May 30, 2003

LICENSEE: Arizona Public Service Company (APS)

FACILITY: Palo Verde Nuclear Generating Station, Unit 3

SUBJECT: CONFERENCE CALL ON APRIL 29, 2003, WITH REGION IV AND ARIZONA PUBLIC SERVICE COMPANY FOR RESTART OF PALO VERDE NUCLEAR GENERATING STATION, UNIT 3, FROM ITS REFUELING OUTAGE (TAC NO. MA2264)

A conference call was held on Tuesday, April 29, 2003, between the Nuclear Regulatory Commission (NRC) staff and the licensee for Palo Verde Nuclear Generating Station, Unit 3. The call was held at the request of Region IV for the licensee to explain pictures that were taken of the underneath of the reactor pressure vessel (RPV) and what could be interpreted as boric acid stains on the penetration nozzles of the lower head of the vessel.

Enclosure 1 is the list of attendees. Enclosure 2 are five pictures of several of the lower head penetration nozzles. The pictures were taken by the licensee and sent, through Region IV, to NRC headquarters.

PLANT STATUS

On April 29, 2003, Unit 3 was in Mode 3 in the process of restarting from the spring 2003 refueling outage that started on March 29, 2003. The licensee was preparing to pull the control rods for the unit to enter Mode 2, possibly later that day.

BACKGROUND

The RPV is covered completely with insulation, except for piping penetrating the insulation, with a gap between the vessel and the insulation. The bottom, or lower head, of the RPV is inspected as part of the licensee's inservice inspection program with the insulation in place; although a bare metal visual inspection is not normally performed during a refueling outage. On April 25, 2003, the licensee conducted an examination of the lower head of the Unit 3 RPV. This examination was part of the licensee's investigation of the feasibility and accessibility for a bare metal examination of the lower head of the Unit 2 RPV because Unit 2 has a refueling outage scheduled to begin in about six months in the fall of 2003. The lower head of the RPV could not be inspected during power operation because of the high radiation levels in and around the RPV; however, during a refueling outage the radiation levels are lower and an inspection of the lower head of the Unit 3 RPV was conducted even though it was not a qualified VT-2 visual inspection.

A qualified Level-III VT-2 inspector observed the area underneath the Unit 3 lower head and the licensee took pictures of several of the penetration nozzles. This was to allow the licensee to plan what would be needed so that the bare metal examination of the lower head of the Unit 2 RPV would be a qualified visual inspection.

CONCERN

What was seen by the licensee's qualified VT-2 inspector and shown in the pictures in Enclosure 2 was that there existed a (1) white staining of the penetration nozzles and the metal between nozzles, and (2) stalagmite-like deposit of some substance below a nozzle. The purpose of the conference call was for the NRC staff to understand what the licensee had found in this area of the lower head of the Unit 3 RPV.

LICENSEE RESPONSE

In the conference call, the licensee explained that the conclusions of its qualified Level-III VT-2 inspector that looked at the lower head of the Unit 3 RPV were that the white substance on the nozzles was from Spraylat, a commercial coating product used to protect bare metal of vessels, such as an RPV, during shipment, and the white staining on the metal between nozzles was from boric acid water that had leaked from the pool above the RPV during refuelings and had evaporated leaving boric acid on the bare metal. The licensee stated that there were no "wet" indications of recent boric acid water on the lower head. The licensee also added that the chemical additive "NALCO" in the nuclear cooling water system could also be a cause of the white staining on the bottom of the RPV.

The licensee stated that the Spraylat is normally applied in three coats, a gray base coat, a black coat, and then a white final coat. It is a strippable coating which is usually removed from the metal before the vessel would be put in service. There are two black spots evident in one picture which is this black coating. The licensee's inspector is familiar with the Spraylat coating, which was applied to the steam generators that have been shipped to the site for the steam generator replacement in the Unit 2 fall 2003 outage, and he observed brush marks in some of the white coatings seen on the nozzles. The licensee pointed out that one picture also shows the brush marking. Because the welds between the penetration nozzles and the lower head are below the surface of the head, caulk was applied to fill the crevices and the Spraylat was applied over the caulking. It was explained that, as is shown in the pictures, the Spraylat is strippable off bare metal, but not off the caulking.

