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U.S. ATOMIC ENERGY COMMISSION

REGULATORY GUIDE

DIRECTORATE OF REGULATORY STANDARDS

REGULATORY GUIDE 1.16

REPORTING OF OPERATING INFORMATION – APPENDIX A TECHNICAL SPECIFICATIONS

A. INTRODUCTION

Section 50.36, "Technical Specifications," of 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that each applicant for a license authorizing operation of a nuclear power plant include in its application proposed technical specifications. These technical specifications, as issued by the AEC, are incorporated into the facility license and are conditions of the license. Technical specifications are now included as two appendices to the license: Appendix A technical specifications relate to health and safety, and Appendix B technical specifications relate to environmental impact.[1] Each of these appendices includes a section on reporting requirements. The reporting program described in this regulatory guide involves the reporting requirements of Appendix A technical specifications only. In some cases, this program may need to be supplemented or modified because of unique plant design features or other factors. The need for a supplemental or modified program will be determined on a case-by-case basis.

Reporting of information concerning routine radioactive discharges, radiological environmental monitoring not covered in this guide, and nonradiological environmental surveillance and environmental impact will be discussed in a separate regulatory guide currently being developed on Appendix B environmental technical specifications.

In addition to the reporting requirements necessary for compliance with technical specifications, specific reporting requirements are included in Part 50, as well as in other Parts of Title 10, Chapter I, Code of Federal Regulations. A compilation of all reporting requirements applicable to the various types of AEC licensees, including identification of the proper AEC addressee or addressees and designation of the number of copies required, will be included in a separate regulatory guide and is not presented herein.

[1] A few facilities have a single appendix which contains the combined aspect of Appendices A and B.

B. DISCUSSION

The Regulatory staff has reviewed the operating information needed to permit assessment by the Commission of safety-related activities during the operating phase of plant life. Based on this review and a review of licensees' current reporting programs, the staff has revised the guidelines for such reporting.

Significant differences in this guide from Revision 1 of Regulatory Guide 1.16, dated October 1973, are:

1. Reporting requirements have been updated to reflect changes in reports required by Appendix A technical specifications. In general, these changes involve:

a. a change in frequency of submittal of routine operating reports;

b. elimination of the first-year operating report;

c. formalization of reporting of operating information on a monthly frequency;

d. deletion of certain items of information no longer required by the AEC to be submitted on a routine basis;

e. changes in the format and immediacy of reporting required for certain types of abnormal occurrences; and

f. improved guidance concerning definitions and categories of significance of abnormal occurrences.

2. Appendices B, C, D, and E of this guide have been added. These appendices provide the desired format for radiation exposure reports and monthly operating reports.

3. A listing of reports other than those required by Appendix A technical specifications has been eliminated. (See Introduction above.)

C. REGULATORY POSITION

The following program for reporting of operating information provides an acceptable basis to the AEC Regulatory staff for meeting the reporting requirements of Appendix A technical specifications. Reports submitted in accordance with this guide should be addressed to the Director of the appropriate AEC Regulatory Operations Regional Office unless otherwise noted.

1. Routine Reports

a. **Startup Report.** A summary report of plant startup and power escalation testing should be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly altered the nuclear, thermal, or hydraulic performance of the plant. The report should address each of the tests conducted and should include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation should also be described.

Startup reports should be submitted within (1) 90 days following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) 9 months following initial criticality, whichever is earliest. If the Startup Report does not cover all three events (i.e., initial criticality, completion of startup test program, and resumption or commencement of commercial power operation), supplementary reports should be submitted at least every three months until all three events have been completed.

b. **Annual Operating Report.**[2,3] Routine operating reports covering the operation of the unit during the previous calendar year should be submitted prior to March 1 of each year. The initial report should be submitted prior to March 1 of the year following initial criticality.

The primary purpose of annual operating reports is to permit annual evaluation by the AEC staff of operating and maintenance experience throughout the nuclear power industry. The annual operating reports made by licensees should provide a comprehensive summary of the operating experience gained during the year, even though some repetition of previously reported information may be involved. References in the annual operating report to previously submitted reports should be clear.

Each annual operating report should include, for example:

(1) A narrative summary of operating experience during the report period relating to safe operation of the facility.

