



Orano TN

7160 Riverwood Drive
Suite 200
Columbia, MD 21046
USA
Tel: 410-910-6900
Fax: 434-260-8480

March 12, 2021
E-57630

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Subject: ANUH-01.0150, Standardized Advanced NUHOMS[®] Updated Final Safety Analysis Report (UFSAR), Revision 10, and 10 CFR 72.48 Summary Report for the Period 3/13/19 to 3/12/21, Docket 72-1029

Reference: Letter from Paul Oleyar to NRC Document Control Desk, "ANUH-01.0150, Standardized Advanced NUHOMS[®] Updated Final Safety Analysis Report (UFSAR), Revision 9, and 10 CFR 72.48 Summary Report for the Period 8/14/18 to 3/12/19, Docket 72-1029," March 12, 2019 (E-53756)

Pursuant to 10 CFR 72.248, TN Americas LLC (TN) has updated ANUH-01.0150, the Standardized Advanced NUHOMS[®] UFSAR, last updated by the referenced submittal, and herewith submits UFSAR Revision 10 replacement pages for docketing. This update incorporates changes implemented by TN pursuant to 10 CFR 72.48, for the time period of 3/13/19 to 3/12/21. No amendments to CoC 1029 became effective during this timeframe.

The changed areas are marked as follows:

- New or changed pages show "Rev. 10" and "03/21" in the header.
- Changed areas are indicated using single revision bars in the right-hand margin.
- Newly inserted text is shown by italics.

I certify that this submittal accurately presents changes made since the referenced submittal.

The replacement pages for the UFSAR do not contain proprietary information. Accordingly, the public replacement pages are provided in the Enclosure.

Also, regarding the summary report required to be submitted pursuant to 10 CFR 72.48(d)(2), TN Americas LLC made no changes in facilities or spent fuel storage cask design, no changes in procedures, and no tests or experiments pursuant to 10 CFR 72.48(c)(2) during the period 3/13/19 to 3/12/21 for the Standardized Advanced NUHOMS[®] System.

Should you have any questions regarding this submittal, please do not hesitate to contact Mr. Douglas Yates at 434-832-3101, or by email at Douglas.Yates@orano.group.



Prakash Narayanan
Chief Technical Officer

cc: Christian Jacobs (NRC DFM)

Enclosure:

Replacement Pages for ANUH-01.0150, Standardized Advanced NUHOMS[®] UFSAR, Revision 10 (Public Version)

Enclosure to E-57630

**Replacement Pages for ANUH-01.0150,
Standardized Advanced NUHOMS® UFSAR,
Revision 10**

(Public Version)

NON-PROPRIETARY

UPDATED FINAL SAFETY ANALYSIS REPORT
FOR THE
STANDARDIZED ADVANCED NUHOMS®
HORIZONTAL MODULAR STORAGE SYSTEM
FOR IRRADIATED NUCLEAR FUEL

By

TN Americas LLC⁽¹⁾
Columbia, MD

March 2021 |

⁽¹⁾ TN Americas LLC, formerly AREVA TN, and Transnuclear, Inc. (herein referred to as TN Americas LLC, AREVA TN, Transnuclear, Inc., Transnuclear, or TN)

REVISION LOG SHEET

UFSAR Revision	Date	Record of Changes/FCNs	Changed Pages
0	3/19/03	None	All
1	3/21/05	FCNs 721029-39, 40, 62, 65, 81, 89, 92, 124, 126, 165, 169 & 175	See List of Effective Pages
2	8/17/06	FCNs 721029-182, 185, 103 R-1, 162 R-1, 166, 173 R-1, 176 R-1, 177 and 204	See List of Effective Pages
3	8/15/08	FCNs 721029-202, 205, 206, 208, 215, 220, 222 R1, 232, 239, 246, 257, 272	See List of Effective Pages
4	8/12/10	FCNs 721029-275, 280 R-1, 285, 294, 303, 311, 312 R-1, 316	See List of Effective Pages
5	8/13/12	FCNs 721029-339, 348 R-1, 351 R-1, 352, 353, 354, 356, 364	See List of Effective Pages
6	8/13/14	FCN 721029-385	See List of Effective Pages
7	8/11/16	FCN 721029-374 R-1, 378 R-1, 386 R-1, 394, 407 R-1, 414, 415, 416 R-1, 417	See List of Effective Pages
8	8/13/18	FCN 721029-418, 419 R-1, 420 R-1, 421, 422	See List of Effective Pages
9	3/12/19	FCN 721029-424	See List of Effective Pages
10	3/12/21	<i>FCN 721029-423, 425, 426, 429 R-1</i>	<i>See List of Effective Pages</i>

Revision 2 of this UFSAR incorporates changes implemented due to the approval of CoC 1029 Amendment 1, effective May 16, 2005. It also incorporates modifications implemented per 10 CFR 72.48 from March 21, 2005 through August 15, 2006.

