

IMPLEMENTATION OF STANDARD REVIEW PLANS

by Frank Schroeder

Acting Deputy Director for Technical Review
Directorate of Licensing, USAEC

To be Given Before the AIF Workshop on Reactor Licensing and Safety
San Diego, California
December 11, 1974

One year ago, at the AIF workshop in Orlando, Florida, Jack O'Leary, who was then Director of Licensing for the AEC Regulatory staff, discussed the Regulatory staff's plans for the preparation of a set of Standard Review Plans which would describe in detail the manner in which the Regulatory staff conducts its safety review of license applications for nuclear power plants. At the time of his remarks, an intensive effort had been under way by the staff for about 6 months on these plans. None were complete, but many had reached the first draft stage. At that time, we expected to develop the plans into a second draft and begin releasing them in the summer of this year. It has taken longer than we had thought. We began releasing the plans in batches of 10 to 20 in late September. To date we have issued about half of the approximately 220 individual plans, and we expect the last of the plans to be released within the next month. The attachment to the printed text of my talk lists the titles of all the plans. These plans can be obtained upon request to the Director of Licensing, as long as the initial printing lasts. As soon as all the plans are finished, we plan to collect them in a multi-volume set, and make them available for purchase.

The preparation of these plans has involved a very significant expenditure of technical manpower by the Licensing staff. The initial drafts were prepared by senior professionals in each scientific and engineering discipline represented on our Technical Review staff. These initial drafts were reviewed by the first-line supervisors prior to circulation for comment by others in the Regulatory staff, and for review by Licensing management. From your own experience, you can undoubtedly appreciate the difficulties inherent in the process. The authors consist of about 30 scientists and engineers who have a common overall objective, but each works in different, though interrelated fields. Each of these individuals was in essence asked to specify what his job is all about, how he works with the others, and how the common objective is met. We also asked that they continue to do their job in the meantime. Management then had the job of reviewing these individual inputs and developing them into a clear, consistent, and useful set of Review Plans. In spite of the difficulty, I believe that the Standard Review Plans we have produced are meeting these objectives.

8002 100/01

I would like to acknowledge at the outset the essential contribution made by Dr. Joseph Hendrie in this process. The work was initiated under his direction when he was Deputy Director for Technical Review in the Directorate of Licensing. He gave the project high priority and made sure that the staff did so also. His own diligent and searching review of the staff's work inspired a high quality and thorough job, in spite of conflicting demands on everyone's time. Fortunately, his contribution did not come to an end with his departure from Bethesda last June, since he has continued to help us in the final stages of review on a consulting basis.

By now many of you will have seen at least some of the plans, and I expect you may already have formed some opinions of what they are and what they are worth to you. Since the purpose and utility of the plans will vary depending on one's point of view, I should emphasize that from our point of view the plans are intended primarily for internal use by the Regulatory staff, but we also recognize that there is an important benefit to be derived from the availability of these plans to those outside the staff. In my remarks this morning, I will describe the plans themselves, discuss their use inside and outside the staff, and wind up with a few words about their implementation and revision in the future.

First, let me remind you how the staff conducts its safety review of the information provided in Safety Analysis Reports. The safety review is conducted by personnel in fifteen specialist branches. These fifteen branches are composed of professionals having a wide variety of educational backgrounds and work experience in the nuclear field. Each of the branches has specific review responsibilities. One of the first tasks in preparing the Standard Review Plans was to enunciate clearly the review responsibilities of each of the reviewing branches and to define the often complex interfaces between these responsibilities. In the list of Standard Review Plans attached to the printed text of this paper, I have indicated which of our branches has primary responsibility for each of the major subsections of Safety Analysis Reports identified in our "Standard Format and Content" document, which most of you are familiar with. Individual Standard Review Plans are being prepared for each of the approximately 220 major subsections of the Standard Format. In addition to the areas of primary responsibility shown on that list, each of the branches has secondary responsibilities to assist the primary branches in the review of other sections of the SAR. These secondary responsibilities are spelled out in the individual Review Plans.

Just as the Standard Format document identifies the information we need to conduct our review, the individual Review Plans address in detail what is reviewed, the basis for the review, how the review is accomplished, and the nature of the conclusions that should be reached.