(2) For each outage or forced reduction in power[4] of over five percent:

(a) the proximate cause and the system and major component involved (if the outage or forced reduction in power involved equipment malfunction);

(b) a brief discussion of (or reference to reports of) any abnormal occurrences pertaining to the outage or power reduction;

(c) corrective action taken to reduce the probability of recurrence, if appropriate;

(d) operating time lost as a result of the outage or power reduction (for forced outages,[5] use the generator off-line hours; for forced reductions in power, use the approximate duration of operation at reduced power);

(e) a description of major safety-related corrective maintenance performed during the outage or power reduction, including the system and component involved and identification of the critical path activity dictating the length of the outage or power reduction; and

(f) a report of any releases of radioactivity or unusual radiation exposures specifically associated with the outage.

(3) A tabulation (supplementing the requirements of § 20.407 of 10 CFR Part 20) of the number of personnel receiving exposures in the reporting period according to duty function, e.g., routine plant maintenance, special plant maintenance (describe maintenance), routine fueling operation, special refueling operation (describe operation), and other job-related exposures. See Appendix B to this guide for a suggested format for providing this information.

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[2] A single submittal may be made for a multiple unit station. The submittal should combine those sections that are common to all units at the station.

[3] Much of the information in the Annual Report was previously submitted in a Semiannual Report.

[4] The term "forced reduction in power" is normally defined in the electric power industry as the occurrence of a component failure or other condition which requires that the load on the unit be reduced for corrective action immediately or up to and including the very next weekend. Note that routine preventive maintenance, surveillance, and calibration activities requiring power reductions are not covered by this section.

[5] The term "forced outage" is normally defined in the electric power industry as the occurrence of a component failure or other condition which requires that the unit be removed from service for corrective action immediately or up to and including the very next weekend.

(4) A report on fuel performance, as follows:

(a) For BWRs, a tabulation on a weekly basis of offgas data reported as the sum of the six principal fission gas nuclides (Xe-133-135-138, Kr-85m-87-88) at the steam jet air ejector. The reactor power level at the time of the sampling should be recorded with the sample result.

(b) For BWRs, a tabulation of primary coolant sample results for iodines following any short term (less than one hour) increase in the steam jet air ejector offgas rate when the base exceeds 5000 μCi/sec and the spike causes at least a factor of 2 increase. Such samples should be obtained within 4 hours after the spike occurs.

(c) For PWRs, a tabulation on a monthly basis of the calculated equivalent percent failed fuel. The evaluation should include, for example, (i) a description of the method used to calculate equivalent percent failed fuel (one time only), (ii) primary system radioactivity (gross beta-gamma, I-131 and I-133 content, average power level for the period and the number of shutdowns and startups during the period), and (iii) any other pertinent information suspected to have influenced fuel performance.

(d) For PWRs, a tabulation of primary coolant sample results for I-131, I-133, and I-135 following any thermal power change of more than 15% of rated thermal power within a 1 hour period. Such samples should be obtained within 4 hours after the power change, and should be continued at 4 hour intervals until the dose equivalent I-131 drops below 1 μCi/gram.

(e) For all plants, all findings from failed fuel examinations, including results of eddy current tests, ultrasonic tests, or visual examinations completed during the report period.

c. **Monthly Operating Report.** Routine reports of operating statistics and shutdown experience should be submitted on a monthly basis. The report formats set forth in Appendices C, D, and E to this guide should be completed in accordance with the instructions provided. The completed forms should be sent to the Director of Regulatory Operations, U.S. Atomic Energy Commission, Washington, D.C. 20545, with a copy to the appropriate Regulatory Operations Regional Office, to arrive no later than the tenth of each month following the calendar month covered by the report.

2. Abnormal Occurrences

Licensees are required to investigate and evaluate the significance of abnormal occurrences and implement corrective actions to prevent recurrence, in accordance with provisions of technical specifications and the program for quality assurance during the operation phase of plant life. In addition, abnormal occurrences, including events of high public interest, should be reported to the AEC as described below.

In general, the importance of an occurrence with respect to safety significance or potential public interest determines the immediacy of reporting required. In some cases, however, the significance of an event may not be obvious at the time of its occurrence. In such cases, the AEC should be informed promptly of an increased significance in the licensee's assessment of the event. Corrected reports should be submitted as expeditiously as possible whenever changes occur.

