

TMI 1 OPERATING EXPERIENCE1. Enforcement

Past problems have been identified in the areas of radiation protection and physical protection. Radiation protection problems were primarily related to identification and administrative control of radiation/high radiation areas. The most noncompliances occurred in 1977 (ten infractions/one deficiency) and general improvement has since been noted in this area.

Physical protection inadequacies resulted in civil penalties of \$3500 and \$8000 being issued 1974 and in early 1976 respectively. An additional noncompliance was found in June 1976 in the area of physical protection, which resulted in a management meeting. In 1977 only one infraction was identified regarding TMI 1 physical protection. No noncompliances were found in 1978 for either unit concerning physical protection.

Noncompliance in other areas has been scattered throughout various areas, and does not appear indicative of major specific or generic problems. The trend of noncompliances has been down with 32 in 1976, 29 in 1977 and 16 in 1978.

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An Immediate Action Letter was issued to the licensee on September 8, 1977, that required the licensee to evaluate the need to repair or replace the Decay Heat Removal Pump Shafts and to perform additional testing, examinations and evaluations of the adequacy of the pump design for this application.

The other management meetings were programmatic meetings following the issuance of the operating license.

2. License Event Reports (LERs)

The attached Table A contains a summary of LERs from the date of licensing (April 9, 1974) through 1978. Since the unit was licensed for approximately two-thirds of 1974, the numbers in brackets are extrapolations of the 1974 events for a full year.

The downward trend of events caused by personnel errors and defective procedures should be expected as the operating staff gains experience and the procedures are subjected to an on-going review. The general trend of all LERs appears to be down.

3. General

The licensee had no major problems identified during pre-operational testing or first two years of facility operations. TMI 1 had a relatively problem-free transition from time of fuel load through completion of power ascension testing. Capacity factor has since been above average.

During a recent refueling outage, the scheduled outage time was delayed about one week due to problems encountered with the fuel transfer carriage and main refueling bridge early in the outage, and BWST dome failure found late in the outage.

TMI 2 OPERATING EXPERIENCE

1. Enforcement

Noncompliance has generally been scattered throughout various areas, and has not been indicative of significant specific or generic problems.

The total number of items of noncompliance for 1978 was 17; this is comparable to the number identified for Unit No. 1 for 1978.

A management meeting was held on February 9, 1979 to review the operating history since the issuance of the operating license on February 8, 1978.

2. Licensee Event Reports (LERs)

The licensee event reports for Unit No. 2 are given in Table A. The numbers in the brackets are extrapolations to a full year from the eleven months of operating experience in 1978. While no trend can be established, the total number of events for Unit 2 compares favorably with Unit No. 1 for the years 1974 and 1975.

3. General

No significant problems occurred during preoperational testing, however, the following substantial delays occurred during startup testing.

- ECCS Actuation on 3/29/78 (LER 78-22/99X)
About 2 week delay due injection of NaOH

- ECCS Actuation on 4/23/78 (LER 78-32/99X)
(Also LERs 78-33/1T, 78-34/1T)

Originally installed (first of a kind) Main Steam safety valves failed to properly reseal after lifting, which led to rapid secondary/primary system cooldown and this ECCS actuation. Corrective action for event included a 5 month outage for design change and replacement of the Main Steam safety valves.

- Atmospheric dump valve bellows rupture on 1/15/79.
Two week delay due replacement of bellows.

TABLE A

| Cause | April 19 1974 | Unit No. 1 | | | | 3/20/79 | Unit No. 2 |
|--|------------------|------------|------|-----------|------------|---------|---------------|
| | | 1975 | 1976 | 1977 | 1978 | 1979 | Feb 8 1978 |
| Personnel errors | 19 [29] | 11 | 12 | 5 III | 5 III | | 13 [14] |
| Design, manufacturing construction/installation | 7 [10] | 16 | 5 | 10 IIIIII | 6 III | | 23 [25] |
| External | 0 | 4 | 5 | 3 | 1 II | | 0 |
| Defective procedures | 11 [16] | 13 | 4 | 3 II | 2 II | 1 | 8 [9] |
| Component Failure | 16 [24] | 23 | 19 | 10 IIII | 11 IIII | IIII | 13 [14] |
| Other | 0 | 9 | 2 | 1 II | 4 IIII | | 8 [9] |
| Total | 53 [80] | 76 | 47 | 32 (21) | 29 | 8 | 65 [71] |

ENFORCEMENT SUMMARYGENERAL AREA OF
NONCOMPLIANCE

| | <u>1976 TMI 1</u> <u>INF/DEF</u> | <u>1977 TMI 1</u> <u>INF/DEF</u> | <u>1978 TMI 1</u> <u>INF/DEF</u> | <u>1978 TMI 2</u> <u>INF/DEF</u> |
|----------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| RADIATION PROTECTION | 5/2 | 10/1 | 4/1 | 3/0 |
| PHYSICAL PROTECTION | 6/4 | 1/0 | 0/0 | 0/0 |
| REVIEW AND AUDIT | 4/2 | 1/0 | 0/1 | 0/0 |
| OPERATIONS | 2/2 | 4/1 | 1/2 | 1/1 |
| TESTING/MAINTENANCE | 0/0 | 3/0 | 2/1 | 4/2 |
| ENVIRONMENTAL | 1/2 | 0/3 | 1/2 | 0/0 |
| EMERGENCY PLANNING | 1/0 | 1/0 | 1/0 | 1/0 |
| FIRE PROTECTION | 1/0 | 2/0 | 0/0 | 2/0 |
| QA/QC | 0/0 | 0/2 | 0/0 | 3/0 |

