ARITZONA



PUBLIC SERVICE COMPANY

P. O. BOX 21666 . PHOENIX, ARIZONA 85036

October 1, 1979 ANPP-13904 - JMA/DBK

Director of Nuclear Reactor Regulation U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Re:

Joint Application for Operating Licenses for Palo Verde Nuclear Generating Station Units 1, 2 and 3 NRC Docket Nos. STN 50-528/529/530

References:

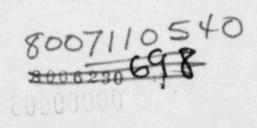
Letter, ANPP-13905, dated September 28, 1979 to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, NRC from E. E. Van Brunt, Jr., Vice President, APS

Dear Sir:

Pursuant to 10 CFR Part 50, Arizona Public Service Company (APS) submits herewith this joint application for the issuance of operating licenses under Sections 103 and 185 of the Atomic Energy Act of 1954, as amended, for utilization facilities known as the Palo Verde Nuclear Generating Station Units 1, 2 and 3.

Palo Verde Nuclear Generating Station (PVNGS) is the name which has been given to a site situated in Maricopa County, Arizona, approximately 36 miles west of the western boundary of the City of Phoenix, at which Palo Verde Units 1, 2 and 3 are currently under construction, pursuant to Construction Permits Nos. CPPR 141, CPPR 142 and CPPR 143, respectively, issued in Docket Nos. STN 50-528, STN 50-529 and STN 50-530, respectively.

Palo Verde Nuclear Generating Station, including each of Palo Verde Units 1, 2 and 3, is currently jointly owned by the joint-applicants listed below, sometimes referred to as "Participants," as tenants in common with undivided ownership interests in the respective percentages hereinafter set forth, all in accordance with the Arizona Nuclear Power Project Participation Agreement, dated as of August 23, 1973, as amended by Amendment Nos. 1 through 4 (hereinafter, as so amended, referred to as the "Participation Agreement").



| Joint Applicants | | Undivided Interest |
|--|--------------------------|-------------------------|
| Arizona Public Service Company Salt River Project Agricultural Improvement and Power District | (APS) (SRP) | 29.1% 29.1% |
| Southern California Edison Company El Paso Electric Company Public Service Company of New Mexico | (SCE) (EPE) (PSNM) | 15.8% 15.8% 10.2% |

However, pursuant to an agreement dated August 18, 1977, between SRP and the Department of Water and Power of the City of Los Angeles (LADWP), SRP will transfer to LADWP, and LADWP will acquire from SRP, a 5.7% undivided ownership interest as a tenant in common with the other Participants in the Palo Verde Nuclear Generating Station, including each of Palo Verde Units 1, 2 and 3, at such time as Palo Verde Unit 1 is placed into commercial operation (i.e., when it is deemed to be available as a reliable source of electric generation).

Pursuant to the Participation Agreement (a copy of which is included as Appendix 1A to Section 1 of the General Information submitted herewith pursuant to 10 CFR Part 50.33), APS has been designated as the Project Manager and Operating Agent of Palo Verde Units 1, 2 and 3, and in such capacities is responsible for the engineering, design, construction, quality assurance, operation, and maintenance of such units and is authorized to submit and prosecute on its own behalf and the behalf of all the joint applicants all applications for any permits, licenses, authorizations, and approvals requisite to the engineering, design, construction, quality assurance, operation, and maintenance of such units.

Accordingly, this joint application seeks the issuance of construction permits and operating licenses authorizing APS to construct, operate and maintain Palo Verde Units 1, 2 and 3 on its own behalf and as agent for all other joint applicants and authorizing all joint applicants to acquire and own undivided interests in each of said units as tenants in common in the percentages hereinabove set forth. Additionally, this joint application further seeks approval of the transfer by SRP to LADWP, and the acquisition by LADWP from SRP, of a 5.7% undivided ownership interest as a tenant in common in the Palo Verde Nuclear Generating Station, including each of Palo Verde Units 1, 2 and 3, as and when such transfer and acquisition shall become effective as hereinabove set forth.

In support and as a part of this joint application, APS submits the General Information required by Section 50.33 and Appendix C of 10 CFR Part 50 and the following parts:

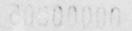
Part 1: Antitrust Information Required by Regulatory Guide 9.3.

Part 2: Palo Verde Nuclear Generating Station Units 1, 2 and 3 Final Safety Analysis Report (FSAR).

The Palo Verde Nuclear Generating Station Units 1, 2 and 3 Environmental Report - Operating License Stage (ER-OL) will be submitted within six (6) months as permitted by 10 CFR Section 2.101 (a) (5).

Consistent with the Commission's announced policy encouraging standardization of nuclear power plants, it is intended that the Palo Verde Units
1, 2 and 3 shall be identical in all respects and each unit will utilize
the Combustion Engineering, Inc. (C-E) standard "System 80" nuclear steam
supply system. Moreover, to further permit the accelerated review of this
joint application, the FSAR, pursuant to the Commission's policy statement
of March 5, 1973, and Appendix 0 of 10 CFR Part 50, follows the "Reference
System" concept and incorporates by reference the C-E Final Standard Safety
Analysis Report (CESSAR-F) currently under review by the Commission in
NRC Docket No. STN-50-470. The manner in which CESSAR-F is incorporated
is explained in Section 1.9 of the FSAR.

By Reference (1), a report was submitted to the Director, Office of Nuclear Reactor Regulation responsive to the requirements of the first report of the TMI-2 Lessons Learned Task Force (NUREG-0578) as modified pursuant to the memorandum, dated August 20, 1979, from Harold R. Denton, Director, Office of Nuclear Reactor Regulation to the NRC Commissioners. The report submitted with Reference (1) evaluates the applicability of the several requirements of NUREG to Palo Verde Units 1, 2 and 3 and includes the commitments of APS to meet such requirements within the time schedule established by NUREG-0578. As designs, analyses and other information are developed to carry out such commitments, the FSAR will be amended accordingly.



