POLICY ISSUE
(Information)

August 24, 1992 SECY-92-294

For: The Commissioners

From: James M. Taylor
Executive Director for Operations

Subject: ACCEPTANCE REVIEW OF THE WESTINGHOUSE ELECTRIC CORPORATION'S APPLICATION FOR FINAL DESIGN APPROVAL AND DESIGN CERTIFICATION FOR THE AP600 DESIGN

Purpose: To inform the Commission of the results of the staff's acceptance review of the Westinghouse Electric Corporation's (Westinghouse's) application for final design approval (FDA) and design certification (DC) for the AP600 design, and provide the staff's estimate of the date for completing the final design approval review.

Background: In its letter dated June 26, 1992, Westinghouse submitted its application for an FDA under Appendix O to 10 CFR Part 52 and a standard design certification under 10 CFR Part 52 for the AP600 standard plant design. The application included the standard safety analysis report (SSAR) for the design; pilot inspections, tests, analyses, and acceptance criteria (ITAAC) for three systems of the design; and the probabilistic risk assessment (PRA) for the design.

The AP600 design is a 600 MWe pressurized water reactor plant design in which passive safety systems are used for the ultimate safety protection of the plant. All of the safety systems are designed to be passive, where natural forces, such as gravity, natural circulation, and stored energy (in the form of pressurized accumulators and batteries), are used as

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NOTE: TO BE MADE PUBLICLY AVAILABLE IN 3 WORKING DAYS FROM THE DATE OF THIS PAPER

the motive forces of these systems. The AP600 has a number of unique features that distinguish it from both the current generation of light-water reactors (LWRs) and the evolutionary advanced light-water reactors (ALWRs). The AP600 application includes the entire power generation complex, except those elements and features considered site-specific, and is not a modular design in which major components are shared.

In accordance with 10 CFR 2.101 and the staff requirements memorandum (SRM) dated April 28, 1992, the staff performed an acceptance review to determine if the AP600 application was complete and if it complies with the Commission's requirements for the scope of such applications. This includes addressing the areas defined in 10 CFR Parts 50 and 52, the most recent revision of Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants," and the Standard Review Plan (NUREG-0800). The staff also considered whether or not Westinghouse addressed other matters that the Commission considers pertinent to the review of such designs. These matters include policy issues and comparison to the Electric Power Research Institute's (EPRI's) Advanced Light Water Reactor (ALWR) Requirements Document. The staff reviewed the application primarily to verify that the applicant had addressed all pertinent matters and <u>not</u> to determine if the applicant's approach to resolving these matters is acceptable. Making determinations about the latter is the primary objective of the review and evaluation process that follows acceptance of the application. Enclosure 1 is a detailed discussion of the criteria used for the acceptance review.

<u>Discussion</u>: <u>Results of Acceptance Review</u>

The staff has completed its acceptance review of the AP600 application and found it incomplete. Although including an extensive amount of design information, the application is missing information either required by 10 CFR 52.47 or considered pertinent to the review by the Commission. To complete its review of the application for an FDA/DC, the staff needs Westinghouse to submit the following information.

Items Required by 10 CFR 52.47

The following information is required by 10 CFR 52.47 for an application for an FDA/DC. Westinghouse has not submitted these items to support the review of the AP600 application.

1. a complete set of ITAAC

2. topical reports (WCAPs) referenced in the SSAR and necessary to support the review of the PRA and other technical areas (reactor systems, instrumentation and controls)

In addition, the applicant needs to revise certain topical reports referenced in the SSAR to reflect the final design.

Other Items Pertinent to the Review

The Commission has determined as a matter of policy that the following information is needed to support the review of an application for an FDA/DC. Westinghouse has not submitted these items to support the review of the AP600 application. The appropriate references for this direction are listed in parentheses.

1. a comparison of the design to the EPRI ALWR Requirements Document with the vendor's reason for deviation (SRMs dated December 15, 1989, and March 5, 1991)

2. a detailed discussion of the manner in which operational experience was incorporated into the design (SRMs dated July 31, 1989, February 15 and March 5, 1991)

3. a discussion of severe accident mitigation design alternatives (SAMDAS) required by the National Environmental Policy Act (NEPA) (SRMs dated October 29 and November 16, 1990)

Acceptance For Review

Under 10 CFR 2.802 and 10 CFR 52.51, if the missing material is not supplied in 90 days, NRC may return the petition for design certification, and, in the meantime, the petition is not to be assigned a docket number. In this case, since there is no question that the petitioner intends to complete the petition for design certification and the staff intends to conduct some review, the staff plans to assign a docket number. However, given the deficiencies, the petition is not being accepted formally as a docketed petition for design certification.