The first major section of each Review Plan, entitled "Areas of Review," describes the scope of review, i.e., what is being reviewed. A detailed description is provided of the systems, components, analyses, data and other information that is reviewed as part of the particular Safety Analysis Reports subsection in question.

The second section of each Review Plan, entitled "Acceptance Criteria," states the purpose and technical bases for the review. The "bases" consist of specific criteria such as AEC Regulatory Guides, General Design Criteria, ASME Code Requirements, Branch Technical Positions, or other criteria used in the review. This section is not merely a tabulation of the pertinent criteria. The application of these criteria to the review area in question is discussed.

The third section of each Review Plan, the "Review Procedures," discusses how the review is accomplished. This section describes the procedures in use for reviewing and approving the systems, components, data, etc., that are described in the first section of the Review Plan, using the criteria delineated in the second section. This section is generally a step-by-step procedure that the reviewer goes through to provide reasonable verification that the applicable safety criteria have been met. The procedures vary considerably for the individual plans. For example, in some cases the procedure may involve a check by the reviewer to ascertain that the applicant has specified the use of appropriate codes and criteria. In other cases, the procedure may involve a detailed review of the applicant's design methods, and in some instances may call for independent calculations by the staff.

The fourth Review Plan section, entitled "Evaluation Findings," presents the type of conclusions that are sought regarding the acceptability of the particular review area. The final section lists the references utilized in the review process.

Some Review Plans have Branch Technical Positions and Appendices attached. These documents typically set forth the solutions and approaches determined to be acceptable in the past by the Licensing staff in dealing with a specific safety problem or safety-related design area. These solutions and approaches are codified in this form so that staff reviewers can take uniform and agreed upon positions in all cases. Some Branch Technical Positions and Appendices may be

converted into Regulatory Guides if it appears that this step would aid the review process. Like Regulatory Guides, the Branch Technical Positions and Appendices represent solutions and approaches that are acceptable to the Licensing staff, but they are not required as the only possible solutions. However, applicants should recognize that substantial time and effort on the part of the staff has gone into the development of these Branch Technical Positions and Appendices and realize that our evaluations of proposed approaches different from those described may require longer review times and more extensive questioning by the staff.

The Standard Review Plans are written to cover a variety of site conditions and plant designs. For any given application, the staff reviewers will select and emphasize particular aspects of each plan as is appropriate for that application. In some cases, the major portion of the review of a plant feature is done on a generic basis with the designer of that feature, rather than in the context of reviews of particular applications from utilities. In other cases a plant feature may be sufficiently similar to that of a previous plant so that a de novo review of the feature is not needed. For these and other similar reasons, the Licensing staff does not expect to carry out in detail all of the review steps listed in each plan in the review of every application.

I'm sure that most of you recognize some of the problems that have accompanied the rapid growth of the Regulatory staff in the past few years. When the staff was reorganized in the spring of 1972, we had approximately 70 professionals engaged in the conduct of safety reviews (exclusive of supervisory and clerical personnel). At present (2½ years later) we have about 220 professionals doing safety reviews. This means that we have a large number of reviewers who, while highly qualified technically, do not have a long background of experience with the evolution of Regulatory procedures and policies. These new professional reviewers need guidance and orientation in the procedures and standards used in our safety evaluations. There has also been a substantial influx of new licensing project managers who have similar needs. The Standard Review Plans offer a valuable training tool that will reduce the required assimilation time for new reviewers, and new project managers, by providing a detailed description of how the review is accomplished, who is responsible, and how the review groups interface with each other.

The primary benefit of the Standard Review Plans from the point of view of the Regulatory staff members (new or old) is that they provide each reviewer with a management-approved statement of 1) the areas he is responsible for, 2) the depth of review expected, 3) the other groups

he must interface with, and 4) the bases for acceptability. It is our intent that by use of the Review Plans we can promote stabilization of the review process, while at the same time assuring completeness and increased consistency.

Once the first edition of the Standard Review Plans is completed and in place, Regulatory management will have available a yardstick by which to measure current practice. In preparing these plans, we instructed the individual authors (who are our senior reviewers in each branch) to write down what we are doing today and not consciously to break new ground in the plans. I am aware that many of you in reading these plans may identify what appear to you to be "ratchets." Let me assure you that in our management review of these plans we have attempted to make them a "snapshot" of currently approved practices in the staff's review. It was not our intent to expand either the scope or the rigor of our requirements in the course of preparing the plans. I am sure you will recognize, however, that the mere act of writing down with some precision and clarity exactly what we are doing inevitably reveals details and nuances previously unperceived by many of you.

