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OFFICE OF STANDARDS DEVELOPMENT

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 NRC, 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 radioactive discharges, radiological environmental monitoring, and nonradiological environmental surveillance and environmental impact is discussed in Regulatory Guide 4.8, "Environmental Technical Specifications for Nuclear Power Plants."

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 NRC licensees, including identification of the proper NRC addressee or addressees and designation of the number of copies required, is included in Regulatory Guide 10.1, "Compilation of Reporting Requirements for Persons Subject to NRC Regulations," and is not presented here.

B. DISCUSSION

In September 1974 the Atomic Energy Commission[2] Regulatory Staff published Revision 2 of Regulatory Guide 1.16. This revision reflected results of a staff review of operating information needed to permit assessment by the Commission of safety-related activities during the operating phase of plant life. Significant changes in Revision 2 were:

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

   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 to be submitted on a routine basis;

   e. changes in the format and immediacy of reporting required for certain types of abnormal occurrences (now called reportable occurrences); and

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

2. Appendices were added to 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 was eliminated. (See Introduction above.)

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

[2] The Atomic Energy Commission was abolished by the Energy Reorganization Act of 1974, which also created the Nuclear Regulatory Commission and gave it the licensing and related regulatory functions of the AEC.

Comments were invited within 60 days of publication of Revision 2 for use in conjunction with early revision of the guide. As a result of comments received on the guide and additional staff review, the staff developed Revision 3. Significant changes in Revision 3 were:

1. The startup report was revised to be more specific as to the test results to be reported.
2. The annual report section was revised to (1) further quantify the term "reduction in power," (2) provide further guidance on reporting of occupational radiation exposures, and (3) revise the information to be submitted on fuel performance.
3. The abnormal occurrence report section was revised to (1) provide for prompt notification by telephone and confirmation of such notification by telegraph, mailgram, or facsimile transmission of the types of abnormal occurrences listed under Section 2.a, (2) be more specific on the types of abnormal occurrences reported, (3) delete radiological effluent releases from Appendix A technical specification reporting requirements, (4) provide for reporting of the types of abnormal occurrences listed under Section 2.b within 30 days of occurrence of the event, and (5) make Section 2.c of Revision 2 of the guide a separate section (Section 4).

* In previous revisions of Regulatory Guide 1.16, the term "abnormal occurrence" was used to designate any unscheduled or unanticipated operational event reported to the Commission. Included in these reported events were (1) events that could or did have significance from the standpoint of public health or safety and (2) events reported to NRC for performance evaluation and trend determinations. In Section 208 of the Energy Reorganization Act of 1974 (Pub. L. 93-438), an "abnormal occurrence" is defined for the purposes of the reporting requirements of the Act as an unscheduled incident or event which the Commission determines is significant from the standpoint of public health or safety. In order to be consistent with this definition, the events designated in previous revisions of this guide as "abnormal occurrences" are designated "reportable occurrences" in Revision 4. Any "reportable occurrences" that are determined by the Commission to be significant from the standpoint of public health or safety will be further designated "abnormal occurrences."

C. REGULATORY POSITION

In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following program for reporting of operating information provides an acceptable basis to the NRC 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 NRC Regional Office unless otherwise noted.

*Lines indicate substantive changes from previous issue.

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 identified in the FSAR and should in general 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. Additional specific details may be included in license conditions based on the applicant's commitment to applicable regulatory guides and should be included in this report.

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.[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 NRC 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:

(1) A narrative summary of operating experience during the report period relating to safe operation of the facility, including safety-related maintenance not covered in item 1.b.(2)(e) below.

[3] 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.

(2) For each outage or forced reduction in power[4] of over 20 percent of design power level where the reduction extends for more than four hours:

(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 reportable 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 scheduled or 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 single release of radioactivity or single radiation exposure specifically associated with the outage which accounts for more than 10 percent of the allowable annual values.

