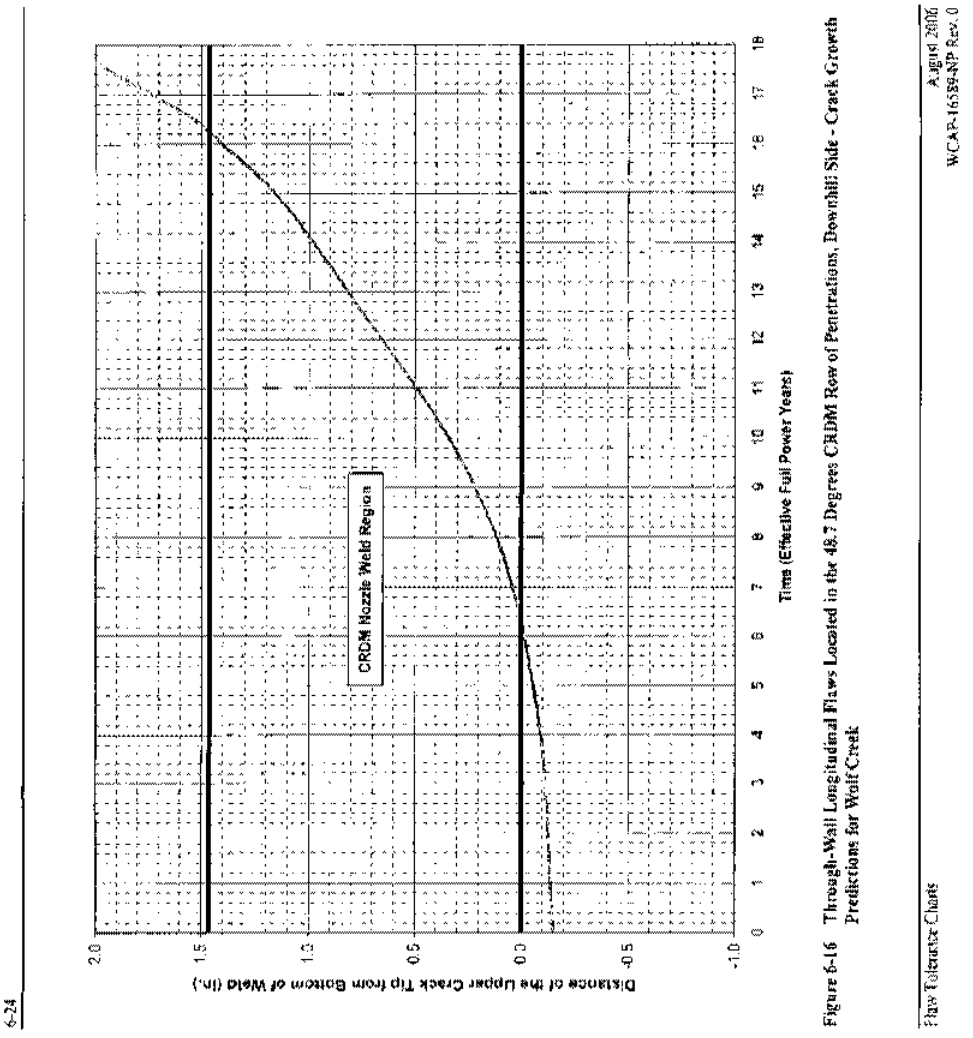


Figure 6-16 Through-Wall Longitudinal Flaws Located in the 48.7 Degrees CRDM Row of Penetrations, Downhill Side - Crack Growth Predictions for Wolf Creek

From:	Thomas, Fabian
To:	Taylor, Nick; Proulx, David; Lyon, Fred; Janicki, Steven; Hilton, Eliza
Cc:	Dodson, Douglas; Thomas, Fabian
Subject:	Wolf Creek Status - 09/01/16
Date:	Thursday, September 01, 2016 8:48:27 AM

Wolf Creek Status for September 1, 2016

- Reactor Power: Full power

- CDF/LERF Risks: Green/green

- RCS Unidentified Leakage: 0.219 gpm – At ~5:30 PM, the resident staff were notified by the dayshift SM that in having completed 2 consecutive RCS Water Inventory Balance calculations, they attained the following unidentified RCS leakage values: 0.227 gpm and 0.219 gpm. According to the licensee's procedure, these values meet the licensees threshold for Action Level II (two consecutive unidentified RCS leakage measurements >0.15 gpm; which requires generation of a condition report; notification to RCS Systems Engineer; Ops Surveillance coordinator and the Operations superintendent. This action level requires licensee to identify leak. T.S. Unidentified leakage limit is 1 gpm (T.S. 3.4.13).