Guidance concerning reportable occurrences and representative examples of events that should be reported in different time frames are provided below.

a. **Prompt Notification With Written Followup.** The types of events listed below should be reported as expeditiously as possible, but within 24 hours, by telephone, telegraph, mailgram, or facsimile transmission to the Director of the appropriate Regulatory Operations Regional Office, or his designate, with a written followup report within two weeks. The written report should include, as a minimum, a completed copy of the transcription sheet (see Appendix A to this guide) used for entering data into the AEC's computer-based file of information concerning abnormal occurrences. (Instructions for completing these transcription sheets[6] are issued individually to each licensee.) Information provided on the transciption sheet should be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

(1) Failure of the reactor protection system to trip, as required, by the time a monitored parameter reaches the setpoint specified as the limiting safety system setting in the technical specifications. The following are examples:

(a) Reactor pressure exceeds limiting safety system setting value without automatic trip.

(b) Inability to trip control rods or to trip sufficient control rods to achieve the technical specification shutdown margin.

(c) Failure of the reactor protective system to complete the required protective action once initiated.

Note: Instrument drift discovered as a result of testing need not be reported under this item [but see items 2.a(6), 2.a(7), and 2.b(1) below].

(2) Operation of the unit or affected systems when any parameter or operation subject to a limiting condition for operation is less conservative than the least conservative aspect of the limiting condition for operation established in the technical specifications. The following are examples:

(a) Shutdown not begun within the specified time when unidentified reactor coolant leakage exceeds the technical specifications limit.

(b) Failure of a system other than the reactor trip system (see 2.a(1) above) to actuate, or actuation of such a system at a monitored parameter value less conservative than that listed in the technical specifications for the system.

[6] Instruction Manual, Licensee Event Report File, Office of Operations Evaluation, USAEC, Washington, D.C. 20545.

(c) Operation with unacceptable containment leak rate type B or C test results.

Note: If specified action is taken when a system is found to be operating between the most conservative and the least conservative aspects of a limiting condition for operation listed in the technical specifications, the limiting condition for operation is not considered to have been violated and no report need be submitted under this section (but see item 2.b(2) below).

(3) Abnormal degradation of one of the several boundaries designed to contain radioactive material resulting from the fission process. The following are examples:

(a) Through-wall failure of piping or components of the reactor coolant pressure boundary.

(b) Steam generator tube thinning in excess of acceptance limits in Regulatory Guide 1.83, "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes."

(c) Detection of greater than 1% fuel cladding failures during operation or by visual or NDT techniques during fuel examination.

(d) Through-wall leak in liquid waste storage tank.

Note: Leakage of valve packing or gaskets within the limits for identified leakage set forth in technical specifications need not be reported under this section (but see item 2.b(3) below).

(4) Releases of radioactivity resulting in calculated doses in excess of those set forth in § 20.105 of 10 CFR Part 20 based on actual meteorology or flow conditions and the most restrictive calculated doses (but see items 2.b(3) and 2.c(6) below).

(5) Reactivity Anomalies

(a) Discovery of disagreement with predicted value of reactivity balance greater than or equal to $1.00. The following are examples:

(i) Core reactivity calculations at a fuel exposure corresponding to the least reactive configuration reveal a reactivity balance less than predicted by an amount greater than or equal to $1.00.

(ii) Core reactivity calculations at a fuel exposure corresponding to the most reactive configuration reveal a reactivity balance greater than predicted by an amount greater than or equal to $1.00.

(b) A projection of a reactivity balance that would threaten the ability to attain required shutdown margin.

(c) Short-term reactivity increases that correspond to a reactor period of less than 5 seconds, or if subcritical, an unplanned reactivity insertion of more than 50¢.

(6) Failure or malfunction of one or more components which prevents or could prevent, by itself, the fulfillment of the functional requirements of systems required to function to cope with accidents analyzed in the SAR. The following are examples:

(a) Clogged fuel line(s) resulting in failure to supply fuel to the emergency generators.

(b) Multiple instrument drift resulting in loss of protective function.

(7) Personnel error or procedural inadequacy which prevents or could prevent, by itself, the fulfillment of the functional requirements of systems required to function to cope with accidents analyzed in the SAR. The following are examples:

(a) Failure to restore a safety system to full operability following test or maintenance.

(b) Improper procedures leading to incorrect valve lineup which resulted in closure of one manual valve in each of two redundant safety injection subsystems and would have prevented injection on demand.

Note: For items 2.a(6) and 2.a(7), reduced redundancy that does not result in loss of system function need not be reported under this section (but see items 2.b(2) and 2.b(4) below).

