ENERGY NORTHWEST

P.O. Box 968 ■ Richland, Washington 99352-0968

April 10, 2000
GO2-00-067

Docket No. 50-397

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: **WNP-2 OPERATING LICENSE NPF-21; AMENDMENT 54 TO THE WNP-2 FINAL SAFETY ANALYSIS REPORT; REVISIONS TO THE TECHNICAL SPECIFICATION BASES AND LICENSEE CONTROLLED SPECIFICATION**

References:
1) Letter, GO2-97-022, dated February 7, 1997, JV Parrish (Supply System) to NRC, "Adequacy and Availability of Design Bases Information"
2) Memorandum EGM 98-007, dated September 15, 1998, James Lieberman, Director Office of Enforcement to Hubert J Miller, Regional Administrator Region I, et al, "Enforcement Guidance Memorandum-Extension of Exercise Discretion for FSAR Discrepancies Identified While the Licensee Has a defined Program for Identifying Such Discrepancies"
3) Letter, GO2-98-201, dated November 30, 1998, RL Webring (Supply System) to NRC, "Amendment 53 to the WNP-2 Final Safety Analysis Report (FSAR); Revisions to the Technical Specification Bases and Licensee Controlled Specifications"
4) NEI 98-03, Revision 1, dated June 1999, "Guidelines for Updating Final Safety Analysis Reports"
5) Letter, GO2-00-040, dated February 29, 2000, DW Coleman (Energy Northwest) to NRC, "1999 Annual Operating Report"

Pursuant to 10 CFR 50.71(e), Energy Northwest hereby submits one original and ten (10) copies of the Amendment 54 Revisions to the WNP-2 Final Safety Analysis Report, Technical Specification Bases Revisions 14 through 19, and the Licensee Controlled Specifications Revisions 16 through 20.

In late 1996 (Reference 1) Energy Northwest initiated a Final Safety Analysis Report (FSAR) Upgrade Project to consolidate and improve the accuracy of information in the FSAR. During the FSAR Upgrade Project, many issues were identified that could potentially impact the accuracy of the FSAR. Not all of these issues were resolved prior to preparing and submitting Amendment 53 (Reference 3). Since submittal of Amendment 53, Energy Northwest has

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performed a review based on the update process considerations described in Reference 4 to ensure the FSAR is complete and have resolved many of the accuracy issues. Any changes deemed necessary as a result of these activities are included in Amendment 54. The activities associated with the FSAR Upgrade Project as originally described in Reference 1 are now considered complete.

Amendment 54 removes some redundant information and excessive detail from the FSAR to improve its focus, clarity and maintainability. This action is in accordance with the guidance provided in Reference 4. A brief description of the information removed and the basis for its removal is provided in Tables 1 and 2. Table 1 describes the redundant information that was removed from the FSAR. When redundant information was removed, a reference was provided, if appropriate, to the section that now includes the information. Table 2 describes information that was deleted from the FSAR. Information was removed if it described equipment that is no longer installed in the plant; organizations, programs or procedures that are no longer in effect; design information, evaluations or other descriptions that no longer apply to the facility; or was considered to be excessive detail.

Table 3 provides a summary of a plant modification record and its associated 10 CFR 50.59 Evaluation summary that were inadvertently excluded from Section 2.6.1, "Plant Modifications" of the WNP-2 1999 Annual Operating Report (Reference 5). Therefore, this information is being transmitted with our FSAR update in accordance with 10 CFR 50.59(b)(2).

Energy Northwest is committed to ensure the FSAR is accurate, complete and meets the requirements of 10 CFR 50.71(e). Resolution of issues continues consistent with the schedule for enforcement discretion and recommendations provided in Reference 2.

If you have any questions, please contact Mr. P J Inserra at (509) 377-4147.

Respectfully,

RL Webring (Mail Drop PE08)
Vice President, Operations Support/PIO

Enclosures: 1) FSAR Amendment 54
2) Revisions 14-19 to the Technical Specification Bases
3) Revisions 16-20 Licensee Controlled Specifications

Attachments: 1) Table 1-Redundant Information Removed from the FSAR
2) Table 2-Information Deleted from the FSAR
3) Table 3-Supplement to the 1999 Annual Operating Report

cc: EW Merschoff - NRC RIV DL Williams - BPA (MD 1399) (w/o)
JS Cushing - NRC NRR (w/o) TC Poindexter - Winston & Strawn (w/o enc. 2 & 3)
NRC Sr. Resident Inspector (MD 927N) (w/o enc. 2 & 3)

TABLE 1

REDUNDANT INFORMATION REMOVED FROM THE FSAR

Chapter 1

Section	Description of Change	Justification
1.2.2.11.3	Removed text related to administrative control of the service water and fuel pool cooling water from 1.2.2.11.3 and 3.1.2.6.2.2.	Text combined and relocated to 9.1.3.2.3.

Chapter 2

No redundant information deleted.

Chapter 3

Section	Description of Change	Justification
3.1.2.6.2.2	Removed text related to administrative control of the service water and fuel pool cooling water from 1.2.2.11.3 and 3.1.2.6.2.2.	Text combined and relocated to 9.1.3.2.3.
Figure 3.2-1	Removed Figure 3.2-1 and references were provided to Figure 4.6-5.	The content of Figure 3.2-1 was relocated to replace the content of Figure 4.6-5. This update to Figure 4.6-5 better suited its purpose and eliminated redundant information.
Figure 3.8-9	Removed Figure 3.8-9 and references were provided to Figure 9.4-8.1.	FSAR Figure 9.4-8.1 contains adequate detail to support the text.
Table 3.11-1	Removed footnote "(g)."	The information is also contained in Section 9.4.9, which addresses this topic in greater detail.