Because a 100 percent bare metal examination of the lower head cannot be performed effectively with any caulking or coatings on the lower head surface, the licensee stated it must remove the remaining caulking and Spraylat to do a bare metal examination of the lower head, but that it must carefully inspect the areas with the caulking and Spraylat before it is removed to determine if there is any evidence of penetration leakage. The licensee stated that it plans to inspect the as-found lower head as much as practical, perform cleaning of the head to remove the caulking and Spraylat, and then re-inspect the lower head after the cleaning. Because removing the caulking and Spraylat may destroy evidence of penetration leakage, the licensee believes that it may not be able to do an effective bare metal examination of the lower head of any of their units until the refueling outage after they remove the caulking and Spraylat.

NRC STAFF QUESTIONS

The NRC staff asked if the licensee had taken a sample of the white coating on the nozzles to determine what the coating was made of and, if not, why this was not done.

LICENSEE RESPONSE

The licensee stated that it did not take a sample for analysis because (1) it was clear to its qualified Level-III VT-2 inspector that saw the coating that it is Spraylat and he is familiar with the product, (2) the coating is not consistent with boric acid leaking through a penetration, and (3) an analysis of such a sample would show boric acid being present because the boric acid water leaking down the sides of the vessel has contaminated the lower head with boric acid. The licensee had concluded that analyzing a coating sample from a nozzle would be inconclusive and not worth the occupational exposure needed to collect the sample.

The licensee stated that its conclusion that the "so-called" indications of boric acid on the lower head in the pictures were either Spraylat on the nozzles, or boric acid or the NALCO chemical evaporated from water running down the sides of the vessel and thus along the lower head until it dripped off were based on the following: (1) there were no indications consistent with what is seen from leakage of boric acid water through penetrations, (2) the white coatings on the nozzles are clearly the same as the Spraylat observed on other vessels, including brush markings in some of the coatings seen, and are consistent with the documentation on Spraylat from the vendor, (3) the staining between the nozzles is consistent with what is seen from boric acid water flowing down the vessel and evaporating and Unit 3 has had pool seal leaks from above the RPV during refueling outages, (4) the staining between nozzles could also be the NALCO chemical which dries to a white color, (5) the conclusions of the qualified inspector who observed the lower head, and (6) the stalagmite-like deposit seen in one picture was seen by the qualified inspector to be insulation.

NRC STAFF EVALUATION

The conference call was concluded with the licensee and the NRC staff caucused. The NRC staff discussed the information presented in the conference call and concluded that there was no clear indication that (1) the white substance on the penetration nozzles and the white staining of the metal between nozzles, and (2) the stalagmite-like deposit of some substance below a nozzle were evidence of leakage through the penetration nozzles of the Unit 3 lower head. With that conclusion, the NRC staff further concluded that it had no objections to the licensee continuing with its restart of Unit 3 from the refueling outage.

At this time, the NRC staff completed the conference call. A copy of this summary was sent to the licensee and the licensee's comments were incorporated as appropriate.

/RA/

Jack Donohew, Senior Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. STN 50-530

Enclosures: 1. List of Meeting Attendees
2. Licensees' Handout (ADAMS Accession No. ML031210571)

cc w/encls: See next page

At this time, the NRC staff completed the conference call. A copy of this summary was sent to the licensee and the licensee's comments were incorporated as appropriate.

/RA/

Jack Donohew, Senior Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. STN 50-530

Enclosures: 1. List of Meeting Attendees
2. Licensees' Handout (ADAMS Accession No. ML031210571)

cc w/encls: See next page

DISTRIBUTION:

PUBLIC	PDIV-2 Reading
RidsNrrDlpm (JZwolinski/TMarsh)	RidsNrrDlpmLpdiv (HBerkow)
RidsNrrPMJDonohew	RidsNrrLAMMcAllister
RidsAcrsAcnwMailCenter	RidsRgn4MailCenter (AHowell)
RidsNrrDe (RBarrett)	TChan (NRR/DE/EMCB)
AHiser (NRR/DE/EMCB)	MMitchell (NRR/DE/EMCB)
BElliot (NRR/DE/EMCB)	JMedoff (NRR/DE/EMCB)
NRay (NRR/DE/EMCB)	ESullivan (NRR/DE/EMCB)
KWichman (NRR/DE/EMCB)	WReckley (RidsNrrPMWReckley)
JFoster (NRR/DRIP/RORP)	TMensah (NRR/DSSA/SPLB)
MFields, EDO	RidsOgcRp

Package No.: ML031500197
Licensee Handouts No.: **ML031210571**
ADAMS Accession No.: ML031500164