(8) Conditions arising from natural or man-made events that, as a direct result of the event, require plant shutdown, operation of safety systems, or other protective measures required by technical specifications. The following are examples:

(a) Threatened civil disturbance requiring plant shutdown.

(b) Damage to the facility caused by fire, flood, earthquake, or other similar occurrences.

(9) Errors in the transient or accident analyses or in the methods used for such analyses as described in the safety analysis report or in the bases for the technical specifications that have or could have permitted reactor operation in a manner less conservative than assumed in the analyses. The following are examples:

(a) Loss of condenser vacuum resulting in reactor pressure and flux transients that peak at values higher than analyzed.

(b) Reactivity insertion delay times by reactor protection system longer than those used in the technical specification bases.

(10) Performance of structures, systems, or components that requires remedial action or corrective measures to prevent operation in a manner less conservative than assumed in the safety analysis report or technical specifications (including bases) or discovery during plant life of conditions not specifically considered in the safety analysis report or technical specifications that require remedial action or corrective measures to prevent the existence or development of an unsafe condition. The following are examples:

(a) Fuel densification and resulting gaps between pellets.

(b) Axial flux ratios less conservative than those for which correlations with overpower ΔT were based on core burnup projections.

(c) Failure of a safety injection pump to deliver the flow rates assumed in the FSAR.

(d) Degradation of hydraulic shock suppressors to the extent that they could not perform their required function.

(e) Failure of magnetic trip mechanisms on a safety-related circuit breaker to provide trip on instantaneous overcurrent as indicated on the manufacturer's time-current characteristic curve.

Note: This item is intended to provide for reporting of potentially generic problems not otherwise reportable as well as problems affecting only the reporting licensee.

b. **Thirty Day Written Reports.** The abnormal occurrences discussed below have lesser immediate importance than those described under 2.a above. Such events should be the subject of written reports (transcription sheets--see Appendix A to this guide) to the Director of the appropriate Regulatory Operations Regional Office no later than the tenth of the calendar month following the month in which the events occurred. Abnormal occurrence reports submitted in accordance with this section may be compiled for each calendar month and submitted within ten days after the end of the month covered.

(1) Reactor protection system or engineered safety feature instrument settings which are found to be less conservative than those established by the technical specifications but which do not prevent the fulfillment of the functional requirements of affected systems (but see items 2.a(1) and 2.a(2) above). The following are examples:

(a) One of the four scram dump volume level switches failed to operate during surveillance test.

(b) One of four reactor low-pressure switches operated at 885 psig instead of LSSS value of 900 psig.

(c) During test, one out of four undervoltage relays failed to perform its function of tripping a reactor trip breaker.

(2) Conditions leading to operation between the most conservative and least conservative aspects of a limiting conditions for operation (but see item 2.a(2) above). The following are examples:

(a) Core spray pump B breaker tripped after 20 minutes during test. Trip unit was found to be defective, declared inoperable, and repaired.

(b) Safety injection pump C failed to start following system initiation. Required surveillance on redundant components was successfully completed.

(c) One of the two centrifugal charging pumps became inoperable because of a faulty bearing. Redundant pump operability was confirmed.

(3) Any release of radioactive material from the site boundary in excess of the reporting levels of proposed Appendix I to 10 CFR Part 50 (but see also 2.a(4) and 2.c(6)). For example, offgas system rupture disc fractured releasing radioactive gases without required holdup time. An evaluation of the release showed that the annual release is expected to exceed the reporting level of proposed Appendix I to 10 CFR Part 50.

(4) Observed inadequacies in the implementation of administrative or procedural controls which threaten to cause reduction of degree of redundancy provided in reactor protection systems or engineered safety feature systems (but see item 2.a(7) above). The following are examples:

(a) One of the three diesel generators tripped from high temperature because cooling water valves were lined up incorrectly.

(b) Isolation valve for a low-pressure trip switch was found closed with system pressure locked in. Trip of switch would not occur at low pressure. Improper return to operation following maintenance was the cause.

(c) Failure to perform surveillance tests at the required frequency.

c. Prompt Notification Only

The types of events identified below are generally of high public interest, although they may not be subject to the reporting guidelines of Sections 2.a and 2.b above. The Director of the appropriate AEC Regulatory Operations Regional Office, or his designate, should be notified of such events, for information purposes only, as expeditiously as possible but within 24 hours.