It is vital to the interests of the joint applicants and the public served by them that Palo Verde Unit 1 be available for commercial operation not later than May 1, 1983. In order to meet this scheduled date in an orderly and efficient manner, we plan to complete construction of and to commence the loading of fuel into Palo Verde Unit 1 on or about November 1, 1982. Since such fuel loading cannot proceed without an operating license as required by law, it is requested that the Commission's review of this joint application be scheduled and conducted in a manner that, with an appropriate allowance for any contested hearing as may be required or permitted by law and any stays of decisions resulting therefrom, will permit the issuance of an operating license for Palo Verde Unit 1 on or before November 1, 1982.

Mr. Edwin E. Van Brunt, Jr., Vice President, Arizona Public Service Company, has been delegated the authority and responsibility to administer this joint application. Accordingly, please address all communications in respect thereof to Mr. Van Brunt at the following address:

Mr. E. E. Van Brunt, Jr. Vice President Arizona Public Service Company P. O. Box 21666 Phoenix, Arizona 85036

with a copy thereof to our attorney in this matter:

Arthur C. Gehr, Esq. Snell & Wilmer 3100 Valley Center Phoenix, Arizona 85073

Respectfully submitted,

ARIZONA PUBLIC SERVICE COMPANY

81: 811 8

Edwin E. Van Brunt, Jr. Vice President

On its own behalf and as agent for all other joint participants

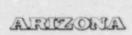
STATE OF ARIZONA) ss.
County of Maricopa)

Subscribed and sworn to before me this $\frac{26}{4}$ day of $\frac{Sept}{4}$, 1979.

John M allen Xotary Public

My Commission expires:

My Commission Expires Jan. 23, 1963





PUBLIC SERVICE COMPANY

- PHOENIX, ARIZONA 85036 P. O. BOX 21666 March 31, 1980 ANPP-14987 - JMA/DBK

Director of Nuclear Reactor Regulation U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Subject:

Palo Verde Nuclear Generating Station

Units 1, 2 and 3

Docket Nos. STN-50-528/529/530

Dear Sir:

Arizona Public Service Company (APS), as Project Manager and Operating Agent for Palo Verde Nuclear Generating Station (PVNGS) Units 1,2&3, is submitting herewith Fifteen (15) copies of Amendment 1 to the PVNGS Units 1,2&3 Final Safety Analysis Report tendered October 1, 1979.

This Amendment provides an update to the Final Safety Analysis Report.

Respectfully submitted,

ARIZONA PUBLIC SERVICE COMPANY

Edwin E. Van Brunt, Jr. APS Vice President Nuclear Projects ANPP Project Director

State of Arizona SS: County of Maricopa)

On its own behalf and as agent for all other joint applicants.

Subscribed and sworn to before me this

My Commission Expires:

LIST OF EFFECTIVE PAGES

This List of Effective Pages identifies those text pages and figures that are currently effective in the FSAR.

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|-----------------------|----------|--------------------|----------|
| Title Page | Original | 1.8-23 | Amend 1 |
| iii - xxix | Original | 1.8-24 - 1.8-36 | Original |
| Chapter 1 Tab | Original | 1.8-37 | Amend 1 |
| 1-i - 1-v | Original | 1.8-38 - 1.8-39 | Original |
| 1.1-1 - 1.1-4 | Original | 1.8-40 | Amend 1 |
| 1.2 Tab | Original | 1.8-41 - 1.8-60 | Original |
| 1.2-1 - 1.2-2 | Amend 1 | 1.8-61 | Amend 1 |
| 1.2-3 - 1.2-21 | Original | 1.8-62 - 1.8-64 | Original |
| Fig 1.2-1 - 1.2-2 | Original | 1.8-65 | Amend 1 |
| Fig 1.2-3 (Sh 1 of 2) | Original | 1.8-66 | Original |
| Fig 1.2-3 (Sh 2 of 2) | Original | 1.8-67 - 1.8-68 | Amend 1 |
| Fig 1.2-4 - 1.2-13 | Original | | Original |
| 1.3 Tab | Original | 1.9 Tab | Original |
| 1.3-1 - 1.3-16 | Original | 1.9-1 - 1.9-10 | Original |
| 1.4 Tab | Original | 1A Tab | Original |
| 1.4-1 - 1.4-4 | Original | Appx 1A Title Page | Original |
| 1.5 Tab | Original | Chapter 2 Tab | Original |
| 1.5-1 | Original | 2 i - 2-xvi | Original |
| 1.6 Tab | Original | 2· xvii | Amend 1 |
| 1.6-1 - 1.6-2 | Original | 2-xviii - 2-xxi | Original |
| 1.7 Tab | Original | 2.1 Tab | Original |
| 1.7-1 - 1.7-70 | Original | 2.1-1 - 2.1-18 | Original |
| 1.7-71 - 1.7-79 | Amend 1 | Fig 2.1-1 - 2.1-15 | Original |
| Fig 1.7-1 | Original | 2.2 Tab | Original |
| Fig 1.7-2 (Sh 1 of 2) | Original | 2.2-1 - 2.2-33 | Original |
| Fig 1.7-2 (Sh 2 of 2) | | Fig 2.2-1 - 2.2-3 | Original |
| 1.8 Tab | Original | | Original |
| 1.8-1 - 1.8-22 | Original | 2.3-1 - 2.3-60 | Original |
| | | | |