Review Schedule

In SECY-91-161, "Schedules for the Advanced Reactor Reviews and Regulatory Guidance Revisions," the staff estimated the review schedule for the AP600 based on ALWR applicants' proposed schedules provided in early 1991. In making these

initial schedule estimates for the AP600 review, the staff assumed that it would receive a complete application by June 1, 1992.

In SECY-90-146, the staff stated that it had determined from the experience gained from the review of the ABWR and EPRI Requirements Document that a modular review approach is inefficient and is not desirable for future reviews. Therefore, the staff would not begin the passive ALWR design certification reviews until a complete application is received by the staff.

The staff reiterated this proposed approach to the review process in the enclosure to SECY-91-161 and in SECY-92-120, "NRC Staff Review Schedules for the Westinghouse AP600 and the General Electric Simplified Boiling Water Reactor Designs." The staff continues to endorse its recommendation in SECY-91-210, "Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Requirements for Design Review and Issuance of a Final Design Approval (FDA)," that the review and approval of ITAAC be completed before issuing an FDA. Staff review of evolutionary designs has demonstrated the importance of performing the ITAAC and design reviews concurrently.

In accordance with the SRM dated April 28, 1992, the staff re-estimated the review schedule for the AP600 because the application received from Westinghouse on June 26, 1992, is incomplete. In that application, Westinghouse stated that it intends to submit all of the ITAAC information by December 15, 1992. The staff does not yet have an estimate for when Westinghouse will submit the other required information.

The staff has revised the estimated review schedule for the AP600 design based on the assumption that a complete application will be provided by December 15, 1992. In addition, this estimate incorporates the comments of the Advisory Committee on Reactor Safeguards (ACRS) provided in its letter dated July 18, 1991. The staff now estimates that the FDA will be issued in June 1995. Enclosure 2 is an estimated timeline of major milestones of the AP600 review. This enclosure shows the baseline estimate of SECY-91-161 and the revised estimate. However, the staff will establish the formal review schedule after determining that the application is complete.

In SECY-92-120, the staff stated that the delay of the formal review schedule does not imply that the staff will ignore the application until it is complete. The staff will continue to develop and issue requests for additional information (RAIs) where sufficient information is available to do so. However,

issuing these requests at this stage of the review is not intended to complete the RAI stage of the review. The staff's intent is to provide Westinghouse with questions to identify initial staff concerns, and give the applicant an opportunity to address them in the forthcoming ITAAC and information responses before submitting the complete application.

Staff Actions:

1. Assign a docket number to the AP600 project because of the extensive amount of information in the June 26, 1992, application. This will facilitate handling the large amount of technical questions and information that is expected to be exchanged before Westinghouse completes the application.

2. Issue the enclosed letter (Enclosure 3) to Westinghouse after three work days from the date of this paper to provide the results of the staff's acceptance review of the AP600 application for the FDA/DC and the revised estimate of the review schedule.

3. Issue RAIs where sufficient information is available to do so, and forward them to Westinghouse to inform it of the staff's initial concerns without waiting for the complete submittal.

Coordination: The Office of The General Counsel has reviewed this paper and has no legal objection.

James M. Taylor
Executive Director
for Operations

Enclosures:
1. Acceptance review criteria
2. Revised estimated review schedule for AP600
3. Proposed letter to Westinghouse Electric Corporation

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ENCLOSURE 1

CRITERIA FOR CONDUCTING THE ACCEPTANCE REVIEW OF THE AP600 FDA/DC APPLICATION

The staff conducted an acceptance review to determine if the AP600 application for final design approval (FDA) and design certification (DC) complies with the Commission's requirements for the scope of such applications. This includes addressing the areas defined in 10 CFR Parts 50 and 52, the most recent revision of Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants," the Standard Review Plan (NUREG-0800), and other areas discussed below. The staff reviewed the application primarily to verify that the applicant has addressed all pertinent matters and <u>not</u> to determine if the applicant's approach to resolving these matters is acceptable. Making determinations about the latter is the primary objective of the review and evaluation process that follows acceptance of the application.