(3) A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man-rem exposure according to work and job functions,[6] e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling. The dose assignments to various duty functions may be estimates based on pocket dosimeter, TLD, or film badge measurements. Small exposures totalling less than 20 percent of the individual total dose need not be accounted for. In the aggregate, at least 80 percent of the total whole body dose received from external sources should be assigned to specific major work functions. See Appendix A to this guide for a standard format for providing this information.

(4) Indications of failed fuel resulting from irradiated fuel examinations, including 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 B, C, and D to this guide should be completed in accordance with the instructions provided. The completed forms should be submitted by the tenth of the month following the calendar month covered by the report to the Director, Office of Management Information and Program Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the appropriate NRC Regional Office.

2. Reportable Occurrences

Guidance concerning reportable occurrences that should be reported in different time frames is provided below. Supplemental reports may be required to fully describe final resolution of the occurrence. In cases of corrected or supplemental reports, a licensee event report should be completed and reference should be made to the original report date.

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 and confirmed by telegraph, mailgram, or facsimile transmission to the Director of the appropriate NRC Regional Office, or his designee, no later than the first working day following the event, with a written followup report within two weeks. A copy of the confirmation and the written followup report should also be sent to the Director, Office of Management Information and Program Control, USNRC. The written followup report should include, as a minimum, a completed copy of the licensee event report form (see Appendix E to this guide) used for entering data into the NRC's computer-based file of information concerning licensee events. (Instructions for completing these licensee event report forms[7] are issued individually to each licensee.) Information provided on the licensee event report form 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 or other systems subject to limiting safety-system settings to initiate the required protective function by the time a monitored parameter reaches the setpoint specified as the limiting safety-system setting in the technical specifi-

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

[6]This tabulation supplements the requirements of §20.407 of 10 CFR Part 20.

[7]Instruction Manual, Licensee Event Report File, Office of Management Information and Program Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

cations or failure to complete the required protective function. The following are examples:[8]

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

(b) Inability to trip and insert 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 may be reportable under items 2.a(5),2.a(6), or 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 systems subject to limiting safety-system settings (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.

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

(d) System cooldown at a rate exceeding the technical specifications limit.

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 need not be reported under this item, but it may be reportable under item 2.b(2) below.

(3) Abnormal degradation discovered in fuel cladding, reactor coolant pressure boundary, or primary containment. 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) Welding or material defects greater than those allowable by applicable codes.

Note: Leakage of valve packing or gaskets within the limits for identified leakage set forth in technical specifications need not be reported under this item.

[8]Examples are intended to be illustrative only.

(4) Reactivity anomalies involving disagreement with the predicted value of reactivity balance under steady-state conditions during power operation greater than or equal to 1% $\Delta k/k$; a calculated reactivity balance indicating a shutdown margin less conservative than specified in the technical specifications; 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 0.5% $\Delta k/k$; or occurrence of any unplanned criticality.

(5) Failure or malfunction of one or more components which prevents or could prevent, by itself, the fulfillment of the functional requirements of system(s) used 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.

(c) HPCI failure to start or failure to continue running once initiated.

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

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

(b) Improper procedure 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(5) and 2.a(6) reduced redundancy that does not result in loss of system function need not be reported under this section but may be reportable under items 2.b(2) and 2.b(3) below.

(7) 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 disturbances requiring plant shutdown.

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

(8) Errors discovered 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.

(9) Performance of structures, systems, or components that requires remedial action or corrective measures to prevent operation in a manner less conservative than that assumed in the accident analyses in the safety analysis report or technical specifications 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) Axial flux ratios less conservative than those for which correlations with overpower ΔT were based on core burnup projections.

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

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

(d) 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.

(e) Failure of a safety/relief valve to close after pressure has reduced below the required reseat valve.

(f) Thermal shock to the reactor coolant system resulting from inadvertent safety injection actuation.

Note: This item is intended to provide for reporting of potentially generic problems.

b. Thirty-Day Written Reports.