Many of you are aware of the formation some months ago of the Regulatory Requirements Review Committee, composed of senior members of the Regulatory management. The principal function of this review committee is to provide systematic management review of any proposed changes in our licensing requirements, whether "ratchets" or "deratchets." The Standard Review Plans will be used by the committee as a point of reference for such reviews, since they enunciate what we are doing today. As changes are proposed, reviewed, and approved by the Regulatory Requirements Review Committee, we will revise individual sections of the Standard Review Plans to reflect the new base. Although we hope that the number of such changes will be small, the intent is not to prevent change, but rather to control changes in a disciplined way.

The preparation of the first edition of the Standard Review Plans has already revealed the need for substantial revisions to the Standard Format document to provide greater clarity and specificity on the information needed by the Regulatory staff in conducting our licensing reviews. These revisions are being issued individually as Regulatory Guides (in the 1.70 series), and when the Review Plans are all completed, Revision 2 to the Standard Format document will be published. The Review Plans are keyed to Revision 2 of the Standard Format, and are numbered according to the section numbers in Revision 2. We recognize that for some time after the Review Plans and the Revised Standard

Format are published, applications being reviewed by the Licensing staff will have been prepared in accordance with Revision 1 of the Standard Format. Staff reviewers will adapt their use of the Review Plans for applications based on Revision 1. Staff reviewers will also make appropriate allowance for the differences in information requirements between Revision 1 and Revision 2 when determining the acceptability of applications for docketing.

Like the Standard Format, the Review Plans are directed toward water-cooled reactor power plants. Staff reviewers will adapt the plans for use in the reviews of other reactor types where applicable.

Since the Review Plans specify the criteria and standards used in the review of each major section of the Safety Analysis Report, another important byproduct of their preparation is the identification of those areas where criteria and guidance to the industry is either lacking or in need of supplementation. This feedback is being provided to the Directorate of Regulatory Standards for use in the preparation of new or revised Regulatory Guides.

Now let me say a few words about the use of our Review Plans by the industry. Let me first caution those of you who have not read any of the plans that they are not light reading. In spite of the substantial amount of time we have spent in the final editing, they are not models of literary art. They do not attempt to explain technical matters to a nontechnical audience. Each plan is written for the knowledgeable professional reviewer in the discipline needed for each area of review. Thus, I would expect there will be few, if any, individuals in industry who will wish to read the whole multi-volume set of plans. What then are the benefits of their release outside the staff? First, we want to show you and the interested public that our process is open and above board, and give any interested party an opportunity to understand our internal procedures. Secondly, while the Standard Format document specifies the information needed in your Safety Analysis Reports, we believe that the individual specialists preparing Safety Analysis Reports could benefit from a better understanding of how we conduct our review in each area. We have found over the years that many of the objections of applicants to staff questions in given areas can be resolved easily, once the applicant understands why the staff needs the information, and how it will be used in our review.

The title I was given for my talk is "Implementation of Standard Review Plans." I'm not quite sure what the organizers of this workshop really had in mind by that title. I have described to you this morning what these plans are and how we have gone about preparing them. To the extent

that we have accomplished our objectives in writing these plans, we have set down on paper, and in a form for everybody to see, what we have been doing for some time, or at least what we have intended to do. Thus, in a very real sense, these plans have already been implemented in the review of license applications for the past year or two. Several months ago we asked our reviewers to begin using the draft versions of the plans on a trial basis to test their completeness and utility.

Obviously some licensing requirements have changed in the last several months, and we have attempted to make the plans as up-to-date as possible in reflecting current regulatory positions and current Regulatory Guides, Industry Codes, and Standards. There is no question that the standards for, and the quality of, our reviews have improved substantially in the last 2 to 3 years. Thus, some of you who had experience with the review process some years ago and who are now entering into it again may perceive a substantial upgrading in the quality and quantity of information that we require of you and in our review. By making use of the Standard Review Plans and the Revised Standard Format document, you should be able to reduce the number of surprises during the review process.