Revision 3 of this UFSAR incorporates modifications implemented per 10 CFR 72.48 from August 16, 2006 through August 15, 2008. This revision also includes a full list of effective pages.

Revision 4 of this UFSAR incorporates modifications implemented per 10 CFR 72.48 from August 16, 2008 through August 12, 2010.

Revision 5 of this UFSAR incorporates modifications implemented per 10 CFR 72.48 from August 13, 2010 through August 13, 2012.

Revision 6 of this UFSAR incorporates modifications implemented per 10 CFR 72.48 from August 14, 2012 through August 13, 2014.

Revision 7 of this UFSAR incorporates changes implemented due to the approval of CoC 1029 Amendment 3, effective February 23, 2015. It also incorporates modifications implemented per 10 CFR 72.48 from August 14, 2014 through August 11, 2016.

Revision 8 of this UFSAR incorporates modifications implemented per 10 CFR 72.48 from August 12, 2016 through August 13, 2018.

Revision 9 of this UFSAR incorporates changes implemented due to the approval of CoC 1029 Amendment 4, effective March 12, 2019.

Revision 10 of this UFSAR incorporates modifications implemented per 10 CFR 72.48 from March 13, 2019 through March 12, 2021.

List Of Effective Pages

Page or description	Rev.	Date
Title Page	10	March 2021
i	8	08/18
ii	10	03/21
iii	7	08/16
iv	8	08/18
v	10	03/21
vi	5	08/12
vii	5	08/12
viii	5	08/12
ix	8	08/18
x	8	08/18
xi	8	08/18
xii	8	08/18
xiii	8	08/18
xiv	8	08/18
xv	8	08/18
xvi	8	08/18
xvii	8	08/18
xviii	8	08/18
xix	8	08/18
xx	8	08/18
xxi	8	08/18
xxii	8	08/18
xxiii	8	08/18
xxiv	8	08/18
xxv	8	08/18
xxvi	8	08/18
LOEP-1	10	03/21
LOEP-2	10	03/21
LOEP-3	10	03/21
LOEP-4	10	03/21
LOEP-5	10	03/21
LOEP-6	10	03/21
LOEP-7	10	03/21
LOEP-8	10	03/21
LOEP-9	10	03/21
LOEP-10	10	03/21
LOEP-11	10	03/21
LOEP-12	10	03/21
LOEP-13	10	03/21
LOEP-14	10	03/21
LOEP-15	10	03/21
LOEP-16	10	03/21
LOEP-17	10	03/21
LOEP-18	10	03/21
LOEP-19	10	03/21
LOEP-20	10	03/21
LOEP-21	10	03/21
LOEP-22	10	03/21
LOEP-23	10	03/21

Page or description	Rev.	Date
1-1	7	08/16
1-1a	7	08/16
1.1-1	5	08/12
1.1-2	5	08/12
1.1-3	0	02/03
1.1-4	0	02/03
1.2-1	5	08/12
1.2-2	5	08/12
1.2-3	7	08/16
1.2-4	5	08/12
1.2-5	0	02/03
1.2-6	0	02/03
1.2-7	2	08/06
1.2-8	5	08/12
1.2-9	5	08/12
1.2-9a	10	03/21
1.2-10	0	02/03
1.2-11	0	02/03
1.2-12	0	02/03
1.2-13	2	08/06
1.3-1	7	08/16
1.4-1	5	08/12
1.4-2	0	02/03
1.4-3	0	02/03
1.4-4	0	02/03
1.5-1	8	08/18
DWG: (sh. 1 of 6) NUH-05-4010	6 ¹	7/18/18
DWG: (sh. 2 of 6) NUH-05-4010	6 ¹	Not shown
DWG: (sh. 3 of 6) NUH-05-4010	6 ¹	Not shown
DWG: (sh. 4 of 6) NUH-05-4010	6 ¹	Not shown
DWG: (sh. 5 of 6) NUH-05-4010	6 ¹	Not shown
DWG: (sh. 6 of 6) NUH-05-4010	6 ¹	Not shown
DWG: (sh. 1 of 9) NUH-03-4011	8 ¹	7/18/18
DWG: (sh. 2 of 9) NUH-03-4011	8 ¹	Not shown
DWG: (sh. 3 of 9) NUH-03-4011	8 ¹	Not shown
DWG: (sh. 4 of 9) NUH-03-4011	8 ¹	Not shown
DWG: (sh. 5 of 9) NUH-03-4011	8 ¹	Not shown

