TI*RC

Work Order 00-001846-000
Subsystem: SUB062-01

Asset: TI*RC REACTOR VESSEL 1-1
Problem Locn: CTMT9_213*_565

Action: ROUTINE MAINTENANCE
WO Type:
Clearance: N

Work Class:
Nat Acct: 4537.4537.IS.NP13A.DBRX.00000.00
Printed: 25-APR-00 15:51 D&L

Clearance number:
Tech Spec: N
Test Requirements: N
Lead Craft: RADIATION TEST

Quality Class: Q
Environmental Qualification: N
ASME Component: ASMEXI
Repair Tag Number: U0896
Train:

Permission to Commence Work

SS/SM Authorization: V/Agn DATE

SUPERVISOR DATE

Requested by: ANDREW SIEMASZKO Phone: 7341
Planner: DENNIS A LISKA Phone: 8338

Problem Description:
LARGE BORON ACCUMULATION WAS NOTED ON THE TOP OF THE RX HEAD AND ON TOP OF THE INSULATION. BORIC ACID CORROSION MAY OCCUR

NO TAGS HUNG (IN CONTAINMENT)
SS/SM APPROVED BY: GARY MELSSEN
FAILURE DATE: 04-21-00
JDA04-21-00

Work Description:
CLEAN BORON ACCUMULATION FROM TOP OF REACTOR HEAD AND ON TOP OF INSULATION.
SEE ANDREW SIEMASZKO (PLANT ENGINEERING), EXT 7341 FOR ADDITIONAL DETAILS.

Work Order Review

Plant Engineering	Andrew Siemaszko	DATE	4/25/00
SRO	[signature]	DATE	4/25/00
ALARA	[signature]	DATE	4/25/00
QC Mechanical	[signature]	DATE	4/25/00
Lead Shop Review	[signature]	DATE	5/2/00

Special Instructions:
Ensure water does not enter Shielding Annul [illegible] 4/25/00

04/17/2002 DBNPS

A-5

DAVIS-BESSE PLANT

T1R8C

Work Order: 00-003886-000

Activity: SW2062-01

Permits

RWP
Transient Combustible

Steps

	Craft	Crew Size	Crew Name	Hrs
1	RADIATION TEST	4		10

CLEAN BORON ACCUMULATION FROM TOP OF REACTOR HEAD AND ON TOP OF INSULATION.

SEE ANDREW SIEMASZKO (PLANT ENGINEERING), EXT 7341 FOR ADDITIONAL DETAILS.

1) RAISE LEAD BLANKETS AS REQUIRED TO PROVIDE ACCESS TO WEEP HOLES. ALL BLANKETS WILL HAVE TO BE RAISED TO PROVIDE ACCESS 360 DEGREES AROUND HEAD AT WEEP HOLE LEVEL.

2) INSTALL PROTECTIVE COVERING ON REACTOR HEAD BOLT HOLES. THIS IS REQUIRED TO PREVENT WATER RUN OFF FROM DRAINING THROUGH BOLT HOLES.

3) COVER WEEP HOLES AND PROVIDE DRAIN

4) POWER WASH REACTOR VESSEL HEAD

5) REMOVE PLASTIC AND PROTECTIVE COVERS.

6) RESTORE LEAD BLANKETS AS DIRECTED BY RP

SIGNATURE: [signature] DATE: 4/25/00

2	MECHANICAL	4		6

REMOVE AND REPLACE LEXAN COVERS ON REACTOR VESSEL HEAD TO FACILITATE CLEANING.

SIGNATURE: N/A Affirmative DATE: 4/25/00

3	MAINTENANCE SERVICES	1		6

IF NECESSARY MANUFACTURE REPLACEMENT LEXAN COVERS

SIGNATURE: N/A Affirmative DATE: 4/25/00

Closeout

Lead Shop / MDT Removed: [signature] Date: 5/1/00 4/26

SS/SM Authorization: N/A Date:

QC Mechanical: N/A Date:

Planner Review: [signature] Date: 5/1/00

Completion Date: 4/26/00 Completed By: [signature]

Work performed without deviations.

Gordon Edwards
4/25/00

CONTINUED ON BACK SIDE

Reactor Vessel Head cleaning.