Once our Review Plans are on the street, and experts in the various technical disciplines have had an opportunity to become familiar with the individual plans, we expect that there will be questions, comments, and probably objections to things in the plans. As problems or questions arise on individual plans, or groups of plans, we expect to arrange meetings with interested parties, including industry groups, to discuss them and determine whether changes in the plans are warranted. It is obvious to us that a general meeting or series of meetings that attempted to cover all 220 Review Plans with one audience would be unworkable and interminable. Thus, we hope that industry representatives, perhaps working through the AIF, and other interested parties, will identify selected plans for discussion with staff representatives in given disciplines, so that a series of such meetings of limited scope can be scheduled, as appropriate.

The preparation of the Review Plans has required, and is still requiring, the expenditure of a substantial amount of manpower on the part of the Regulatory staff. This expenditure comes at a time when the staff is heavily impacted with licensing reviews, standard plant reviews, generic safety problems, and standards development activities. The fact that we have been willing to expend this sizable block of manpower serves notice as to the importance we place on the Review Plans. We are convinced that the completion of this task is an important near-term mechanism for maintaining, and improving, the quality and uniformity of our reviews, while

at the same time attempting to expedite the review process. I believe that use of the Review Plans by the staff and by Regulatory management as a tool to assure uniformity, consistency, and quality of our safety reviews will have a stabilizing effect on the licensing process that will help in meeting the nation's energy needs, while at the same time providing for the protection of the public health and safety.

Attachment:

List of Standard Review Plans

LIST OF STANDARD REVIEW PLANS

		Responsible Branch *
INTRODUCTION.....		
<u>CHAPTER 2.0 SITE CHARACTERISTICS</u>		
2.1.1	Site Location and Description.....	AAB
2.1.2	Exclusion Area Authority and Control.....	"
2.1.3	Population Distribution.....	"
2.2.1-2.2.2.	Locations and Routes, Descriptions.....	"
2.2.3	Evaluation of Potential Accidents.....	"
2.3.1	Regional Climatology.....	SAB
2.3.2	Local Meteorology.....	SAB
2.3.3	Onsite Meteorological Measurements Programs.....	"
2.3.4	Short Term (Accident) Diffusion Estimates.....	"
2.3.5	Long Term (Routine) Diffusion Estimates.....	"
2.4.1	Hydrologic Description.....	"
2.4.2	Floods.....	"
2.4.3	Probable Maximum Flood (PMF) on Streams and Rivers.....	"
2.4.4	Potential Dam Failures (Seismically Induced).....	"
2.4.5	Probable Maximum Surge and Seiche Flooding.....	"
2.4.6	Probable Maximum Tsunami Flooding.....	"
2.4.7	Ice Flooding.....	"
2.4.8	Cooling Water Canals and Reservoirs.....	"
2.4.9	Channel Diversions.....	"
2.4.10	Flood Protection Requirements.....	"
2.4.11	Low Water Considerations.....	"
2.4.12	Dispersion, Dilution, and Travel Times of Accidental Releases of Liquid Effluents.....	"
2.4.13	Groundwater.....	"
2.4.14	Technical Specifications and Emergency Operation Requirements.....	"
2.5.1	Basic Geologic and Seismic Information.....	"
2.5.2	Vibratory Ground Motion.....	"
2.5.3	Surface Faulting.....	"
2.5.4	Stability of Subsurface Materials.....	"
2.5.5	Slope Stability.....	"

* See attached key.