The staff performed the acceptance review on the technical documentation submitted with the application on June 26, 1992, including the Standard Safety Analysis Report (SSAR), the probabilistic risk assessment (PRA), and related documents. The staff evaluated the application to determine if it addressed the areas defined in 10 CFR Part 52, policy papers developed by the staff, and other matters that the Commission considers pertinent to the review of such designs. The following is a discussion of those items that the staff considered during the acceptance review.

1. The staff evaluated the submittal to determine if it complies with the requirements of 10 CFR 52.47, including

   a. technical information that is required by 10 CFR Part 20, Part 50 and its appendices, Part 73, and Part 100, and which is technically relevant to the design and not site specific. These areas are defined in Regulatory Guide 1.70 and the SRP.

   b. demonstration of compliance with any technically relevant portions of the TMI-2 requirements of 10 CFR 50.34(f).

   c. the site parameters postulated for the design, and an analysis and evaluation of the design in terms of these parameters.

   d. proposed technical resolutions of those unresolved safety issues (USIs) and medium- and high-priority generic safety issues (GSIs) that are identified in the version of NUREG-0933 current on the date 6 months before the application (in the case of the AP600 design, December 1991) and are technically relevant.

   e. a design-specific PRA.

f. proposed inspections, tests, analyses, and acceptance criteria (ITAAC) that are necessary and sufficient to provide reasonable assurance that, if the tests, inspections, and analyses are performed and the acceptance criteria met, a plant referencing the design will be built and operated in accordance with the design certification.

g. the interface requirements to be met by those portions of the plant for which the application does not seek certification, with justification that compliance with these interface requirements are verifiable through inspection, testing, or analysis.

h. a representative conceptual design for those portions of the plant for which the application does not seek certification.

2. The staff evaluated the submittal to determine whether or not it addresses issues discussed in the staff's policy papers and other matters that the Commission considers pertinent to the review of such designs, including

a. a reliability assurance program that addresses the technical specifications, the inservice inspection/inservice testing program, the maintenance program, the plant procedures, and the security program (see SECY-89-013 and the staff requirements memorandum (SRM) dated June 31, 1989).

b. design acceptance criteria where detailed design information is missing (see SECY-92-053 and SECY-92-196).

c. a discussion demonstrating that the design adequately addresses the policy issues discussed in SECY-90-016 and the draft Commission paper dated February 27, 1992.

d. a discussion of severe accident mitigation design alternatives (SAMDAs) required under the National Environmental Policy Act (NEPA) (see SECY-91-229). This discussion substitutes for one addressing areas defined in the environmental Standard Review Plan (NUREG-0555) as required for applications for construction and licensing permits.

e. a comparison of the AP600 design against the EPRI ALWR Requirements Document (see the SRM dated December 15, 1989).