  Licensee planning a containment entry between 9:00 AM and 9:30 AM this morning, to

- =7 Day LCOs:

  - Planned surveillance – Actuation Logic testing on train 'B' Solid State Protection System – T.S. 3.3.1, T.S. 3.3.2, (most limiting condition 1 hour to verify interlocks) ; work scheduled to begin at 1:00 PM and complete by 5:00 PM this evening.

  - Planned maintenance – Replacement of air and N2 supply check valve on Main Steam Isolation valve 'B' – T.S. 3.7.4, Condition A (72 hour LCO); work scheduled to begin at 8:00 AM, and complete by 12:00 PM.

- Other Noteworthy Work: None

- Items of Interest: None.

- Other Inspections/Audits: None.

- Significant Forecasted Weather: None.

Coverage and Other Visits: Fabian is onsite today, and has weekend coverage.

From:	Janicki, Steven
To:	Thomas, Fabian; Taylor, Nick; Proulx, David; Lyon, Fred; Hilton, Eliza
Cc:	Dodson, Douglas
Subject:	Wolf Creek Status - 09/02/16
Date:	Friday, September 02, 2016 9:15:29 AM

Wolf Creek Status for September 2, 2016

- Reactor Power: Full power

- CDF/LERF Risks: Green/Green (However, the site has taken several qualitative actions for higher risk levels based on RCS unidentified leakage and preparing for shutting down the plant)

- The licensee is currently in TS 3.4.13 Condition B, RCS Operational Leakage, for unidentified leakage being 1.358 gpm. A second leakage calculation was performed this morning that was determined to be 0.521 gpm however, the licensee is remaining in TS 3.4.13 Condition B based on the higher leak rate. At 10:00 AM the licensee will begin reducing power to 30% in preparation of commencing a shutdown per technical specifications.

- Other Noteworthy Work: None

- Items of Interest: None.

- Other Inspections/Audits: None.

- Significant Forecasted Weather: None.

Coverage and Other Visits: Fabian is onsite today, and has weekend coverage.

From:	Thomas, Fabian
To:	Taylor, Nick
Subject:	Wolf Creek Status - 09/04/16
Date:	Sunday, September 04, 2016 11:44:23 AM

Wolf Creek Status for September 4, 2016 – as of 11:30 AM

- Reactor Power: Mode 3; PZR Press: ~2234 PSIG; RCS Temp: ~558 degrees F; Cntmt Pressure: ~0 PSIG; Cntmt Temp: ~110 degrees F.

- CDF/LERF Risks: Green/green

- RCS Unidentified Leakage: 0.648 gpm – last RCS Inventory balance calculation performed on 09/02/03. RCS leak identified on core exit thermocouple nozzle assembly in head penetration #77. Leak has yet to be isolated or quantified.

- =7 Day LCOs: None.

- Major Work Activities:

  Licensee working preparation efforts to begin plant cool-down and enter Mode 5. The following are the major activities that licensee has decided to complete before beginning plant cool-down, and isolating the active RCS leak:

  - Auxiliary Boiler – working on auto dampers on forced draft fan and replacement of flame detection card on fuel supply system.
  - CVCS Letdown – working to correct issue associated with valve stem and limit switch on letdown isolation valve.
  - S/G Safety Relief Valve Testing – contractor (Furmanite) to be onsite by 09/05/16 to complete testing by COB 09/06/16.

  The licensee has decided that there will not be an ascension to 100% before the outage, but they are still in a forced outage posture, rather than a normal outage. According to the OCC manager and Operations Superintendent, the active RCS leak is expected to continue over the next 3 days. Cool down expected to begin late on 09/06/16.

From:	Thomas, Fabian
To:	Taylor, Nick; Proulx, David; Lyon, Fred; Hilton, Eliza; Janicki, Steven
Cc:	Dodson, Douglas; Thomas, Fabian
Subject:	Wolf Creek Status - 09/06/16
Date:	Tuesday, September 06, 2016 8:43:28 AM

Wolf Creek Status for September 6, 2016 – As of 6:30 AM

- Reactor Power: Mode 3; PZR Press: ~1873 PSIG; RCS Temp: ~554 degrees F; Cntmt Pressure: ~0.3 PSIG; Cntmt Temp: ~107.3 degrees F.

  - GTRE0031
    Particulate: 3.16E-10 microC/mL
    Gas: 1.59E-6 microC/mL
    Iodine: 8.277E-11 microC/mL

  - GTRE0032
    Particulate: 3.156E-10 microC/mL
    Gas: 6.907E-6 microC/mL
    Iodine: 6.021E-11 microC/mL

- CDF/LERF Risks: Green/green

- RCS Unidentified Leakage: 0.504 gpm

- RCS Identified Leakage: 0.040 gpm

  RCS leakage values based on RCS Inventory balance calculation performed at 4:30 AM this morning – 09/06/16. RCS leak is on core exit thermocouple nozzle assembly in head penetration #77. According operations log entry, reports from the field indicate the spray plume from the leaking canopy seal is noticeably smaller than from the day before, as RCS pressure is ~360 PSIG lower. Leak has yet to be isolated or quantified.