* Concurrence taken by Jack Donohew
NRR-106

OFFICE	PDIV-2/PM	PDIV-1/LA	EMCB/SC	RGN4/RPB-D	PDIV-2/SC
NAME	JDonohew	MMcAllister	TChan	LSmith *	SDembek
DATE	5/20/03	5/20/03	5/28/03	05/09/2003	5/28/03

DOCUMENT NAME: G:\PDIV-2\PaloVerde\Summary-04-29-03-Call-final.pvngs3.wpd
OFFICIAL RECORD COPY

LIST OF ATTENDEES AT CONFERENCE CALL OF APRIL 29, 2003

NAME	AFFILIATION
J. Donohew	NRC/NRR/PDIV-2
H. Berkow	NRC/NRR/PDIV
S. Dembek	NRC/NRR/PDIV-2
A. Howell	NRC/Region IV
L. Smith	NRC/Region IV
R. Barrett	NRC/NRR/DE
T. Chan	NRC/NRR/EMCB
A. Hiser	NRC/NRR/EMCB
M. Mitchell	NRC/NRR/EMCB
B. Elliot	NRC/NRR/EMCB
J. Medoff	NRC/NRR/EMCB
N. Ray	NRC/NRR/EMCB
E. Sullivan	NRC/NRR/EMCB
K. Wichman	NRC/NRR/EMCB
W. Reckley	NRC/NRR/PDIV-1
J. Foster	NRC/NRR/RORP
C. Seaman	APS
S. Bauer	APS
T. Weber	APS
M. Melton	APS
Rich Rogalski	APS
Rodney Wilferd	APS
Ray Buzard	APS
Dan Marks	APS
Mike Powell	APS
Steve Jones	APS
Dave Fan	APS
Scott Burns	APS
Rex Meeden	APS
Ed Fernandez	APS
Mike Powlikowky	APS
Mark Radspinner	APS
Doug Hansen	APS
Mark Brutcher	APS
Fred Gowers	APS

Where:

APS	=	Arizona Public Service Company
NRC	=	Nuclear Regulatory Commission
NRR	=	Office of Nuclear Reactor Regulation
PDIV-2	=	Project Directorate IV-2

ENCLOSURE 1

PICTURES FROM LICENSEE FOR APRIL 29, 2003, CONFERENCE CALL

ADAMS ACCESSION NO. ML031210571

ENCLOSURE 2

DESCRIPTION OF PICTURES

The following are written descriptions of the referenced pictures from the licensee. The pictures are in the ADAMS file (ADAMS ACCESSION NO. ML031210571). The descriptions assume that the picture has been orientated such that the nozzles are vertical, with the bottom of the reactor vessel at the top of the picture. The list is in order of the pictures.

First Picture (P1010005)

A white material was found around most of the nozzles where they interfaced with the bottom head of the reactor vessel. This material is attributed to "spraylat" that was not cleaned off after shipping and installation of the reactor vessel. The "spraylat" material is applied to the reactor vessel to protect it from corrosion during shipping and storage prior to installation. Brush marks can clearly be seen in some of the deposits, which demonstrate that the deposits are "spraylat" material. The use of "spraylat" has been confirmed by reviewing the vendor documentation.

A reddish streak is observed on the right side of the reactor vessel. This stain comes down from the side of the reactor vessel and continues down to the bottom of the bottom head and is of a reddish color with some white streaks in it. One source of leakage that could have caused this streak is most likely from leaks in the temporary refueling pool seal during previous refueling outages (note that this seal was replaced with a permanent refueling pool seal in Unit 3 Refueling Outage 4). This stain appears to have some slight corrosion associated with it that gives the stain a reddish appearance. There is no degradation of the bottom head and only a slight amount of generalized corrosion may be present in this stain location. On the bottom right hand corner of the picture there is a splatter pattern on the insulation that is attributed to this leak. Water appears to have dripped off of the interface between the bottom head and the insulation located at the top right of this picture, and falling to the insulation below.

The black spot on some of the nozzles is a sub-coat of the "spraylat" material. The "Spraylat" is applied in three coats of material, with each coat having a unique color. Note also that the grooves around each nozzle are caulked prior to applying the three "spraylat" coats of material.

Second Picture (P1010007)

A white material was found around most of the nozzles where they interfaced with the bottom head of the reactor vessel. This material is attributed to "spraylat" that was not cleaned off after shipping and installation of the reactor vessel. Brush marks can clearly be seen in some of the deposits, and some of the material had fallen to the insulation below.