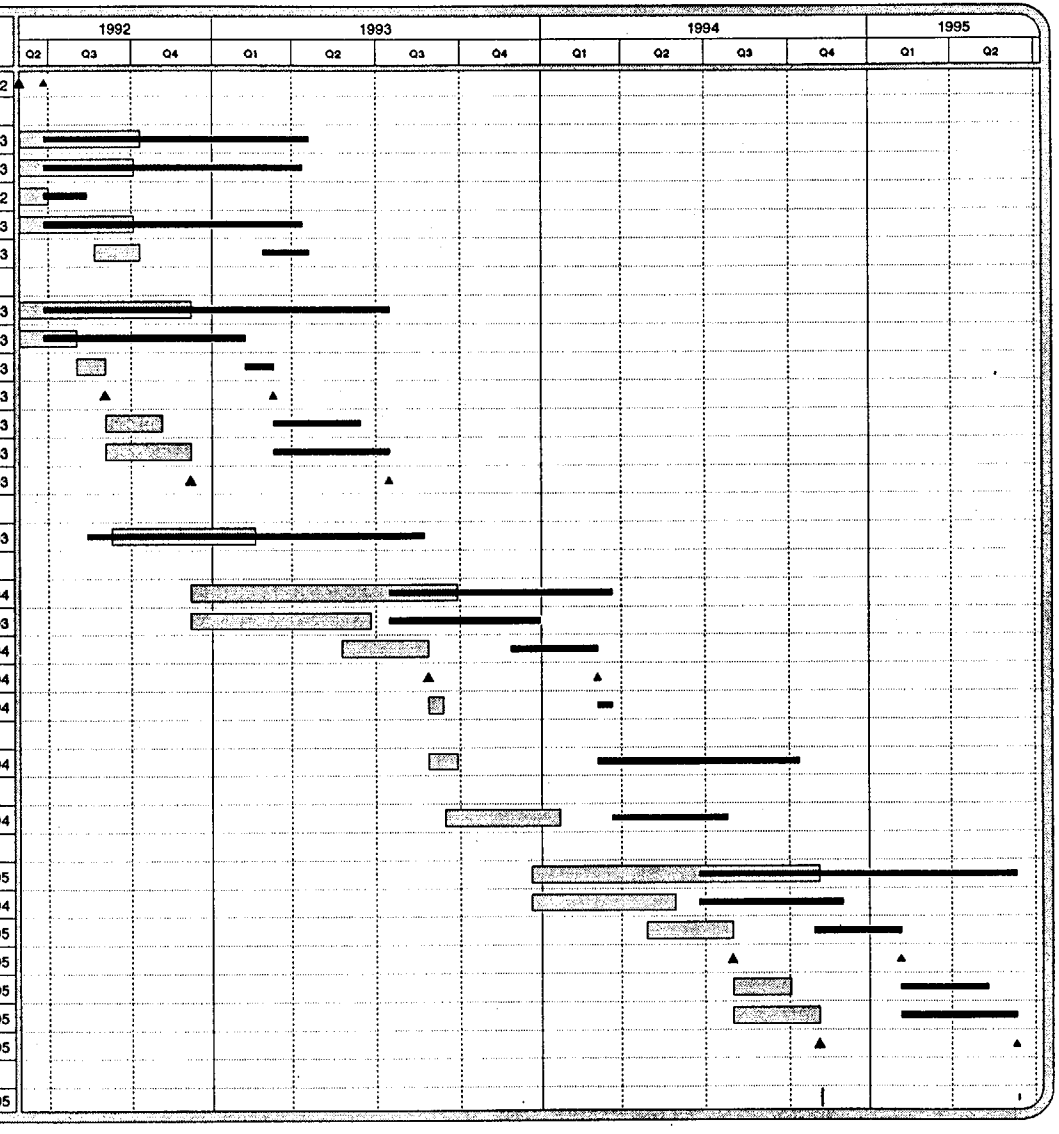
f. a detailed discussion of how operational experience was incorporated into the design (see the SRMs dated February 15 and March 5, 1991).

ENCLOSURE 2

AP-600 REVIEW SCHEDULE

REVISED SCHEDULE

Task Name	Start Date	Duratn (Mths)	End Date
Receipt of Application	26-Jun-92	0	26-Jun-92
Preliminary Evaluation Phase	26-Jun-92	9. 2	19-Apr-93
Review of Appl./RAIs to PM	26-Jun-92	9	12-Apr-93
Acceptance Review	26-Jun-92	1. 5	12-Aug-92
Technical Review/RAI Developmt	26-Jun-92	9	12-Apr-93
PM Issues RAIs	2-Mar-93	1. 8	19-Apr-93
Policy Issue Identification	26-Jun-92	12	15-Jul-93
Identify Policy Issues	26-Jun-92	7	8-Feb-93
Prepare Policy Papers	8-Feb-93	1	11-Mar-93
Trans. Policy Pprs to Com/ACRS	12-Mar-93	0	12-Mar-93
ACRS Review of Policy Papers	12-Mar-93	3	14-Jun-93
Com. Review of Policy Paper	12-Mar-93	4	15-Jul-93
Commission Guidance to Staff	15-Jul-93	0	15-Jul-93
Appl. Responds to RAIs	13-Aug-92	11. 7	23-Aug-93
DSER Preparation/Issuance	15-Jul-93	7. 7	22-Mar-94
DSER to PM	15-Jul-93	5. 2	30-Dec-93
PM Prepares DSER	30-Nov-93	3	7-Mar-94
DSER to Commission/ACRS	8-Mar-94	0	8-Mar-94
DSER Issued to Applicant	8-Mar-94	0. 5	22-Mar-94
ACRS Review of DSER	8-Mar-94	7	13-Oct-94
Appl. Reviews DSER & Responds	23-Mar-94	4	26-Jul-94
FSER Preparation/Issuance	24-Jun-94	11	12-Jun-95
FSER to PM	24-Jun-94	5	1-Dec-94
PM Prepares FSER/FDA	31-Oct-94	3	6-Feb-95
FSER/FDA to Commission/ACRS	7-Feb-95	0	7-Feb-95
ACRS Review of FSER/FDA	7-Feb-95	3	10-May-95
Commission Review of FSER/FDA	7-Feb-95	4	12-Jun-95
Commission Decision	12-Jun-95	0	12-Jun-95
FSER/FDA Issued to Applicant	13-Jun-95	0	14-Jun-95



