DEC 1 1978

Docket No. 50-368

Mr. William Cavanaugh III
Executive Director of Generation
and Construction
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203

Dear Mr. Cavanaugh:

SUBJECT: ISSUANCE OF AMENDMENT NO. 7 TO FACILITY OPERATING LICENSE NO. NPF-6 FOR ARKANSAS NUCLEAR ONE, UNIT 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 7 to Facility Operating License No. NPF-6 for the Arkansas Power and Light Company for the Arkansas Nuclear One, Unit 2 plant. The amendment modifies license No. NPF-6 to authorize Mode 1 operation as noted below.

1. The Appendix A Technical Specifications are modified to reflect the incorporation of portable containment radiation monitors for an interim period.

2. Three license conditions have been deleted regarding equipment qualification, fire barrier testing and implementation of modifications for protection from degraded offsite power grid voltage.

3. License conditions have been modified regarding implementation of the fire protection modifications and the staff positions on the core protection calculator system.

However, operation of the facility is temporarily restricted to the sequence of operational modes described in Attachment 2 to the license until the preoperational tests, startup tests and other items noted in Attachment 2 are completed to the written satisfaction of the Commission.

CP 1

GD

7812140013

OFFICE➤						
SURNAME➤						
DATE➤						

NRC FORM 318 (9-76) NRCM 0240 ☆ U.S. GOVERNMENT PRINTING OFFICE: 1978 - 265 - 769

Copies of the FEDERAL REGISTER Notice of Issuance, and of the Safety Evaluation supporting Amendment No. 7 are also enclosed.

Sincerely,

Original signed by:
Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 7 to Facility Operating License No. NPF-6
2. FEDERAL REGISTER Notice
3. Safety Evaluation Supporting Amendment No. 7 to NPF-6

cc: See page 3

SEE PREVIOUS YELLOW FOR CONCURRENCES*

OFFICE	LWR 1	LWR 1	STS/DOR*	OELD*	LWR	DPM
SURNAME	Eyton/red LEngle	JStolz	DBrinkman	CWoodhead	DBVassallo	RSBoyd
DATE	11/29/78	11/29/78	11/21/78	11/24/78	11/29/78	12/1 /78

Copies of the FEDERAL REGISTER Notice of Issuance and Safety Evaluation supporting Amendment No. 7 are also enclosed.

Sincerely,

John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

Enclosures:
1. Amendment No. 7 to Facility Operating License No. NPF-6
2. FEDERAL REGISTER Notice
3. Safety Evaluation Supporting Amendment No. 7 to NPF-6

cc: See page 3

Add. D.B. Vassallo

OFFICE	LWR 1	LWR 1	STS/DOR	DSS	OELD	LWR 1
SURNAME	EHylton/red	LEngle	DBrinkman	NA	CWoodhead	JStolz
DATE	11/21/78	11/21/78	11/21/78	11/ /78	11/24/78	11/ /78

cc: Mr. Daniel H. Williams
Manager, Licensing
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203

Philip K. Lyon, Esq.
House, Holms & Jewell
1550 Tower Building
Little Rock, Arkansas 72203

Mr. C. W. Reed, Project Engineer
Bechtel Power Corporation
San Francisco, California 94119

Mr. Fred Sernatinger, Project Manager
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Mr. Charles B. Brinkman, Manager
Washington Nuclear Operations
C-E Power Systems
Combustion Engineering, Inc.
4853 Cordell Avenue, Suite A-1
Bethesda, Maryland 20014

Honorable Ermil Grant
Acting County Judge of Pope County
Pope County Courthouse
Russellville, Arkansas 72801

Director, Bureau of Environmental
Health Services
4815 West Markham Street
Little Rock, Arkansas 72201

Attorney General
Justice Building
Little Rock, Arkansas 72201

Mr. Bruce Blanchard
Environmental Projects
Review
Department of the Interior
Room 4256
18th and C Street, N. W.
Washington, D. C. 20240

U. S. Environmental Protection
Agency
ATTN: Ms. F. Munter
Office of Federal Activities
Room W-535, Waterside Mall
401 M Street, S. W.
Washington, D. C. 20460

OFFICE ➤						
SURNAME ➤						
DATE ➤						

ARKANSAS POWER AND LIGHT COMPANY

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

FACILITY OPERATING LICENSE

Amendment No. 7
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The issuance of this license amendment to Arkansas Power and Light Company (the licensee) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission; with the exception of those exemptions granted by Amendment No. 1 to NPF-6;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the amended Facility Operating License No. NPF-6 is hereby amended by changing the Technical Specifications as indicated in Attachment 1 to this license amendment and by amending Paragraphs 2.C.(1), 2.C.(2) and 2.C.(3) of Facility Operating License No. NPF-6 as follows:

   2.C.(1) Maximum Power Level

   The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2815 megawatts thermal. Prior to attaining the power level Arkansas Power and Light Company shall comply with the applicable conditions identified in Paragraph 2.C.(3) below and complete the preoperational tests, startup tests and other items identified in Attachment 2 to this license amendment in the sequence specified. Attachment 2 is an integral part of this license amendment.

8121140014

OFFICE➤						
SURNAME➤						
DATE➤						

2.C.(2) Technical Specifications

The Technical Specifications contained in Appendices A & B, as revised through Amendment No. 7 are hereby incorporated in license NPF-6. Arkansas Power and Light Company shall operate the facility in accordance with the Technical Specifications.