Chapter 4

No redundant information deleted.

Chapter 5

No redundant information deleted.

Chapter 6

Section	Description of Change	Justification
Table 6.2-16	Removed information regarding the specific allowable leakage rate and replaced it with a reference to Technical Specification SR 3.4.6.1.	This information is included in SR 3.4.6.1 and its inclusion here is redundant.
Table 6.2-31	Removed Table 6.2-60.	The data table is not referenced in the text of this section and its data is also contained in Figure 6.2-9.
Figure 6.2-60	Removed Figure 6.2-60 and provided reference to Figure 3.8-53.	The information in this figure is also shown in Figure 3.8-53.

Chapter 7

Section	Description of Change	Justification
Table 7.3-9	Removed information that was not pertinent to the intent of the table (Standby Service Water System Information).	In each case the information is adequately documented in other subject-specific parts of the FSAR and therefore redundant.
7.4.1.1.2	Removed redundant information describing the RPV level relationship with RCIC-V-45.	Redundant to statements within this same FSAR Section.
7.4.2.3	Removed redundant information regarding the explosive valve control circuits.	Redundant to statements within this same FSAR Section.
7.5.2.2.2.2	Removed information relative to equipment purchased to NUREG 0588 and IEEE-323.	This topic is fully addressed in Section 3.11 and a redundant discussion is not required here.

Chapter 8

No redundant information deleted.

Chapter 9

Section	Description of Change	Justification
9.1.4	Removed Tables 9.1-7 through 9.1-10, which utilized an obsolete method of equipment classification and were otherwise redundant to Table 3.2-1.	Removed classifications were based on the NSSS Supplier (GE) QA program definitions, Table 3.2-1 uses WNP-2 QA program definitions. Their removal also eliminated information redundant to the text and excessive detail.
9.2.6.5	Removed information related to the instrumentation requirements for the CST.	The topic is adequately addressed in Section 5.4.6.2.1.1 and this change eliminates redundancy.

Section	Description of Change	Justification
9.2.7.3	Removed information regarding using PASS for sampling after a LOCA.	Information is redundant, the details and requirements for PASS are addressed in Appendix B.
Table 9.3-3	Removed Table 9.3-3 and provided reference to Figure 9.3-14.	The table represented excessive detail; the necessary information is already contained in the related text and Figure 9.3-14.
9.4.9	Removed specification of the number of pump rooms and air handling units.	Redundant to information already contained in this section.
9.5.4.5	Removed description of the high and low level alarms in the main control room for each diesel oil storage tank.	Redundant to information already contained in this section.
9.5.5.2	Removed information regarding the diesel jacket water flow rate and average temperature rise at normal operating conditions.	The information is already contained in Table 9.5-4 and its inclusion here is redundant..

Chapter 10

No redundant information deleted.

Chapter 11

No redundant information deleted.

Chapter 12

Section	Description of Change	Justification
Table 12.3-1	Removed Table 12.3-1.	The table's content was not applicable to this section and was redundant to that contained in Section 3.11.1.2.3 and Appendix J.6.2.
Figures 12.3-1 through 12.3-8	Removed Figures 12.3-1 through 12.3-8 and provided references to other figures within this section.	The remaining Access Control System and Radiation Zone figures adequately support the text. The deleted figures represented redundant information.
12.5	Removed the discussion on locker change room areas from the Health Physics facilities description.	Temporary change areas located near the work area are already described in the FSAR and they exclusively fulfill this function.

Chapter 13

No redundant information deleted.

Chapter 14

No redundant information deleted.

Chapter 15

No redundant information deleted.

Chapter 16

No redundant information deleted.

Chapter 17

No redundant information deleted.

Appendix B

Section	Description of Change	Justification
B.I.A.2.1	Removed this section which addressed immediate upgrading of operator and senior operator training.	The topic is adequately addressed in section 13.2.2 of the FSAR and this Section is therefore redundant.

Appendix F

Section	Description of Change	Justification
Table F.3-1	Removed information regarding Turbine building non-radioactive sump discharges and other building radioactive sump discharges.	This information is already addressed in Sections 9.3.2.2, 9.3.3.2.3 and 11.2.2.2.2 and its presence here is redundant.

Appendix I and J

No redundant information deleted.

TABLE 2

DELETED INFORMATION

Chapter 1

No deleted information.

Chapter 2

Section	Description of Change	Justification
2.3.3.2.4	Removed information related to Primary and Backup Meteorological data processing in the PRIME computer.	Information is obsolete. The PRIME computer system was deactivated and the processing of meteorological data relocated to the PDIS computer system.

Chapter 3

Section	Description of Change	Justification
Table 3.2-1	Deleted reference to the "defective fuel storage container" and its various classification indicators.	Containers are not installed in the plant and the fuel racks are not designed to receive them.
3.9.1.4.12	Deleted the categorization of the refueling platform as an "essential component."	Obsolete equipment reference.
Table 3.11-1	Deleted details regarding the heat exchanger efficiency used in calculations to determine that room temperatures will not be exceeded	Excessive detail, basic assumptions used in calculations need not be specified in a table of this sort.

Chapter 4

Section	Description of Change	Justification
4.1-4	Deleted reference to 8x8 fuel array in fuel assembly description	Obsolete information that is no longer applicable.
4.1-16	Deleted reference to 8x8 reload report.	Obsolete information that is no longer applicable.
Figure 4.3-2	Deleted Figure 4.3-2 "Calculated Neutron Flux at Core Equivalent Boundary."	New Pressure/Temperature Limit Curves were incorporated into the FSAR. The data contained in the deleted figure was not pertinent to the new curves and was therefore obsolete.

Chapter 5

No deleted information.

