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August

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POSTED
Amdt 148 to
DPR-52

Dockets Nos. 50-259/260/296

Mr. S. A. White
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. White:

SUBJECT: REVISION TO TECHNICAL SPECIFICATION TABLE 3.7.A TO MODIFY VALVE STROKE TIMES, BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 (TAC 00074, 00075, 00076) (TS 244)

The Commission has issued the enclosed Amendments Nos. 152,148 , and 123 to Facility Operating Licenses Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3, respectively. These amendments are in response to your application dated June 13, 1988. The amendments modify Technical Specification Table 3.7.A by changing the maximum operating time for the inboard low pressure coolant injection valves from 30 seconds to 40 seconds.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

Original signed by gerald E. gears for

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Enclosures:
1. Amendment No. 152 to License No. DPR-33
2. Amendment No. 148 to License No. DPR-52
3. Amendment No. 123 to License No. DPR-68
4. Safety Evaluation

cc w/enclosures:
See next page

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

August 8, 1988

Docket Nos. 50-259/260/296

Mr. S. A. White
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. White:

SUBJECT: REVISION TO TECHNICAL SPECIFICATION TABLE 3.7.A TO MODIFY VALVE STROKE TIMES, BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 (TAC 00074, 00075, 00076) (TS 244)

The Commission has issued the enclosed Amendments Nos. 152, 148, and 123 to Facility Operating Licenses Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3, respectively. These amendments are in response to your application dated June 13, 1988. The amendments modify Technical Specification Table 3.7.A by changing the maximum operating time for the inboard low pressure coolant injection valves from 30 seconds to 40 seconds.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

Gerald E. Gears

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Enclosures:
1. Amendment No. 152 to License No. DPR-33
2. Amendment No. 148 to License No. DPR-52
3. Amendment No. 123 to License No. DPR-68
4. Safety Evaluation

cc w/enclosures:
See next page

Mr. S. A. White
Tennessee Valley Authority

Browns Ferry Nuclear Plant
Units 1, 2, and 3

cc:
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Committee on Interior
and Insular Affairs
U.S. House of Representatives
Washington, D.C. 20515

Tennessee Valley Authority
Rockville Office
11921 Rockville Pike
Suite 402
Rockville, Maryland 20852

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 152
License No. DPR-33

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

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated June 13, 1988, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 rules and regulations of the Commission;

   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 license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-33 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 152, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 8, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 152

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages* are provided to maintain document completeness.

REMOVE	INSERT
3.7/4.7-25	3.7/4.7-25
3.7/4.7-26	3.7/4.7-26*

TABLE 3.7.A
PRIMARY CONTAINMENT ISOLATION VALVES

Group	Valve Identification	Number of Power Operated Valves Inboard	Outboard	Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
1	Main steamline isolation valves (FCV-1-14, -26, -37, & -51; 1-15 -27,- 38, & -52)	4	4	3 < T < 5	O	GC
1	Main steamline drain isolation valves (FCV-1-55 & 1-56)	1	1	15	O	GC
1 *	Reactor Water sample line isolation valves	1	1	5	C	SC
2	RHRS shutdown cooling supply isolation valves (FCV-74-48 & -47)	1	1	40	C	SC
2	RHRS - LPCI to reactor (FCV-74-53, -67)		2	40	C	SC
2	Reactor vessel head spray isolation valves (FCV-74-77, -78)	1	1	30	C	SC
2	RHRS flush and drain vent to suppression chamber (FCV-74-102, -103, -119, & -120)		4	20	C	SC
2	Suppression Chamber Drain (FCV 75-57, -58)		2	15	O**	GC
2	Drywell equipment drain discharge isolation valves (FCV-77-15A, & -15B)		2	15	O	GC
2	Drywell floor drain discharge isolation valves (FCV-77-2A & -2B)		2	15	O	GC

*These valves isolate only on reactor vessel low low water level (470") and main steam line high radiation of Group 1 isolations.