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Baseline SECY-91-161 Actual Milestone

ENCLOSURE 3

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

Docket No. 50-003

Mr. Nicholas J. Liparulo
Nuclear Safety and Regulatory Activities
Westinghouse Electric Corporation
P.O. Box 355
Pittsburgh, Pennsylvania 15230

Dear Mr. Liparulo:

SUBJECT: RESULTS OF ACCEPTANCE REVIEW FOR WESTINGHOUSE ELECTRIC CORPORATION'S APPLICATION FOR FINAL DESIGN APPROVAL AND DESIGN CERTIFICATION FOR THE AP600 DESIGN

In a letter dated June 26, 1992, the Westinghouse Electric Corporation (Westinghouse) submitted its application for a final design approval under Appendix O to 10 CFR Part 52 and a standard design certification under 10 CFR Part 52 for the AP600 standard plant design. The contents of the application were made in conformance with the requirements of 10 CFR 52.47, and included the standard safety analysis report (SSAR) for the design; pilot inspections, tests, analyses, and acceptance criteria (ITAAC) for three systems of the design; and the probabilistic risk assessment (PRA) for the design.

In accordance with 10 CFR 2.101, the staff performed an acceptance review to determine if the AP600 application was complete and found that, although an extensive amount of design information is included, the application is incomplete. The missing information is either required by 10 CFR 52.47 or considered pertinent to the review by the Commission. To complete its review of the application for an FDA/DC, the staff needs Westinghouse to submit the following information.

Items Required by 10 CFR 52.47

The following information is required by 10 CFR 52.47 for an application for an FDA/DC. Westinghouse has not submitted these items to support the review of the AP600 application.

1. a complete set of ITAAC

2. topical reports (WCAPs) referenced in the SSAR and necessary to support the review of the PRA and other technical areas (reactor systems, instrumentation and controls)

In addition, Westinghouse should revise certain topical reports referenced in the SSAR to reflect the final design.

Other Items Pertinent to the Review

The Commission has determined as a matter of policy that the following information is needed to support the review of an application for an FDA/DC. Westinghouse has not submitted these items to support the review of the AP600 application. The appropriate references for this direction is listed in parentheses.

1. a comparison of the design to the EPRI ALWR Requirements Document with the vendor's reason for deviation (SRMs dated December 15, 1989, and March 5, 1991)

2. a detailed discussion of the manner in which operational experience was incorporated into the design (SRMs dated July 31, 1989, February 15 and March 5, 1991)

3. a discussion of severe accident mitigation design alternatives (SAMDAS) required by the National Environmental Policy Act (NEPA) (SRMs dated October 29 and November 16, 1990)

The staff will issue a more detailed description of the deficiencies under separate cover. In addition, the design of the AP600 must also be consistent with the final agency positions that have not yet been established on applicable policy issues that are identified during the staff's reviews of ALWRs.

The staff has assigned a docket number to the AP600 project because of the extensive amount of information in the June 26, 1992, application. The application has been assigned Docket Number STN-52-003. Enclosure 1 is a copy of the notice relating to the application that has been sent to the Office of the Federal Register for publication.