The reportable occurrences discussed below should be the subject of written reports to the Director of the appropriate NRC Regional Office within 30 days of occurrence of the event. A copy of the written report should also be sent to the Director, Office of Management Information and Program Control. The written report should include, as a minimum, a completed copy of the licensee event report form (see Appendix E to this guide) used for entering data into the NRC's computer-based file of information concerning licensee events. (Instructions for completing these licensee event report forms[7] are issued individually to each licensee.) Information provided on the licensee event report form should be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

(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. 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 in a degraded mode permitted by a limiting condition for operation, or plant shutdown required by a limiting condition for operation. The following are examples:

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

(b) Safety injection pump 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.

Note: Routine surveillance testing, instrument calibration, or preventive maintenance which require system configurations as described in items 2.b(1) and 2.b(2) need not be reported except where test results themselves reveal a degraded mode as described above.

(3) 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. 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.

(4) Abnormal degradation of systems other than those specified in item 2.a(3) above designed to contain radioactive material resulting from the fission process. For example, a through-wall leak in a liquid waste storage tank.

Note: Sealed sources or calibration sources are not included under this item. Leakage of valve packing or gaskets within the limits for identified leakage set forth in technical specifications need not be reported under this item.

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.

4. Events of Potential Public Interest

The types of events listed below are frequently of high public interest. While some of the events may not be reportable by regulation or defined in other parts of this guide, the Director of the appropriate NRC Regional Office, or his designee, should be informed of such events by telephone as soon as possible after the event has been discovered.

a. An event that causes damage to property or equipment when such damage affects the power production capability of the facility.

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

c. Natural or man-made conditions that may require action which need not be reported under item 2.a(7) above.

d. Discovery of significant radiological event offsite occurring during transport of material for which the licensee was either shipper or consignee.

e. Unscheduled shutdowns expected to last for more than one week, regardless of cause.

f. Unusual releases of radioactive material from the site boundary not reportable under other requirements.

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

D. IMPLEMENTATION

The purpose of this section is to provide information to applicants and licensees regarding the NRC staff's plans for utilizing this regulatory guide.

Except in those cases in which the applicant proposes an acceptable alternative method, the reporting program described herein is being used by the NRC staff in order to standardize the reporting requirements section of Appendix A technical specifications of all operating licenses.

For licensees holding operating licenses without Appendix B environmental technical specifications, it may be necessary to include those reports identified in 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, "Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants," in the technical specifications under the unique reporting requirements section of the technical specifications.

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

Work & Job Function	Number of Personnel (> 100 mrem)			Total Man-Rem		
	Station Employees	Utility Employees	Contract Workers and Others	Station Employees	Utility Employees	Contract Workers and Others
Reactor Operations & Surveillance						
Maintenance Personnel						
Operating Personnel						
Health Physics Personnel						
Supervisory Personnel						
Engineering Personnel						
Routine Maintenance						
Maintenance Personnel						
Operating Personnel						
Health Physics Personnel						
Supervisory Personnel						
Engineering Personnel						
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 B
AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. _____

UNIT _____

DATE _____

COMPLETED BY _____

TELEPHONE _____

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			

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 when maximum dependable capacity is used 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 C

OPERATING DATA REPORT

DOCKET NO. _____

UNIT _____

DATE _____

COMPLETED BY _____

TELEPHONE _____

OPERATING STATUS

1. REPORTING PERIOD: _____ GROSS HOURS IN REPORTING PERIOD: _____
2. CURRENTLY AUTHORIZED POWER LEVEL (MWt): _____ MAX. DEPEND. CAPACITY (MWe-Net): _____
   DESIGN ELECTRICAL RATING (MWe-Net): _____
3. POWER LEVEL TO WHICH RESTRICTED (IF ANY) (MWe-Net): _____
4. REASONS FOR RESTRICTION (IF ANY):

