

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY  
MONTICELLO NUCLEAR GENERATING PLANT

Docket No. 50- 263

REQUEST FOR AMENDMENT TO  
OPERATING LICENSE NO. DPR-22  
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(License Amendment Request Dated July 29, 1977)

Northern States Power Company, a Minnesota corporation, requests authorization for changes to the Technical Specifications as shown on the attachments labeled Exhibit A and Exhibit B. Exhibit A describes the proposed changes along with reasons for the change. Exhibit B is a set of Technical Specification pages incorporating the proposed changes.

This request contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By

*L. J. Wachter*

L J Wachter

Vice President, Power Production &  
System Operation

On this 29th day of July, 1977, before me a notary public in and for said County, personally appeared L J Wachter, Vice President, Power Production & System Operation, and first being duly sworn acknowledged that he is authorized to execute this document in behalf of Northern States Power Company, that he knows the contents thereof and that to the best of his knowledge, information and belief, the statements made in it are true and that it is not interposed for delay.

*Denise E. Halvorson*

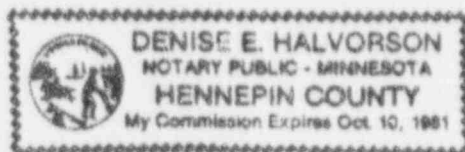


EXHIBIT A

MONTICELLO NUCLEAR GENERATING PLANT  
DOCKET NO. 50-263

LICENSE AMENDMENT REQUEST DATED JULY 29, 1977

PROPOSED CHANGES TO TECHNICAL SPECIFICATIONS  
APPENDIX A OF PROVISIONAL OPERATING  
LICENSE NO. DPR-22

Pursuant to 10CFR50.59, the holders of Provisional Operating License DPR-22 hereby propose the following changes to the Appendix A Technical Specifications:

1. ROD WORTH MINIMIZER

PROPOSED CHANGES

On Page 78, TS 3.3.B.5 and 4.3.B.5, change the acronym "RWM" to "RBM".

REASON FOR CHANGE

A change to this page was requested in our License Amendment Request Dated September 22, 1972. On November 27, 1973 that change was issued. In the course of re-typing the page this error crept in. There is no question but what it should read RBM as shown in our September 22, 1972 submittal and all prior versions; the staff safety evaluation did not address this as an additional intended change when it was issued. The wording proposed above is consistent with the remainder of those specifications and their bases, whereas the present wording is not.

SAFETY EVALUATION

This change merely corrects a previous typing error and has no safety significance.

2. MCPR LIMITS

PROPOSED CHANGE

On Page 189D, TS 3.11.C and on Page 189F, first paragraph of Bases 3.11.C, change the operating MCPR limits from "1.38" to "1.46" and from "1.29" to "1.37" for 8x8 and 7x7 fuel respectively.

REASON FOR CHANGE

License Event Report M-RO-77-12 identified a delta MCPR of 0.08 which was found necessary and administratively applied at that time. It was discovered that a model change was appropriate to properly represent the manner in which the load shedding of the recirculation pumps occurred during the limiting abnormal operational transient.

## EXHIBIT A

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### SAFETY EVALUATION

The Monticello Plant electrical protection design scheme incorporates trip circuitry for the recirculation pump M-G set drive motors. This is done to avoid the transfer of large, non-essential electrical loads from the auxiliary transformer to the reserve transformer in the event of a turbine or generator trip. The pump trip uses device having a long history of reliable operation with certain elements of redundancy; however, it does not meet the same rigorous standards as does the reactor protection system. When fuel thermal limits were analyzed using the Henschel-Levy heat flux correlation, it was found that limiting transients were not affected by the recirculation pump trip. Transients were analyzed assuming the pump trip existed.

An analysis for conditions expected at the end of the next cycle was recently done using the same model as in the past except that GETAB replaced the Henschel-Levy correlation. The results of a turbine trip without bypass showed a delta CPR for the pump trip case 0.08 smaller than the case without the trip. In evaluating this unexpected situation, it was discovered that in the past the pump trip was modeled to occur too rapidly. The appropriate corrections, referenced to measured plant data, were incorporated into the model. The modified transient model was used for analysis of the next cycle. An adjustment of 0.08 to the MCPR operating limit is bounding for the duration of the present cycle. A re-analysis of the transient shows that the recirculation pump trip occurs too late to have any effect in determining thermal limits. Turbine and generator trips will continue to be modeled to include the pump trip to best represent the existing equipment.