2.C.(3) Additional Conditions

The following conditions, numbered as they were identified in Amendment No. 1 to the license have been changed as noted below:

(e) Fire Protection

Paragraph 2.C.(3) (e) of the license is amended by a change in the implementation date for item 3.3 "Protection From Water Spray" from September 1, 1978 to prior to startup following the first regularly scheduled refueling outage.

(i) Containment Radiation Monitor

Paragraph 2.C.(3)(i) of License No. NPF-6 is hereby amended to read as follows:

The licensee shall, prior to July 31, 1980 submit for Commission review and approval documentation which establishes the adequacy of the qualifications of the containment radiation monitors located inside the containment and shall complete the installation and testing of these instruments to demonstrate that they meet the operability requirements of Technical Specification No. 3.3.3.6.

(j) Environmental Qualifications of Safety Related Instrumentation

The conditions specified in items (1) and (2) of paragraph 2.C.(3)(j) have been resolved and are, therefore, deleted.

(k) Core Protection Calculator System (CPCS)

Items (1), (2), (3) and (4) of paragraph 2.C.(3)(k) have been superceded by the following conditions. In addition, a copy of the startup report addressed by these conditions shall be submitted to the Director of the Division of Project Management in the Office of Nuclear Reactor Regulation.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

(1) CPCS Position No. 1, Power Distribution Algorithm

The startup report required by Technical Specification No. 6.9.1 shall be supplemented to include the results of the startup verification testing which demonstrates the conservatism of the calculation of the power distribution uncertainty factors. The startup testing shall be performed in accordance with information previously submitted by the licensee, as identified in Section D.3.5 of the Staff's Safety Evaluation Report and Supplements Number 1 and 2 thereto, in support of the resolution of CPCS Position No. 1.

(2) CPCS Position No. 5, Cable Separation

The startup report required by Technical Specification No. 6.9.1 shall be supplemented to include the results of measurements from the startup testing program which demonstrates that noise or electromagnetic interference effects from non-Class IE circuits which are in close proximity to Class IE circuits are within previously established acceptable ranges. These measurements shall be performed in accordance with information previously submitted by the licensee, as identified in Section D.4.1.2 of the Safety Evaluation report and Supplements Number 1 and 2 thereto, in support of the resolution of CPCS Position No. 5.

(3) CPCS Position No. 12, Electrical Noise and Isolation

The startup report required by Technical Specification No. 6.9.1 shall be supplemented to include the results of measurements from the startup testing program which demonstrates that noise or electromagnetic interference effects upon the operation of the optical isolators are within previously established acceptable ranges. These measurements shall be performed in accordance with information previously submitted by the licensee, as identified in Sections D.4.1.4 and D.4.4.4 of Supplements Number 1 and 2 to the Safety Evaluation Report, in support of the resolution of CPCS Position No. 12.

(4) CPCS Position No. 19, Software Change Procedure Qualification

The licensee shall not make any changes to the CPCS software until the Commission has reviewed and approved the licensee's responses to items (1), (2), (3) and (4) as identified in the Summary Subsection of Section D.4.4.6 of Supplement No. 2 to the Safety Evaluation Report.

(n) Fire Barrier Testing

The condition specified in paragraph 2.C.(3)(n) has been resolved and is, therefore, deleted.

(o) Offsite Power System

The changes needed for protection from degraded offsite power voltage have been completed. The condition specified in paragraph 2.C.3(o) has been resolved and is, therefore, deleted.

3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Changes to the Technical Specifications
2. Preoperational Tests, Startup Tests and Other Items Which Must be Completed By the Indicated Operational Mode

Date of Issuance: DEC 1 1978

SEE PREVIOUS YELLOW FOR CONCURRENCES*

OFFICE	LWR 1	LWR 1	STS/DOR*	OELD*	LWR	DPM
SURNAME	~~DMorton~~/red LEngle	JStolz	DBrinkman	CWoodhead	DBVassallo	RSBoyd
DATE	11/30/78	11/30/78	11/21/78	11/24/78	12/1/78	12/ /78

(4) CPCS Position No. 19, Software Change Procedure Qualification

The licensee shall not make any changes to the CPCS software pending completion of the Commission's review and approval of additional information which demonstrates that an acceptable procedure has been developed for the execution of changes to the CPCS software. The information shall consist of responses to items (1), (2), (3) and (4) as identified in Supplement No. 2 to the Safety Evaluation Report, Section D.4.4.6. Summary Subsection.

(n) Fire Barrier Testing

The condition specified in paragraph 2.C.(3)(n) has been resolved and is, therefore, deleted.

(o) Offsite Power System

The changes needed for protection from degraded offsite power voltage have been completed. The condition specified in paragraph 2.C.3(o) has been resolved and is, therefore, deleted.

3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

Attachments:
1. Changes to the Technical Specifications
2. Preoperational Tests, Startup Tests and Other Items Which Must be Completed By the Indicated Operational Mode

Date of Issuance:

OFFICE	LWR 1	LWR 1	STS/DOR	DSS	OELD	LWR 1
SURNAME	EHylton/red	LEngle	DBrinkman	NA	CWoodhead	JStolz
DATE	11/21/78	11/21/78	11/21/78	11/ /78	11/ /78	11/ /78

ATTACHMENT 1 TO LICENSE AMENDMENT NO. 7

FACILITY OPERATING LICENSE NO. NPF 6

DOCKET NO. 50-368

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. Revised pages are identified by Amendment number and contain vertical lines indicating the area of change. Corresponding overleaf pages are also provided to maintain document completeness.