LIST OF STANDARD REVIEW PLANS - Continued

<u>CHAPTER 3.0 DESIGN OF STRUCTURES, COMPONENTS, EQUIPMENT, AND SYSTEMS</u>		<u>Responsible Branch</u>
3.2.1	Seismic Classification.....	RSB
3.2.2	System Quality Group Classification.....	"
3.3.1	Wind Loadings.....	SEB
3.3.2	Tornado Loadings.....	"
3.4.1	Flood Protection.....	APCS
3.4.2	Analysis Procedures	SEB
3.5.1.1	Internally Generated Missiles (Outside Containment).....	APCS
3.5.1.2	Internally Generated Missiles (Inside Containment).....	RSB
3.5.1.3	Turbine Missiles.....	AAB
3.5.1.4	Missiles Generated by Natural Phenomena.....	AAB
3.5.1.5	Site Proximity Missiles (Except Aircraft).....	"
3.5.1.6	Aircraft Hazards.....	"
3.5.2	Structures, Systems, and Components to be Protected from Externally Generated Missiles.....	APCS
3.5.3	Barrier Design Procedures.....	SEB
3.6.1	Plant Design for Protection Against Postulated Piping Failures in Fluid Systems Outside Containment.....	APCS
3.6.2	Determination of Break Locations and Dynamic Effects Associated with the Postulated Rupture of Piping.....	MEB
3.7.1	Seismic Input.....	SEB
3.7.2	Seismic System Analysis.....	"
3.7.3	Seismic Subsystem Analysis.....	"
3.7.4	Seismic Instrumentation Program	"
3.8.1	Concrete Containment.....	"
3.8.2	Steel Containment.....	"
3.8.3	Concrete and Structural Steel Internal Structures of Steel or Concrete Containments.....	"
3.8.4	Other Category I Structures.....	"
3.8.5	Foundations.....	"
3.9.1	Special Topics for Mechanical Components.....	MEB
3.9.2	Dynamic Testing and Analysis of Systems, Components, and Equipment	"
3.9.3	ASME Code Class 1, 2, and 3 Components, Component Supports, and Core Support Structures.....	"
3.9.4	Control Rod Drive Systems.....	"

<u>LIST OF STANDARD REVIEW PLANS - Continued</u>		<u>Responsible Branch</u>
3.9.5	Reactor Pressure Vessel Internals.....	MEB
3.9.6	Inservice Testing of Pumps and Valves.....	MEB
3.10	Seismic Qualification of Category I Instrumentation and Electrical Equipment.....	MEB
3.11	Environmental Design of Mechanical and Electrical Equipment.....	EICS
3.11.5	Chemical and Radiological Environmental Estimates.....	AAB
<u>CHAPTER 4.0 REACTOR</u>		
4.2	Fuel System Design.....	CPB
4.3	Nuclear Design.....	"
4.4	Thermal and Hydraulic Design.....	RSB
4.5	Reactivity Control Systems Functional Design	RSB
4.5.1	Control Rod System Structural Materials	MTEB
4.5.2	Reactor Internals Materials.....	MTEB
<u>CHAPTER 5.0 REACTOR COOLANT SYSTEM AND CONNECTED SYSTEMS</u>		
5.2.1.3	Compliance with 10 CFR § 50.55a.....	RSB
5.2.1.4	Applicable Code Cases.....	"
5.2.2	Overpressure Protection.....	"
5.2.3	Reactor Coolant Pressure Boundary Materials.....	MTEB
5.2.4	RCPB Inservice Inspection & Testing.....	"
5.2.5	RCPB Leakage Detection.....	RSB
5.3.1	Reactor Vessel Materials.....	MTEB
5.3.2	Pressure-Temperature Limits.....	"
5.3.3	Reactor Vessel Integrity.....	"
	Preface to Section 5.4	
5.4.1.1	Pump Flywheel Integrity (PWR).....	MTEB
5.4.2.1	Steam Generator Materials.....	"
5.4.2.2	Steam Generator Inservice Inspection.....	"
5.4.6	Reactor Core Isolation Cooling System (BWR).....	RSB
5.4.7	Residual Heat Removal (RHR) System.....	RSB
5.4.8	Reactor Water Cleanup System (BWR).....	ETSB
5.4.11	Pressurizer Relief Tank.....	APCS

LIST OF STANDARD REVIEW PLANS - Continued

		<u>Responsible Branch</u>
<u>CHAPTER 6.0 ENGINEERED SAFETY FEATURES</u>		
6.1.1	Engineered Safety Features Metallic Materials	MTEB
6.1.2	Organic Materials.....	AAB
6.1.3	Post-Accident Chemistry.....	"
6.2.1	Containment Functional Design.....	CSB
6.2.2	Containment Heat Removal Systems.....	"
6.2.3	Secondary Containment Functional Design.....	"
6.2.4	Containment Isolation Systems.....	"
6.2.5	Combustible Gas Control in Containment.....	"
6.2.6	Containment Leakage Testing.....	CSB
6.3	Emergency Core Cooling System.....	CSB
6.4	Habitability Systems.....	AAB
6.5.1	ESF Filter Systems.....	ETSB
6.5.2	Containment Spray as a Fission Product Cleanup System....	AAB
6.5.3	Fission Product Control Systems.....	AAB
6.5.4	Ice Condenser as a Fission Product Cleanup System.....	"
6.6	Inservice Inspection of Class 2 and 3 Components.....	MTEB