80000000 March 1980

8004010247 00000008 3-17-80 dupe Amendment 1

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|---------------------------|----------|------------------------|----------|
| 2.3-61 | Amend 1 | 2.5-148 - 2.5-160 | Original |
| 2.3-62 | Original | 2.5-161 - 2.5-163 | Amend 1 |
| 2.3-63 - 2.3-64 | Amend 1 | 2.5-164 - 2.5-189 | Original |
| 2.3-65 | Original | Fig 2.5-1 - 2.5-55 | Original |
| 2.3-66 | Amend 1 | Fig 2.5-56 (Sh 1 of 3) | Original |
| 2.3-67 | Original | Fig 2.5-56 (Sh 2 of 3) | Original |
| 2.3-68 | Amend 1 | Fig 2.5-56 (Sh 3 of 3) | Original |
| 2.3-69 - 2.3-72 | Original | Fig 2.5-57 (Sh 1 of 3) | Original |
| 2.3-73 | Amend 1 | Fig 2.5-57 (Sh 2 of 3) | Original |
| Fig 2.3-1 - 2.3-23 | Original | Fig 2.5-57 (Sh 3 of 3) | Original |
| 2.4 Tab | Original | Fig 2.5-58 (Sh 1 of 3) | Original |
| 2.4-1 - 2.4-106 | Original | Fig 2.5-58 (Sh 2 of 3) | Original |
| 2.4-107 - 2.4-110 | Amend 1 | Fig 2.5-58 (Sh 3 of 3) | Original |
| 2.4-111 - 2.4-111A | Amend 1 | Fig 2.5-59 (Sh 1 of 3) | Original |
| 2.4-111B | Amend 1 | Fig 2.5-59 (Sh 2 of 3) | Original |
| 2.4-112 - 2.4-126 | Original | Fig 2.5-59 (Sh 3 of 3) | Original |
| Fig 2.4-1 - 2.4-14 | Original | Fig 2.5-60 (Sh 1 of 3) | Original |
| Fig 2.4-15 (Sh 1 of 4) | Original | Fig 2.5-60 (Sh 2 of 3) | Original |
| Fig 2.4-15 (Sh 2 of 4) | Original | Fig 2.5-60 (Sh 3 of 3) | Original |
| Fig 2.4-15 (Sh 3 of 4) | Original | Fig 2.5-61 - 2.5-96 | Original |
| Fig 2.4-15 (Sh 4 of 4) | Original | 2A Tab | Original |
| Fig 2.4-16 - 2.4-18 | Original | Appx 2A Title Page | Original |
| Fig 2.4-19 (Sheet 1 of 2) | Original | 2B Tab | Original |
| Fig 2.4-19 (Sheet 2 of 2) | Original | Appx 2B Title Page | Original |
| Fig 2.4-20 - 2.4-27 | Original | 2B-1 - 2B-5 | Original |
| Fig 2.4-28 | Amend 1 | 2C Tab | Original |
| Fig 2.4-29 - 2.4-39 | Original | Appx 2C Title Page | Original |
| Fig 2.4-40 | Amend 1 | 2C-1 - 2C-5 | Original |
| Fig 2.4-41 | Original | 2D Tab | Original |
| Fig 2.4-42 | Amend 1 | Appx 2D Title Page | Original |
| 2.5 Tab | Original | 2D-ii - 2D-iii | Original |
| 2.5-1 - 2.5-146 | Original | 2D-1 - 2D-19 | Original |
| 2.5-147 | Amend 1 | Fig 2D-1 - 2D-6 | Original |
| | | | |