Pages

3/4 3-40
3/4 3-41

OFFICE ➤						
SURNAME ➤						
DATE ➤						

INSTRUMENTATION

POST-ACCIDENT INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.6 The post-accident monitoring instrumentation channels shown in Table 3.3-10 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With the number of OPERABLE post-accident monitoring channels less than required by Table 3.3-10, either restore the inoperable channel to OPERABLE status within 30 days, or be in HOT SHUTDOWN within the next 12 hours.

b. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.6 Each post-accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-10.

TABLE 3.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE
1. Containment Pressure	2
2. Containment Radiation Monitors*	2
3. Pressurizer Pressure	2
4. Pressurizer Water Level	2
5. Steam Generator Pressure	2/steam generator
6. Steam Generator Water Level	2/steam generator
7. Refueling Water Tank Water Level	2
8. Containment Sump Water Level	2

*This requirement may be satisfied through July 31, 1980 by the use of portable radiation monitors equivalent in number to the minimum channels required OPERABLE.

TABLE 4.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1. Containment Pressure	M	R
2. Containment Radiation Monitors*	M	R
3. Pressurizer Pressure	M	R
4. Pressurizer Water Level	M	R
5. Steam Generator Pressure	M	R
6. Steam Generator Water Level	M	R
7. Refueling Water Tank Water Level	M	R
8. Containment Sump Water Level	M	R

*This requirement may be satisfied through July 31, 1980 by the use of portable radiation monitors, and by substituting a source check for the channel check and by substituting an instrument calibration for the channel calibration.

INSTRUMENTATION

CHLORINE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.3.3.7 Two independent chlorine detection systems, with their alarm/trip setpoints adjusted to actuate at a chlorine concentration of $\leq$ 5 ppm, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one chlorine detection system inoperable, restore the inoperable detection system to OPERABLE status within 7 days or within the next 6 hours initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

b. With no chlorine detection system OPERABLE, within 1 hour initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.7 Each chlorine detection system shall be demonstrated OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours, a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION at least once per 18 months.

ATTACHMENT 2 TO AMENDMENT NO. 7

LICENSE NO. NPF-6

Preoperational Tests, Startup Tests, and Other Items Which Must be Completed Prior to Proceeding To Succeeding Operational Modes

This attachment identifies certain preoperational tests, startup tests, and other items which must be completed to the Commission's satisfaction prior to proceeding to certain specified Operational Modes. Arkansas Power & Light Company shall not proceed beyond the authorized Operational Modes without prior written authorization from the Commission.

A. The following items must be completed prior to proceeding to Operational Mode 2 (Initial Criticality).

1. Completion of significant startup punchlist items which affect the operability of the following:

   - Sampling System
   - Auxiliary Building H&V (1)
   - Emergency Feedwater System (2)
   - Plant Protective System (4)
   - Reactor Coolant System (3)
   - Waste Gas System (1)
   - Area Radiation Monitors (2)
   - Air & Gas Radiation Monitors (6)
   - Safety Injection System (2)
   - Liquid Radwaste System (4)

2. Completion of the following Preoperational Tests:

   2.083.01 Main Steam Supply and Safety Relief Valves

3. Closeout of outstanding Startup Program Test Deficiencies.

4. Approval and issuance of the following procedure:

   2.800.01 App. U Unit Load Transient Test

5. Resolution of main feedwater line break potential within the containment piping penetration room.

6. Resolution of the following items relating to radiation protection.

   a. Complete installation and calibration of health physics monitoring equipment.

   b. Complete calibration of area radiation monitors.

   c. Complete calibration of process radiation monitors.

7. Complete hanger installation.

8. Complete installation of independent DC power supplies to the series containment penetration breakers.

9. Resolution of discrepancies identified in the Facility Operating Procedures.

10. Resolution of test deficiencies relating to the failure of the Hydrogen Purge System to meet FSAR acceptance criterion. These deficiencies include:

    - Failure of the filters to pass the Freon-112 test.

    - Failure of the system to meet specified flow rate.

11. Resolution of LPSI Pump Motor Failure.

12. Resolution of loose part in safety injection system.

13. Conformance to GDC-17 offsite power deficiencies.

14. Resolution of inverter deficiencies.

15. Chloride swipes within containment.

16. Resolution of Diesel Generator No. 2 failure.

17. Operating Procedures for Radiation Post Accident Monitors.

B. The following items must be completed prior to proceeding to Operational Mode 1 (Power Operation).

   1. Completion of significant startup punchlist items which affect the operability of the following:

- Control Room H&V (1)
- Miscellaneous H&V (1)
- Feedwater System (1)
- Steam Generators (2)
- Fuel Pool and Auxiliaries (8)
- Waste Gas System (1)
- Solid Radiation Waste System (4)
- Main Steam System (2)

2. Resolution of the following outstanding operations punchlist items:

   - Instrumentation in place for CECEC Code verification.