(1) An event that causes property damage to the plant in excess of $10,000, exclusive of labor costs or costs of purchased power.

(2) Radiation exposure to licensee personnel or members of the public in excess of applicable exposure limits set forth in 10 CFR Part 20.

(3) Natural or man-made conditions that may require action but which need not be reported under item 2.a(8) above.

(4) Significant radiological event offsite occurring during transport of material for which the licensee was either shipper or intended receiver.

(5) Unscheduled shutdowns expected to last for more than one week, regardless of cause.

(6) Unusual low-level releases of radioactive material from the site boundary which need not be reported under item 2.a(4) above.

(7) Failure of or damage to safety-related equipment which need not be reported under Section 2.a above, if the time for repair is likely to exceed the time allowed by the technical specifications.

3. Unique Reporting Requirements

The above reporting program will in general satisfy the reporting requirements necessary for compliance with Appendix A technical specifications. This program may need to be supplemented or modified because of unique plant design features or other factors. The need for a supplemental or modified program will be determined on a case-by-case basis and so designated in individual operating licenses.

D. IMPLEMENTATION

The purpose of this section is to provide guidance to applicants and licensees regarding an implementation schedule for utilizing this regulatory guide.

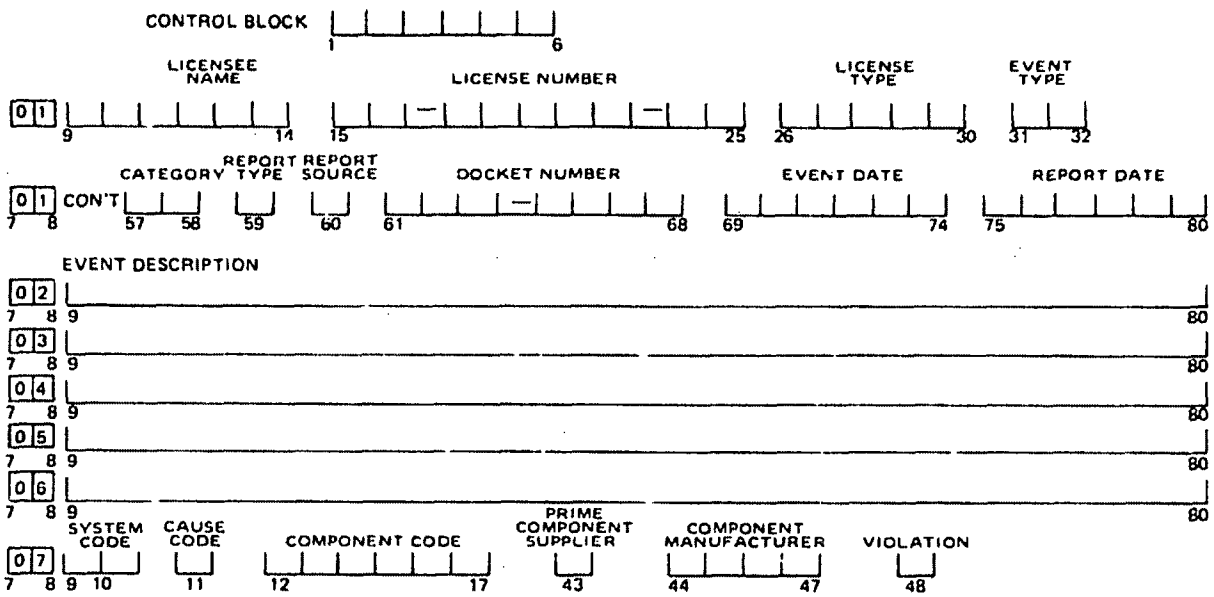
The reporting program described herein, or an alternative method determined by the Regulatory staff to be acceptable, should be implemented in the technical specifications of all operating licenses. Licensees holding operating licenses issued before the publication of this guide should consider appropriate revision to their technical specifications to achieve standardized reporting by all licensees.

Rather than repeating many sections of the Regulatory staff position in each licensee's technical specifications, the Regulatory staff position may be incorporated by reference, upon AEC approval, with any exceptions noted. Appropriate wording for insertion into the technical specifications is as follows:

> "The information to be reported to the USAEC in addition to the reports required by Title 10, Chapter 1, Code of Federal Regulations, shall be in accordance with the Regulatory position of Regulatory Guide 1.16 (Revision 2) 'Reporting of Operating Information—Appendix A Technical Specifications.' "

For licensees holding operating licenses without Appendix B environmental technical specifications, it may be necessary to include reference to Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," and Regulatory Guide 4.1, "Measuring and Reporting of Radioactivity in the Environs of Nuclear Power Plants," in addition to Regulatory Guide 1.16, in the technical specifications statement.