Chapter 6

Section	Description of Change	Justification
Table 6.2-16	Deleted reference to the high radiation, main steam line isolation signal to the MSIVs and the MS line drain valves.	Obsolete information, this isolation signal was removed by an earlier design change.
6.3.4.2	Deleted reference to racking out the injection valve breakers from the description of the input jacks available for ECCS loop response time testing..	The method of accessing and using the test jacks represents unnecessary and excessive detail that is not required in this section.
6.7.3.f	Deleted detail regarding the calculation assumptions used in determining the time it would take for pressure between the MSIVs to decay.	This level of detail is not required and is excessive

Chapter 7

Section	Description of Change	Justification
Figure 7.2-3	Deleted the main steam line high radiation input indicated to the RPS scram	Obsolete information, this input function was removed by an earlier design change.
Figures 7.3-15.1 and 7.3-15.2	Deleted Figures 7.3-15.1 and 7.3-15.2 (Containment Instrument Air Compressor Logic Diagrams).	Obsolete information, the drawings contained in these figures were voided and the compressors and associated equipment were removed from the plant design prior to fuel load.
7.4.1.1.1	Deleted reference to the steam condensing (hot standby) mode of operation.	Obsolete information, this mode of operation was deactivated at WNP-2 prior to fuel load.
7.4.1.4.2	Deleted description of key lock for RHR-V-8.	Obsolete equipment, this was removed by a design change.
Figure 7.4-3	Deleted the input to the LFMG circuit breakers from the figure.	Obsolete information, the input was deleted per the ASD modification.
7.5.1.6.1	Deleted "alarm unit" from the description of the Reactor/Turbine Buildings Rad. Detector signal processing and "turbine building" from the description of the Radwaste Building vent release path.	The information was not pertinent to the text and not required to be included in this section.
7.5.1.23.1	Deleted description of computer display type.	Details of the hardware used for display purposes constitute excessive detail.
7.5.2.2.3	Deleted reference to the CRD pump room level switch.	The information was incorrect and did not reflect the plant design. No credit was taken for the switch in any accident scenario.

Section	Description of Change	Justification
7.6.1.3.5.1	Deleted information related to the high flow through the "common RHR/RCIC steam line."	The information is obsolete.
7.6.2.4	Deleted reference to the Riley temperature switch and trip light.	References were to obsolete equipment that is no longer included in the plant design.
Table 7.6-2	Deleted information from the table that was not pertinent to the Leak Detection System.	The information was not pertinent to the purpose of the table and is considered to be excessive detail.
7.7.1.15	Deleted specification of the number of plant parameters reported to the NRC and the type of phone line used in conjunction with a modem.	It is sufficient to state that the required parameters are reported. The number of parameters and the phone line designation represent excessive detail.
7.7.1.9.2	Deleted details related to processor data port numbering,	Details of processor port numbers constitute excessive detail.

Chapter 8

Section	Description of Change	Justification
8.2.1	Deleted references that describe the communications system between Ashe Substation and WNP-2 as being microwave based.	The level of detail is not required and is considered to be excessive.
8.3.2.1.1.2	Deleted statement regarding the replacement of 125 v (Div 1 & 2) batteries during outage 9.	Excessive detail that is not required and added no value to the FSAR.
Table 8.3-15 Table 8.3-16 Table 8.3-17 Table 8.3-18	Deleted information regarding the revision number of the calculation used to determine battery duty cycles.	Excessive detail that is not required and added no value to the FSAR.

Chapter 9

Section	Description of Change	Justification
9.1.2.1.1.2	Deleted reference to 3.25 weight percent enrichment fuel.	Obsolete information that is no longer applicable.
9.1.2.3.1.2	Deleted references to vendor drawings showing construction criteria for fuel racks.	Drawings were not required by RG 1.70 Rev. 2 and constituted excessive detail.
9.1.4.2.10.2	Deleted statements regarding load handling and use of the general purpose grapple	Rigging use is controlled by plant procedures which provide sufficient protection. Further discussion here constitutes excessive detail.
9.2.6.2	Deleted the stated option to discharge CST retaining basin drainage water to the storm sewer.	Bring FSAR into line with plant procedures (2.11.9).

Section	Description of Change	Justification
9.3.5.3	Deleted information regarding boron injection.	The information was based on the original SLC injection (non-ATWS condition) design and is now obsolete due to an ATWS design change.
9.4.13 9.4.14 Table 9.4-8 Figure 9.4-9 Figure 9.4-10 Figure 9.4-11	Deleted detailed description of personal comfort HVAC systems serving the General Services Building and Machine Shop areas.	This information is not required to be in the FSAR and constitutes excessive detail.

Chapter 10

No deleted information.

Chapter 11

No deleted information.

Chapter 12

Section	Description of Change	Justification
Table 12.5-1	Deleted the term "high range" in regard to direct reading dosimeters.	Elimination of obsolete equipment. The updated table reflects current instruments in use. Requirements of RG 1.97 for type and number of instruments continue to be met for normal and accident conditions.
12.5.2.2	Deleted references to the PSF Laundry Facility radiation-monitoring program.	Obsolete information that is no longer applicable.
12.5.3.3	Deleted the specification of minimum frequencies for weekly and annual routine surveys.	Specification of survey frequencies is not required and constitutes excessive detail. Requirement to perform periodic surveys was retained.

Chapter 13

Section	Description of Change	Justification
Fig 13.5-1	Deleted Figure 13.5-1 "Operator at the Controls Area."	Not required to be in the FSAR by Reg Guide 1.70 Rev. 2 and it represented excessive detail.

Chapter 14

No deleted information.

Chapter 15

No deleted information.

Chapter 16

No deleted information.

Chapter 17

No deleted information.