A slight white stain or streak was observed coming down the bottom of the lower head from the side of the reactor vessel. This stain is located directly above the insulation access window. This stain showed no signs of corrosion or degradation of the reactor vessel or the nozzles. One source of leakage that could have caused this streak is from leaks in the temporary refueling pool seal during previous refueling outages. Another source of leakage could be from the Nuclear Cooling Water System piping that is uncoupled from the Control Element Drive Mechanism Coolers prior to destacking the reactor vessel in preparation for refueling. A chemical corrosion inhibitor is added to the Nuclear Cooling Water System. This additive would also appear white in color after the water had evaporated, leaving behind the stain.

There is a reddish patch next to the nozzle marked 25. This is an area that was ground during fabrication, and has red oxide has formed at this location. There is no degradation of the bottom head associated with this reddish patch.

There is loose fiber insulation installed between the tubing and the opening in the reflective metallic insulation. This loose fiber insulation is installed to make up for any bigger than anticipated gaps due to the fabrication of the reflective metallic insulation. This practiced was used at several locations in the insulation.

Third Picture (P1010010)

This picture is of the same area as shown in the first picture, except it is in a more horizontal orientation. This view does show areas on the insulation where drops of water had fallen down from the area of the reddish streak. The white stain on the insulation is residue left from the evaporated water. There are white particles on the insulation where "spraylat" has fallen off of the nozzle above.

There is loose fiber insulation installed between the tubing and the opening in reflective metallic insulation. This loose fiber insulation is installed to make up for any bigger than anticipated gaps due to the fabrication of the reflective metallic insulation. This practiced was used at several locations in the insulation.

Fourth Picture (P1010011)

This picture is of the same general area as shown in the first picture. This view does show a white spot above the nozzle marked 44. This white spot is an area where the "spraylat" was not completely removed from the bottom reactor vessel head. The black spot on nozzle marked 44 is a sub-coat of the "spraylat" material. The "Spraylat" is applied in three coats of material, with each coat having a unique color (one of which is black). Note also that the grooves around each nozzle are caulked prior to applying the three "spraylat" coats of material.

Fifth Picture (P1010017)

This picture is of the same general area as shown in the first picture. There is loose fiber insulation put installed between the tubing and the opening in the reflective metallic insulation. This loose fiber insulation is installed to make up for any bigger than anticipated gaps due to the fabrication of the reflective metallic insulation. This practiced was used at several locations in the insulation.

Palo Verde Generating Station, Unit 3

cc:

Mr. Steve Olea
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, AZ 85007

Douglas Kent Porter
Senior Counsel
Southern California Edison Company
Law Department, Generation Resources
P.O. Box 800
Rosemead, CA 91770

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 40
Buckeye, AZ 85326

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
Harris Tower & Pavillion
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Chairman
Maricopa County Board of Supervisors
301 W. Jefferson, 10th Floor
Phoenix, AZ 85003

Mr. Aubrey V. Godwin, Director
Arizona Radiation Regulatory Agency
4814 South 40 Street
Phoenix, AZ 85040

Mr. Craig K. Seaman, Director
Regulatory Affairs/Nuclear Assurance
Palo Verde Nuclear Generating Station
P.O. Box 52034
Phoenix, AZ 85072-2034

Mr. Hector R. Puente
Vice President, Power Generation
El Paso Electric Company
2702 N. Third Street, Suite 3040
Phoenix, AZ 85004

Mr. John Taylor
Public Service Company of New Mexico
2401 Aztec NE, MS Z110
Albuquerque, NM 87107-4224

Mr. Jarlath Curran
Southern California Edison Company
5000 Pacific Coast Highway Building DIN
San Clemente, CA 92672

Mr. Robert Henry
Salt River Project
6504 East Thomas Road
Scottsdale, AZ 85251

Terry Bassham, Esq.
General Counsel
El Paso Electric Company
123 W. Mills
El Paso, TX 79901

Mr. John Schumann
Los Angeles Department of Water & Power
Southern California Public Power Authority
P.O. Box 51111, Room 1255-C
Los Angeles, CA 90051-0100

Brian Almon
Public Utility Commission
William B. Travis Building
P.O. Box 13326
1701 North Congress Avenue
Austin, TX 78701-3326

Mr. Gregg R. Overbeck
Senior Vice President, Nuclear
Arizona Public Service Company
P.O. Box 52034
Phoenix, AZ 85072-2034