¹ Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

List Of Effective Pages

Page or description	Rev.	Date
DWG: (sh. 6 of 9) NUH-03-4011	8 ¹	Not shown
DWG: (sh. 7 of 9) NUH-03-4011	8 ¹	Not shown
DWG: (sh. 8 of 9) NUH-03-4011	8 ¹	Not shown
DWG: (sh. 9 of 9) NUH-03-4011	8 ¹	Not shown
2.1-1	7	08/16
2.1-1a	7	08/16
2.1-2	5	08/12
2.1-3	0	02/03
2.1-4	5	08/12
2.1-5	5	08/12
2.1-6	0	02/03
2.2-1	5	08/12
2.2-2	0	02/03
2.2-3	5	08/12
2.2-4	0	02/03
2.2-5	0	02/03
2.2-6	0	02/03
2.2-7	0	02/03
2.2-8	0	02/03
2.2-9	0	02/03
2.3-1	0	02/03
2.3-2	2	08/06
2.3-3	5	08/12
2.3-4	5	08/12
2.3-5	0	02/03
2.3-6	1	03/05
2.4-1	5	08/12
2.5-1	5	08/12
2.5-2	5	08/12
2.5-3	8	08/18
2.6-1	2	08/06
2.6-2	2	08/06
3.1-1	7	08/16
3.1-2	0	02/03
3.1-3	3	08/08
3.1-4	0	02/03
3.1-5	5	08/12
3.1-6	2	08/06
3.1-7	5	08/12
3.1-8	5	08/12
3.1-9	5	08/12
3.1-10	5	08/12
3.1-11	0	02/03
3.1-12	1	03/05
3.1-13	0	02/03

Page or description	Rev.	Date
3.1-14	10	03/21
3.1-15	0	02/03
3.1-16	0	02/03
3.1-17	0	02/03
3.1-18	0	02/03
3.1-19	0	02/03
3.1-20	0	02/03
3.1-21	0	02/03
3.1-22	5	08/12
3.1-23	0	02/03
3.1-24	0	02/03
3.1-25	0	02/03
3.1-26	0	02/03
3.1-27	0	02/03
3.1-28	5	08/12
3.1-29	5	08/12
3.1-30	0	02/03
3.1-31	2	08/06
3.1-32	0	02/03
3.1-33	0	02/03
3.1-34	0	02/03
3.1-35	0	02/03
3.1-36	0	02/03
3.2-1	0	02/03
3.2-2	5	08/12
3.2-3	0	02/03
3.2-4	0	02/03
3.3-1	5	08/12
3.3-2	0	02/03
3.3-3	0	02/03
3.3-4	0	02/03
3.3-5	0	02/03
3.3-6	0	02/03
3.3-7	0	02/03
3.3-8	0	02/03
3.3-9	0	02/03
3.4-1	0	02/03
3.4-2	0	02/03
3.4-3	2	08/06
3.4-4	0	02/03
3.4-5	0	02/03
3.4-6	0	02/03
3.5-1	5	08/12
3.5-2	0	02/03
3.5-3	0	02/03
3.5-4	0	02/03
3.5-5	9	03/19
3.5-6	0	02/03
3.5-7	0	02/03
3.5-8	5	08/12
3.5-9	0	02/03
3.5-10	0	02/03