Appendix B

No deleted information.

Appendix F

Section	Description of Change	Justification
F.4.4.1	Removed information regarding operator actions required to mitigate the effects of fire in certain areas and provided reference to PPM 4.12.4.1 "Fire" or PPM 4.12.1.1 "Control Room Evacuation and Remote Shutdown."	The information removed contains excessive detail beyond the descriptive needs for this FSAR section. The referenced procedures explore the topic in even greater depth and provide a more expansive specification of operator actions.
F.4.4.4 Fire Areas	Removed information regarding credited operator actions and provided reference to PPM 4.12.4.1 "Fire" or PPM 4.12.1.1 "Control Room Evacuation and Remote Shutdown."	The information removed contains excessive detail beyond the descriptive needs for this FSAR section. The referenced procedures explore the topic in even greater depth and provide a more expansive specification of operator actions.
F.4.4.4 Fire Areas	Removed information regarding specific credited cables for post-fire safe shutdown and provided reference to Calculation NE-02-85-19 "Revised Appendix R Safe Shutdown Analysis."	The information removed contains excessive detail beyond the descriptive needs for this FSAR section while the identified calculation addresses the topic in full measure.

Appendix I and J

No deleted information.

TABLE 3

SUMMARY OF PLANT MODIFICATION RECORD

PMR 92-0120-2 (SE 93-199)

This modification provided for the replacement of motor-operated valve power fuses as part of a fuse coordination enhancement effort.

Safety Evaluation Summary

It was concluded from the safety evaluation that replacement of the power fuses ensures that the fuses are in conformance with sizing methods for safety-related valves. In addition, reducing the fuse size enhances the protection of the motor against a locked-rotor or locked-armature current condition.

Downsizing the fuses to 125 percent full load amps allows the motor-operated valve to provide two full strokes under maximum degraded voltage, temperature and differential conditions without tripping. This change has no adverse impact on previously evaluated accidents or transients. Downsizing of the fuses provides increased motor protection and ensures that the valve is capable of performing its intended safety function.

ENERGY NORTHWEST

INTEROFFICE MEMORANDUM

DATE: April 24, 2000

TO: Distribution:

FROM: Procedure and Manual Control, Administrative Services, WNP-2 (927A)

SUBJECT: **AMENDMENT 54 TO THE FINAL SAFETY ANALYSIS REPORT (FSAR) DISTRIBUTION PACKAGE 2000-174**

REFERENCE:

The attached instructions are provided to help you insert Amendment 54 into your controlled copy of the Energy Northwest WNP-2 Final Safety Analysis Report (FSAR).

The insertion instructions are designed to be completed in vertical line-by-line order. To ensure accuracy, they must be followed in such a manner. Beginning in the first row, extract the pages indicated in the REMOVE column, and then replace them with the pages indicated in the INSERT column. For your convenience, and to reduce the number of mistakes, the amendment package is organized in the same manner as the insertion instructions.

If you have any questions as you are filing these insertion instructions, please contact Heather McMurdo at 509-377-6018.

To verify receipt and inclusion of these procedures, please sign, date and **return this receipt** within THIRTY (30) WORKING DAYS of the date of this IOM.

Energy Northwest
P.O. Box 968
Richland, WA 99352

ATTN: RM Morse (MD 927A)

Date	Signature of Manual Holder	Controlled Copy Number

Attachment: WNP-2 FSAR Amendment 54 Insertion Instructions

WNP-2 FSAR AMENDMENT 54
INSERTION INSTRUCTIONS

REMOVE	INSERT
-----	Letter to the NRC regarding Amendment No. 54 to the FSAR (in front of existing letter to the NRC dated 11/30/98—in the very front of the FSAR).
LEP-1 thru LEP-67	LEP-1 thru LEP-66
CHAPTER 1	
1-iii thru 1-ix	1-iii thru 1-ix
1.1-1	1.1-1
1.2-11 thru 1.2-14	1.2-11 thru 1.2-14
1.2-21 thru 1.2-24	1.2-21 thru 1.2-24
1.2-27 thru 1.2-38	1.2-27 thru 1.2-38
Figures 1.2-1 thru 1.2-19.15	Figures 1.2-1 thru 1.2-29.15
1.3-17 thru 1.3-20	1.3-17 thru 1.3-20
1.3-23/1.3-24	1.3-23/1.3-24
1.4-1 thru 1.4-6	1.4-1 thru 1.4-6
1.5-1 thru 1.5-6	1.5-1 thru 1.5-6
1.5-9/1.5-10	1.5-9/1.5-10
1.6-9/1.6-10	1.6-9/1.6-10
1.7-1 thru 1.7-9	1.7-1 thru 1.7-10
1.8-1/1.8-2	1.8-1/1.8-2
1.8-19/1.8-20	1.8-19/1.8-20
1.8-23 thru 1.8-26	1.8-23 thru 1.8-26
1.8-33/1.8-34	1.8-33/1.8-34
1.8-61/1.8-62	1.8-61/1.8-62
1.8-99 thru 1.8-104	1.8-99 thru 1.8-104
1.8-107/1.8-108	1.8-107/1.8-108
1.8-135/1.8-136	1.8-135/1.8-136
1.8-161/1.8-162	1.8-161/1.8-162
1.8-165 thru 1.8-168	1.8-165 thru 1.8-168
1.8-175/1.8-176	1.8-175/1.8-176
1.8-197/1.8-198	1.8-197/1.8-198
1.8-203/1.8-204	1.8-203/1.8-204
CHAPTER 2	
2-iii/2-xiv	2-iii/2-iv
2-xi/2-xii	2-xi/2-xii
2-xvii thru 2-xxii	2-xvii thru 2-xxii
2.1-1 thru 2.1-4	2.1-1 thru 2.1-4
2.2-1 thru 2.2-6	2.2-1 thru 2.2-6
2.3-13/2.3-14	2.3-13/2.3-14
2.3-23/2.3.24	2.3-23/2.3-24
2.3-29 thru 2.3-41	2.3-29 thru 2.3-41
2.3-81 thru 2.3-84	2.3-81 thru 2.3-84
2.4-5/2.4-6	2.4-5/2.4-6
2.4-29 thru 2.4-32	2.4-29 thru 2.4-32
------	Figure 2.4-32 (new figure - insert after Figure 2.4-31)
2.5-5/2.5-6	2.5-5/2.5-6
2.5-15/2.5-16	2.5-15/2.5-16
2.5-57 thru 2.5-60	2.5-57 thru 2.5-60
2.5-83/2.5-84	2.5-83/2.5-84
2.5-91/2.5-92	2.5-91/2.5-92