The MCPR operating limit is derived by adding to the MCPR safety limit the maximum delta CPR of the limiting abnormal operational transient. The reactor transients and the thermal hydraulic responses were analyzed as described in the topical report, "GE/BWR Generic Reload Licensing Application for 8x8 Fuel, Revision 1, Supplement 4, April 1976, NEDO-20360". It was found that at the end of the next cycle the turbine trip without bypass event and the generator load rejection without bypass event are equally limiting, having a delta CPR of 0.40 for 8x8 fuel. (All 7x7 fuel will be removed from the core during the next refueling outage.) The MCPR safety limit of 1.06 is not changed, placing the new MCPR operating limit at 1.46. The input and output for the limiting transient calculations are presented in the attached Tables 1, 2 and 3 and Figures 1, 2 and 3.

Table 1

GETAB TRANSIENT ANALYSIS INITIAL CONDITION PARAMETERS

Peaking factors (local, radial and axial)	1.22/1.49/1.40
R-Factor	1.094
Bundle Power (MWt)	5.004
Nonfuel Power Fraction	0.035
Core Flow (lb/hr)	$57.6 \times 10^6$
Bundle Flow (lb/hr)	$1.07 \times 10^5$
Reactor Pressure (psia)	1030
Inlet Enthalpy (Btu/lb)	523.2
Initial MCPR	1.47

Table 2

## TRANSIENT INPUT PARAMETERS

Thermal Power, (MWt)	1670	100%
Rated Steam Flow, (lb/hr)	$6.78 \times 10^6$	100%
Rated Core Flow, (lb/hr)	$57.6 \times 10^6$	100%
Dome Pressure, (psig)	1025	
Turbine Pressure, (psig)	980	
S/RV Setpoint, (psig)	1080 + 1%	
S/RV Capacity (at Setpoint), (No. /%)	6/68.76	
S/RV Time Delay, (msec)	400	
S/RV Stroke Time, (msec)	100	
Void Coefficient, (c/%Rg)	-8.92	
Void Fraction, (%)	37.47	
Doppler Coefficient, (c/°F)	-0.217	
Average Fuel Temperature, (°F)	1192	
Scram Reactivity Curve	Figure 1	
Scram Worth, (\$)	-30.71	

Table 3

## TRANSIENT DATA SUMMARY

<u>Transient</u>	<u>Power</u> <u>(%)</u>	<u>Core</u> <u>Flow</u> <u>(%)</u>	<u>Peak</u> <u>Ø</u> <u>(%)</u>	<u>Peak</u> <u>Q/Δ</u> <u>(%)</u>	<u>Peak</u> <u>P<sub>SL</sub></u> <u>(psig)</u>	<u>Peak</u> <u>P<sub>V</sub></u> <u>(psig)</u>	<u>ΔCPR</u>
Generator Load Rejection w/o Bypass	100	100	468.3	123.7	1193	1223	0.40
Turbine trip w/o Bypass	100	100	444.5	122.8	1193	1222	0.40