P00000000

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|-----------------------|----------|------------------------|----------|
| 2E Tab | Original | Fig 3.7-1 - 3.7-20 | Original |
| Appx 2E Title Page | Original | 3.8 Tab | Origina! |
| 2E-1 - 2E-2 | Original | 3.8-1 - 3.8-15 | Original |
| 2F Tab | Original | 3.8-16 | Amend 1 |
| Appx 2F Title Page | Original | 3.8-17 - 3.8-33 | Original |
| 2F-1 - 2F-13 | Original | 3.8-34 | Amend 1 |
| 2G Tab | Original | 3.8-35 - 3.8-88 | Original |
| Appx 2G Title Page | Original | 3.8-89 | Amend 1 |
| 2G-ii | Original | 3.8-90 - 3.8-98 | Original |
| 2G-1 - 2G-9 | Original | 3.8-99 | Amend 1 |
| Fig 2G-1 | Original | 3.8-100 | Original |
| Chapter 3 Tab | Original | Fig 3.8-1 - 3.8-2 | Original |
| 3-i - 3-xiii | Original | Fig 3.8-3 (Sh 1 of 2) | Original |
| 3-xiv | Amend 1 | Fig 3.8-3 (Sh 2 of 2) | Original |
| 3-xv - 3-xxiii | Original | Fig 3.8-4 - 3.8-5 | Original |
| 3.1 Tab | Original | Fig 3.8-6 (Sh 1 of 2) | Original |
| 3.11 - 3.1-33 | Original | Fig 3.8-6 (Sh 2 of 2) | Original |
| 3.2 Tab | Original | Fig 3.8-7 - 3.8-8 | Original |
| 3.2-1 - 3.2-36 | Original | Fig 3.8-9 | Amend 1 |
| 3.3 Tab | Original | Fig 3.8-10 - 3.8-13 | Original |
| 3.3-1 - 3.3-4 | Original | Fig 3.8-14 | Amend 1 |
| 3.4 Tab | Original | Fig 3.8-15 - 3.8-23 | Original |
| 3.4-1 - 3.4-2 | Original | Fig 3.8-24 - 3.8-26 | Amend 1 |
| 3.5 Tab | Original | Fig 3.8-27 - 3.8-28 | Original |
| 3.5-1 - 3.5-43 | Original | Fig 3.8-29 | Amend 1 |
| Fig 3.5-1 - 3.5-7 | Original | Fig 3.8-30 - 3.8-33 | Original |
| 3.6 Tab | Original | Fig 3.8-34 (Sh 1 of 2) | Original |
| 3.6-1 - 3.6-52 | Original | Fig 3.8-34 (Sh 2 of 2) | Original |
| Fig 3.6-1 (Sh 1 of 2) | Original | Fig 3.8-35 - 3.8-36 | Amend 1 |
| Fig 3.6-1 (Sh 2 of 2) | Original | Fig 3.8-37 | Original |
| Fig 3.6-2 - 3.6-32 | Original | Fig 3.8-38 | Amend 1 |
| 3.7 Tab | Original | Fig 3.8-39 | Original |
| 3.7-1 - 3.7-35 | Original | 3.9 Tab | Original |
| | | | |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|------------------------|----------|-------------------------|----------|
| 3.9-1 - 3.9-77 | Original | Fig 3B.4-9 (Sh 1 of 2) | Original |
| 3.10 Tab | Original | Fig 3B.4-9 (Sh 2 of 2) | Original |
| 3.10-1 - 3.10-4 | Original | Fig 3B.4-10 (Sh 1 of 2) | Original |
| 3.10-5 | Amend 1 | Fig 3B.4-10 (Sh 2 of 2) | Original |
| 3.10-6 | Original | Fig 3B.4-11 (Sh 1 of 2) | Original |
| 3.11 Tab | Original | Fig 3B.4-11 (Sh 2 of 2) | Original |
| 3.11-1 - 3.11-7 | Original | Fig 3B.4-12 (Sh 1 of 2) | Original |
| 3.11-8 | Amend 1 | Fig 3B.4-12 (Sh 2 of 2) | Original |
| 3.11-9 - 3.11-15 | Original | Fig 3B.4-13 (Sh 1 of 2) | Original |
| 3A Tab | Original | Fig 3B.4-13 (Sh 2 of 2) | Original |
| Appx 3A Title Page | Original | Fig 3B.4-14 (Sh 1 of 2) | Original |
| 3B Tab | Original | Fig 3B.4-14 (Sh 2 of 2) | Original |
| Appx 3B Title Page | Original | Fig 3B.4-15 (Sh 1 of 2) | Original |
| 3B-i - 3B-xiii | Original | Fig 3B.4-15 (Sh 2 of 2) | Original |
| 3B.1-1 - 3B.1-4 | Original | Fig 3B.4-16 - 3B.4-22 | Original |
| 3B.2-1 - 38.2-11 | Original | Fig 3B.4-23 (Sh 1 of 2) | Original |
| Fig 3B.2-1 - 3B.2-20 | Original | Fig 3B.4-23 (Sh 2 of 2) | Original |
| 3B.3-1 - 3B.3-9 | Original | 3B.5-1 - 3B.5-4 | Original |
| Fig 3B.3-1 - 3B.3-19 | Original | 3B.6-1 - 3B.6-6 | Original |
| 3B.4-1 - 3B.4-7 | Original | Fig 3B.6-1 - 3B.6-2 | Original |
| Fig 3B.4-1 (Sh 1 of 2) | Original | 3B.7-1 - 3B.7-7 | Original |
| Fig 3B.4-1 (Sh 2 of 2) | Original | Fig 3B.7-1 - 3B.7-3 | Original |
| Fig 3B.4-2 (Sh 1 of 2) | Original | 3B.8-1 - 3B.8-25 | Original |
| Fig 3B.4-2 (Sh 2 of 2) | Original | Fig 3B.8-1 - 3B.8-16 | Original |
| Fig 3B.4-3 (Sh 1 of 2) | Original | 3B.9-1 - 3B.9-8 | Original |
| Fig 3B.4-3 (Sh 2 of 2) | Original | Fig 3B.9-1 - 3B.9-11 | Original |
| Fig 3B.4-4 (Sh I of 2) | Original | 3B.10-1 - 3B.10-43 | Original |
| Fig 3B.4-4 (Sh 1 of 2) | Original | Fig 3B.10-1 - 3B.10-23 | Original |
| Fig 3B.4-5 (Sh I of 2) | Original | 3B.11-1 - 3B.11-20 | Original |
| Fig 3B.4-5 (Sh 2 of 2) | Original | Fig 3B.11-1 - 3B.11-2 | Original |
| Fig 3B.4-6 (Sh 1 of 2) | Original | 3B.12-1 - 3B.12-2 | Amend 1 |
| Fig 3B.4-6 (Sh 2 of 2) | Original | 3C Tab | Original |
| Fig 3B.4-7 - 3B.4-8 | Original | Appx 3C Title Page | Original |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|---------------------|----------|-----------------------|----------|