CHAPTER 3	
3-i thru 3-lvii	3-i thru 3-lvii
3.1-1 thru 3.1-6	3.1-1 thru 3.1-6
3.1-23/3.1-24	3.1-23/3.1-24
3.1-59 thru 3.1-65	3.1-59 thru 3.1-65
3.2-1/3.2-2	3.2-1/3.2-2
3.2-7 thru 3.2-24	3.2-7 thru 3.2-24
Figures 3.2-1.1 thru 3.2-2	Figures 3.2-1 and 3.2-2
Figure 3.2-4	Figure 3.2-4
3.3-7/3.3-8	3.3-7/3.3-8
3.4-1 thru 3.4-7	3.4-1 thru 3.4-7
3.5-7 thru 3.5-10	3.5-7 thru 3.5-10
3.5-13 thru 3.5-29	3.5-13 thru 3.5-29
Figure 3.5-2	Figure 3.5-2
Figure 3.5-5	Figure 3.5-5
Figure 3.5-10	Figure 3.5-10
3.6-3 thru 3.6-74	3.6-3 thru 3.6-74
Figure 3.6-6	Figure 3.6-6
Figure 3.6-15	Figure 3.6-15
Figure 3.6-32.1	Figure 3.6-32.1
Figure 3.6-33.1	Figure 3.6-33.1
Figure 3.6-34.1	Figure 3.6-34.1
Figure 3.6-35.1	Figure 3.6-35.1
Figure 3.6-36.1	Figure 3.6-36.1
Figure 3.6-38.2	Figure 3.6-38.2
Figure 3.6-39.1	Figure 3.6-39.1
Figures 3.6-40.1 thru 3.6-43.1	Figures 3.6-40.1 thru 3.6-43.1
Figure 3.6-44.1	Figure 3.6-44.1
Figure 3.6-45.1	Figure 3.6-45.1
Figures 3.6-46.1 thru 3.6-49.1	Figures 3.6-46.1 thru 3.6-49.1
Figures 3.6-50.1 thru 3.6-51.1	Figures 3.6-50.1 thru 3.6-51.1
Figure 3.6-52.1	Figure 3.6-52.1
Figure 3.6-53.1	Figure 3.6-53.1
Figure 3.6-54.1	Figure 3.6-54.1
Figures 3.6-55.1 thru 3.6-56.2	Figures 3.6-55.1 thru 3.6-56.2
3.7-1/3.7-2	3.7-1/3.7-2
3.7-31/3.7-32	3.7-31/3.7-32
3.7-39/3.7-40	3.7-39/3.7-40
3.7-57/3.7-58	3.7-57/3.7-58
3.8-13 thru 3.8-122	3.8-13 thru 3.8-122
3.8-131 thru 3.8-134	3.8-131 thru 3.8-134
3.8-143/3.8-144	3.8-143/3.8-144
Figure 3.8-9	Figure 3.8-9
Figure 3.8-27	Figure 3.8-27
Figures 3.8-52 and 3.8-53	Figures 3.8-52 and 3.8-53
3.9-21/3.9-22	3.9-21/3.9-22
3.9-25/3.9-26	3.9-25/3.9-26
3.9-45 thru 3.9-62	3.9-45 thru 3.9-62
3.9-107 thru 3.9-172	3.9-107 thru 3.9-173
3.10-1/3.10-2	3.10-1/3.10-2
3.10-9/3.10-10	3.10-9/3.10-10
3.10-15 thru 3.10-18	3.10-15 thru 3.10-18
3.11-3/3.11-4	3.11-3/3.11-4