APPENDIX A
LICENSEE EVENT REPORT



NAME:_____ PHONE: _____

APPENDIX B
STANDARD FORMAT FOR REPORTING NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION

Work & Job Function	Number of Personnel			Total Man-Rem		
	Station Employees	Utility Employees	Contract Workers	Station Employees	Utility Employees	Contract Workers
Reactor Operations & Surveillance						
Maintenance Personnel						
Operating Personnel						
Health Physics Personnel						
Supervisory Personnel						
Engineering Personnel						
Routine Maintenance/Inservice Inspection						
Maintenance Personnel						
Operating Personnel						
Health Physics Personnel						
Supervisory Personnel						
Engineering Personnel						
Special Maintenance						
Maintenance Personnel						
Operating Personnel						
Health Physics Personnel						
Supervisory Personnel						
Engineering Personnel						
Waste Processing						
Maintenance Personnel						
Operating Personnel						
Health Physics Personnel						
Supervisory Personnel						
Engineering Personnel						
Refueling						
Maintenance Personnel						
Operating Personnel						
Health Physics Personnel						
Supervisory Personnel						
Engineering Personnel						
TOTAL						
Maintenance Personnel						
Operating Personnel						
Health Physics Personnel						
Supervisory Personnel						
Engineering Personnel						
Grand Total						

APPENDIX C

DOCKET NO. _____

UNIT _____

DATE _____

COMPLETED BY _____

AVERAGE DAILY UNIT POWER LEVEL

MONTH _____

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

DAILY UNIT POWER LEVEL FORM INSTRUCTIONS

On this form, list the average daily unit power level in MWe-net for each day in the reporting month. Compute to the nearest whole megawatt.

These figures will be used to plot a graph for each reporting month. Note that by using maximum dependable capacity for the net electrical rating of the unit, there may be occasions when the daily average power level exceeds the 100% line (or the restricted power level line). In such cases, the average daily unit power output sheet should be footnoted to explain the apparent anomaly.

APPENDIX D

UNIT _____

DATE _____

COMPLETED BY _____

DOCKET NO. _____

OPERATING STATUS

1. REPORTING PERIOD _____ THROUGH _____
   HOURS IN REPORTING PERIOD: _____
2. CURRENTLY AUTHORIZED POWER LEVEL (MWth) _____ MAX. DEPENDABLE CAPACITY (MWe-NET) _____
3. LOWEST POWER LEVEL TO WHICH SPECIFICALLY RESTRICTED (IF ANY) (MWe-NET): _____
4. REASONS FOR RESTRICTION (IF ANY):

	THIS REPORTING PERIOD	YR TO DATE	CUMULATIVE TO DATE
5. HOURS REACTOR WAS CRITICAL			
6. REACTOR RESERVE SHUTDOWN HOURS			
7. HOURS GENERATOR ON LINE			
8. UNIT RESERVE SHUTDOWN HOURS			
9. GROSS THERMAL ENERGY GENERATED (MWH)			
10. GROSS ELECTRICAL ENERGY GENERATED (MWH)			
11. NET ELECTRICAL ENERGY GENERATED (MWH)			
12. REACTOR AVAILABILITY FACTOR (1)			
13. UNIT AVAILABILITY FACTOR (2)			
14. UNIT CAPACITY FACTOR (3)			
15. UNIT FORCED OUTAGE RATE (4)			

16. SHUTDOWNS SCHEDULED TO BEGIN IN NEXT 6 MONTHS (STATE TYPE, DATE, AND DURATION OF EACH):
    _____
17. IF SHUT DOWN AT END OF REPORT PERIOD, ESTIMATED DATE OF STARTUP: _____
18. UNITS IN TEST STATUS (PRIOR TO COMMERCIAL OPERATION) REPORT THE FOLLOWING:

	DATE LAST FORECAST	DATE ACHIEVED
INITIAL CRITICALITY		
INITIAL ELECTRICAL POWER GENERATION		
COMMERCIAL OPERATION		

(1) REACTOR AVAILABILITY FACTOR = $\frac{\text{HOURS REACTOR WAS CRITICAL}}{\text{HOURS IN REPORTING PERIOD}} \times 100$