- =7 Day LCOs: None.

- Major Work Activities:

  Licensee working preparation efforts to begin plant cool-down and enter Mode 5. The following are the major activities that licensee has decided to complete before beginning plant cool-down, and isolating the active RCS leak:

  - Auxiliary Boiler – working on auto dampers on forced draft fan and replacement of flame detection card on fuel supply system.

  - S/G Safety Relief Valve Testing – contractor (Furmanite) started testing on nightshift of 09/05/16, and working to complete testing by COB 09/07/16. Testing will only be done nightshift.

  The licensee has decided that there will not be an ascension to 100% before the outage, but they are still in a forced outage posture, rather than a normal outage. The OCC is only working on nightshift, and dayshift work will be managed through normal

From:	Thomas, Fabian
To:	Taylor, Nick; Proulx, David
Cc:	Dodson, Douglas; Thomas, Fabian
Subject:	Wolf Creek Status - 09/07/16
Date:	Wednesday, September 07, 2016 2:37:22 AM

Wolf Creek Status for September 7, 2016 – As of ~2:10 AM

- Reactor Power: Mode 3; PZR Press: ~1728 PSIG; RCS Temp: ~530 degrees F; Cntmt Pressure: ~0.3 PSIG; Cntmt Temp: ~107.3 degrees F. Operations began plant cool-down manipulations at ~12:30 AM this morning. I requested to be contacted by SM when the plant reaches Mode 4 (350 degrees F > Tavg > 200 degrees F).

  - GTRE0031 – (from NPIS)
    Particulate: 1.654E-10 microC/mL
    Gas: 1.683E-6 microC/mL
    Iodine: 7.067E-11 microC/mL

  - GTRE0032 - (from NPIS)
    Particulate: 1.933E-10 microC/mL
    Gas: 7.679E-6 microC/mL
    Iodine: 4.619E-11 microC/mL

- CDF/LERF Risks: Green/green

- RCS Unidentified Leakage: 0.395 gpm

- RCS Identified Leakage: 0.0.031 gpm

  RCS leakage values based on RCS Inventory balance calculation performed at 10:40 PM last night – 09/06/16. RCS leak is on core exit thermocouple nozzle assembly in head penetration #77. According operations log entry, reports from the field indicate the spray plume from the leaking canopy seal continues to get smaller, as RCS pressure continues to decrease. Leak has yet to be isolated or quantified.

- =7 Day LCOs: None

- Major Work Activities:

  Licensee began implementation of their hot standby to cold shutdown procedure at ~12:30 AM this morning. For the past couple of hours, licensee has been using boration and pressurizer spray as a means to decrease RCS pressure and temperature. The SM plans to begin securing RCPs once RCS temperature has reached 375 degrees F. The Auxiliary Boiler is still out of service – maintenance still working replacement of flame detection card on fuel supply system. This will not delay plant entering Mode 5.

  The S/G Safety Relief Valve Testing – contractor (Furmanite) completed testing on nightshift of 09/06/16 at ~11:30 PM. All safety relief valves within test scope, tested satisfactorily.

The OCC is only working on nightshift, and dayshift work will continue to be managed through normal work controls office.

- Coverage and Other Visits: Fabian will be onsite later this morning (~11:00 AM – and will not likely be on morning status call), and Doug is expected to return to the office on Thursday (09/08/16).

From:	Thomas, Fabian
To:	Taylor, Nick; Proulx, David; Lyon, Fred; Janicki, Steven; Hilton, Eliza
Cc:	Dodson, Douglas; Thomas, Fabian
Subject:	Wolf Creek Status - 09/08/16
Date:	Thursday, September 08, 2016 8:45:28 AM

Wolf Creek Status for September 8, 2016 – As of ~8:00 AM

- Reactor Power: Mode 5; PZR Press: ~345 PSIG; RCS Temp: ~190 degrees F; Cntmt Pressure: ~0.2 PSIG; Cntmt Temp: ~100 degrees F. Plant entered Mode 5 at ~3:40 PM yesterday afternoon. Licensee has stopped performing RCS water inventory calculations, as plant is in Mode 5.

  Containment entry was made yesterday at 4:49 PM to inspect RCS leak on weld head penetration #77. According inspectors, the leak amount barely visible with little to no plume. Outage is still planned to begin September 17, 2016.