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

ARKANSAS POWER AND LIGHT COMPANY

DOCKET NO. 50-368

ARKANSAS NUCLEAR ONE, UNIT 2

FACILITY OPERATING LICENSE

Amendment No. 7
License No. NPF-6

1. The Nuclear Regulatory Commission (the Commission) having found that:

   A. The issuance of this license amendment to Arkansas Power and Light Company (the licensee) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission; with the exception of those exemptions granted by Amendment No. 1 to NPF-6;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the amended Facility Operating License No. NPF-6 is hereby amended by changing the Technical Specifications as indicated in Attachment 1 to this license amendment and by amending Paragraphs 2.C.(1), 2.C.(2) and 2.C.(3) of Facility Operating License No. NPF-6 as follows:

   2.C.(1) Maximum Power Level

   The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2815 megawatts thermal. Prior to attaining the power level Arkansas Power and Light Company shall comply with the applicable conditions identified in Paragraph 2.C.(3) below and complete the preoperational tests, startup tests and other items identified in Attachment 2 to this license amendment in the sequence specified. Attachment 2 is an integral part of this license amendment.

2.C.(2) Technical Specifications

The Technical Specifications contained in Appendices A & B, as revised through Amendment No. 7 are hereby incorporated in license NPF-6. Arkansas Power and Light Company shall operate the facility in accordance with the Technical Specifications.

2.C.(3) Additional Conditions

The following conditions, numbered as they were identified in Amendment No. 1 to the license have been changed as noted below:

(e) Fire Protection

Paragraph 2.C.(3) (e) of the license is amended by a change in the implementation date for item 3.3 "Protection From Water Spray" from September 1, 1978 to prior to startup following the first regularly scheduled refueling outage.

(i) Containment Radiation Monitor

Paragraph 2.C.(3)(i) of License No. NPF-6 is hereby amended to read as follows:

The licensee shall, prior to July 31, 1980 submit for Commission review and approval documentation which establishes the adequacy of the qualifications of the containment radiation monitors located inside the containment and shall complete the installation and testing of these instruments to demonstrate that they meet the operability requirements of Technical Specification No. 3.3.3.6.

(j) Environmental Qualifications of Safety Related Instrumentation

The conditions specified in items (1) and (2) of paragraph 2.C.(3)(j) have been resolved and are, therefore, deleted.

(k) Core Protection Calculator System (CPCS)

Items (1), (2), (3) and (4) of paragraph 2.C.(3)(k) have been superceded by the following conditions. In addition, a copy of the startup report addressed by these conditions shall be submitted to the Director of the Division of Project Management in the Office of Nuclear Reactor Regulation.

(1) CPCS Position No. 1, Power Distribution Algorithm

The startup report required by Technical Specification No. 6.9.1 shall be supplemented to include the results of the startup verification testing which demonstrates the conservatism of the calculation of the power distribution uncertainty factors. The startup testing shall be performed in accordance with information previously submitted by the licensee, as identified in Section D.3.5 of the Staff's Safety Evaluation Report and Supplements Number 1 and 2 thereto, in support of the resolution of CPCS Position No. 1.

(2) CPCS Position No. 5, Cable Separation

The startup report required by Technical Specification No. 6.9.1 shall be supplemented to include the results of measurements from the startup testing program which demonstrates that noise or electromagnetic interference effects from non-Class IE circuits which are in close proximity to Class IE circuits are within previously established acceptable ranges. These measurements shall be performed in accordance with information previously submitted by the licensee, as identified in Section D.4.1.2 of the Safety Evaluation report and Supplements Number 1 and 2 thereto, in support of the resolution of CPCS Position No. 5.

(3) CPCS Position No. 12, Electrical Noise and Isolation

The startup report required by Technical Specification No. 6.9.1 shall be supplemented to include the results of measurements from the startup testing program which demonstrates that noise or electromagnetic interference effects upon the operation of the optical isolators are within previously established acceptable ranges. These measurements shall be performed in accordance with information previously submitted by the licensee, as identified in Sections D.4.1.4 and D.4.4.4 of Supplements Number 1 and 2 to the Safety Evaluation Report, in support of the resolution of CPCS Position No. 12.

(4) CPCS Position No. 19, Software Change Procedure Qualification

The licensee shall not make any changes to the CPCS software until the Commission has reviewed and approved the licensee's responses to items (1), (2), (3) and (4) as identified in the Summary Subsection of Section D.4.4.6 of Supplement No. 2 to the Safety Evaluation Report.

(n) Fire Barrier Testing

The condition specified in paragraph 2.C.(3)(n) has been resolved and is, therefore, deleted.

(o) Offsite Power System

The changes needed for protection from degraded offsite power voltage have been completed. The condition specified in paragraph 2.C.3(o) has been resolved and is, therefore, deleted.

3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Roger S. Boyd, Director
Division of Project Management
Office of Nuclear Reactor Regulation

Attachments:
1. Changes to the Technical Specifications
2. Preoperational Tests, Startup Tests and Other Items Which Must be Completed By the Indicated Operational Mode

Date of Issuance: DEC 1 1978

ATTACHMENT 1 TO LICENSE AMENDMENT NO. 7

FACILITY OPERATING LICENSE NO. NPF 6

DOCKET NO. 50-368

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. Revised pages are identified by Amendment number and contain vertical lines indicating the area of change. Corresponding overleaf pages are also provided to maintain document completeness.

Pages

3/4 3-40
3/4 3-41

INSTRUMENTATION

POST-ACCIDENT INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.6 The post-accident monitoring instrumentation channels shown in Table 3.3-10 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

a. With the number of OPERABLE post-accident monitoring channels less than required by Table 3.3-10, either restore the inoperable channel to OPERABLE status within 30 days, or be in HOT SHUTDOWN within the next 12 hours.

b. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.6 Each post-accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-10.

