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October 10, 1995
C311-95-2405

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: Three Mile Island Nuclear Station, Unit I (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Monthly Operating Report for September 1995

Enclosed are two copies of the September 1995 Monthly Operating Report for Three Mile Island Nuclear Station, Unit 1.

Sincerely,

J. Knubel
Vice President and Director, TMI

WGH

Attachments

cc: Administrator, Region I
TMI Senior Resident Inspector
T95001

IE24

OPERATIONS SUMMARY
September 1995

The plant entered the month operating at 100% power and remained at that level until 1700 on September 8 when reactor power was reduced to initiate the scheduled 11R refueling outage. The main generator breaker was opened at 1900. Net unit electrical output averaged approximately 770 MWe while the unit was on-line during September.

MAJOR SAFETY RELATED MAINTENANCE

The following is a summary of major safety related maintenance items accomplished during the month.

10R Refueling Activities

On September 8, at approximately 1700 hours, the plant shutdown commenced for the scheduled 11R refueling outage. The Turbine was taken off line at 1900 hours and Reactor shutdown occurred at 2057 hours. Activities completed since the start of the outage include:

Refueling

Preparations were completed in the Fuel Transfer Canal and on the reactor head service structure for the reactor head removal. The full core was offloaded and ultrasonic inspection of all the off-loaded fuel assemblies was performed. Cycle 10 operating reactor coolant radiochemistry data estimates of the number of defective fuel rods was confirmed by the ultrasonic test (UT) results. Nine failed fuel rods confined to four assemblies (three of the assemblies involved once-burned fuel) were identified by UT. An additional failed rod was found by eddy current testing.

Visual examination of some first burned fuel assemblies showed unusual distinctive crud patterns (DCP) on the top two spans. During reconstitution of the first once-burned assembly, eddy current testing identified that six rods had through wall defects. Eddy current testing of the intact fuel rods with DCP showed some to have cladding wall loss. A systematic program was initiated to determine the extent of the degradation and actions to assure the integrity of fuel assemblies to be reused in Cycle 11. Twenty fuel assemblies scheduled for use in Cycle 11 containing fuel rods having DCP were reconstituted using a maximum of ten stainless steel rods and donor rods of equivalent fuel burnup if more than ten rods per assembly were involved. The Cycle 11 core was redesigned to incorporate eight new fuel assemblies thereby limiting the extent of the reconstitution effort. Further examination to determine the cause of the DCP and associated fuel rod failures will occur during cycle 11.

Control Rod Drive Mechanisms

On September 8, 1995 during pre-11R testing conducted concurrent with plant shutdown, control rod trip insertion times were obtained in accordance with

Surveillance Procedure 1303-11.1. Seven control rods exceeded the trip insertion time limit of 1.66 seconds from fully withdrawn to 3/4 insertion as specified in the TMI-1 Technical Specifications. The reactor was placed in cold shutdown for the 11R outage and 27 CRDMs and their thermal barriers were removed and replaced with new open flow path thermal barriers. These barriers are dimensionally similar to those used to replace the four barriers in June 1994; in that they have larger clearances in the region of the ball check valves, however the open flow path barriers are different in that one of the four check valve balls was eliminated. Inspection of the thermal barriers removed showed crud deposition in the area of the thermal barrier ball check valves that restricted movement of the balls and in the lead screw guide bushing. These results further confirm the deposits as the cause of the slow rod insertion times.

Reactor Coolant Pump Maintenance

The Reactor Coolant Pumps RC-P-1A/1B/1C and 1D were inspected during hot shutdown. The high pressure oil lift hoses on all four pumps were replaced with new flexible stainless steel hoses and the motor oil leaks identified during operation were repaired. The RC-P-1D motor was thoroughly inspected as part of a routine preventive maintenance activity. The upper thrust bearing shoes were replaced in RC-P-1A, 1B and 1C. The seal injection line for RC-P-1B was modified to increase the capacity of the temporary drain path to support seal maintenance by keeping the water level below the seal cavity.