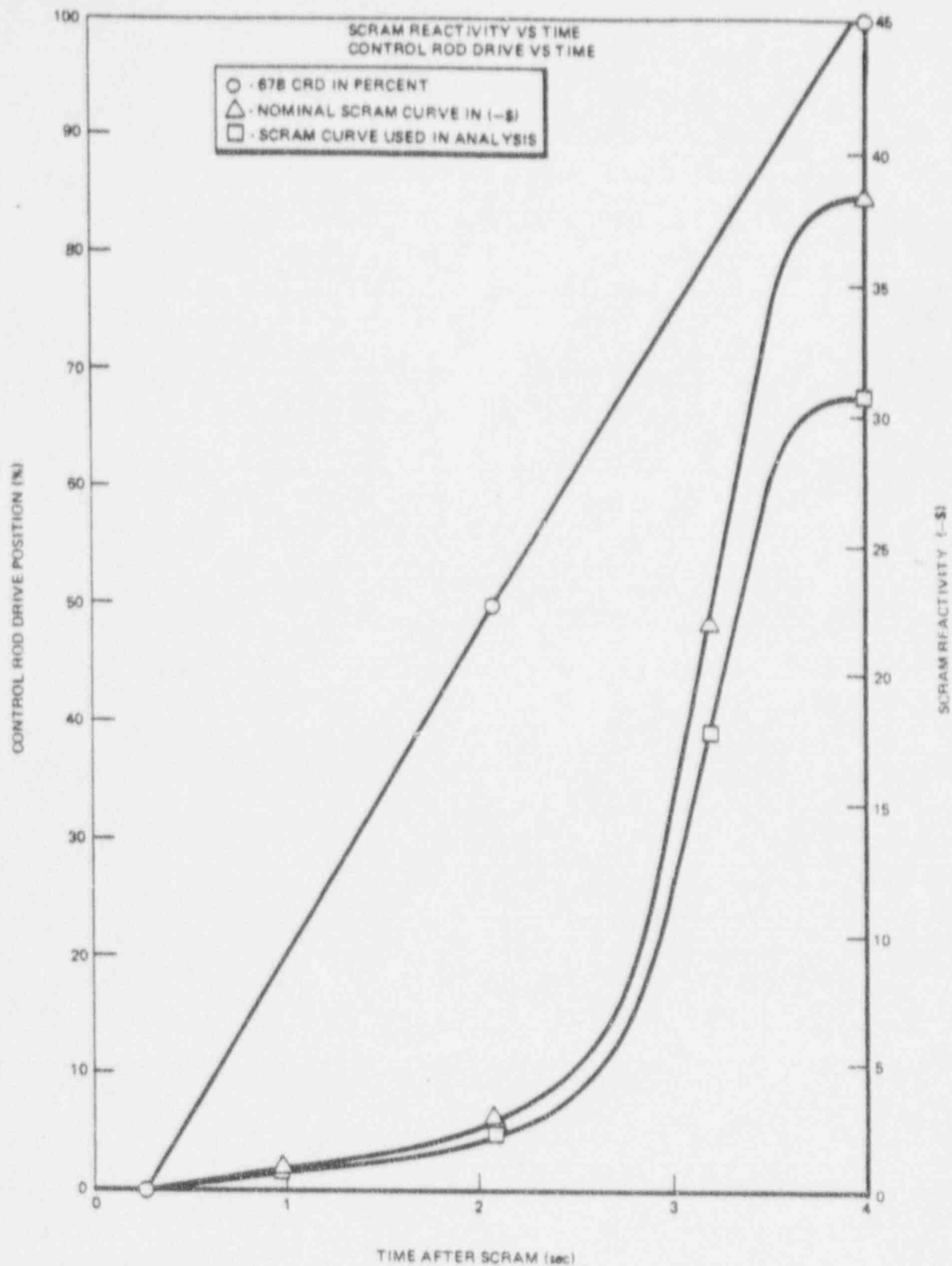


Figure 1 Scram Reactivity and Control Rod Drive Specifications,  
Monticello Cycle 6