| 3C-ii - 3C-iv | Original | Chapter 5 Tab | Original |
| 3C.1-1 - 3C.1-2 | Original | 5-i - 5-iii | Original |
| 3C.2-1 - 3C.2-13 | Original | 5-iv | Amend 1 |
| 3C.3-1 - 3C.3-21 | Original | 5-v | Original |
| 3C.4-1 - 3C.4-4 | Original | 5.1 Tab | Original |
| 3D Tab | Original | 5.1-1 - 5.1-51 | Original |
| Appx 3D Title Page | Original | Fig 5.1-1 (Sh 1 of 2) | Original |
| 3D-iii - 3D-vi | Original | Fig 5.1-1 (Sh 2 of 2) | Original |
| Fig 3D-1 - 3D-17 | Original | 5.2 Tab | Original |
| Fig 3D-18 (deleted) | Amend 1 | 5.2-1 - 5.2-2 | Amend 1 |
| Fig 3D-19 - 3D-21 | Original | 5.2-3 - 5.2-3A | Amend 1 |
| Fig 3D-22 (deleted) | Amend 1 | 5.2-3B - 5.2-4 | Amend 1 |
| Fig 3D-23 - 3D-39 | Original | 5.2-5 - 5.2-5A | Amend 1 |
| 3E Tab | Original | 5.2-5B - 5.2-5D | Amend 1 |
| Appx 3E Title Page | Original | 5.2-6 - 5.2-25 | Original |
| 3E-1 - 3E-51/52 | Original | Fig 5.2-1 | Original |
| Chapter 4 Tab | Original | Fig 5.2-2 (Sh 1 of 2) | Original |
| 4-i - 4-iii | Original | Fig 5.2-2 (Sh 2 of 2) | Original |
| 4.1 Tab | Original | Fig 5.2-3 | Original |
| 4.1-1 | Original | 5.3 Tab | Original |
| 4.2 Tab | Original | 5.3-1 - 5.3-20 | Original |
| 4.2-1 - 4.2-10 | Original | Fig 5.3-1 - 5.3-5 | Original |
| 4.3 Tab | Original | 5.4 Tab | Original |
| 4.3-1 | Original | 5.4-1 - 5.4-26 | Original |
| 4.4 Tab | Original | 5A Tab | Original |
| 4.4-1 - 4.4-4 | Original | Appx 5A Title Page | Original |
| Fig 4.4-1 | Original | Chapter 6 Tab | Original |
| 4.5 Tab | Original | 6-1 | Original |
| 4.5-1 | Original | 6-ii | Amend 1 |
| 4.6 Tab | Original | 6-iii - 6-x | Original |
| 4.6-1 | Original | 6.1 Tab | Original |
| 4A Tab | Original | 6.1-1 - 6.1-2 | Original |
| Appx 4A Title Page | Original | 6.1-3 | Amend 1 |
| | | | |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|--------------------------|----------|--------------------------|----------|
| 6.1-4 - 6.1-11 | Original | Fig 6.2.1-19 (Sh 1 of 2) | Original |
| 6.2.1 Tab | Original | Fig 6.2.1-19 (Sh 2 of 2) | Original |
| 6.2.1-1 - 6.2.1-4 | Original | 6.2.2 Tab | Original |
| 6.2.1-5 - 6.2.1-6 | Amend 1 | 6.2.2-1 - 6.2.2-10 | Original |
| 6.2.1-7 - 6.2.1-43 | Original | 6.2.3 Tab | Original |
| 6.2.1-44 | Amend 1 | 6.2.3-1 | Original |
| 6.2.1-45 - 6.2.1-46 | Original | 6.2.4 Tab | Original |
| 6.2.1-47 - 6.2.1-50 | Amend 1 | 6.2.4-1 - 6.2.4-4 | Original |
| 6.2.1-51 - 6.2.1-98 | Original | 6.2.4-5 - 6.2.4-6 | Amend 1 |
| Fig 6.2.1-1 - 6.2.1-5 | Original | 6.2.4-7 | Original |
| Fig 6.2.1-6 (Sh 1 of 5) | Original | 6.2.4-8 - 6.2.4-9 | Amend 1 |
| Fig 6.2.1-6 (Sh 2 of 5) | Original | 6.2.4-10 | Original |
| Fig 6.2.1-6 (Sh 3 of 5) | Original | 6.2.4-11 | Amend 1 |
| Fig 6.2.1-6 (Sh 4 of 5) | Original | 6.2.4-12 - 6.2.4-13 | Original |
| Fig 6.2.1-6 (Sh 5 of 5) | Original | 6.2.4-14 - 6.2.4-17 | Amend 1 |
| Fig 6.2.1-7 - 6.2.1-11 | Original | 6.2.4-18 - 6.2.4-27 | Original |
| Fig 6.2.1-12 (Sh 1 of 2) | Original | Fig 6.2.4-1 (Sh 1 of 9) | Original |
| Fig 6.2.1-12 (Sh 2 of 2) | Original | Fig 6.2.4-1 (Sh 2 of 9) | Original |
| Fig 6.2.1-13 - 6.2.1-16 | Original | Fig 6.2.4-1 (Sh 3 of 9) | Original |
| Fig 6.2.1-17 (Sh 1 of 7) | Original | Fig 6.2.4-1 (Sh 4 of 9) | Original |
| Fig 6.2.1-17 (Sh 2 of 7) | Original | Fig 6.2.4-1 (Sh 5 of 9) | Original |
| Fig 6.2.1-17 (Sh 3 of 7) | Original | Fig 6.2.4-1 (Sh 6 of 9) | Original |
| Fig 6.2.1-17 (Sh 4 of 7) | Original | Fig 6.2.4-1 (Sh 7 of 9) | Original |
| Fig 6.2.1-17 (Sh 5 of 7) | Original | Fig 6.2.4-1 (Sh 8 of 9) | Original |
| Fig 6.2.1-17 (Sh 6 of 7) | Original | Fig 6.2.4-1 (Sh 9 of 9) | Original |
| Fig 6.2.1-17 (Sh 7 of 7) | Original | 6.2.5 Tab | Original |
| Fig 6.2.1-18 (Sh 1 of 7) | Original | 6.2.5-1 - 6.2.5-5 | Original |
| Fig 6.2.1-18 (Sh 2 of 7) | Original | 6.2.5-6 | Amend 1 |
| Fig 6.2.1-18 (Sh 3 of 7) | Original | 6.2.5-7 - 6.2.5-23 | Original |
| Fig 6.2.1-18 (Sh 4 of 7) | Original | 6.2.5-24 | Amend 1 |
| Fig 6.2.1-18 (Sh 5 of 7) | Original | Fig 6.2.5-1 - 6.2.5-3 | Original |
| Fig 6.2.1-18 (Sh 6 of 7) | Original | 6.2.6 Tab | Original |
| Fig 6.2.1-18 (Sh 7 of 7) | Original | 6.2.6-1 - 6.2.6-6 | Original |
| | | | |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|-----------------------|----------|-----------------------|----------|