However, in the enclosure to SECY-91-161, "Schedules for the Advanced Reactor Reviews and Regulatory Guidance Revisions," the staff stated that

> the staff...has determined from the experience gained from the review of the ABWR and EPRI Requirements Document that a modular review approach is inefficient and is not desirable for future reviews. Therefore, the staff will not begin the passive ALWR design certification reviews until a complete application is received by the staff.

Therefore, the staff will establish the formal review schedule only after determining that the application is complete. In the application, Westinghouse stated that it will submit all of the ITAAC information by December 15, 1992. The staff does not yet have an estimate for submittal of the other missing information. The staff has developed an estimated review schedule for the AP600 design based on the assumption that a complete application will be provided by December 15, 1992. In addition, this estimate incorporates the

comments of the Advisory Committee on Reactor Safeguards provided in its letter dated July 18, 1991. The staff estimates that the FDA will be issued in June 1995. Enclosure 2 is an estimated timeline of the major milestones of the AP600 review.

In SECY-92-120, "NRC Staff Review Schedules for the Westinghouse AP600 and the General Electric Simplified Boiling Water Reactor Designs," the staff stated that the delay of the formal review schedule does not imply that the staff will ignore the application until it is complete. The staff will continue to develop and issue requests for additional information (RAIs) where sufficient information is available to do so. However, issuing these requests at this stage of the review is not intended to complete the RAI stage of the review. The staff's intent is to provide Westinghouse with questions to identify initial staff concerns, and give you the opportunity to address them in the forthcoming ITAAC and information responses before submitting the complete application.

If you have any questions or comments concerning this matter, you may contact one of the project managers assigned to this review, Thomas J. Kenyon at (301) 504-1120 or Rick Hasselberg at (301) 504-1141.

Sincerely,

Dennis M. Crutchfield, Associate Director
for Advanced Reactors and License Renewal
Office of Nuclear Reactor Regulation

Enclosures:
As stated

Enclosure 1

United States Nuclear Regulatory Commission

Westinghouse Electric Corporation

Receipt of Application for Design Certification

Notice is hereby given that the Nuclear Regulatory Commission (the Commission) has received an application from Westinghouse Electric Corporation dated June 26, 1992, filed pursuant to Section 103 of the Atomic Energy Act and 10 CFR Part 52, for the standard design certification of the AP600 Standard Plant Design. A notice relating to the rulemaking pursuant to 10 CFR 52.51 for design certification, including provisions for participation of the public and other parties, will be published in the future.

The AP600 design is a 600 MWe pressurized water reactor plant design in which passive safety systems are used for the ultimate safety protection of the plant. All of the safety systems are designed to be passive, where natural forces, such as gravity, natural circulation, and stored energy (in the form of pressurized accumulators and batteries), are used as the motive forces of these systems. The AP600 has a number of unique features that distinguish it from both the current generation of LWRs and the evolutionary ALWRs. The AP600 application includes the entire power generation complex, except those elements and features considered site-specific, and is not a modular design in which major components are shared.

The application is incomplete in several important respects, and cannot, therefore, be accepted formally at this time for docketing as a rulemaking petition for design certification. However, the NRC staff plans some substantive review activities at this early stage to give Westinghouse early notice of issues and concerns. A docket number is being assigned to the application

to facilitate public access to correspondence and review information. No formal review schedule has been established yet, although, assuming the missing material is supplied by December 15, 1992, and the NRC staff's review progresses favorably, the staff estimates that a final design approval for the design would be issued in June 1995.

A copy of the application is available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street, N.W., Washington, D.C. Previous correspondence on this application is filed under Project Number 676. The new docket established for this application is STN-52-003.

Dated at Rockville, Maryland this day of 1992.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert C. Pierson, Director
Standardization Project Directorate
Associate Directorate for Advanced Reactors
and License Renewal
Office of Nuclear Reactor Regulation