CHAPTER 7.0 INSTRUMENTATION AND CONTROLS

7.1	Introduction.....	EICS
7.2	Reactor Trip System.....	"
7.3	Engineered Safety Feature Systems.....	"
7.4	Systems Required for Safe Shutdown.....	"
7.5	Safety-Related Display Instrumentation.....	"
7.6	All Other Instrumentation Systems Required for Safety....	"
7.7	Control Systems Not Required for Safety.....	"
Appendix 7-A	Branch Technical Positions (EICSB).....	"
Appendix 7-B	General Agenda, Station Site Visits.....	"
Table 7-1	Acceptance Criteria for Controls.....	"

CHAPTER 8.0 ELECTRIC POWER

8.1	Introduction.....	"
8.2	Offsite Power System.....	"
8.3.1	A-C Power Systems (Onsite).....	"

LIST OF STANDARD REVIEW PLANS - Continued

		Responsible Branch
8.3.2	D-C Power Systems (Onsite).....	EICS
Table 8-1	Acceptance Criteria for Electric Power.....	"
<u>CHAPTER 9.0 AUXILIARY SYSTEMS</u>		
9.1.1	New Fuel Storage.....	APCS
9.1.2	Spent Fuel Storage.....	"
9.1.3	Spent Fuel Pool Cooling and Cleanup System.....	"
9.1.4	Fuel Handling System.....	"
9.2.1	Station Service Water System (SSWS).....	"
9.2.2	Cooling Water System.....	"
9.2.3	Demineralized Water Make-up System (DWMS).....	"
9.2.4	Potable and Sanitary Water Systems.....	ETSB
9.2.5	Ultimate Heat Sink.....	APCS
9.2.6	Condensate Storage Facilities.....	"
9.3.1	Compressed Air System (CAS).....	"
9.3.2	Process Sampling System (PSC).....	ETSB
9.3.3	Equipment and Floor Drainage System (EFDS).....	APCS
9.3.4	Chemical and Volume Control System (PWR) (Including Boron Recovery System).....	"
9.3.5	Standby Liquid Control System (SLCS).....	"
9.4.1	Control Room Area Ventilation System (CRAVS).....	"
9.4.2	Spent Fuel Pool Area Ventilation System (SFPAVS).....	"
9.4.3	Auxiliary and Radwaste Area Ventilation System (ARAVS)...	"
9.4.4	Turbine Area Ventilation System (TAVS).....	"
9.4.5	Engineered Safety Feature Ventilation System (ESFVS).....	"
9.5.1	Fire Protection System.....	"
9.5.2	Communications System (CS).....	"
9.5.3	Lighting Systems (LS).....	"
9.5.4	Diesel Engine Fuel Oil Storage and Transfer System.....	"
9.5.5	Diesel Generator Cooling Water System.....	"
9.5.6	Diesel Generator Starting System.....	"
9.5.7	Diesel Engine Lubrication System.....	"
9.5.8	Diesel Generator Combustion Air Intake and Exhaust System	"
9.5.9	Main Steamline Isolation Valve Sealing System (BWR).....	"

LIST OF STANDARD REVIEW PLANS - Continued

		<u>Responsible Branch</u>
<u>CHAPTER 10.0 STEAM AND POWER CONVERSION SYSTEM</u>		
10.2	Turbine Generator.....	APCS
10.2.3	Turbine Disc Integrity.....	MTEB
10.3	Main Steam Supply System (MSSS).....	APCS
10.3.6	Steam and Feedwater System Materials.....	MTEB
10.4.1	Main Condensers (MC).....	APCS
10.4.2	Main Condenser Evacuation System (MCES).....	ETSB
10.4.3	Turbine Gland Sealing System (TGSS).....	"
10.4.4	Turbine Bypass System (TBS).....	APCS
10.4.5	Circulating Water System (CWS).....	"
10.4.6	Condensate Cleanup System (CCS).....	"
10.4.7	Condensate and Feedwater System (CBFS).....	"
10.4.8	Steam Generator Blowdown System (SGBS).....	"
10.4.9	Auxiliary Feedwater System (AFS).....	"
 <u>CHAPTER 11.0 RADIOACTIVE WASTE MANAGEMENT</u>		
11.1	Source Terms.....	ETSB
11.2	Liquid Waste Systems.....	"
11.3	Gaseous Waste Systems.....	"
11.4	Solid Waste Systems.....	"
11.5	Process and Effluent Radiological Monitoring and Sampling Systems.....	"
 <u>CHAPTER 12.0 RADIATION PROTECTION</u>		
12.1	Assuring That Occupational Radiation Exposures are As Low As Practicable (ALAP).....	RAB
12.2	Radiation Sources.....	"
12.3	Radiation Protective Design Features.....	"
12.4	Dose Assessment.....	"
12.5	Health Physics Program.....	"
 <u>CHAPTER 13.0 CONDUCT OF OPERATIONS</u>		
13.1.1	Management and Technical Support Organization.....	QA
13.1.2	Operating Organization.....	"
13.1.3	Qualifications of Nuclear Plant Personnel.....	"
13.2	Training	"