| 6.2.6-7 | Amend 1 | Fig 7.2-1 - 7.2-4 | Original |
| 6.2.6-8 - 6.2.6-9 | Original | 7.3 Tab | Original |
| 6.2.6-10 - 6.2.6-12 | Amend 1 | 7.3-1 - 7.3-61 | Original |
| 6.2.6-13 - 6.2.6-15 | Original | Fig 7.3-1 - 7.3-7 | Original |
| 6.2.6-16 - 6.2.6-18 | Amend 1 | 7.4 Tab | Original |
| 6.2.6-19 - 6.2.6-24 | Original | 7.4-1 - 7.4-13 | Original |
| 6.3 Tab | Original | Fig 7.4-1 - 7.4-3 | Original |
| 6.3-1 - 6.3-5 | Original | Fig 7.4-4 (Sh 1 of 3) | Original |
| 6.3-6 | Amend 1 | Fig 7.4-4 (Sh 2 of 3) | Original |
| 6.3-7 - 6.3-23 | Original | Fig 7.4-4 (Sh 3 of 3) | Original |
| 6.3-24 | Amend 1 | Fig 7.4-5 | Original |
| 6.3-25 - 6.3-28 | Original | 7.5 Tab | Original |
| Fig 6.3-1 (Sh 1 of 3) | Original | 7.5-1 - 7.5-11 | Original |
| Fig 6.3-1 (Sh 2 of 3) | Original | Fig 7.5-1 (Sh 1 of 2) | Original |
| Fig 6.3-1 (Sh 3 of 3) | Original | Fig 7.5-1 (Sh 2 of 2) | Original |
| 6.4 Tab | Original | Fig 7.5-2 (Sh 1 of 2) | Original |
| 6.4-1 - 6.4-28 | Original | Fig 7.5-2 (Sh 2 of 2) | Original |
| Fig 6.4-1 | Original | 7.6 Tab | Original |
| 6.5 Tab | Original | 7.6-1 - 7.6-5 | Original |
| 6.5-1 - 6.5-7 | Original | 7.7 Tab | Original |
| 6.5-8 | Amend 1 | 7.7-1 - 7.7-4 | Original |
| 6.5-9 - 6.5-75 | Original | Fig 7.7-1 - 7.7-2 | Original |
| Fig 6.5-1 - 6.5-9 | Original | 7A Tab | Original |
| 6.6 Tab | Original | Appx 7A Title Page | Original |
| 6.6-1 - 6.6-2 | Original | Chapter 8 Tab | Original |
| 6A Tab | Original | 8-i - 8-iv | Original |
| Appx 6A Title Page | Original | 8.1 Tab | Original |
| Chapter 7 Tab | Original | 8.1-1 - 8.1-5 | Original |
| 7-i - 7-xi | Original | Fig 8.1-1 (Sh 1 of 2) | Original |
| 7.1 Tab | Original | Fig 8.1-1 (Sh 2 of 2) | Amend 1 |
| 7.1-1 - 7.1-17 | Original | 8.2 Tab | Original |
| 7.2 Tab | Original | 8.2-1 | Amend 1 |
| 7.2-1 - 7.2-7 | Orig | 3.2-2 - 8.2-7 | Original |
| | | | |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|-----------------------|----------|-----------------------|----------|
| 8.2-8 | Amend 1 | Fig 9.1-2 | Amend 1 |
| 8.2-9 | Original | | Original |
| Fig 8.2-1 - 8.2-4 | Original | 9.2 Tab | Original |
| 8.3 Tab | Original | 9.2-1 - 9.2-111 | Original |
| 8.3-1 - 8.3-7 | Original | 9.2-112 - 9.2-112B | Amend 1 |
| 8.3-8 | Amend 1 | 9.2-113 | Original |
| 8.3-9 - 8.3-16 | Original | 9.2-114 | Amend 1 |
| 8.3-17 | Amend 1 | 9.2-115 - 9.2-128 | Original |
| 8.3-18 - 8.3-26 | Original | Fig 9.2-1 (Sh 1 of 2) | Original |
| 8.3-27 - 8.3-30 | Amend 1 | Fig 9.2-1 (Sh 2 of 2) | Original |
| 8.3-31 - 8.3-87 | Original | Fig 9.2-2 (Sh 1 of 2) | Original |
| 8.3-88 | Amend 1 | Fig 9.2-2 (Sh 2 of 2) | Original |
| 8.3-89 - 8.3-111 | Original | Fig 9.2-3 | Original |
| Fig 8.3-1 - 8.3-2 | Original | Fig 9.2-4 (Sh 1 of 3) | Original |
| Fig 8.3-3 (Sh 1 of 2) | Original | Fig 9.2-4 (Sh 2 of 3) | Original |
| Fig 8.3-3 (Sh 2 of 2) | Original | Fig 9.2-4 (Sh 3 of 3) | Original |
| Fig 8.3-4 (Sh 1 of 2) | Original | Fig 9.2-5 (Sh 1 of 2) | Original |
| Fig 8.3-4 (Sh 2 of 2) | Original | Fig 9.2-5 (Sh 2 of 2) | Original |
| Fig 8.3-5 - 8.3-9 | Amend 1 | Fig 9.2-6 (Sh 1 of 2) | Amend 1 |
| 8A Tab | Original | Fig 9.2-6 (Sh 2 of 2) | Original |
| Appx 8A Title Page | Original | Fig 9.2-7 | Original |
| 8B Tab | Original | Fig 9.2-8 (Sh 1 of 3) | Original |
| Agra w 8B Title Page | Original | Fig 9.2-8 (Sh 2 of 3) | Original |
| 8B 3P-32 | Original | Fig 9.2-8 (Sh 3 of 3) | Original |
| Chapter 9 Tab | Original | Fig 9.2-9 - 9.2-11 | Original |
| 9-i - 9-v | Original | 9.3 Tab | Original |
| 9-vi | Amend 1 | 9.3-1 - 9.3-95 | Original |
| 9-vii - 9-xiv | Original | Fig 9.3-1 (Sh 1 of 3) | Original |
| 9.1 Tab | Original | Fig 9.3-1 (Sh 2 of 3) | Original |
| 9.1-1 - 9.1-28 | Original | Fig 9.3-1 (Sh 3 of 3) | Original |
| 9.1-29 | Amend 1 | Fig 9.3-2 | Original |
| 9.1-30 - 9.1-40 | Original | Fig 9.3-3 (Sh 1 of 3) | Original |
| Fig 9.1-1 | Original | Fig 9.3-3 (Sh 2 of 3) | Original |
| | | | |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|------------------------|----------|------------------------|----------|
| Fig 9.3-3 (Sh 3 of 3) | Original | Fig 9.4-3 (Sh 2 of 4) | Amend 1 |
| Fig 9.3-4 - 9.3-6 | Original | Fig 9.4-3 (Sh 3 of 4) | Amend 1 |
| Fig 9.3-7 | Amend 1 | Fig 9.4-3 (Sh 4 of 4) | Amend 1 |
| Fig 9.3-8 - 9.3-9 | Original | Fig 9.4-4 (Sh 1 of 2) | Amend 1 |
| Fig 9.3-10 (Sh 1 of 3) | Original | Fig 9.4-4 (Sh 2 of 2) | Amend 1 |