ENFORCEMENT COMPARISON

| <u>FACILITY</u> | <u>1976</u> <u>INF/DEF</u> | <u>1977</u> <u>INF/DEF</u> | <u>1978</u> <u>INF/DEF</u> |
|-----------------|-------------------------------|-------------------------------|-------------------------------|
| TMI 1 | 20/12 | 22/7 | 9/7 |
| PWR A | 13/13 | 18/11 | 10/9 |
| PWR B | 29/10 | 21/15 | 6/8 |
| PWR C | 15/10 | 23/17 | 18/8 |
| PWR D | 12/10 | 13/11 | 9/9 |
| TMI 2 | 5/1 | 9/3 | 14/3 |

Rush to Commercial Operation; TMI 2

The milestone of commercial operation is related to financial and tax accounting practices. NRC has no oversight role in these areas.

TMI 2 received an NRC Operating License on February 8, 1978. Prior to issuance of this license NRC inspection had determined that the plant was sufficiently completely built and preoperationally tested to allow safe operation. Subsequent to receipt of the license, the reactor was loaded with fuel and startup testing began. During the startup testing a five month outage was experienced to replace first of a kind main steam safety valves which did not perform satisfactorily. On December 30, 1978 when Unit 2 was classified as in commercial operation startup testing at about 95% power was underway. Inspections did not indicate that short cuts were being taken.

Licensee Regulatory Performance Evaluation Results
For Three Mile Island (Unit 1)

The regulatory performance of the TMI-1 plant has been evaluated in two ways. First, quantitative ratings of TMI-1 and other operating plants were calculated as a function of the numbers and types of noncompliance and licensee event reports (LER's) for each licensee. Second, IE inspectors were asked to provide subjective evaluations of the safety of each operating plant.

For 1976, the regulatory performance of TMI-1, as reflected in these two types of evaluations, can be summarized as follows:

| | |
|------------------------------|---------------|
| Overall quantitative rating | Average |
| Noncompliance record | Average |
| Licensee Events | Below Average |
| Subjective Inspector Ratings | Above Average |

The quantitative evaluation shows that:

- In calendar year 1976 (CY76), NRC inspectors found no violations, nine infractions and four deficiencies in 858 hours of inspection.
- The quantitative rating for TMI-1, based upon this noncompliance records, was 0.3 (The quantitative rating indicates the numbers of standard deviations that each plant's performance falls above or below the mean of zero). The 0.3 rating means that the noncompliance record for TMI-1 was just slightly better than the average plant in CY76.
- Similar calculations performed on this CY76 noncompliance data yielded ratings for TMI-1 ranging between minus 0.2 and plus 0.2.
- In an update based on the noncompliance records of operating reactor licensees during the first half of 1977, the TMI-1 rating was minus 0.7. (Any plant with a rating between minus 1.0 and plus 1.0 is considered average).

- Based on the number of licensee event reports (LER's) accumulated during CY76, TMI-1 was rated minus 0.9 in personnel-related LER's, minus 2.2 in procedural-related LER's, and minus 2.2 in combined (personnel and procedural) LER's. This means that TMI-1 was below average (i.e., had more of these LER's) than most of the other operating reactor licensees.
- The overall quantitative rating for TMI-1, based upon both noncompliances and LER's in CY76, was minus 0.4. Based upon this overall quantitative rating, the TMI-1 plant would be considered average.

Additional detail on the quantitative rating of TMI-1 is provided as Attachment 1.

In mid-1978, NRC conducted a survey in which all inspectors were asked to rate the safety of each operating reactor. The inspectors were asked to rate the overall safety (among other factors) of each plant on a scale ranging from "acceptable" to "exceptional." The results of this survey show that:

- Based on the ratings of 14 inspectors, TMI-1 was considered safer than 12 of the 15 plants in Region I.
- The overall safety rating for TMI-1 ranks about No. 10 of the 45 sites considered in the survey.
- Nine inspectors thought that there had been no change in the safety of TMI-1 in the first 8 or 9 months of 1977; 1 inspector thought safety was slightly improved.

Additional detail on the subjective ratings of TMI-1, including narrative comments, are provided as Attachment 2.