**These valves are normally open when the pressure suppression head tank is aligned to serve the RHR and CS discharge piping and closed when the condensate head tank is used to serve the RHR and CS discharge piping. (See Specification 3.5.H)

TABLE 3.7.A (Continued)

Group	Valve Identification	Number of Power Operated Valves Inboard	Outboard	Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
3	Reactor water cleanup system supply isolation valves (FCV-69-1, & -2)	1	1	30	0	GC
3	Reactor water cleanup system return isolation valves (FCV-69-12)		1	60	0	GC
4	FCV 73-81 (Bypass around FCV 73-3)		1	10	0	GC
4	HPCIS steamline isolation val (FCV-73-2 & -3)	1	1	20	0	GC
5	RCICS steamline isolation valves (FCV-71-2 & -3)	1	1	15	0	GC
6	Drywell nitrogen purge inlet isolation valves (FCV-76-18)		1	5	C	SC
6	Suppression chamber nitrogen purge inlet isolation valves (FCV-76-19)		1	5	C	SC
6	Drywell Main Exhaust isolation valves (FCV-64-29 and -30)		2	2.5	C	SC
6	Suppression chamber main exhaust isolation valves (FCV-64-32 and -33)		2	2.5	C	SC
6	Drywell/Suppression Chamber purge inlet (FCV-64-17)		1	2.5	C	SC
6	Drywell Atmosphere purge inlet (FCV-64-18)		1	2.5	C	SC

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 148
License No. DPR-52

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

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated June 13, 1988, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 rules and regulations of the Commission;

   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 license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-52 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 148, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 8, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 148

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages* are provided to maintain document completeness.

REMOVE	INSERT
3.7/4.7-25	3.7/4.7-25
3.7/4.7-26	3.7/4.7-26*

TABLE 3.7.A
PRIMARY CONTAINMENT ISOLATION VALVES

Group	Valve Identification	Number of Power Operated Valves Inboard	Outboard	Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
1	Main steamline isolation valves (FCV-1-14, 26, 37, & 51; 1-15, 27, 38, & 52)	4	4	3 < T < 5	O	GC
1	Main steamline drain isolation valves (FCV-1-55 & 1-56)	1	1	15	O	GC
1*	Reactor Water sample line isolation valves	1	1	5	C	SC
2	RHRS shutdown cooling supply isolation valves (FCV-74-48 & 47)	1	1	40	C	SC
2	RHRS - LPCI to reactor (FCV-74-53 & 67)		2	40	C	SC
2	RHRS flush and drain vent to suppression chamber (FCV-74-102, 103, 119, & 120)		4	20	C	SC
2	Suppression Chamber Drain (FCV-75-57, 58)		2	15	O**	GC
2	Drywell equipment drain discharge isolation valves (FCV-77-15A & 15B)		2	15	O	GC
2	Drywell floor drain discharge isolation valves (FCV-77-2A & 2B)		2	15	O	GC

*These valves isolate only on reactor vessel low low water level (470") and main steam line high radiation of Group 1 isolations.
**These valves are normally open when the pressure suppression head tank is aligned to serve the RHR and CS discharge piping and closed when the condensate head tank is used to serve the RHR and CS discharge piping. (See Specification 3.5.H)

TABLE 3.7.A (Continued)

Group	Valve Identification	Number of Power Operated Valves Inboard	Outboard	Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
3	Reactor water cleanup system supply isolation valves FCV-69-1, & 2	1	1	30	O	GC
4	FCV 73-81 (Bypass around FCV 73-3)		1	10	O	GC
4	HPCIS steamline isolation valves FCV-73-2 & 3	1	1	20	O	GC
5	RCICS steamline isolation valves FCV-71-2 & 3	1	1	15	O	GC
6	Drywell nitrogen purge inlet isolation valves (FCV-76-18)		1	5	C	SC
6	Suppression chamber nitrogen purge inlet isolation valves (FCV-76-19)		1	5	C	SC
6	Drywell Main Exhaust isolation valves (FCV-64-29 and 30)		2	2.5	C	SC
6	Suppression chamber main exhaust isolation valves (FCV-64-32 and 33)		2	2.5	C	SC
6	Drywell/Suppression Chamber purge inlet (FCV-64-17)		1	2.5	C	SC
6	Drywell Atmosphere purge inlet (FCV-64-18)		1	2.5	C	SC