3.11-7/3.11-8	3.11-7/3.11-8
3.11-13 thru 3.11-16	3.11-13 thru 3.11-16
3.12-1 thru 3.12-4	3.12-1 thru 3.12-4
3.12-15 thru 3.12-21	3.12-15 thru 3.12-21
3A-iii/3A-iv	3A-iii/3A-iv
3A-ix/3A-x	3A-ix/3A-x
3A.1.1-1	3A.1.1-1
3A.2.1-1/3A.2.1-2	3A.2.1-1/3A.2.1-2
Figure 3A.2.1-9	Figure 3A.2.1-9
3A.3.1-1/3A.3.1-2	3A.3.1-1/3A.3.1-2
3A.3.2-3 thru 3A.3.2-6	3A.3.2-3 thru 3A.3.2-6
3A.3.2-15/3A.3.2-16	3A.3.2-15/3A.3.2-16
Figure 3A.3.2-28 (note Figure # in FSAR is 3A.2-28 the 3 is missing)	Figure 3A.3.2-28
3A.3.5-5 thru 3A.3.5-8	3A.3.5-5 thru 3A.3.5-8
3A.4.2-9/3A.4.2-10	3A.4.2-9/3A.4.2-10
3A.B-1/3A.B-2	3A.B-1/3A.B-2
3A.D-5/3A.D-6	3A.D-5/3A.D-6
3A.D-15/3A.D-16	3A.D-15/3A.D-16
Figure 3A.D-11	Figure 3A.D-11
3A.E-1/3A.E-2	3A.E-1/3A.E-2
3A.I-1/3A.I-2	3A.I-1/3A.I-2
CHAPTER 4	
4-ix thru 4-xi	4-ix thru 4-xi
4.1-1 thru 4.1-6	4.1-1 thru 4.1-6
4.1-9 thru 4.1-17	4.1-9 thru 4.1-17
4.2-1/4.2-2	4.2-1/4.2-2
4.2-5/4.2-6	4.2-5/4.2-6
4.2-9 thru 4.2-12	4.2-9 thru 4.2-12
4.3-1 thru 4.3-6	4.3-1 thru 4.3-5
4.4-7 thru 4.4-9	4.4-7 thru 4.4-9
4.4-11/4.4-12	4.4-11/4.4-12
4.5-1/4.5-2	4.5-1/4.5-2
4.6-5/4.6-6	4.6-5/4.6-6
4.6-31 thru 4.6-34	4.6-31 thru 4.6-34
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5-i thru 5-x	5-i thru 5-x
5.1-3	5.1-3
5.2-1 thru 5.2-36	5.2-1 thru 5.2-36
5.2-41/5.2-42	5.2-41/5.2-42
5.2-45/5.2-46	5.2-45/5.2-46
5.2-49 thru 5.2-54	5.2-49 thru 5.2-54
5.3-3 thru 5.3-22	5.3-3 thru 5.3-22
5.3-29 thru 5.3-32	5.3-29 thru 5.3-32
Figures 5.3-1 and 5.3-2	Figures 5.3-1.1 thru 5.3-2
5.4-1/5.4-2	5.4-1/5.4-2
5.4-17 thru 5.4-58	5.4-17 thru 5.4-58
Figures 5.4-15.1 thru 5.4-17.2	Figures 5.4-15.1 thru 5.4-17.2
Figures 5.4-22.1	Figures 5.4-22.1
CHAPTER 6	
6-iii thru 6-xii	6-iii thru 6-xii
6-xv/6-xvi	6-xv/6-xvi
6.1-9/6.1-10	6.1-9/6.1-10

6.2-3/6.2-4	6.2-3/6.2-4
6.2-19/6.2-20	6.2-19/6.2-20
6.2-33/6.2-34	6.2-33/6.2-34
6.2-37/6.2-38	6.2-37/6.2-38
6.2-47 thru 6.2-75	6.2-47 thru 6.2-76
6.2-79/6.2-80	6.2-79/6.2-80
6.2-83/6.2-84	6.2-83/6.2-84
6.2-93/6.2-94	6.2-93/6.2-94
6.2-97/6.2-98	6.2-97/6.2-98
6.2-101 thru 6.2-132	6.2-101 thru 6.2-139
Figures 6.2-60.1 thru 6.2-60.4	Figure 6.2-60
6.3-13 thru 6.3-27	6.3-13 thru 6.3-28
6.3-31/6.3-32	6.3-31/6.3-32
Figure 6.3-4	Figure 6.3-4
6.4-1 thru 6.4-10	6.4-1 thru 6.4-10
6.5-1 thru 6.5-6	6.5-1 thru 6.5-6
6.5-9 thru 6.5-12	6.5-9 thru 6.5-12
6.7-5/6.7-6	6.7-5/6.7-6
CHAPTER 7	
7-i thru 7-xviii	7-i thru 7-xviii
7.1-1/7.1-2	7.1-1/7.1-2
7.1-5/7.1-6	7.1-5/7.1-6
7.2-3 thru 7.2-22	7.2-3 thru 7.2-22
Figures 7.2-2 and 7.2-3	Figures 7.2-2 and 7.2-3
7.3-3/7.3-4	7.3-3/7.3-4
7.3-7 thru 7.3-18	7.3-7 thru 7.3-18
7.3-21/7.3-22	7.3-21/7.3-22
7.3-25 thru 7.3-32	7.3-25 thru 7.3-32
7.3-37 thru 7.3-47	7.3-37 thru 7.3-48
Figure 7.3-7.2	Figure 7.3-7.2
Figure 7.3-10.5	Figure 7.3-10.5
Figure 7.3-12.7	Figure 7.3-12.7
Figure 7.3-12.11	Figure 7.3-12.11
Figures 7.3-15.1 thru 7.3-15.12	Figures 7.3-15.1 thru 7.3-15.10
7.4-1 thru 7.4-23	7.4-1 thru 7.4-21
7.5-1 thru 7.5-4	7.5-1 thru 7.5-4
7.5-7 thru 7.5-38	7.5-7 thru 7.5-39
7.6-1 thru 7.6-36	7.6-1 thru 7.6-36
Figure 7.6-1.1	Figure 7.6-1.1
Figure 7.6-19	Figure 7.6-19
7.7-1 thru 7.7-14	7.7-1 thru 7.7-14
7.7-17 thru 7.7-34	7.7-17 thru 7.7-34
7.7-37 thru 7.7-45	7.7-37 thru 7.7-45
7.7-49/7.7-50	7.7-49/7.7-50
Figure 7.7-4.1	Figure 7.7-4.1
Figures 7.7-9 thru 7.7-17	Figures 7.7-9 thru 7.7-16
CHAPTER 8	
8-i thru 8-viii	8-i thru 8-viii
8.1-1/8.1-2	8.1-1/8.1-2
Figure 8.1-2.2	Figure 8.1-2.2
8.2-1 thru 8.2-8	8.2-1 thru 8.2-8
8.3-3/8.3-4	8.3-3/8.3-4
8.3-7 thru 8.3-16	8.3-7 thru 8.3-16