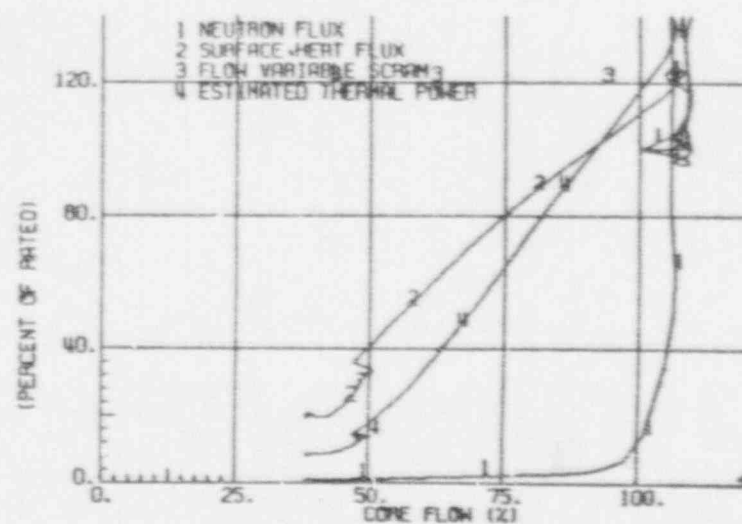
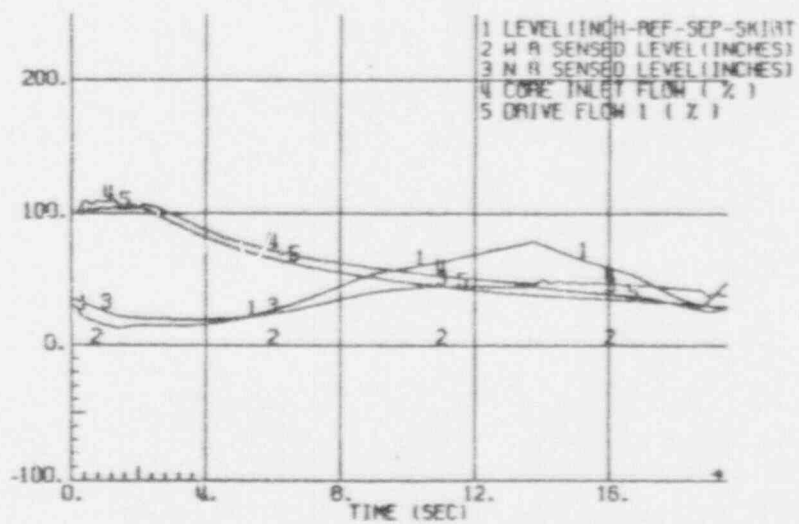
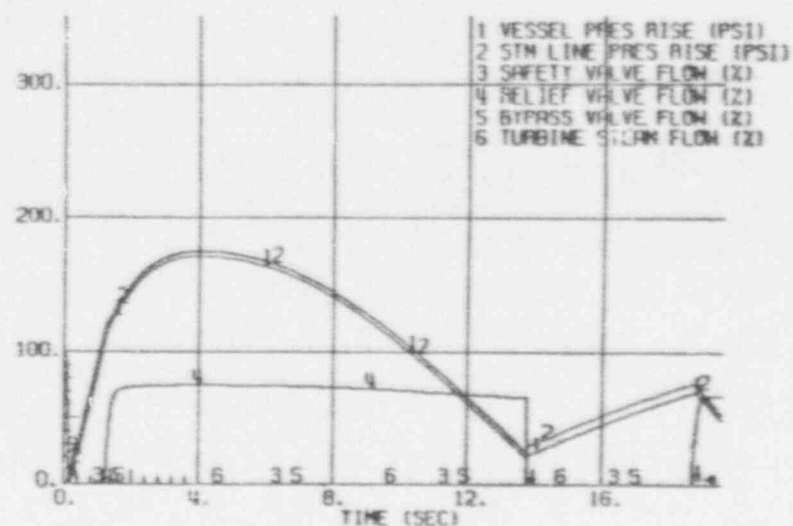
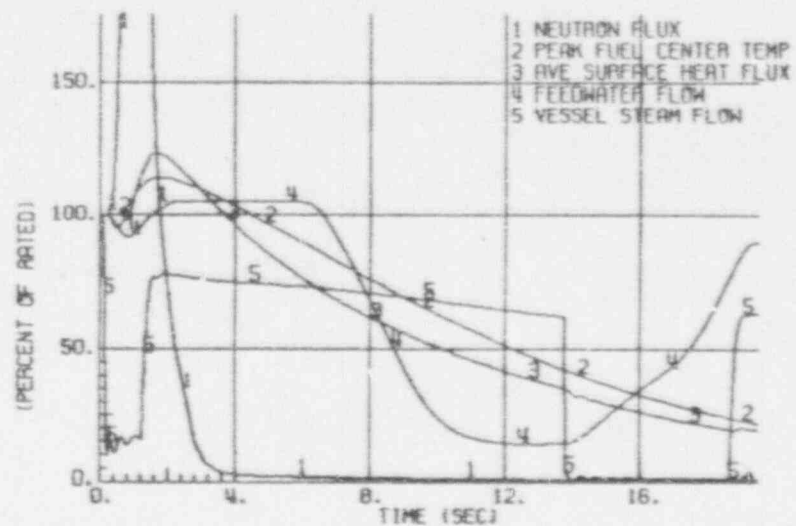