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 123
License No. DPR-68

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

   A. The application for amendment by Tennessee Valley Authority (the licensee) dated June 13, 1988, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 rules and regulations of the Commission;

   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 license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-68 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 123 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: August 8, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 123

FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages* are provided to maintain document completeness.

REMOVE	INSERT
3.7/4.7-24	3.7/4.7-24
3.7/4.7-25	3.7/4.7-25*

TABLE 3.7.A
PRIMARY CONTAINMENT ISOLATION VALVES

Group	Valve Identification	Number of Power Operated Valves Inboard	Outboard	Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
1	Main steamline isolation valves (FCV-1-14, -26, -37, & -51; 1-15 -27, - 38, & -52)	4	4	3 < T < 5	O	GC
1	Main steamline drain isolation valves (FCV-1-55 & 1-56)	1	1	15	O	GC
1 *	Reactor Water sample line isolation valves	1	1	5	C	SC
2	RHRS shutdown cooling supply isolation valves (FCV-74-48 & -47)	1	1	40	C	SC
2	RHRS - LPCI to reactor (FCV-74-53, -67)		2	40	C	SC
2	RHRS flush and drain vent to suppression chamber (FCV-74-102, -103, -119, & -120)		4	20	C	SC
2	Suppression Chamber Drain (FCV 75-57, -58)		2	15	O**	GC
2	Drywell equipment drain discharge isolation valves (FCV-77-15A, & -15B)		2	15	O	GC
2	Drywell floor drain discharge isolation valves (FCV-77-2A & -2B)		2	15	O	GC

*These valves isolate only on reactor vessel low low water level (470") and main steam line high radiation of Group 1 isolations.

**These valves are normally open when the pressure suppression head tank is aligned to serve the RHR and CS discharge piping and closed when the condensate head tank is used to serve the RHR and CS discharge piping. (See Specification 3.5.H)

TABLE 3.7.A (Cont'd)

Group	Valve Identification	Number of Power Operated Valves Inboard	Outboard	Maximum Operating Time (sec.)	Normal Position	Action on Initiating Signal
3	Reactor water cleanup system supply isolation valves (FCV-69-1, & -2)	1	1	30	0	GC
4	FCV-73-81 (Bypass around FCV-73-3)		1	10	0	GC
4	HPCIS steamline isolation valves (FCV-73-2 & -3)	1	1	20	0	GC
5	RCICS steamline isolation valves (FCV-71-2 & -3)	1	1	15	0	GC
6	Drywell nitrogen purge inlet isolation valves (FCV-76-18)		1	5	C	SC
6	Suppression chamber nitrogen purge inlet isolation valves (FCV-76-19)		1	5	C	SC
6	Drywell Main Exhaust isolation valves (FCV-64-29 and -30)		2	2.5	C	SC
6	Suppression chamber main exhaust isolation valves (FCV-64-32 and -33)		2	2.5	C	SC
6	Drywell/Suppression Chamber purge inlet (FCV-64-17)		1	2.5	C	SC
6	Drywell Atmosphere purge inlet (FCV-64-18)		1	2.5	C	SC

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

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 152 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 148 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 123 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2 AND 3

DOCKETS NOS. 50-259, 50-260 AND 50-296

1.0 INTRODUCTION

By letter dated June 13, 1988, the Tennessee Valley Authority (TVA or the licensee) requested an amendment to Appendix A of the Browns Ferry Nuclear Plant (BFN) Units 1, 2 and 3 Technical Specifications (TS) for Facility Operating Licenses DPR-33, DPR-52, and DPR-68. The amendment would modify TS Table 3.7.A to increase the maximum operating time for the inboard low pressure coolant injection (LPCI) valves, FCV 74-53 and FCV 74-67, from 30 seconds to 40 seconds.