Attachment 1. Quantitative Ratings of IMI-1

| <u>Date of Report</u> | <u>Rating Period</u> | <u>Regulatory Performance Measurement</u> | <u>Rating</u> |
|-----------------------|----------------------|--|--|
| Feb 77 | 1976 | Noncompliance | +0.3 |
| | | LERs | -2.2 |
| | | Overall quantitative (Noncompliance + LERs) | -0.4 |
| Sep 77 | 1976 | Noncompliance | 0.0 ^{1/} |
| | | | -0.2 ^{2/} |
| | | Overall quantitative | -0.2 ^{1/} -0.4 ^{2/} |
| | | Noncompliance (excluding safeguards) | 0.2 ^{1/} |
| Oct 77 | Jan-Jun 1977 | Noncompliance | -0.7 ^{1/} |

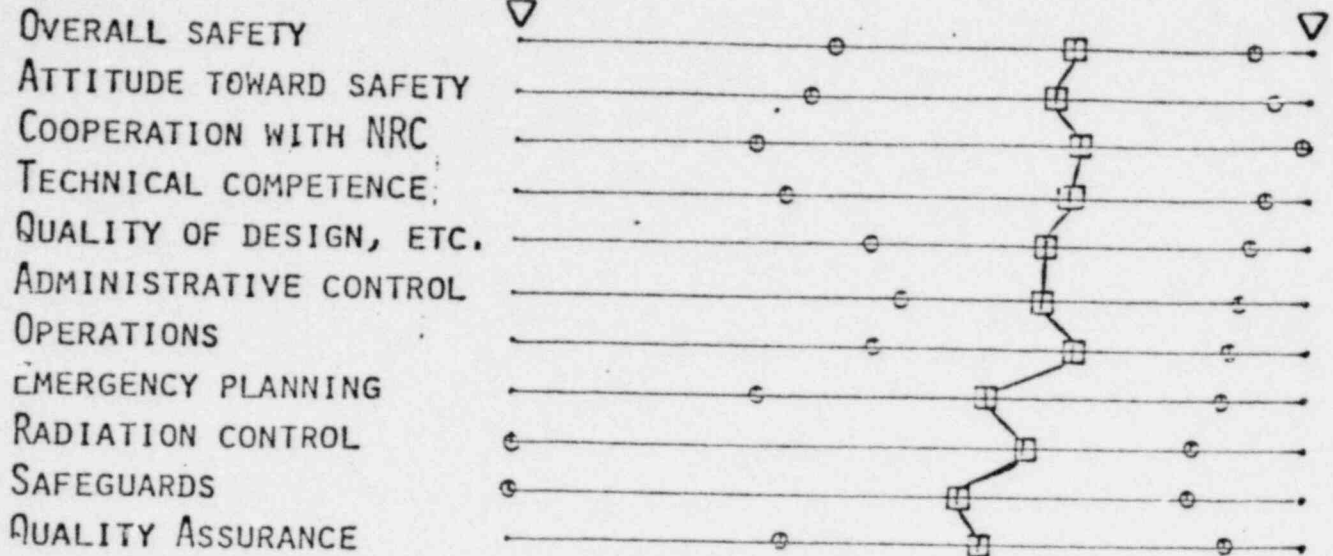
^{1/}Using "simplified" calculation method.

^{2/}Using "detailed" calculation method.

RATING CATEGORIES

ACCEPTABLE

EXCEPTIONAL



NUMBER OF PEOPLE RATING SITE = 14

FAMILIARITY OF RATERS WITH SITE (ON 7 POINT SCALE) = 5.6
 (1 = HARDLY AT ALL, 7 = EXTREMELY WELL)

AVERAGE NUMBER OF MONTHS SINCE RATERS' LAST INSPECTION = 6.6

STRINGENCY OF REQUIREMENTS FOR SITE (ON 7 POINT SCALE) = 4.7
 (1 = MUCH LESS DEMANDING THAN THOSE OF OTHER SITES,
 7 = MUCH MORE DEMANDING THAN THOSE OF OTHER SITES)

INDICATIONS OF CHANGE IN SITE SAFETY SINCE JANUARY 1977

| | |
|--|----------|
| 1 = NO CHANGE IN SAFETY..... | <u>9</u> |
| 2 = SAFETY SLIGHTLY IMPROVED..... | <u>1</u> |
| 3 = SAFETY SUBSTANTIALLY IMPROVED..... | <u>0</u> |
| 4 = SAFETY SLIGHTLY WORSE..... | <u>0</u> |
| 5 = SAFETY SUBSTANTIALLY WORSE..... | <u>0</u> |

NARRATIVE STATEMENTS OF CHANGES IN SAFETY AND OTHER SAFETY CONSIDERATIONS

(see next page)

1/10/79

Power Reactors

CY 78 (date inspection began)

| | |
|---|------|
| Operating Power Reactor | 68 |
| Total items of noncompliance | 1400 |
| Total inspections | 1959 |
| Average noncompliance per reactor (Operating) | 21.6 |
| Average number of items of noncompliance per inspection | .7 |

Three Mile Island 2 (50-320)

36 inspections
 17 items of noncompliance (Sev 1 = 0, Sev 2 = 14, Sev 3 = 3)

0.47 INC'S/insp

Three Mile Island 1 (50-289)

26 inspections
 16 items of noncompliance (Sev 1 = 0, Sev 2 = 9, Sev 3 = 7)