FIGURE 2 MONTICELLO  
GENERATOR LOAD REJECTION, WITHOUT BYPASS

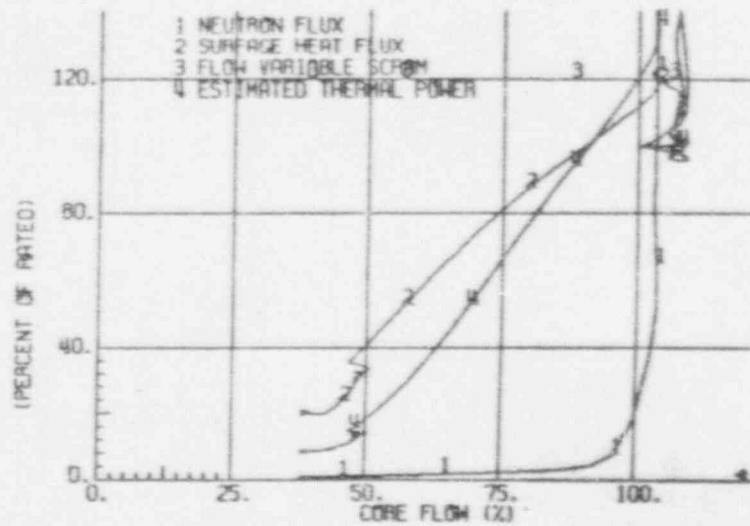
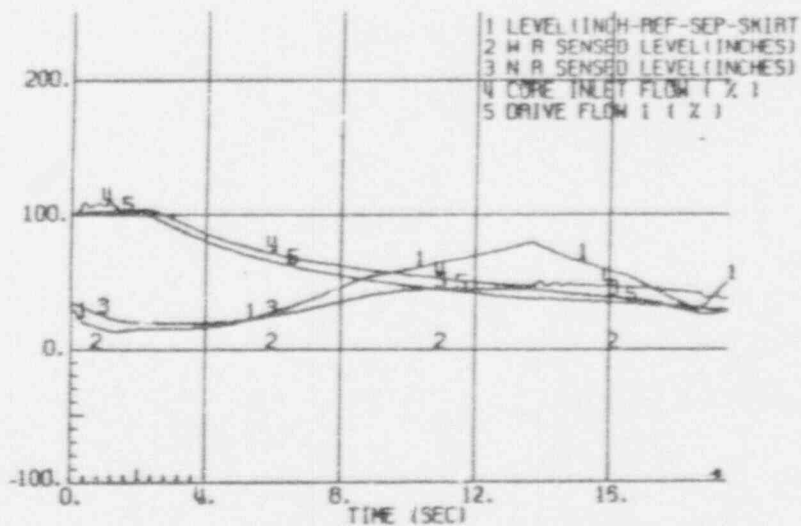
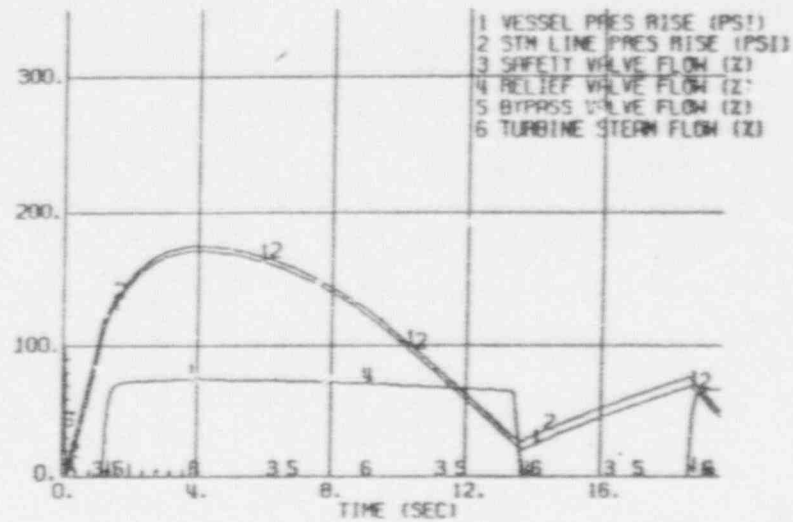
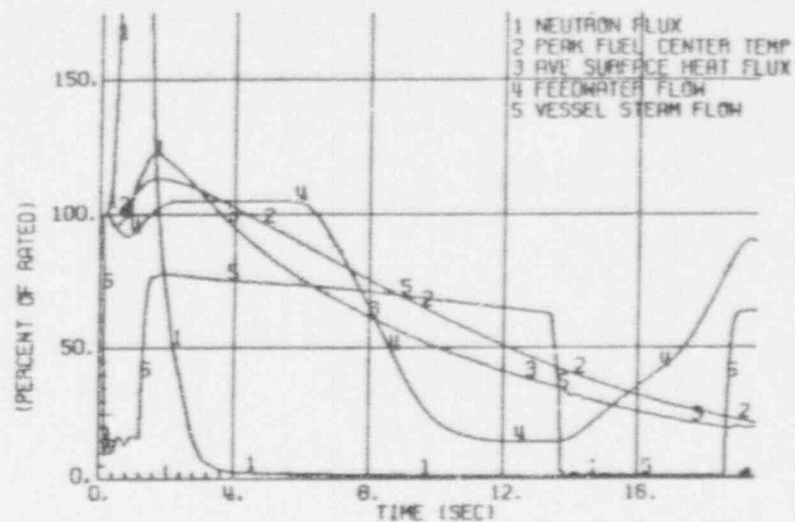


FIGURE 3 MONTICELLO  
TURBINE TRIP WITHOUT BYPASS, TRIP SCRAM



EXHIBIT B

LICENSE AMENDMENT REQUEST DATED JULY 29, 1977

This exhibit consists of the following pages revised to incorporate all of the proposed Technical Specification changes:

78  
189D  
189F