	THIS MONTH	YR TO DATE	CUMULATIVE
5. NUMBER OF 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 SERVICE FACTOR			
13. REACTOR AVAILABILITY FACTOR			
14. UNIT SERVICE FACTOR			
15. UNIT AVAILABILITY FACTOR			
16. UNIT CAPACITY FACTOR (Using MDC)			
17. UNIT CAPACITY FACTOR (Using Design MWe)			
18. UNIT FORCED OUTAGE RATE			

19. SHUTDOWNS SCHEDULED OVER NEXT 6 MONTHS (TYPE, DATE, AND DURATION OF EACH):

20. IF SHUT DOWN AT END OF REPORT PERIOD, ESTIMATED DATE OF STARTUP: _____

21. UNITS IN TEST STATUS (PRIOR TO COMMERCIAL OPERATION):

	FORECAST	ACHIEVED
INITIAL CRITICALITY		
INITIAL ELECTRICITY		
COMMERCIAL OPERATION		

INSTRUCTIONS FOR COMPLETING OPERATING DATA REPORT

This report should be furnished each month by licensees. The name and telephone number of the preparer should be provided in the designated spaces. The instructions below are provided to assist licensees in reporting the data consistently. The number of the instruction corresponds to the item number of the report form.

1. **Reporting Period.** Designate the month for which the data are presented. The **Gross Hours** are normally from 0001 of the first day through 2400 of the last day of the calendar month, with appropriate adjustments for any month in which a change from standard to daylight-saving time (or vice versa) is made. The only two shorter reporting periods are (1) the one in which the initial electrical generation occurs and (2) the one in which the reactor is shut down for decommissioning. In the former, the gross hours, expressed to the nearest tenth of an hour, are those from the time of initial power generation to 2400 of the last day of the calendar month. In the latter case, the gross hours, expressed to the nearest tenth of an hour, are those from 0001 of the calendar month to the specific time of final shutdown.

2. The **Authorized Power Level** is the maximum thermal power, expressed in megawatts, currently authorized by the Nuclear Regulatory Commission.

The net **Maximum Dependable Capacity** is the gross electrical output as measured at the output terminals of the turbine-generator during the most restrictive seasonal conditions less the normal station service loads.

The net **Design Electrical Rating** is the nominal net electrical output of the unit specified by the utility and used for the purpose of plant design.

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, it is requested that this figure be expressed in MWe-Net in spite of the fact that the figure must be derived from MWt or percent power.

4. **Reasons for Restriction (if Any).** If item 3 is used, item 4 explains why. 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. Show the total number of hours the reactor was critical during the gross hours of the reporting period.

6. **Reactor Reserve Shutdown Hours.** The total number of hours during the gross hours of reporting period that the reactor was removed from service for administrative or other reasons but was available for operation.

7. **Hours Generator On Line.** Also called Service Hours. The total number of hours during the gross hours of the reporting period that the unit operated with breakers closed to the station bus. These hours, plus those listed in Appendix D for the generator outage hours, should equal the gross hours in the reporting period.

8. **Unit Reserve Shutdown Hours.** The total number of hours during the gross hours of the reporting period that the unit was removed from service for economic or similar reasons but was available for operation.

9. **Gross Thermal Energy Generated.** The thermal output of the nuclear steam supply system during the gross hours of the reporting period, expressed in megawatt hours.

10. **Gross Electrical Energy Generated.** The electrical output of the unit measured at the output terminals of the turbine-generator during the gross hours of the reporting period, expressed in megawatt hours.

11. **Net Electrical Energy Generated.** The gross electrical output of the unit measured at the output terminals of the turbine-generator minus the normal station service loads during the gross hours of the reporting period, expressed in megawatt hours. Negative quantities should not be used. If there is no net positive value for the period, enter zero.