8.3-21 thru 8.3-30	8.3-21 thru 8.3-30
8.3-33/8.3-34	8.3-33/8.3-34
8.3-37/8.3-38	8.3-37/8.3-38
8.3-45 thru 8.3-62	8.3-45 thru 8.3-62
8.3-65 thru 8.3-82	8.3-65 thru 8.3-82
8.3-93 thru 8.3-98	8.3-93 thru 8.3-98
Figures 8.3-4.1 thru 8.3-6	Figures 8.3-4.1 thru 8.3-6
Figure 8.3-17	Figure 8.3-17
Figures 8.3-33 and 8.3-34	Figures 8.3-33 and 8.3-34
Figures 8.3-36 thru 8.3-38	Figures 8.3-36 thru 8.3-38
Figure 8.3-52	Figure 8.3-52
8A-1/8A-2	8A-1/8A-2
8A-5 thru 8A-10	8A-5 thru 8A-10
8A-19	8A-19
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9-i thru 9-xviii	9-i thru xvii
9.1-3 thru 9.1-54	9.1-3 thru 9.1-54
9.1-63/9.1-64	9.1-63/9.1-64
9.1-65 thru 9.1-67	-----
Figures 9.1-5 and 9.1-6	Figures 9.1-5 and 9.1-6
9.2-11 thru 9.2-46	9.2-11 thru 9.2-48
Figure 9.2-1	Figures 9.2-1.1 and 9.2-1.2
Figures 9.2-4 and 9.2-5	Figures 9.2-4 and 9.2-5
Figures 9.2-9 and 9.2-10	Figures 9.2-9 and 9.2-10
Figures 9.2-12.1 thru 9.2-12.3	Figures 9.2-12.1 thru 9.2-12.3
Figure 9.2-15	Figure 9.2-15
9.3-1 thru 9.3-6	9.3-1 thru 9.3-6
9.3-9/9.3-10	9.3-9/9.3-10
9.3-15/9.3-16	9.3-15/9.3-16
9.3-21 thru 9.3-37	9.3-21 thru 9.3-37
Figures 9.3-1.2 and 9.3-1.3	Figures 9.3-1.2 and 9.3-1.3
Figures 9.3-2.2 thru 9.3-5	Figures 9.3-2.2 thru 9.3-5
Figure 9.3-9	Figure 9.3-9
Figure 9.3-14	Figure 9.3-14
9.4-1 thru 9.4-6	9.4-1 thru 9.4-6
9.4-35 thru 9.4-76	9.4-35 thru 9.4-73
Figure 9.4-1	Figure 9.4-1
Figure 9.4-4.1	Figure 9.4-4.1
Figure 9.4-7	Figure 9.4-7
Figure 9.4-8.2	Figure 9.4-8.2
Figures 9.4-9 thru 9.4-12.2	Figures 9.4-9.1 and 9.4-9.2
9.5-3/9.5-4	9.5-3/9.5-4
9.5-11 thru 9.5-35	9.5-11 thru 9.5-33
Figure 9.5-1.1	Figure 9.5-1.1
Figures 9.5-1.3 and 9.5-1.4	Figures 9.5-1.3 and 9.5-1.4
Figure 9.5-5	Figure 9.5-5
CHAPTER 10	
10-i thru 10-iv	10-i thru 10-iv
10.2-1 thru 10.2-6	10.2-1 thru 10.2-6
Figure 10.2-4	Figure 10.2-4
Figure 10.2-6.2	Figure 10.2-6.2
10.3-3/10.3-4	10.3-3/10.3-4
Figure 10.3-2	Figure 10.3-2

10.4-9/10.4-10	10.4-9/10.4-10
10.4-13 thru 10.4-26	10.4-13 thru 10.4-28
Figures 10.4-4.1 thru 10.4-4.3	Figures 10.4-4.1 thru 10.4-4.3
Figures 10.4-5 and 10.4-6	Figures 10.4-5 and 10.4-6
Figure 10.4-8.1	Figure 10.4-8.1
CHAPTER 11	
11-i thru 11-iv	11-i thru 11-iv
11.1-11/11.1-12	11.1-11/11.1-12
11.2-1/11.2-2	11.2-1/11.2-2
11.2-9 thru 11.2-14	11.2-9 thru 11.2-14
11.2-17/11.2-18	11.2-17/11.2-18
11.2-21 thru 11.2-24	11.2-21 thru 11.2-24
11.2-29 thru 11.2-34	11.2-29 thru 11.2-34
11.2-37 thru 11.2-44	11.2-37 thru 11.2-44
Figures 11.2-2 and 11.2-3	Figures 11.2-2 and 11.2-3
Figure 11.2-4.3	Figure 11.2-4.3
11.3-5 thru 11.3-18	11.3-5 thru 11.3-18
11.3-23/11.3-24	11.3-23/11.3-24
11.3-27 thru 11.3-29	11.3-27 thru 11.3-29
Figures 11.3-1 and 11.3-2.1	Figures 11.3-1 and 11.3-2.1
11.4-1 thru 11.4-6	11.4-1 thru 11.4-6
11.4-9/11.4-10	11.4-9/11.4-10
11.4-15/11.4-16	11.4-15/11.4-16
Figure 11.4-1	Figure 11.4-1
11.5-11/11.5-12	11.5-11/11.5-12
11.5-23/11.5-24	11.5-23/11.5-24
11.5-29/11.5-30	11.5-29/11.5-30
CHAPTER 12	
12-i thru 12-viii	12-i thru 12-vii
12.1-1 thru 12.1-11	12.1-1 thru 12.1-11
12.2-1/12.2-2	12.2-1/12.2-2
12.2-5 thru 12.2-14	12.2-5 thru 12.2-14
12.3-1 thru 12.3-29	12.3-1 thru 12.3-27
Figures 12.3-1 thru 12.3-32	Figures 12.3-1 thru 12.3-24
12.4-1/12.4-2	12.4-1/12.4-2
-----	12.4-17
12.5-1 thru 12.5-23	12.5-1 thru 12.5-21
CHAPTER 13	
13-i thru 13-v	13-i thru 13-v
13.1-1 thru 13.1-18	13.1-1 thru 13.1-18
Figures 13.1-1 thru 13.1-11	Figures 13.1-1 thru 13.1-12
13.2-1/13.2-2	13.2-1/13.2-2
13.2-7	13.2-7
13.4-1/13.4-2	13.4-1/13.4-2
13.5-1 thru 13.5-5	13.5-1 thru 13.5-5
Figure 13.5-1	-----
CHAPTER 14	
14-i/14-ii	14-i/14-ii
14-xi thru 14-xiv	14-xi thru 14-xiv
14.2-3 thru 14.2-20	14.2-3 thru 14.2-20
14.2-25 thru 14.2-28	14.2-25 thru 14.2-28
14.2-55 thru 14.2-58	14.2-55 thru 14.2-58
14.2-87/14.2-88	14.2-87/14.2-88