TABLE 3.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT		MINIMUM CHANNELS OPERABLE
1.	Containment Pressure	2
2.	Containment Radiation Monitors*	2
3.	Pressurizer Pressure	2
4.	Pressurizer Water Level	2
5.	Steam Generator Pressure	2/steam generator
6.	Steam Generator Water Level	2/steam generator
7.	Refueling Water Tank Water Level	2
8.	Containment Sump Water Level	2

*This requirement may be satisfied through July 31, 1980 by the use of portable radiation monitors equivalent in number to the minimum channels required OPERABLE.

TABLE 4.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1. Containment Pressure	M	R
2. Containment Radiation Monitors*	M	R
3. Pressurizer Pressure	M	R
4. Pressurizer Water Level	M	R
5. Steam Generator Pressure	M	R
6. Steam Generator Water Level	M	R
7. Refueling Water Tank Water Level	M	R
8. Containment Sump Water Level	M	R

*This requirement may be satisfied through July 31, 1980 by the use of portable radiation monitors, and by substituting a source check for the channel check and by substituting an instrument calibration for the channel calibration.

INSTRUMENTATION

CHLORINE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.3.3.7 Two independent chlorine detection systems, with their alarm/trip setpoints adjusted to actuate at a chlorine concentration of $\leq$ 5 ppm, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With one chlorine detection system inoperable, restore the inoperable detection system to OPERABLE status within 7 days or within the next 6 hours initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

b. With no chlorine detection system OPERABLE, within 1 hour initiate and maintain operation of the control room emergency ventilation system in the recirculation mode of operation.

c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.7 Each chlorine detection system shall be demonstrated OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours, a CHANNEL FUNCTIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION at least once per 18 months.

ATTACHMENT 2 TO AMENDMENT NO. 7

LICENSE NO. NPF-6

Preoperational Tests, Startup Tests, and Other Items Which Must be Completed Prior to Proceeding To Succeeding Operational Modes

This attachment identifies certain preoperational tests, startup tests, and other items which must be completed to the Commission's satisfaction prior to proceeding to certain specified Operational Modes. Arkansas Power & Light Company shall not proceed beyond the authorized Operational Modes without prior written authorization from the Commission.

A. The following items must be completed prior to proceeding to Operational Mode 2 (Initial Criticality).

1. Completion of significant startup punchlist items which affect the operability of the following:

   - Sampling System
   - Auxiliary Building H&V (1)
   - Emergency Feedwater System (2)
   - Plant Protective System (4)
   - Reactor Coolant System (3)
   - Waste Gas System (1)
   - Area Radiation Monitors (2)
   - Air & Gas Radiation Monitors (6)
   - Safety Injection System (2)
   - Liquid Radwaste System (4)

2. Completion of the following Preoperational Tests:

   2.083.01 Main Steam Supply and Safety Relief Valves

3. Closeout of outstanding Startup Program Test Deficiencies.

4. Approval and issuance of the following procedure:

   2.800.01 App. U Unit Load Transient Test

5. Resolution of main feedwater line break potential within the containment piping penetration room.

6. Resolution of the following items relating to radiation protection.

   a. Complete installation and calibration of health physics monitoring equipment.

   b. Complete calibration of area radiation monitors.

   c. Complete calibration of process radiation monitors.

7. Complete hanger installation.

8. Complete installation of independent DC power supplies to the series containment penetration breakers.

9. Resolution of discrepancies identified in the Facility Operating Procedures.

10. Resolution of test deficiencies relating to the failure of the Hydrogen Purge System to meet FSAR acceptance criterion. These deficiencies include:

    - Failure of the filters to pass the Freon-112 test.

    - Failure of the system to meet specified flow rate.

11. Resolution of LPSI Pump Motor Failure.

12. Resolution of loose part in safety injection system.

13. Conformance to GDC-17 offsite power deficiencies.

14. Resolution of inverter deficiencies.

15. Chloride swipes within containment.

15. Resolution of Diesel Generator No. 2 failure.

17. Resolution of CRD-58 failure.

B. The following items must be completed prior to proceeding to Operational Mode 1 (Power Operation).

   1. Completion of significant startup punchlist items which affect the operability of the following:

- Control Room H&V (1)
- Miscellaneous H&V (1)
- Feedwater System (1)
- Steam Generators (2)
- Fuel Pool and Auxiliaries (8)
- Waste Gas System (1)
- Solid Radiation Waste System (4)
- Main Steam System (2)

2. Resolution of the following outstanding operations punchlist items:

   - Instrumentation in place for CECEC Code verification.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-368

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT 2

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 7 to Facility Operating License No. NPF-6 to Arkansas Power and Light Company for operation of Arkansas Nuclear One, Unit 2 (the facility) located at the licensee's site in Pope County, Arkansas. The amended license is effective as of its date of issuance.

The amendment modifies or removes three conditions to Facility Operating License No. NPF-6 that had restricted the facility from going critical and operating at full power. One of these conditions is removed by finding that the environmental qualification test results are acceptable for certain safety-related instrumentation located inside containment. Modifications to two other conditions include changes to the Technical Specifications to permit reliance on portable radiation monitors to meet the requirement for the capability to monitor the radiation level inside the containment following an accident; and a restriction on making any software changes on the core protection calculator system pending Commission approval of change procedures.