LIST OF STANDARD REVIEW PLANS - Continued Responsible Branch

13.3	Emergency Planning.....	ISEP
13.4	Review and Audit.....	QA
13.5	Plant Procedures.....	OLB
13.6	Industrial Security.....	ISEP
 <u>CHAPTER 14.0 PLANT TEST PROGRAMS</u> 		
4.1.1	Initial Plant Test Programs - FSAR.....	QAB
4.1.2	Initial Plant Test Programs - FSAR.....	"
 <u>CHAPTER 15.0 ACCIDENT ANALYSES</u> 		
15.0	Introduction.....	RSB
<u>15.1 INCREASE IN HEAT REMOVAL BY THE SECONDARY SYSTEM</u>		
15.1.1-15.1.4	Decrease in Feedwater Temperature, Increase in Feedwater Flow, Increase in Steam Flow, and Inadvertent Opening of a Steam Generator Relief or Safety Valve.....	"
15.1.5	Spectrum of Steam System Piping Failures Inside and Outside of Containment (PHR).....	"
<u>15.2 DECREASE IN HEAT REMOVAL BY THE SECONDARY SYSTEM</u>		
15.2.1-15.2.5	Steam Pressure Regulator Failure (Closed), Loss of External Load or Turbine Trip, Closure of Main Steam Isolation Valve (BWR), and Loss of Condenser Vacuum.....	RSB
15.2.6	Loss of Non-Emergency A-C Power to the Station Auxiliaries.....	"
15.2.7	Loss of Normal Feedwater Flow.....	"
15.2.8	Feedwater System Pipe Breaks Inside and Outside Containment (PHR).....	"
<u>15.3 DECREASE IN REACTOR COOLANT FLOW RATE</u>		
15.3.1-15.3.2	Loss of Forced Reactor Coolant Flow Including Trip of Pump and Flow Controller Malfunctions.....	"
15.3.3-15.3.4	Reactor Coolant Pump Shaft Seizure and Reactor Coolant Pump Shaft Break.....	"
<u>15.4 REACTIVITY AND POWER DISTRIBUTION ANOMALIES</u>		
15.4.1	Uncontrolled Control Rod Assembly Withdrawal From a Subcritical or Low Power Startup Condition.....	CPB
15.4.2	Uncontrolled Control Rod Assembly Withdrawal at Power....	"
15.4.3	Control Rod Misoperation (System Malfunction or Operator Error).....	"

LIST OF STANDARD REVIEW PLANS - Continued

Responsible
Branch

15.4.4-15.4.5	Startup of an Inactive Loop or Recirculation Loop at an Incorrect Temperature, and Flow Controller Malfunction Causing an Increase in BWR Reactor Coolant Flow Rate.....	RSB
15.4.6	Chemical and Volume Control System Malfunction That Results in a Decrease in the Boron Concentration in the Reactor Coolant (PWR).....	"
15.4.7	Inadvertent Loading and Operation of a Fuel Assembly in an Improper Position.....	CPB
15.4.8	Spectrum of Rod Ejection Accidents (PWR).....	"
15.4.9	Spectrum of Rod Drop Accidents (BWR).....	"

15.5 INCREASE IN REACTOR COOLANT INVENTORY

15.5.1-15.5.2	Inadvertent Operation of ECCS and Chemical and Volume Control System Malfunction That Increases Reactor Coolant Inventory.....	RSB
---------------	--	-----