List Of Effective Pages

Page or description	Rev.	Date
3.5-11	0	02/03
3.6-1	5	08/12
3.6-2	0	02/03
3.6-3	0	02/03
3.6-4	0	02/03
3.6-5	5	08/12
3.6-6	0	02/03
3.6-7	5	08/12
3.6-8	0	02/03
3.6-9	5	08/12
3.6-10	5	08/12
3.6-11	5	08/12
3.6-12	0	02/03
3.6-13	0	02/03
3.6-14	0	02/03
3.6-15	0	02/03
3.6-16	0	02/03
3.6-17	0	02/03
3.6-18	0	02/03
3.6-19	0	02/03
3.6-20	2	08/06
3.6-21	0	02/03
3.6-22	0	02/03
3.6-23	0	02/03
3.6-24	0	02/03
3.6-25	0	02/03
3.6-26	0	02/03
3.6-27	5	08/12
3.6-28	0	02/03
3.6-29	0	02/03
3.6-30	5	08/12
3.6-31	0	02/03
3.6-32	0	02/03
3.6-33	0	02/03
3.6-34	0	02/03
3.6-35	0	02/03
3.6-36	0	02/03
3.6-37	0	02/03
3.6-38	1	03/05
3.6-39	0	02/03
3.6-40	0	02/03
3.6-41	0	02/03
3.6-42	5	08/12
3.6-43	0	02/03
3.6-44	0	02/03
3.6-45	0	02/03
3.6-46	0	02/03
3.6-47	0	02/03
3.6-48	0	02/03
3.6-49	0	02/03
3.6-50	0	02/03
3.6-51	0	02/03

Page or description	Rev.	Date
3.6-52	0	02/03
3.6-53	0	02/03
3.6-54	0	02/03
3.6-55	0	02/03
3.6-56	0	02/03
3.6-57	0	02/03
3.6-58	2	08/06
3.6-59	5	08/12
3.6-60	5	08/12
4-1	7	08/16
4.1-1	5	08/12
4.1-2	0	02/03
4.1-3	0	02/03
4.1-4	0	02/03
4.1-5	0	02/03
4.1-6	0	02/03
4.1-7	0	02/03
4.1-8	0	02/03
4.2-1	0	02/03
4.2-2	0	02/03
4.2-3	0	02/03
4.2-4	0	02/03
4.2-5	0	02/03
4.2-6	5	08/12
4.2-7	0	02/03
4.3-1	0	02/03
4.4-1	8	08/18
4.4-2	0	02/03
4.4-3	5	08/12
4.4-4	0	02/03
4.4-5	0	02/03
4.4-6	8	08/18
4.4-6a	1	03/05
4.4-7	8	08/18
4.4-8	0	02/03
4.4-9	8	08/18
4.4-10	8	08/18
4.4-11	0	02/03
4.4-12	0	02/03
4.4-13	5	08/12
4.4-14	0	02/03
4.4-15	0	02/03
4.4-16	0	02/03
4.4-17	0	02/03
4.4-18	0	02/03
4.4-19	0	02/03
4.4-20	0	02/03
4.4-21	0	02/03
4.4-22	0	02/03
4.4-23	0	02/03
4.4-24	0	02/03

List Of Effective Pages

Page or description	Rev.	Date
4.4-25	0	02/03
4.4-25a	9	03/19
4.4-26	0	02/03
4.4-27	0	02/03
4.4-28	0	02/03
4.4-29	0	02/03
4.4-30	0	02/03
4.4-31	0	02/03
4.4-32	0	02/03
4.4-33	0	02/03
4.5-1	8	08/18
4.5-2	0	02/03
4.6-1	0	02/03
4.6-2	8	08/18
4.6-3	8	08/18
4.6-4	0	02/03
4.6-5	0	02/03
4.6-6	0	02/03
4.7-1	9	03/19
4.7-2	9	03/19
4.7-3	8	08/18
4.7-4	0	02/03
4.7-5	0	02/03
4.7-6	0	02/03
4.7-7	0	02/03
4.7-8	0	02/03
4.8-1	5	08/12
4.8-2	2	08/06
4.8-3	0	02/03
4.8-4	0	02/03
4.8-5	0	02/03
4.8-6	0	02/03
4.8-7	5	08/12
4.8-8	0	02/03
4.8-9	5	08/12
4.8-10	0	02/03
5-1	7	08/16
5.1-1	0	02/03
5.1-2	0	02/03
5.1-3	9	03/19
5.1-4	0	02/03
5.1-5	0	02/03
5.1-6	0	02/03
5.1-7	0	02/03
5.1-8	0	02/03
5.1-9	0	02/03
5.1-10	0	02/03
5.2-1	5	08/12
5.2-2	0	02/03
5.2-3	0	02/03
5.2-4	5	08/12