  - GTRE0031 – (from NPIS)
    Particulate: 5.389E-11 microC/mL
    Gas: 1.381E-6 microC/mL
    Iodine: 8.168E-11 microC/mL

  - GTRE0032 - (from NPIS)
    Particulate: 4.993E-11 microC/mL
    Gas: 5.730E-6 microC/mL
    Iodine: 6.427E-11 microC/mL

- CDF/LERF Risks: Green/green

- Plant Shutdown Risks: Green; Decay heat removal line-up currently includes 'A' and 'B' RHR pumps; 2 RCPs running.

- =7 Day LCOs:

  - Planned surveillance – Loss of voltage testing on NB02 Bus – T.S. 3.3.5, Condition A (6 hours to place channel in trip); work tentatively planned to begin at 8:00 AM, and complete by 12:00 PM today.

- Other Work Activities:

  - Planned surveillance – Manual start and synchronization of 'B' EDG; work expected to complete by 3:00 PM today.

- Items of Interest:

  - At ~3:00 PM on yesterday, the site experienced a sitewide internet outage. This outage lasted throughout the night, and rendered the ERDS system unavailable. In having reviewed NUREG 1022, Section 3.2.13 for Loss of Emergency Preparedness Capabilities, the licensee is not required to report outage to the NRC. However, the licensee is planning to write a condition report on this as, the SM did not provide a courtesy call to NRC. Site-wide internet and ERDS capabilities were

restored 2:46 AM this morning.

- At ~2:46 PM on yesterday, licensee entered their off-normal procedure for medical emergency, due to an individual being in distress at the William Allen White building (outside protected area). 2 EMTs were called to assist individual. Turns out EMTs were miss informed, as there was no real medical emergency. Licensee exited procedure at 3:26 PM.

- Coverage and Other Visits: Fabian and Doug onsite and in the area. Doug has coverage for the weekend.

From:	Thomas, Fabian
To:	Taylor, Nick; Proulx, David; Lyon, Fred; Janicki, Steven
Cc:	Thomas, Fabian; Dodson, Douglas
Subject:	Wolf Creek Status - 09/19/16
Date:	Monday, September 19, 2016 9:10:30 AM

Wolf Creek Status for September 19, 2016

- Outage Parameters:
  Mode – 5
  RCS Temperature – Approximately 100˚F
  RCS Pressure – Depressurized (<1 psig)
  Inventory – 709.6 inches – RCS Drain-down began at 12:14 AM on 09/17/16
  RCS Time to Boil: ~106 minutes
  SFP Time to Boil: ~67 hours
  Containment Status – Open
  Fuel Moves – None in progress

  Day shift containment closure test was performed successfully (accomplished in 14 minutes on dayshift – 09/18/16)
  Night shift containment closure test (accomplished in 13 minutes on nightshift – 09/18/16)
  Remove head blanket insulation (early this night shift)
  Remove mirror insulation (delayed due to issues associated with personnel qualifications needed to complete as-found inspections)
  RCS drain down to the flange (mid-afternoon tomorrow)
  Mode 6 is now scheduled for 09/20/16 & Stud detensioning (21:00)

- Plant Shutdown Risks: All Green
  Reactivity Management – Green
  Core Decay Heat Removal – Green
  Spent Fuel Decay Heat Removal – Green
  RCS Inventory – Green
  Electrical Power Sources – Green
  Containment Closure – Green
  Radiation Monitoring and Ventilation – Green

- TS LCOs: None.

- Other Work Activities:

  Major weekend activities completed:

  - RCS depressurized and vented
  - Equipment hatch (containment door) testing was completed on sat on yesterdays
  - PZR vented, using Tygon tube and N2 purging – earlier this morning it was reported that in setting up venting path, there was a burp of RCS water which overfilled catch-container, and reached some duct work within containment, which resulted in light spray within that area. RP techs are currently evaluating contamination in area of spray.

The Rose Hill transmission line (one of the three 345 KV transmission lines) will be out of service until later this week for breaker testing, which will be conducted in the switchyard. The residents have reviewed the outage risk assessment for this condition —in accordance with the risk process Wolf Creek will be implementing risk mitigation actions when work is occurring in the switchyard (supervisory oversight) to maintain "Electrical Power Sources" risk green during this evolution.

- Items of Interest:

  At 6:14 PM on yesterday evening, licensee entered off-normal for Medical Emergency when individual was reported as having experienced heat related symptoms in the ladies restroom on the ground floor of the Operations Admin building. Fire brigade leader and Security EMT were dispatched. Individual was later relocated to the Health services office where security EMT administered ice packs. Individual was later transported off-site by way of ambulance. Licensee exited OFN at 6:57 PM.

- Other Inspections/Audits: None

- Significant Forecasted Weather: None

- Coverage and Other Visits: Fabian is onsite, and in the area. Doug is traveling into the region for Regulatory Conference on next week, returning to the office on 09/22/16.