15.6 DECREASE IN REACTOR COOLANT INVENTORY

15.6.1	Inadvertent Opening of a PWR Pressurizer Safety/Relief Valve or a BWR Safety/Relief Valve.....	"
15.6.2	Break in Instrument Line or Other Lines from Reactor Coolant Pressure Boundary That Penetrate Containment.....	AAB
15.6.3	Steam Generator Tube Failure Accident (PWR).....	"
15.6.4	Main Steam Line Break Accident (BWR).....	"
15.6.5	Loss of Coolant Accidents Resulting From Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary.....	RSB

15.7 RADIOACTIVE RELEASE FROM A SUBSYSTEM OR COMPONENT

15.7.1	Waste Gas System Failure.....	AAB
15.7.2	Radioactive Liquid Waste System Leak or Failure.....	"
15.7.3	Postulated Radioactive Releases due to Liquid Tank Failures.....	ETSB

LIST OF STANDARD REVIEW PLANS - Continued

Responsible
Branch

15.7.4	Fuel Handling Accidents.....	AAB
15.7.5	Spent Fuel Cask Drop Accidents.....	"
<u>15.8 ANTICIPATED TRANSIENTS WITHOUT SCRAM</u>		
15.8	Anticipated Transients Without Scram.....	RSB
<u>CHAPTER 16.0 TECHNICAL SPECIFICATIONS</u>		
16.0	Technical Specifications.....	QA
<u>CHAPTER 17.0 QUALITY ASSURANCE</u>		
17.1	Quality Assurance During Design and Construction.....	QA
17.2	Quality Assurance During the Operations Phase.....	QA

KEY TO LICENSING BRANCH

- AA - Accident Analysis Branch
- CPB - Core Performance Branch
- CSB - Containment Systems Branch
- MEB - Mechanical Engineering Branch
- MTEB - Materials Engineering Branch
- RAB - Radiological Assessment Branch
- RSB - Reactor Systems Branch
- SAB - Site Analysis Branch
- SEB - Structural Engineering Branch
- QAB - Quality Assurance Branch
- OSB - Operational Safety Branch
- ETSB - Effluent Treatment Systems Branch
- APCS - Auxiliary & Power Conversion Systems Branch
- EICS - Electrical, Instrumentation & Control Systems Branch
- ISEP - Industrial Security and Emergency Planning Branch
- OLB - Operator Licensing Branch

Barnes (11)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

No. 75-289
Contact: Carl Gustin
Tel. 301/492-7771

FOR IMMEDIATE RELEASE
(Mailed - December 22, 1975)

NRC PUBLISHES STANDARD REVIEW PLAN

The Nuclear Regulatory Commission's Office of Nuclear Reactor Regulation has published a Standard Review Plan for the NRC staff's safety review of applications to build and operate light water-cooled nuclear power reactors.

The purpose of the plan is to improve the quality, uniformity and predictability of the NRC staff's review of applications to build new nuclear power facilities as well as the quality and uniformity of information supplied by applicants as the basis for the staff's review. The plan is a major step in advancing the Nuclear Regulatory Commission's goal of enhanced consistency and predictability in the licensing process.

By providing more specific guidance to applicants on the kinds of safety-related information needed to review applications to build and operate light water-cooled nuclear power plants and specific information as to the basis for the staff's review, it is intended that there will be a stabilizing effect on the licensing process that will benefit both the public and the nuclear industry.

The Standard Review Plan describes in detail the various safety-related technical areas reviewed by the NRC staff, the basis for the review, the procedures for accomplishing the review, and the conclusions which are sought in each area. The format of the Standard Review Plan is consistent with Revision 2 of the NRC's Regulatory Guide 1.70 "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants - Light Water Reactor Edition."

The 1,414-page Standard Review Plan comprises 224 subsections that have been made available to the public during the past year in separate groups as they were completed. The complete plan incorporates some changes to improve clarity and incorporate comments received.

28

Copies of the Standard Review Plan, which has been identified as NUREG-75/087, are available from the National Technical Information Service, Springfield, Virginia 22161. The domestic price is \$60 and the foreign price \$75 including first-year supplements. The domestic price for individual sections is \$3.50 and the foreign price is \$5.00.

#



POSTAGE AND FEES PAID
U. S. NUCLEAR REGULATORY
COMMISSION

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20545

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300