Both RC-P-1B and 1C were converted from the conventional seal package to a cartridge package. The conversion included modification of the seal leakoff lines to accommodate the design differences associated with the seal cartridges. Vibration monitoring equipment was upgraded on all four RCPs during the outage.

Main Steam Safety Relief Valves

Main Steam Safety Relief Valve relief testing was performed while taking the plant off line for the 11R refueling outage. Although the results of all valve tests were satisfactory, four valves (MS-V-17A, MS-V-17C, MS-V-21A and MS-V-21B) were found to be leaking past the seat. Each valve was refurbished and will be retested during plant startup.

Pressurizer Code and Safety Relief Valves

Pressurizer Code and Safety valve RC-V-1A was satisfactorily tested in place. It was replaced with a rebuilt and factory tested spare due to the original valve being outside the 1% Technical Specification "as left" tolerance. The Pressurizer Pilot Operated Relief Valve RC-RV-2 was replaced with a rebuilt tested spare. The valves that were removed will be sent off-site to the vendor for rebuilding and post maintenance testing after the 11R outage.

Once Through Steam Generators RC-H-1A/B Maintenance and Inspection

Once Through Steam Generator work completed included removing both the 'A' and 'B' OTSG upper handhole and manway covers and installing ventilation equipment in support of eddy current testing (ECT) and tube plugging. The lower manway covers were removed from both generators and the 'B' lower handhole cover was removed to repair a minor leak.

ECT of 21% of the tubes and approximately half of the sleeves in the lane wedge of each OTSG was performed. As a result the 'A' OTSG was categorized as "C-1" and examination of a larger sample population was not required. Based on the ECT results, OTSG 'B' was categorized as "C-2" due to two adjacent defective tubes from the 12% sample (a portion of the 21% total). Immediately adjacent unplugged tubes were additionally inspected to bound the defective tubes. No additional increase in sample population was required.

As a result of the tube plug eddy current examination, 21 B&W Inconel (I) 600 rolled plugs in the 'A' OTSG upper tube sheet were replaced with 21 I-690 rolled plugs and eight I-600 rolled plugs in the 'B' OTSG upper tube sheet were replaced with seven I-690 rolled plugs and one I-690 welded plug. On completion of drip testing, all Mk3 explosive plugs remaining in service were repaired with welded plugs (380 in the 'A' lower tube sheet and 79 in the 'B' lower tube sheet). One leaking I-690 rolled plug installed below a cable stabilizer in the 'B' lower tube sheet was repaired with a remote weld plug. One Westinghouse rolled plug in 'B' lower was replaced and one Mk1 explosive plug in the 'A' lower was replugged as a result of drip testing.

Reactor Coolant Inventory Trending System (RCITS)

In accordance with Technical Specification section 3.24, a report in the March 1995 Operating Report identified that the affected channels of the RCITS were isolated. The action was taken because of a 15 to 20 gpm reactor coolant leak caused by an instrument tubing/fitting separation. The affected channels of RCITS were not restored to an OPERABLE status prior to the shutdown for the 11R outage. Since the shutdown, all tubing joints were inspected, the system has been repaired and will be hydrostatically tested before being restored to operation next month. Procedural guidance for work on mechanical joints when pressure is greater than 200 psig and temperature is greater than 200°F has been appropriately incorporated.

Fuel Transfer System Repairs

Fuel Transfer System repairs performed involved the use of divers to adjust the underwater limit switches on the east fuel carriage and the installation of additional weight on the east fuel basket to ensure it would latch in the down position. The drive chain on the west fuel carriage was found broken and repair work is scheduled for a later date.

Cold Leg Drain Line Reactor Coolant Leak

A leak of approximately 20 drops per second was found in a weld on a nonisolable two inch diameter cold leg drain line. Metallurgical evaluations have determined that the failure was fatigue induced and that the fatigue occurred over a long period. The most probable cause for growth of the crack from an initial flaw is reactor coolant turbulent flow penetration into the drain line compounded by thermal stratification causing fatigue cycles in the weld. The four foot section of 'B' RCP suction drain line and the reducing elbow were replaced. Piping supports for all four RCP drain lines were reconfigured to reduce thermal stresses.