(2) UNIT AVAILABILITY FACTOR = $\frac{\text{HOURS GENERATOR ON LINE}}{\text{HOURS IN REPORTING PERIOD}} \times 100$

(3) UNIT CAPACITY FACTOR = $\frac{\text{NET ELECTRICAL POWER GENERATED}}{\text{MAX. DEPENDABLE CAPACITY (MWe-NET) X HOURS IN REPORTING PERIOD}}$

(4) UNIT FORCED OUTAGE RATE = $\frac{\text{FORCED OUTAGE HOURS}}{\text{HOURS GENERATOR ON LINE + FORCED OUTAGE HOURS}} \times 100$

INSTRUCTIONS FOR COMPLETING OPERATING DATA REPORT (APPENDIX D)

This report is to be furnished each month by licensees. The name, telephone number and ext nsion of the preparer should be provided in the space labeled "Completed By." The instructions below are provided to assist licensees in reporting the data consistently. The numbering of the instruction matches that used on the report format.

OPERATING STATUS

1. Reporting Period. The Period normally will be from 0001 of the first day through 2400 of the last day of the calendar month. There may be some slight variations, however, and this item should be used to indicate when such variations occur. Successive monthly reports should be consistent: i.e., no gaps in time. Report as hour, year, month, day using 24-hour clock (0001, 750814 for 12:01 a.m. on August 14, 1975). Hours in reporting period should be calculated from report period.

2. For the "net" figure, use Maximum Dependable Capacity. Maximum Dependable Capacity is defined as the dependable main-unit capacity, winter or summer, whichever is smaller.

3. Note that this item is applicable only if restrictions on the power level are in effect. Short-term (less than one month) limitations on power level need not be presented in this item, since one of the important purposes of the item is to determine if, and at what power level, a restricted power level line should be drawn on the chart of average daily reactor power.

Since this information is used to develop figures on capacity lost due to restrictions and because most users of the "Operating Plant Status Report" are primarily interested in energy actually fed to the distribution system, we request that this figure be expressed in MWe (net) in spite of the fact that that figure must be derived from MWth or percent power.

4. Reasons for Restriction (if any). If item 3 is used, explain in item 4. Brief narrative is acceptable. Cite references as appropriate. Indicate whether restrictions are self-imposed or are regulatory requirements. Be as specific as possible within space limitations. Plants in startup and power ascension test phase should be identified here.

5. Self Explanatory

6. Reactor Reserve Shutdown Hours. The duration in hours that the reactor was removed from service for administrative or other reasons but was available for operation.

7. Self Explanatory

8. Unit Reserve Shutdown Hours. The duration in hours that the unit was removed from service for economic or similar reasons, but was available for operation.

9-10. Self Explanatory

11. Negative numbers should be used, if applicable.

12-15. For units still in the startup and power ascension test phase, items 12-15 should *not* be computed. Instead, enter N/A in the current month column. These four factors should be computed starting at the time the unit is declared to be in commercial operation. The cumulative figures in the second and third columns should be based on commercial operation as a starting date. However, units already in commercial operation, for which cumulative figures have been based on different starting dates, need not recalculate the cumulative figures.

12. Reactor Availability Factor. Compute by dividing Hours Reactor was Critical (Item 5) by Hours in Report Period (from Item 1). Express as percent, to nearest tenth of a percent. During months when the unit is shut down for the entire period due to non-reactor problems, enter "Not Applicable." Do *not* include reserve shutdown hours in the calculation.

13. Unit Availability Factor. Compute by dividing Hours Generator On Line (Item 7) by Hours in Report Period (from Item 1). Express as percent, to nearest tenth of a percent. Do not include reserve shutdown hours in the calculation.

14. Unit Capacity Factor. Compute by dividing Net Electrical Energy Generated (Item 11) by the product of Maximum Dependable Capacity (MWe-net) (Item 2) times Hours in Report Period (from Item 1). Express as percent, to the nearest tenth of a percent.

15. Unit Forced Outage Rate. Compute by dividing Total Forced Outage Hours (from shutdown table, Appendix E) by the sum of Hours Generator On Line (Item 7) plus Total Forced Outage Hours (Appendix E). Express as percent, to nearest tenth of a percent.