The amendment also reflects modification to or removal of other license conditions involving acceptable completion of certain conduit penetration fire barrier testing; correction of an implementation date for an action required by the fire protection program; completion of acceptable changes needed for protection from degraded offsite power voltage; and modification of the schedule for the remaining actions needed to complete the review of three core protection calculator system positions.

OFFICE ➤					
SURNAME ➤					
DATE ➤					

The Commission has made appropriate findings as required by the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations in 10 CFR Chapter I, which are set forth in the amended license. The application for the license complies with the standards and requirements of the Act and the Commission's regulations.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR Section 51.5(d)(4) an environmental impact statement, or negative declaration and environmental appraisal impact need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) Amendment No. 7 to Facility Operating License No. NPF-6 complete with Preoperational Tests and Other Items Which Must Be Completed By the Indicated Operational Mode (Attachment 2); and (2) the Commission's related Safety Evaluation supporting Amendment No. 7 to License No. NPF-6. These items are available for public inspection at the Commission's Public Document Room at 1717 H Street, N. W., Washington, D. C. 20555 and the Arkansas Polytechnic College, Russellville, Arkansas 72801. A copy of items (1) and (2) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Project Management, Office of Nuclear Reactor Regulation.

Dated at Bethesda, Maryland this 1 day of December 1978.

Original signed by:
John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

OFFICE	LWR 1	LWR 1	STS/DOR			LWR 1
SURNAME	Ellerton/red	LEngle	DBrinkman		CWoodhead	JStolz
DATE	11/21/78	11/21/78	11/27/78	11/ /78	11/ /78	11/27/78

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-368

ARKANSAS POWER AND LIGHT COMPANY

ARKANSAS NUCLEAR ONE, UNIT 2

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 7 to Facility Operating License No. NPF-6 to Arkansas Power and Light Company for operation of Arkansas Nuclear One, Unit 2 (the facility) located at the licensee's site in Pope County, Arkansas. The amended license is effective as of its date of issuance.

The amendment modifies or removes three conditions to Facility Operating License No. NPF-6 that had restricted the facility from going critical and operating at full power. One of these conditions is removed by finding that the environmental qualification test results are acceptable for certain safety-related instrumentation located inside containment. Modifications to two other conditions include changes to the Technical Specifications to permit reliance on portable radiation monitors to meet the requirement for the capability to monitor the radiation level inside the containment following an accident; and a restriction on making any software changes on the core protection calculator system pending Commission approval of change procedures.

The amendment also reflects modification to or removal of other license conditions involving acceptable completion of certain conduit penetration fire barrier testing; correction of an implementation date for an action required by the fire protection program; completion of acceptable changes needed for protection from degraded offsite power voltage; and modification of the schedule for the remaining actions needed to complete the review of three core protection calculator system positions.

The Commission has made appropriate findings as required by the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations in 10 CFR Chapter I, which are set forth in the amended license. The application for the license complies with the standards and requirements of the Act and the Commission's regulations.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR Section 51.5(d)(4) an environmental impact statement, or negative declaration and environmental appraisal impact need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) Amendment No. 7 to Facility Operating License No. NPF-6 complete with Preoperational Tests and Other Items Which Must Be Completed By the Indicated Operational Mode (Attachment 2); and (2) the Commission's related Safety Evaluation supporting Amendment No. 7 to License No. NPF-6. These items are available for public inspection at the Commission's Public Document Room at 1717 H Street, N. W., Washington, D. C. 20555 and the Arkansas Polytechnic College, Russellville, Arkansas 72801. A copy of items (1) and (2) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Project Management, Office of Nuclear Reactor Regulation.

Dated at Bethesda, Maryland this 1 day of December 1978.

John F. Stolz

John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

SAFETY EVALUATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 7
(ARKANSAS POWER AND LIGHT COMPANY)

A. Evaluation Concerning Implementation Date of a Fire Protection Program Item

In Amendment No. 1 to License No. NPF-6 Section 2.C(3)(e) item 3.3 required that the implementation of actions required to close out item 3.3 "Protection From Water Spray" be completed by September 1, 1978.

The licensee's letter dated October 17, 1978 states that item 3.3 requires the installation of drip shields over certain safety related alternating current panels. The licensee's letter also states that the date agreed upon by the staff and the licensee for the installation of water sprinkler systems in these areas is prior to startup following the first regularly scheduled refueling outage. Therefore, the licensee concludes that installation of the spray shields to these electrical panels before installation of the sprinkler system serves no useful purpose and requests a change in the implementation date for installation of the spray shields.

We agree with the installation of the water spray systems in the portion of Fire Zone 2109-U wherein panels 2R51, 2R52, 2R53 and 2R54 are located prior to startup following the first regularly scheduled refueling outage. Therefore, we agree that the protective shields must also be installed prior to startup following the first regularly scheduled refueling outage instead of the previously required date of September 1, 1978. Therefore, this item is resolved.

B. Evaluation Concerning Containment Radiation Monitors

On June 23, 1978 the licensee submitted additional information regarding the environmental qualifications of safety related equipment. This equipment included the containment radiation monitors which are located inside the containment for the purpose of monitoring the radiation levels inside the containment following an accident. The licensee's response stated that due to certain operational problems experienced with a previous design of radiation monitor, a decision had been made to proceed with installaton of an alternate design. The staff requires that such an alternate design be shown to be sufficiently qualified by type test or analysis with environmental conditions which envelope, with margin, the ANO-2 plants design envelope requirements. The licensee further stated that information describing the environmental qualification test plan and the test results would be provided as soon as they became available.