Electrical Bus Outages

Bus outages were completed on the following electrical equipment:

- 1C, 1D and 1E 4160V busses
- AB-E; TRA and TRB; VBA, VBB and VBC; ATA and ATB distribution panels
- 1H, 1L, 1P, 1R, 1S and 1T 480V busses
- 1A and 1B Auxiliary Transformers
- 1E Inverter bus
- 1A and 1B Control Rod Drive busses

Miscellaneous Outage Work

The following is a summary of various refueling outage activities accomplished:

- Completed 22 of 30 motor operated valve diagnostic tests (MOVATS/VOTES).
- Completed 41 of 46 motor operated valve repairs and 22 of 27 Generic Letter 89-10 motor operated valve repairs.
- Completed 97 of 101 valve repacking actions.
- Completed 40 of 69 Local Leak Rate Tests.
- Completed 19 of 19 Technical Specification snubber tests.

OPERATING DATA REPORT

DOCKET NO. 50-289
DATE
COMPLETED BY W G HEYSEK
TELEPHONE (717) 948-8191

OPERATING STATUS

1. UNIT NAME: THREE MILE ISLAND UNIT 1
2. REPORTING PERIOD: SEPTEMBER 1995
3. LICENSED THERMAL POWER: 2568
4. NAMEPLATE RATING (GROSS MWe): 872
5. DESIGN ELECTRICAL RATING (NET MWe): 819
6. MAXIMUM DEPENDABLE CAPACITY (GROSS MWe): 834
7. MAXIMUM DEPENDABLE CAPACITY (NET MWe): 786

NOTES:

8. IF CHANGES OCCUR IN (ITEMS 3-7) SINCE LAST REPORT, GIVE REASONS: _____
9. POWER LEVEL TO WHICH RESTRICTED, IF ANY (NET MWe): _____
10. REASONS FOR RESTRICTIONS, IF ANY: _____

		THIS MONTH	YR-TO-DATE	CUMMULATIVE
11. HOURS IN REPORTING PERIOD	(HRS)	720.0	6551.0	184776.0
12. NUMBER OF HOURS REACTOR WAS CRITICAL	(HRS)	188.9	6019.9	107608.6
13. REACTOR RESERVE SHUTDOWN HOURS	(HRS)	-0.0	0.0	2284.0
14. HOURS GENERATOR ON-LINE	(HRS)	187.0	6018.0	106473.1
15. UNIT RESERVE SHUTDOWN HOURS	(HRS)	0.0	0.0	0.0
16. GROSS THERMAL ENERGY GENERATED	(MWH)	478264	15351915	261268186
17. GROSS ELECTRICAL ENERGY GENERATED	(MWH)	156749	5135569	87818823
18. NET ELECTRICAL ENERGY GENERATED	(MWH)	144888	4848443	82503861
19. UNIT SERVICE FACTOR	(%)	26.0	91.9	57.6
20. UNIT AVAILABILITY FACTOR	(%)	26.0	91.9	57.6
21. UNIT CAPACITY FACTOR	(USING MDC NET)	25.6	94.2	56.8
22. UNIT CAPACITY FACTOR	(USING DER NET)	24.6	90.4	54.5
23. UNIT FORCED OUTAGE RATE	(%)	0.0	0.0	36.3
UNIT FORCED OUTAGE HOURS	(HRS)	0.0	0.0	60761.2

24. SHUTDOWNS SCHEDULED OVER NEXT 6 MONTHS (TYPE, DATE AND DURATION OF EACH): _____
25. IF SHUT DOWN AT END OF REPORT PERIOD, ESTIMATED DATE OF STARTUP: October 11, 1995

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-289
UNIT TMI-1
DATE
COMPLETED BY W G HEYSEK
TELEPHONE (717) 948-8191