16. Shutdowns Scheduled to Begin in Next 6 Months. Include type (refueling, maintenance, other), proposed date of start of shutdown and proposed length of shutdown. It is recognized that shutdowns may be scheduled between reports and that this item may not be all inclusive. Be as accurate as possible as of the date the report is prepared.

17. Self Explanatory.

18. Self Explanatory. Note, however, that this information is requested for all units in startup and power ascension test status, and is not required for units already in commercial operation.

APPENDIX E

UNIT SHUTDOWNS

DOCKET NO. _____

UNIT NAME _____

DATE _____

COMPLETED BY _____

REPORT MONTH _____

NO.	DATE	TYPE F-FORCED S-SCHEDULED	DURATION (HOURS)	REASON (1)	METHOD OF SHUTTING DOWN THE REACTOR (2)	CORRECTIVE ACTIONS/COMMENTS

(1) REASON
- A EQUIPMENT FAILURE (EXPLAIN)
- B MAINT. OR TEST
- C REFUELING
- D REGULATORY RESTRICTION
- E OPERATOR TRAINING AND LICENSE EXAMINATION
- F ADMINISTRATIVE
- G OPERATIONAL ERROR (EXPLAIN)
- H OTHER (EXPLAIN)

(2) METHOD
- 1 MANUAL
- 2 MANUAL SCRAM
- 3 AUTOMATIC SCRAM

SUMMARY:

INSTRUCTIONS FOR COMPLETING MONTHLY UNIT SHUTDOWN REPORTS (APPENDIX E)

UNIT SHUTDOWNS

This section should describe all plant shutdowns during the report period. In addition, it should be the source of explanation of significant dips in average power levels (Appendix C). Each significant reduction in power level (greater than 20% reduction in average daily power level for the preceding 24 hours) should be noted, even though the unit may not have been shut down completely.[1] For such reductions in power level, the shutdown duration should be zero, the method of shutting down the reactor should be N/A, and the Comments column should explain. The Comments column should be used to provide any needed explanation not adequately described by the coded columns. Please do not add to the list of codes or legends now furnished. Similarly, do not add additional columns.

NUMBER

This column should indicate the sequential number assigned to each shutdown or significant reduction in power for that calendar year. When a shutdown or significant power reduction begins in one report period and ends in another, an entry should be made for both report periods to be sure all shutdowns or significant power reductions are reported.

DATE

This column should indicate the date of the start of each shutdown or significant power reduction. Report as year, month, and day. August 14, 1975 would be reported as 750814. When a shutdown or significant power reduction begins in one report period and ends in another, an entry should be made for both report periods to be sure all shutdowns or significant power reductions are reported.

TYPE

Use "F" or "S" to indicate either "Forced" or "Scheduled," respectively, for each shutdown or significant power reduction. Forced shutdowns include those required to be initiated by no later than the weekend following discovery of an off-normal condition. It is recognized that some judgment is required in categorizing shutdowns in this way. In general, a forced shutdown is one that would not have been completed in the absence of the condition for which corrective action was taken.

DURATION (HOURS)

Self explanatory. When a shutdown extends beyond the end of a report period, count only the time to the end of the report period and pick up the ensuing down time in the following report periods. Report duration of outages or significant reductions in power rounded to the nearest tenth of an hour to facilitate summation.

REASON

Categorize by letter designation in accordance with the table appearing on the report form. If none of the specified categories can be used, supply brief comments.

METHOD OF SHUTTING DOWN THE REACTOR

Categorize by number designation in accordance with the table appearing on the report form. If none of the specified categories can be used, supply brief comments.

CORRECTIVE ACTIONS/COMMENTS

Use this column to amplify or explain as necessary. Where appropriate, the Comments column entries should provide identification of each shutdown or significant power reduction that occurs as a direct result of an abnormal occurrence on which a report has been or will be submitted. (This information may not be immediately evident for all such shutdowns, of course, since further investigation may be required to ascertain whether or not an abnormal occurrence was involved.) When a direct correlation can be made between a given shutdown and a specific abnormal occurrence report, the Comments column entry should state the abnormal occurrence report number and date.

SUMMARY INSTRUCTIONS

Write a brief summary (i.e., 3 to 4 sentences) description of the highlights of operation of the unit for the reporting month.

[1] Note that this differs from the Edison Electric Institute (EEI) definitions of "Forced Partial Outage" and "Scheduled Partial Outage." For these terms, EEI uses a change of 30 MW as the break point. For larger power reactors, 30 MW is too small a change to warrant explanation.