12-18. For units still in the startup and power ascension test phase, items 12-18 should *not* be computed. Instead, enter N/A in the current month column. These seven 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 Service Factor.** Compute by dividing hours reactor was critical (item 5) by the gross hours in the reporting period (item 1). Express as percent to the nearest tenth of a percent. During months when the unit is shut down for the entire period because of nonreactor problems, enter "Not Applicable" and explain in the Summary of Appendix D. Do *not* include reserve shutdown hours in the calculation.

13. **Reactor Availability Factor.** Compute by dividing the reactor available hours (items 5 plus 6) by the gross hours in the reporting period (item 1). Express as percent to the nearest tenth of a percent.

14. **Unit Service Factor.** Compute by dividing hours the generator was on line (item 7) by the gross hours in the reporting period (item 1). Express as percent to the nearest tenth of a percent. Do *not* include reserve shutdown hours in the calculation.

15. **Unit Availability Factor.** Compute by dividing the unit available hours (item 7 plus item 8) by the gross hours in the reporting period (item 1). Express as percent to the nearest tenth of a percent.

16. **Unit Capacity Factor (Using MDC).** Compute by dividing net electrical energy generated (item 11) by the product of maximum dependable capacity (item 2) times the gross hours in the reporting period (item 1). Express as percent to the nearest tenth of a percent.

17. **Unit Capacity Factor (Using Design Electrical Rating).** Compute as in item 16, substituting design electrical rating for maximum dependable capacity.

18. **Unit Forced Outage Rate.** Compute by dividing the total forced outage hours (from the table in Appendix D) by the sum of hours generator on line (item 7) plus total forced outage hours (from the table in Appendix D). Express as percent to the nearest tenth of a percent.

19. **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.

20. Self-explanatory.

21. 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.

Test Status is defined as that period following initial criticality during which the unit is tested at successively higher outputs, culminating with operation at full power for a sustained period and completion of warranty runs. Following this phase, the unit is generally considered by the utility to be available for commercial operation.

Date of **Commercial Operation** is defined as the date that the unit was declared by the utility owner to be available for the regular production of electricity, usually related to the satisfactory completion of qualification tests as specified in the purchase contract and to the accounting policies and practices of the utility.

APPENDIX D

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. _____

UNIT NAME _____

DATE _____

COMPLETED BY _____

TELEPHONE _____

REPORT MONTH _____

NO.	DATE	TYPE F: FORCED S: SCHEDULED	DURATION (HOURS)	REASON (1)	METHOD OF SHUTTING DOWN THE REACTOR OR REDUCING POWER (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 4: OTHER (EXPLAIN)

SUMMARY:

UNIT SHUTDOWNS AND POWER REDUCTIONS

INSTRUCTIONS

This report 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 B). 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 duration should be listed as zero, the method of reduction should be listed as 4 (Other), 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. Until a unit has achieved its first power generation, no number should be assigned to each entry.

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. 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 rounded to the nearest tenth of an hour to facilitate summation. The sum of the total outage hours plus the hours the generator was on line (item 7 of Appendix C) should equal the gross hours in the reporting period (item 1 of Appendix C).

Reason. Categorize by letter designation in accordance with the table appearing on the report form. If category H must be used, supply brief comments.