| Fig 9.3-10 (Sh 2 of 3) | Original | Fig 9.4-5 | Original |
| Fig 9.3-10 (Sh 3 of 3) | Original | Fig 9.4-6 (Sh 1 of 2) | Original |
| Fig 9.3-11 (Sh 1 of 4) | Original | Fig 9.4-6 (Sh 2 of 2) | Original |
| Fig 9.3-11 (Sh 2 of 4) | Original | Fig 9.4-7 - 9.4-11 | Original |
| Fig 9.3-11 (Sh 3 of 4) | Original | Fig 9.4-12 (Sh 1 of 3) | Original |
| Fig 9.3-11 (Sh 4 of 4) | Original | Fig 9.4-12 (Sh 2 of 3) | Original |
| Fig 9.3-12 | Amend 1 | Fig 9.4-12 (Sh 3 of 3) | Original |
| Fig 9.3-13 (Sh 1 of 5) | Original | Fig 9.4-13 | Original |
| Fig 9.3-13 (Sh 2 of 5) | Original | Fig 9.4-14 (Sh 1 of 2) | Original |
| Fig 9.3-13 (Sh 3 of 5) | Original | Fig 9.4-14 (Sh 2 of 2) | Original |
| Fig 9.3-13 (Sh 4 of 5) | Original | Fig 9.4-15 - 9.4-17 | Original |
| Fig 9.3-13 (Sh 5 of 5) | Original | 9.5 Tab | Original |
| Fig 9.3-14 (Sh 1 of 3) | Original | 9.5-1 - 9.5-1B | Amend 1 |
| Fig 9.3-14 (Sh 2 of 3) | Original | 9.5-2 - 9.5-53 | Original |
| Fig 9.3-14 (Sh 3 of 3) | Original | 9.5-54 | Amend 1 |
| 9.4 Tab | Original | 9.5-55 | Original |
| 9.4-1 - 9.4-4 | Original | 9.5-56 - 9.5-58 | Amend 1 |
| 9.4-5 | Amend I | 9.5-59 - 9.5-60 | Original |
| 9.4-6 - 9.4-27 | Original | 9.5-61 | Amend 1 |
| 9.4-28 | Amend | 9.5-62 | Original |
| 9.4-29 - 9.4-40 | Original | 9.5-63 | Amend 1 |
| 9.4-41 | Amend 1 | 9.5-64 - 9.5-88 | Original |
| 9.4-42 - 9.4-66 | Original | Fig 9.5-1 (Sh 1 of 6) | Original |
| Fig 9.4-1 (Sh 1 of 2) | Original | Fig 9.5-1 (Sh 2 of 6) | Amend 1 |
| Fig 9.4-1 (Sh 2 of 2) | Original | Fig 9.5-1 (Sh 3 of 6) | Original |
| Fig 9.4-2 (Sh 1 of 2) | Original | Fig 9.5-1 (Sh 4 of 6) | Amend 1 |
| Fig 9.4-2 (Sh 2 of 2) | Original | Fig 9.5-1 (Sh 5 of 6) | Original |
| Fig 9.4-3 (Sh 1 of 4) | Amend 1 | Fig 9.5-1 (Sh 6 of 6) | Original |
| | | | |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|------------------------|----------|------------------------|----------|
| Fig 9.5-2 - 9.5-6 | Original | 10.4-41 | Amend 1 |
| Fig 9.5-7 | Amend 1 | 10.4-42 - 10.4-56 | Original |
| Fig 9.5-8 (Sh 1 of 2) | Original | Fig 10.4-1 - 10.4-8 | Original |
| Fig 9.5-8 (Sh 2 of 2) | Original | Fig 10.4-9 (Sh 1 of 3) | Original |
| Fig 9.5-9 - 9.5-13 | Original | Fig 10.4-9 (Sh 2 of 3) | Amend 1 |
| 9A Tab | Original | Fig 10.4-9 (Sh 3 of 3) | Original |
| Appx 9A Title Page | Original | Fig 10.4-10 - 10.4-11 | Original |
| Chapter 10 Tab | Original | 10A Tab | Original |
| 10-i - 10-vi | Original | Appx 10A Title Page | Original |
| 10.1 Tab | Original | Chapter 11 Tab | Original |
| 10,1-1 - 10.1-8 | Original | 11-i - 11-v | Original |
| Fig 10.1-1 (Sh 1 of 2) | Original | 11.1 Tab | Original |
| Fig 10.1-1 (Sh 2 of 2) | Original | 11.1-1 - 11.1-27 | Original |
| Fig 10.1-2 - 10.1-3 | Original | Fig 11.1-1 - 11.1-2 | Original |
| 10.2 Tab | Original | 11.2 Tab | Original |
| 10.2-1 - 10.2-20 | Original | 11.2-1 - 11.2-32 | Original |
| Fig 10.2-1 (Sh 1 of 3) | Original | Fig 11.2-1 (Sh 1 of 2) | Original |
| Fig 10.2-1 (Sh 2 of 3) | Original | Fig 11.2-1 (Sh 2 of 2) | Original |
| Fig 10.2-1 (Sh 3 of 3) | Original | Fig 11.2-2 (Sh 1 of 3) | Amend 1 |
| Fig 10.2-2 (Sh 1 of 5) | Original | Fig 11.2-2 (Sh 2 of 3) | Amend 1 |
| Fig 10.2-2 (Sh 2 of 5) | Original | Fig 11.2-2 (Sh 3 of 3) | Original |
| Fig 10.2-2 (Sh 3 of 5) | Original | 11.3 Tab | Original |
| Fig 10.2-2 (Sh 4 of 5) | Original | 11.3-1 - 11.3-8 | Orig_nal |
| Fig 10.2-2 (Sh 5 of 5) | Original | 11.3-9 | Amend 1 |
| Fig 10.2-3 | Original | 11.3-10 - 11.3-18 | Original |
| 10.3 Tab | Original | 11.3-19 - 11.3-20 | Amend 1 |
| 10.3-1 - 10.3-18 | Original | 11.3-21 | Original |
| Fig 10.3-1 (Sh 1 of 2) | Original | 11.3-22 | Amend 1 |
| Fig 10.3-1 (Sh 2 of 2) | Original | Fig 11.3-1 - 11.3-2 | Original |
| 10.4 Tab | Original | 11.4 Tab | Original |
| 10.4-1 - 10.4-33 | Original | 11.4-1 - 11.4-27 | Original |
| 10.4-34 | Amend 1 | Fig 11.4-1 | Original |
| 10.4-35 - 10.4-40 | Original | Fig 11.4-2 (Sh 1 of 2) | Original |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|------------------------|----------|---------------------|----------|
| Fig 11.4-2 (Sh 2 of 2) | Anend 1 | Fig 13.1-1 - 13.1-2 | Original |
| 11.5 Tab | Original | Fig 13.1-3 - 13.1-4 | Amend 1 |
| 11.5-1 - 11.5-50 | Original | Fig 13.1-5 - 13.1-7 | Original |
| Fig 11.5-1 | Original | 13.2 Tab | Original |