On August 31, 1978 the licensee submitted additional information which indicated that previously unforeseeen delays had occurred in the testing program and the required test results information would not be available in time to support the planned schedule for activities following the attainment of initial reactor criticality. As an alternate to having available an acceptably qualified and operable containment radiation monitor located inside the containment the licensee proposed, for an interim period, to rely on a procedure to monitor radiation levels inside containment using portable radiation monitors at selected locations outside the containment.

On September 14, 1978 the licensee submitted further details regarding calculational methods used to determine the location and calibration requirements for the portable radiation monitors. This submittal also included a description of the procedures which would be followed to determine the radiation level inside the containment. The NRC Office of Inspection and Enforcement will monitor the implementation of the procedure described by the licensee for measuring the post-accident radiation levels inside the containment.

By application dated October 10, 1978 the licensee submitted a request for a change to the technical specifications to enable reliance on the portable radiation monitors. Upon further communication with the licensee it is agreed that the portable radiation monitoring procedure will be relied upon to meet the post-accident radiation monitoring function at all times prior to startup following the first regularly scheduled refueling outage. Subsequent to that time the staff will require that radiation monitors which have been shown to be acceptably environmentally qualified be operable and located inside the containment.

Accordingly, we have approved the changes to the Technical Specifications (Tables 3.3-10 and 4.3-10 on pages 3/4 3-40 and 3/4 3-41) for plant operation through July 31, 1980 based on our conclusions that:

(1) The locations chosen for the portable detector readings outside containment assure a good correlation to inside containment levels without endangering personnel taking the reading; and,

(2) the calculational methods needed to determine the actual radiation level in the containment readily provide the post loss-of-coolant accident radiation levels inside containment within a reasonable accuracy.

We further conclude that operation of the ANO-2 plant in Modes 2 and 1, with respect to this matter, is acceptable provided the plant procedures are modified, as addressed in the licensee's September 14, 1978 submittal prior to attaining initial criticality.

OFFICE ➤						
SURNAME ➤						
DATE ➤						

C. Evaluation Concerning the Environmental Qualification of Safety Related Equipment

In Supplement No. 2 to the Arkansas Nuclear One - Unit 2 (ANO-2) Safety Evaluation Report and in Amendment No. 1 to License No. NPF-6 we provided our evaluation of this matter. We concluded that the qualification methodology, utilizing separate effects testing, used to qualify the Foxboro and Fischer and Porter safety related equipment located inside containment was unacceptable. We required that the licensee conduct additional confirmatory testing on this equipment to ensure that it would maintain its functional operability when it is exposed sequentially to the radiation, seismic and loss-of-coolant accident environment that is calculated to occur at the plant (with margin). Alternatively, the applicant would be required to replace this equipment with other transmitters that are qualified to these specified conditions.

As a result, the applicant elected to replace all the Fischer and Porter equipment (i.e., Models 50EP1041 and 13D2495) inside containment with Rosemount Model 1153 instruments and submitted a Rosemount qualification test report (No. 3788 dated March 1978) to support the qualification adequacy of this equipment.

In addition, the applicant has completed a confirmatory thirty-day qualification test of the Foxboro Model E11AH transmitter and a Rosemount Model 1153A transmitter in accordance with the sequential testing requirements specified above. The confirmatory test consisted of irradiating the transmitter to 3.7×10 rads prior to seismic testing. The units were then exposed to loss-of-coolant accident environment of 304 degrees Fahrenheit, 56.4 pounds per square inch gauge (psig) for about ten minutes followed by discrete reductions in temperature and pressure to 150 degrees Fahrenheit, and five psig after 24 hours. These conditions were maintained for the remainder of the 30 day test. During the first 24 hours the units were subjected to chemical sprays with a pH of 11.0. These conditions also envelope the conditions that these instruments would be exposed to in the event of a postulated main steamline break accident.

The licensee submitted in letters dated September 26, 1978 and October 16, 1978, preliminary test data for these transmitters obtained through the first twelve days of the simulated loss-of-coolant accident environment test. These preliminary data showed that, for the first twelve days, the Foxboro Model E11AH and Rosemount Model 1153A transmitters maintained their functional operability and met the acceptance criteria. However, the applicant stated that the Foxboro transmitter output failed to zero on the twelfth day of testing. The thirty-day test was completed with both transmitters remaining in place in the test chamber.

Subsequent to the test, investigation identified the failure mechanism of the Foxboro transmitters as a wiring short circuit external to the hostile environment of the test chamber. That failure was corrected and the applicant has reported to the staff that the functional operability of the Foxboro transmitter was reestablished and that it met acceptance criteria. They also reported that the Rosemount transmitters maintained their operability throughout the test.

Based on our review of the Rosemount test report, the preliminary test data from the confirmatory tests described above, and the satisfactory resolution of concerns identified during the review regarding the design interface, we conclude that both the Foxboro Model E11AH and Rosemount Model 1153A transmitters have been acceptably qualified and, therefore, are acceptable for operation in Mode 1 (Power Operation).