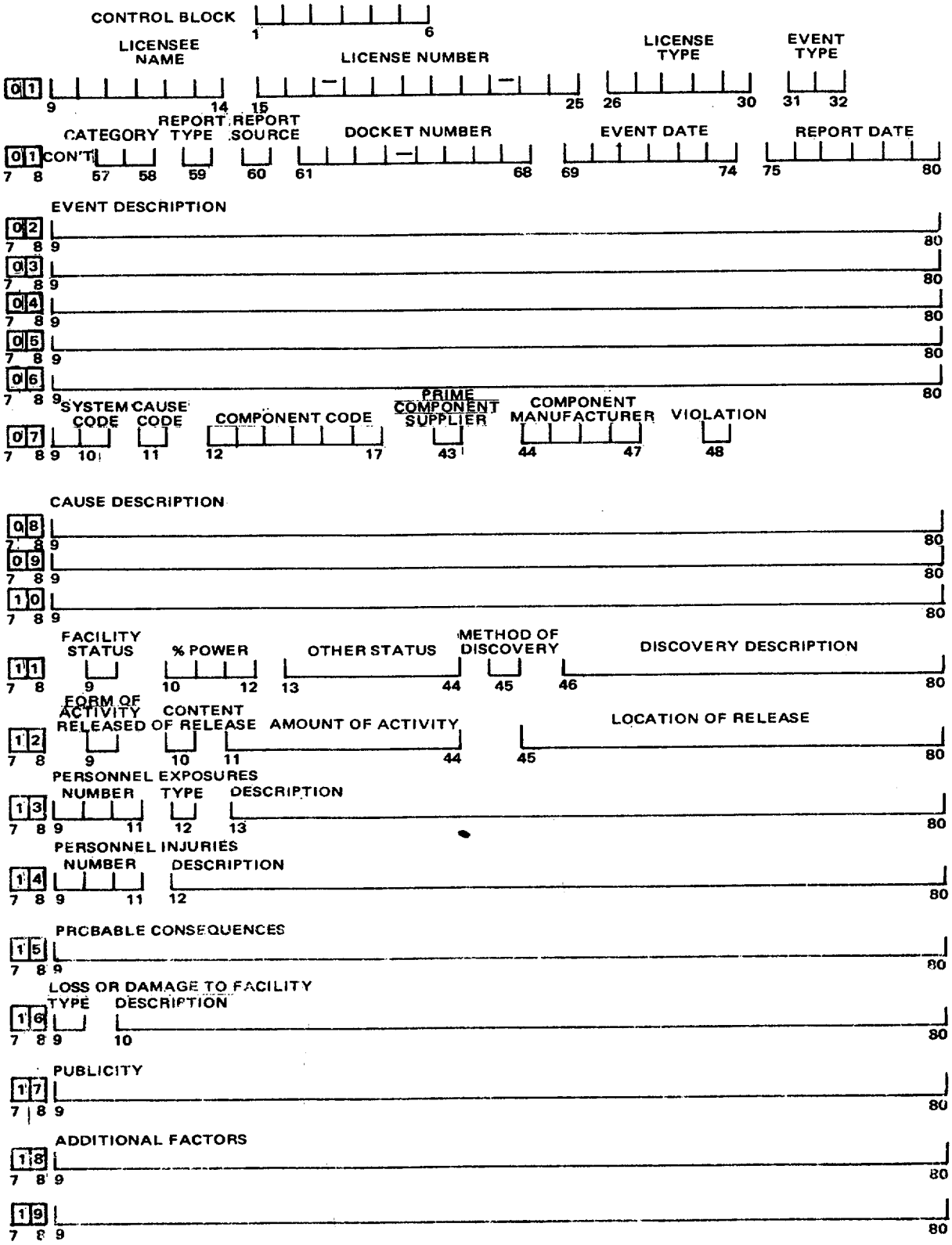
Method of Shutting Down the Reactor or Reducing Power. Categorize by number designation in accordance with the table appearing on the report form. If category 4 must be used, supply brief comments.

Corrective Actions/Comments. Use this column to amplify or explain the reasons for each shutdown or significant power reduction, with the corrective action taken, if appropriate. The Comments column entries should provide identification of each shutdown or significant power reduction that occurs as a direct result of a reportable 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 a reportable occurrence was involved.) When a direct correlation can be made between a given shutdown and a specific reportable occurrence report, the Comments column entry should state the reportable occurrence report number and date.

Summary. Write a brief summary description (3 to 4 sentences) of the highlights of operation of the unit for the reporting month. Include any comments required by item 12 of Appendix C.

[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.

APPENDIX E
LICENSEE EVENT REPORT



NAME: _____ PHONE: _____

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