14.2-91/14.2-92	14.2-91/14.2-92
14.2-99/14.2-100	14.2-99/14.2-100
14.2-127	14.2-127
CHAPTER 15	
15-iii thru 15-vi	15-iii thru 15-vi
15-xvii/15-xviii	15-xvii/15-xviii
15.0-7/15.0-8	15.0-7/15.0-8
15.1-5/15.1-6	15.1-5/15.1-6
15.2-1 thru 15.2-20	15.2-1 thru 15.2-20
15.2-23/15.2-24	15.2-23/15.2-24
15.2-27 thru 15.2-30	15.2-27 thru 15.2-30
15.2-37/15.2-38	15.2-37/15.2-38
15.2-45/15.2-46	15.2-45/15.2-46
Figure 15.2-10.2	Figure 15.2-10.2
15.3-3/15.3-4	15.3-3/15.3-4
15.3-11	15.3-11
15.5-1/15.5-2	15.5-1/15.5-2
15.6-3/15.6-4	15.6-3/15.6-4
15.6-11 thru 15.6-18	15.6-11 thru 15.6-18
15.6-23/15.6-24	15.6-23/15.6-24
15.7-3/15.7-4	15.7-3/15.7-4
15.7-13/15.7-14	15.7-13/15.7-14
15.8-1/15.8-2	15.8-1/15.8-2
15.8-17/15.8-18	15.8-17/15.8-18
15.F-1 thru 15.F-3	15.F-1 thru 15.F-3
15.F-5/15.F-6	15.F-5/15.F-6
15.F-9 thru 15.F-12	15.F-9 thru 15.F-12
15.F-15 thru 15.F-28	15.F-15 thru 15.F-28
CHAPTER 17	
17-i thru 17-iv	17-i thru 17-iv
17.1-1 thru 17.1-14	17.1-1 thru 17.1-14
17.1-19/17.1-20	17.1-19/17.1-20
17.1-23 thru 17.1-30	17.1-23 thru 17.1-30
17.1-33 thru 17.1-36	17.1-33 thru 17.1-36
17.1-39 thru 17.1-42	17.1-39 thru 17.1-42
17.2-1	17.2-1
APPENDIX B	
B-i thru B-ii	B-i thru B-iii
B.1-3	B.1-3
B.1-5 thru B.1-24	B.1-5 thru B.1-21
B.2-3/B.2-4	B.2-3/B.2-4
B.2-15/B.2-16	B.2-15/B.2-16
B.2-23 thru B.2-26	B.2-23 thru B.2-26
B.2-31/B.2-32	B.2-31/B.2-32
B.2-41/B.2-42	B.2-41/B.2-42
B.2-51	B.2-51
B.3-1/B.3-2	B.3-1/B.3-2
-----	Figure II.K.3.45-1 (insert after page B.3-2)
APPENDIX I	
I-i/I-ii	I-i/I-ii
I.1-1/I.1-2	I.1-1/I.1-2
I.3-1 thru I.3-5	I.3-1 thru I.3-5
I.6-17/I.6-18	I.6-17/I.6-18

I.7-3/I.7-4	I.7-3/I.7-4
APPENDIX J	
J-i thru J-iv	J-i thru J-iv
J-xv/J-xvi	J-xv/J-xvi
J.2-3 thru J.2-5	J.2-3 thru J.2-5
J.5-3/J.5-4	J.5-3/J.5-4
J.5-7/J.5-8	J.5-7/J.5-8
APPENDIX F	
F-i thru F-vii	F-i thru F-viii
F.1-1/F.1-2	F.1-1/F.1-2
F.2-5 thru F.2-39	F.2-5 thru F.2-41
F.3-3/F.3-4	F.3-3/F.3-4
F.3-17 thru F.3-36	F.3-17 thru F.3-36
F.3-43 thru F.3-48	F.3-43 thru F.3-48
F.3-73 thru F.3-77	F.3-73 thru F.3-77
F.4-1/F.4-2	F.4-1/F.4-2
F.4-5 thru F.4-209	F.4-5 thru F.4-189
F.5-1 thru F.5-18	F.5-1 thru F.5-18
F.6-1	F.6-1
Figures F.6-1 thru F.6-11	Figures F.6-1 thru F.6-17
F.7-1 thru F.7-9	F.7-1 thru F.7-9