| 11A Tab | Original | 13.2-1 - 13.2-13 | Original |
| Appx 11A Title Page | Original | Fig 13.2-1 - 13.2-2 | Original |
| Chapter 12 Tab | Original | 13.3 Tab | Original |
| 12-i - 12-vi | Original | 13.3-1 | Original |
| 12.1 Tab | Original | 13.4 Tab | Original |
| 12.1-1 - 12.1-29 | Original | 13.4-1 - 13.4-4 | Original |
| 12.2 Tab | Original | 13.5 Tab | Original |
| 12.2-1 - 12.2-18 | Original | 13.5-1 - 13.5-8 | Original |
| 12.2-19 | Amend 1 | 13.6 Tab | Original |
| 12.1-20 - 12.2-21 | Original | 13.6-1 | Original |
| 12.3 Tab | Original | 13A Tab | Original |
| 12.3-1 - 12.3-28 | Original | Appx 13A Title Page | Original |
| Fig. 12.3-1 - 12.3-5 | Amend 1 | 13B Tab | Original |
| Fig 12.3-6 - 12.3-20 | Original | Appx 13B Title Page | Original |
| 12.4 Tab | Original | 13B-1 - 13B-14 | Amend 1 |
| 12.4-1 - 12.4-11 | Original | 13B-15 - 13B-42 | Original |
| 12.5 Tab | Original | 13B-43 - 13-B-44 | Amend 1 |
| 12.5-1 - 12.5-21 | Original | 13B-45 - 13B-52 | Original |
| 12A Tab | Original | 13B-53 - 13B-54 | Amend 1 |
| Appx 12A Title Page | Original | Chapter 14 Tab | Original |
| 12B Tab | Original | 14-i - 14-iv | Original |
| Appx 12B Title Page | Original | 14.1 Tab | Original |
| 12B-1 - 12B-8 | Original | 14.1-1 | Original |
| Chapter 13 Tab | Original | 14.2 Tab | Original |
| 13-i - 13-iv | Original | 14.2-1 - 14.2-22 | Original |
| 13.1 Tab | Original | Fig 14.2-1 - 14.2-2 | Original |
| 13.1-1 - 13.1-11 | Original | 14A Tab | Original |
| 13.1-12 | Amend 1 | Appx 14A Title Page | Original |
| 13.1-13 - 13.1-24 | Original | Chapter 15 Tab | Original |
| | | | |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|---------------------|----------|---------------------------|----------|
| 15-i - 15-vi | Original | 16.2-1 - 16.2-2 | Original |
| 15.0 Tab | Original | 16.2 Bases Tab | Original |
| 15.0-1 - 15.0-2 | Original | Appx 16.2A Title Page | Original |
| 15.1 Tab | Original | 16.2A-1 - 16.2A-2 | Original |
| 15.1-1 - 15.1-2 | Original | 16.3/4 Tab | Original |
| 15.2 Tab | Original | 16.3/4.0-1 - 16.3/4.0-4 | Original |
| 15.2-1 - 15.2-4 | Original | 16.3/4.1-1 - 16.3/4.1-6 | Original |
| 15.3 Tab | Original | 16.3/4.2-1 - 16.3/4.2-4 | Original |
| 15.3-1 | Original | 16.3/4.3-1 - 16.3/4.3-24 | Original |
| 15.4 Tab | Original | 16.3/4.4-1 - 16.3/4.4-13 | Original |
| 15.4-1 - 15.4-4 | Original | 16.3/4.5-1 | Original |
| 15.5 Tab | Original | 16.3/4.6-1 | Original |
| 15.5-1 | Original | 16.3/4.6-2 | Amend 1 |
| 15.6 Tab | Original | 16.3/4.6-3 - 16.3/4.6-4 | Original |
| 15.6-1 - 15.6-7 | Original | 16.3/4.6-5 - 16.3/4.6-6 | Amend 1 |
| 15.7 Tab | Original | 16.3/4.6-7 - 16.3/4.6-8 | Original |
| 15.7-1 - 15.7-9 | Original | 16.3/4.6-9 - 16.3/4.6-11 | Amend 1 |
| Fig 15.7-1 - 15.7-4 | Original | 16.3/4.6-12 | Original |
| 15.8 Tab | Original | 16.3/4.6-13 | Amend 1 |
| 15.8-1 | Original | 16.3/4.6-14 - 16.3/4.6-18 | Original |
| 15A Tab | Original | 16.3/4.6-19 - 16.3/4.6-20 | Amend 1 |
| Appx 15A Title Page | Original | 16.3/4.6-21 - 16.3/4.6-36 | Original |
| 15B Tab | Original | 16/3/4.7-1 - 16.3/4.7-18 | Original |
| Appx 15B Title Page | Original | 16.3/4.8-1 - 16.3/4.8-12 | Original |
| 15B-1 - 15B-18 | Original | 16.3/4.9-1 - 16.3/4.9-11 | Original |
| Fig 15B-1 - 15B-3 | Original | 16.3/4.10-1 - 16.3/4.10-4 | Original |
| Chapter 16 Tab | Original | 16.3/4 Bases Tab | Original |
| 16-i - 16-xi | Original | Appx 16.3/4A Title Page | Original |
| 16.0 Tab | Original | 16.3/4A-1 - 16.3/4A-23 | Original |
| 16.0-1 - 16.0-2 | Original | 16.5 Tab | Original |
| 16.1 Tab | Original | 16.5-1 - 16.5-3 | Original |
| 16.1-1 - 16.1-4 | Original | Fig 16.5.1.1-1 | Original |
| 16.2 Tab | Original | Fig 16.5.1.2-1 | Original |
| | | | |

| Page or Figure No. | Issue | Page or Figure No. | Issue |
|---------------------|----------|---------------------|----------|
| 16.6 Tab | Original | 17.1-1 | Original |
| 16.6-1 - 16.6-19 | Original | 17.2 Tab | Original |
| Fig 16.6.2.1-1 | Amend 1 | 17.2-1 - 17.2-62 | Original |
| Fig 16.6.2.2-1 | Original | Fig 17.2-1 | Original |
| 16A Tab | Original | 17A Tab | Original |
| Appx 16A Title Page | Original | Appx 17A Title Page | Original |
| Chapter 17 Tab | Original | 17B Tab | Original |
| 17-i - 17-iv | Original | Appx 17B Title Page | Original |
| 17.1 Tab | Original | 17B-1 - 17B-7 | Original |