Large deposits of boron have accumulated on the top of the insulation and on the Reactor Vessel Head. Nuclear Regulatory Commission (NRC) issued Generic Letter 97-01 to holders of operating licenses for pressurized water reactors (PWR's). The letter requires to maintain the program for ensuring the timely inspection of the control rod drive mechanism (CRDM) and other vessel closure Head penetrations. The program is required due to degradation of the CRDM nozzle caused by Primary Water Stress Corrosion Cracking process. In order to perform required inspections the nozzles as well as the penetrations must be free of boron dapposits. Once the head is free from the boron new boron deposits may be easily noted and remedial actions taken.

Background and technical information.
Beginning in 1986, Alloy 6000 CRDM nozzle leaks have been reported

Overview of the cleaning effort.
There are two areas requiring cleaning. The area above the insulation and the area below the insulation on the top of the reactor vessel head. The area above the insulation is accessible through the ventilation duct openings located approximately seven feet above the head flange. Scaffolding (movable platform) will be utilized to gain access to the ventilation duct openings after Lexan covers will be removed. The area below the insulation on the top of the reactor vessel head will be accessible via the weep holes (other name is mouse holes). The cleaning media will be pressurized de-mineralized water heated to approximately 175 °F. Water will be sprayed on the boron deposits through the ventilation duct openings and through the weep holes. One weep hole will be used to drain the liquid out of the head to the plastic drums. The remaining weep holes will be blocked with a plastic tape. The plastic drums will be located outside of the head stand area at the base of the water shield tanks. Two inch diameter corrugated plastic hose will provide means of transporting the liquid from the weep hole to the plastic drums. Accumulated liquid will be disposed off as directed by Health Physics and or Decontamination Department personnel. The estimated volume of water used will be between 100 and 600 gallons. Some boron deposits are hardened and soaking time may be required.

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Major challenges of the cleaning effort will be associated with the spill protection. Recently installed inner and outer Reactor Vessel Head gaskets can not become soaked with the boric acid solution. To protect the gaskets number of protective measures will be taken.

- All but one weep hole will be blocked with the plastic cover. In the event the water is escaping from the covered weep hole the cleaning effort will be stopped and spill contained.
- All stud holes will be covered with the plastic covers and secured with the black tape. Should the liquid escape from the weep hole it will float toward the edge of the head and drip down on the floor surface. It is not likely that the liquid would continue its flow under the flange for approximately 30 inches to reach the gaskets.
- The spray and drain process will be coordinated such that when the sill is noted the spraying operation is stopped immediately. Only small amount of water will be used at a time.

Another challenge of the cleaning effort will be associated with the protection of the CRDM motors. To prevent water damage to the motors the only area where water will be permitted and sprayed is located between the flange plain and the top of the insulation. The spray operator will be briefed about the need to control the spray and not to create any splashing. The operator will be briefed not to spray any water on the motor assemblies. Motor assemblies are sealed and are not easily impregnable with water.

ALARA considerations include time/distance principle. The cleaning effort will mainly consist of preparation work. The cleaning effort is scheduled to last approximately 4 hours. With majority of time devoted to the head area. The dose is significantly lower at the weep hole area in comparison with the ventilation duct openings area. Equipment operator will minimize stay time in the "shine" area while spraying. If feasible a mirror will be utilized to inspect the results of spray at the ventilation duct openings area. After initial cleaning a video inspection will be performed by the Framatome Technologies. Should additional cleaning be required the process will be repeated until most boric acid deposits are removed or as directed by HP.

<u>Work Order instructions.</u>

The following items are required for support of head cleaning effort.

Scaffolding- the scaffold is needed on the North side of the head. The scaffold is needed for wrapping the head with the plastic to block all weep holes. In addition to scaffolding a movable platform will be constructed to enable access to the Lexan covers.

Uncover the weep holes- this can be accomplished by partially rising the bottom portion the lead blankets presently installed on the head. All blankets will need to be raised since plastic tape will be strapped all around the head.

Cover the Reactor Head bolt holes- this can be accomplished by rising the plywood decking and covering the holes with plastic or wrap. Cover each hole

separately by cutting square piece of plastic and tape it to the flange with the black tape. Reinstall the plywood flooring.

[redacted]- Lexan covers are bolted to the ventilation duct openings. The Lexan material is fragile. Special care should be taken during removal and re-installation not to chip any corners and not to overtorque the bolts. This will result in cracks, and covers will have to be replaced. As a precaution, more Lexan sheet material should be ordered in the event that replacement covers are needed. Verify Lexan sheets are available in stores. Materials required to perform the work are: plastic, tarpaulin, black tape, and stainless steel hooks for rising the lead shielding.

NRC FORM 366 (9-1998)

U.S. NUCLEAR REGULATORY COMMISSION

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TIME 1030

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