ENCLOSURE 2

AP-600 REVIEW SCHEDULE

REVISED SCHEDULE

Task Name	Start Date	Duratn (Mths)	End Date
Receipt of Application	26-Jun-92	0	26-Jun-92
Preliminary Evaluation Phase	26-Jun-92	9.2	19-Apr-93
Review of Appl./RAIs to PM	26-Jun-92	9	12-Apr-93
Acceptance Review	26-Jun-92	1.5	12-Aug-92
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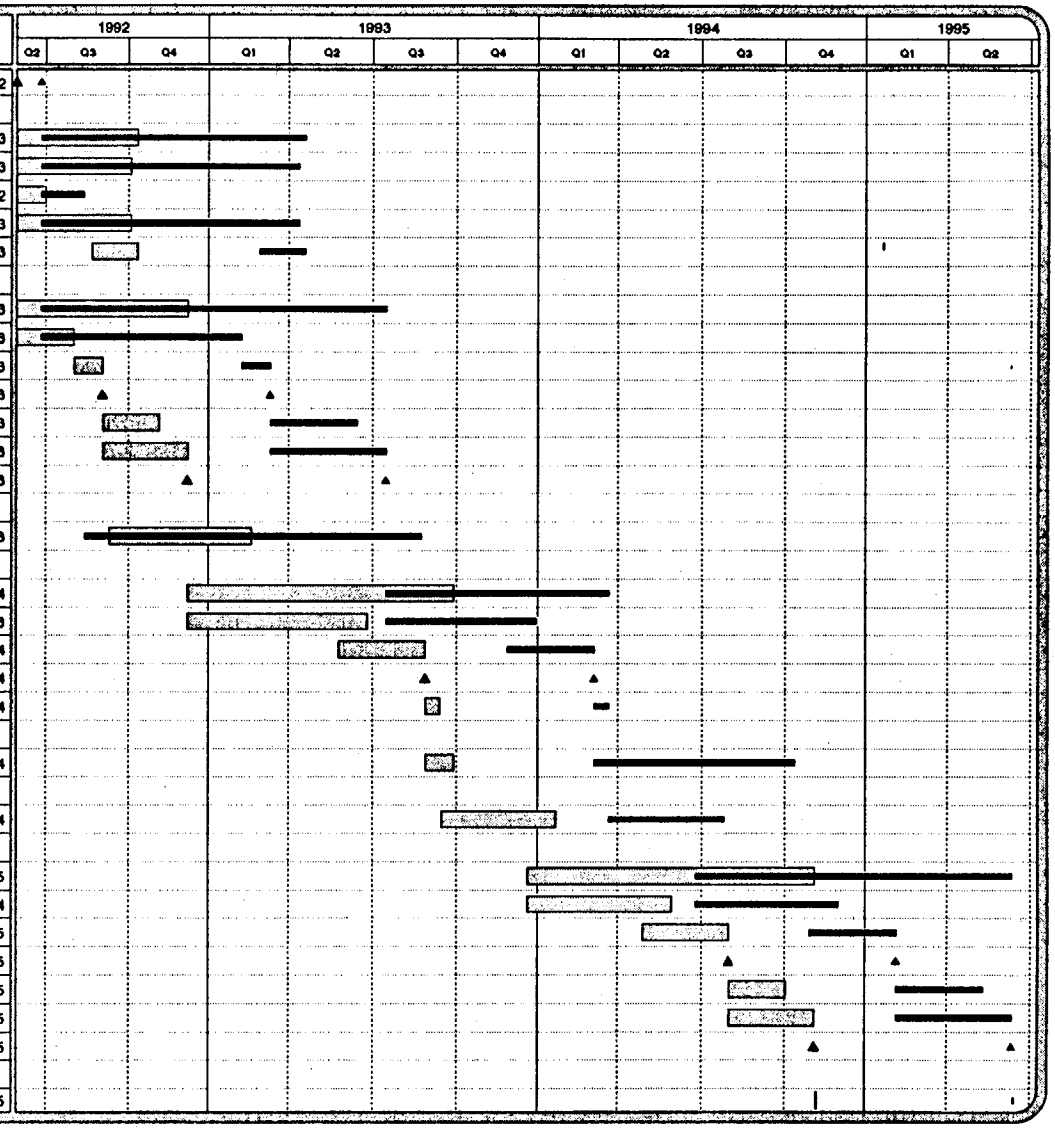
ACRS Review of FSER/FDA	7-Feb-95	3	10-May-95
Commission Review of FSER/FDA	7-Feb-95	4	12-Jun-95
Commission Decision	12-Jun-95	0	12-Jun-95
FSER/FDA Issued to Applicant	13-Jun-95	0	14-Jun-95



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Baseline

Actual

Milestone