Environmental qualification modifications required to meet 10 CFR Part 50.49 criteria resulted in longer stroke times for selected valves in the Emergency Core Cooling Systems. The motor brakes for LPCI injection valves FCV 74-53 and FCV 74-67 could not be qualified for a harsh postaccident environment nor could qualified brakes be procured. The valve operator brakes were then removed and the valves were regeared which increased the valve stroke times.

2.0 EVALUATION

LPCI is an operating mode of the Residual Heat Removal (RHR) system. LPCI operation utilizes two identical pump loops, with each loop containing two pumps in parallel. The two loops are arranged to discharge water into different reactor recirculation loops. The inboard LPCI injection valves (FCV 74-53, FCV 74-67) are normally closed. The LPCI mode of the RHR system is initiated by: (1) high drywell pressure (2.45 psig); or (2) low reactor vessel water level (378 inches). When the reactor vessel pressure has dropped to 450 psig, the LPCI injection valves to both recirculation loops open automatically to allow the LPCI pumps to inject water into the vessel as reactor pressure drops below the pump shutoff head.

Historically, the recirculation discharge line break with an assumed failure of the LPCI injection valve has been the most limiting loss of coolant accident (LOCA) event for Browns Ferry. With the increased valve stroke time, the limiting break event for BFN is still the recirculation discharge line

break with an assumed failure of a LPCI injection valve. A comprehensive LOCA analysis was performed by General Electric with the new valve stroke time. This evaluation also examined the impact of the extended valve stroke time on non-LOCA events, such as high energy line breaks (HELB) and Appendix R fire events, the containment isolation function of the valve, and offsite dose calculations.

In addition to providing water to flood the reactor during a LOCA, the injection valves are part of the return path for the cooling water to the reactor vessel during operation of the shutdown cooling mode of the RHR system. The shutdown cooling mode of the RHR involves long periods of manual operation such that the 10-second increase in the valve stroke time will not adversely affect the function of the LPCI valves in this mode.

The LPCI valves involved in the proposed change are also containment isolation valves. The containment isolation function of each LPCI line is provided by two valves in series: the testable check valve inside the drywell and the normally closed injection valve. The LPCI injection valves have an automatic isolation signal during shutdown cooling. The injection valves are normally closed, and open only during shutdown cooling, surveillance testing, and when required by a LOCA. During shutdown cooling, the reactor pressure is low enough that rapid reactor isolation is not necessary. For a postulated break along the LPCI line, the testable check valve will provide isolation until the redundant isolation valves are closed.

The LPCI system is also used to protect core integrity for HELB events and for certain Appendix R fire events. The licensee's analysis indicated the HELB event is not the most limiting for BFN. The Appendix R fire event is similar to the HELB event in that the reactor will be isolated for a long time after event initiation. Reactor depressurization is accomplished with the main steam relief valves. Thus, the core cooling capability is more dependent on the pump shutoff head than the valve stroke time.

A comprehensive LOCA analysis was performed with the new valve stroke times. This evaluation also examined the impact of the extended valve stroke time on non-LOCA events, other safety functions of the valves, and offsite dose calculations. This safety evaluation demonstrated that the extended valve stroke times will have insignificant impact on all the analyses above. In addition, the increase in valve stroke time will not result in any changes in the Maximum Average Planar Linear Heat Generation Ratio for all fuel types at BFN. Based on the above, the staff concludes that the increase in the operating time of the LPCI injection valves does not significantly impact the safe operation of the plant and is therefore acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

The amendments involve a change to a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of

any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement nor environmental assessment need be prepared in connection with the issuance of these amendments.

4.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: J. Kelly

Dated: August 8, 1988