D. Evaluation Concerning the Core Protection Calculator System

(1) CPCS Position No. 1, Power Distribution Algorithim

(2) CPCS Position No. 5, Cable Separation

(3) CPCS Position No. 12, Electrical Noise and Isolation

In Amendment No. 1 to License No. NPF-6 license condition No. 2.C.(3)(k) subparts 1, 2 and 3 specified that in response to each of the subparts a submittal would be required by a specific date. The choice of the specific date, February 28, 1978, was predicated on an initial cricicality date of early September, 1978. It is now apparent that initial criticality will not be achieved until some significant time after September 1978 and therefore, the status of the startup and power ascension testing program will not permit the completion of these tests and the reporting of the results by the specified date.

Therefore, we conclude that it is more appropriate to condition the license to require that the results of the testing necessary to complete the licensee's response to CPCS Positions 1, 5 and 12 be included in the startup report required by Technical Specification No. 6.9.1. Accordingly, conditions 2.C.(3)(k) subparts 1, 2 and 3 of Amendment No. 1 are modified to require this information to be reported in the startup report required by Technical Specification No. 6.9.1.

(4) CPCS Position No. 19, Software Change Procedure Qualification

In Amendment No. 1 to License No. NPF-6 license condition No. 2.C.(3)(k)(4) specified that additional information related to this subject be submitted for the Commission's review and approval prior to Mode 2 operations.

The licensee has completed the submittal of responses to all items identified by the staff as requiring resolution to enable the issuance of an approval of the licensee's proposed software change procedure. The Staff is currently reviewing this information.

An acceptable software qualification procedure is not necessary for the safe operation of the ANO-2 plant since the currently existing software for ANO-2 is considered acceptable by the staff for operation of the plant up to the 100 percent authorized power level. However, should the licensee wish to make a change to the software a software change procedure acceptable to the staff is required.

Therefore, we consider that it is appropriate to condition the license only to require that no changes be made to the software pending the completion of our review of the information submitted by the licensee. Accordingly, license condition No. 2.C.(3)(k)(4) of Amendment No. 1 has been modified to delete the requirement that this issue be resolved prior to entry into Mode 2 operations.

E. Evaluation Concerning Fire Barrier Testing

In Amendment No. 1 to License No. NPF-6, license condition No. 2.C.(3)(n) specified that the licensee was to submit a report on the results of fire testing conducted on a fire barrier containing steel conduit loaded with cables and sealed at the ends of the conduit.

On August 31, 1978 the licensee submitted a report concerning the qualification testing of conduit penetration fire barrier seals.

We have reviewed the licensee's submittal and find that this test and its results adequately demonstrate the capability of the tested seal design for sealing of rigid steel conduit at the end rather than at the barrier to prevent propagation of fire through the conduit. On this basis, we conclude that this item is satisfactorily resolved.

F. Offsite Power System

Degraded Grid Voltage

We stated in Supplement No. 2 (issued on September 2, 1978), that the licensee had submitted by letter, dated March 30, 1978, a summary of a degraded grid voltage study and details of implemented design modifications which would ensure the operability of the Class IE electrical distribution system.

We reviewed the licensee's degraded grid voltage analysis and the details of the design modifications and found them to be acceptable provided an additional 92 percent relay trip was provided on each of the safety trains as an augmented second level of under voltage protection. This second level of under voltage protection will trip the incoming offsite power source at the 4160 volt safety busses in the event the 480 volt safety busses drop below 92 percent of their rated value.

The time allowed for the licensee to install and complete the additional 92 percent relay trip on each safety train was stipulated as February 28, 1979 and was so stated in Condition 2.C.3(o) as provided in Amendment No. 1 to License NPF-6 issued on September 1, 1978.

By memorandum dated November 13, 1978, we were notified by the Office of Inspection and Enforcement that the licensee has met the provisions of Condition 2.C.3(o) to License NPF-6 as amended. Therefore, we conclude Facility Operating License NPF-6 can be amended by removing the stipulations of Condition 2.C.3(o) as so stated in Amendment No. 1 to License NPF-6.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the

public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Original signed by:

Leon B. Engle, Project Manager
Light Water Reactors Branch No. 1
Division of Project Management

Original signed by:

John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management

DATED: DEC 1 1978

OFFICE	LWR 1	LWR 1				
SURNAME	LEngle/red	JStolz				
DATE	11/21/78	11/21/78				

December 1, 1978

ARKANSAS NUCLEAR ONE, UNIT 2 OPERATING LICENSE NO. NPF-6, AMENDMENT NO. 7

Distribution
Docket File
NRC PDR
Local PDR
LWR #1 File
Attorney, ELD
R. S. Boyd
D. B. Vassallo
J. F. Stolz
L. Engle
E. Hylton (5)
F. J. Williams
D. Crutchfield
Lana Cobb
IE (5)
N. Dube, MPA
M. Jinks, OA (4)
R. Diggs, ADM
V. A. Moore, DSE
R. C. DeYoung, DSE
R. H. Vollmer, DSE
M. L. Ernst, DSE
R. P. Denise, DSE
R. J. Mattson, SS
J. P. Knight, SS
D. F. Ross, SS
R. L. Tedesco, SS
B. Scharf, ADM (15 copies)
D. Skovholt
I. Dinitz
A. Toalston, AIG
H. Bristow, NMSS
V. Stello, OR
B. Grimes, OR
J. McGough, OR
D. Eisenhut, OR
W. Pasciak, OR
F. S. Echols, EP
M. Slater, EP
F. Rosa
D. Brinkman
R. Ingram
DOR Project Manager

bcc: J. R. Buchanan, NSIC
T. B. Abernathy, TIC
A. Rosenthal, ASLAB
J. Yore, ASLBP
ACRS (16)