MONTH: SEPTEMBER

DAY	AVERAGE DAILY POWER LEVEL (MWe-NET)	DAY	AVERAGE DAILY POWER LEVEL (MWe-NET)
1	790	17	-4
2	801	18	-4
3	801	19	-4
4	799	20	-4
5	795	21	-3
6	795	22	-4
7	792	23	-4
8	587	24	-4
9	-32	25	-4
10	-14	26	-4
11	-5	27	-4
12	-4	28	-4
13	-4	29	-4
14	-4	30	-4
15	-4	31	NA
16	-4		

REPORT MONTH September 1995

DOCKET NO. 50-289
UNIT NAME TMI-1
DATE
COMPLETED BY W. G. Heysek
TELEPHONE (717) 948-8191

No.	Date	Type[1]	Duration (Hours)	Reason[2]	Method of Shutting Down Reactor[3]	Licensee Event Report#	System Code [4] & [5]	Component Code [5] & [6]	Cause & Corrective Action to Prevent Recurrence
95-01	9-08-95	S	533	C	1	95-002	AB	AA	From ≈100% power, the unit was shutdown to begin the 11R refueling and maintenance outage. Surveillance procedure 1303-11.1 was performed to obtain control rod trip insertion times. Seven rods exceeded the TS specified limit of 1.66 seconds. The thermal barriers on these control rods and others determined to be affected by the crud deposition in the area of the thermal barrier ball check valves that restricted movement of the balls and in the lead screw guide bushing were replaced during the 11R outage.

1
F Forced
S Scheduled

2
Reason
A-Equipment Failure (Explain)
B-Maintenance or Test
C-Refueling
D-Regulatory Restriction
E-Operator Training & Licensing Examination
F-Administrative
G-Operational Error (Explain)
H-Other (Explain)

3
Method
1-Manual
2-Manual Scram
3-Automatic Scram
4-Other (Explain)

4
Exhibit G - Instructions for preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5 Exhibit 1 same source

6 Actually used exhibits F & II NUREG 0161

REFUELING INFORMATION REQUEST

1. Name of Facility: **Three Mile Island Nuclear Station, Unit 1**

2. Scheduled date for next refueling shutdown: **NA**

3. Scheduled date for restart following current refueling: **October 11, 1995**

4. Will refueling or resumption of operation thereafter require a technical specification change or other license amendment? **No.**

5. Scheduled date(s) for submitting proposed licensing action and supporting information: **NA**

6. Important licensing considerations associated with refueling, e.g. new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, new operating procedures:

   a) **TMI is using the new Mark B10 fuel assembly in the Cycle 11 reload batch. The Mark B10 design meets all current BWFC fuel design criteria and is in use at other B&W 177 FA plants.**

   b) **TMI also will use four new Westinghouse Lead Test Assemblies (LTA) in the Cycle 11 reload batch. Their planned operation is for three consecutive cycles with discharge at end-of-Cycle 13. The LTAs will meet current W fuel design criteria while operating within TMI core operating limits. LTA enrichment and core location will ensure that an LTA will not be the lead (hot) assembly at any time during the cycle and will not set any safety or operating limits. The LTAs will remain bounded by existing UFSAR safety analyses results.**

7. The number of fuel assemblies (a) in the core, and (b) in the spent fuel storage pool: (a) **177** (b) **683**

8. The present licensed spent fuel pool storage capacity and the size of any increase in licensed storage capacity that has been requested or is planned, in number of fuel assemblies:

   The present licensed capacity is 1990. Phase 1 of the reracking project to increase spent fuel pool storage capacity permits storage of 1342 assemblies. Upon completion of Phase II of the reracking project, the full licensed capacity will be attained. Phase II is expected to be started in 2002.

9. The projected date of the last refueling that can be discharged to the spent fuel pool assuming the present licensed capacity:

   Completion of Phase I of the reracking project permits full core off-load (177 fuel assemblies) through the end of Cycle 14 and on completion of the rerack project full core off-load is assured through the end of the current operating license and beyond.