Page or description	Rev.	Date
5.2-5	0	02/03
5.2-6	5	08/12
5.2-7	5	08/12
5.2-8	5	08/12
5.2-9	0	02/03
5.2-10	5	08/12
5.2-11	5	08/12
5.2-12	0	02/03
5.2-13	0	02/03
5.2-14	0	02/03
5.2-15	0	02/03
5.2-16	0	02/03
5.2-17	5	08/12
5.2-18	5	08/12
5.2-19	5	08/12
5.2-20	5	08/12
5.2-21	0	02/03
5.2-22	5	08/12
5.2-23	0	02/03
5.2-24	0	02/03
5.3-1	0	02/03
5.3-2	10	03/21
5.3-3	0	02/03
5.3-4	0	02/03
5.3-5	5	08/12
5.3-6	0	02/03
5.3-7	5	08/12
5.3-8	0	02/03
5.4-1	0	02/03
5.4-2	0	02/03
5.4-3	0	02/03
5.4-4	0	02/03
5.4-5	0	02/03
5.4-6	0	02/03
5.4-7	0	02/03
5.4-8	0	02/03
5.4-9	0	02/03
5.4-10	0	02/03
5.4-11	0	02/03
5.4-12	0	02/03
5.4-13	0	02/03
5.4-14	0	02/03
5.4-15	0	02/03
5.4-16	0	02/03
5.4-17	0	02/03
5.4-18	0	02/03
5.4-19	0	02/03
5.4-20	0	02/03
5.4-21	0	02/03
5.4-22	0	02/03
5.4-23	0	02/03
5.4-24	0	02/03

List Of Effective Pages

Page or description	Rev.	Date
5.5-1	2	08/06
5.5-2	0	02/03
5.5-3	0	02/03
5.5-4	0	02/03
6.1-1	7	08/16
6.1-1a	7	08/16
6.1-2	5	08/12
6.1-3	0	02/03
6.1-4	0	02/03
6.2-1	0	02/03
6.2-2	0	02/03
6.2-3	0	02/03
6.3-1	5	08/12
6.3-2	0	02/03
6.3-3	0	02/03
6.3-4	0	02/03
6.3-5	0	02/03
6.3-6	0	02/03
6.3-7	0	02/03
6.3-8	0	02/03
6.3-9	0	02/03
6.3-10	0	02/03
6.3-11	0	02/03
6.3-12	0	02/03
6.3-13	0	02/03
6.3-14	0	02/03
6.3-15	0	02/03
6.3-16	0	02/03
6.3-17	0	02/03
6.3-18	0	02/03
6.3-19	0	02/03
6.3-20	0	02/03
6.3-21	0	02/03
6.3-22	0	02/03
6.4-1	0	02/03
6.4-2	0	02/03
6.4-3	0	02/03
6.4-4	0	02/03
6.4-5	0	02/03
6.4-6	0	02/03
6.4-7	0	02/03
6.4-8	0	02/03
6.4-9	0	02/03
6.4-10	0	02/03
6.4-11	0	02/03
6.4-12	0	02/03
6.4-13	0	02/03
6.4-14	5	08/12
6.4-15	0	02/03
6.4-16	0	02/03
6.4-17	0	02/03

Page or description	Rev.	Date
6.4-18	0	02/03
6.5-1	0	02/03
6.5-2	0	02/03
6.5-3	0	02/03
6.5-4	0	02/03
6.5-5	0	02/03
6.5-6	0	02/03
6.5-7	0	02/03
6.5-8	0	02/03
6.6-1	2	08/06
6.6-2	0	02/03
6.6-3	0	02/03
6.6-4	0	02/03
6.6-5	0	02/03
6.6-6	0	02/03
6.6-7	0	02/03
6.6-8	0	02/03
6.6-9	0	02/03
6.6-10	0	02/03
6.6-11	0	02/03
6.6-12	0	02/03
6.6-13	0	02/03
6.6-14	0	02/03
6.6-15	0	02/03
6.6-16	0	02/03
6.6-17	0	02/03
6.6-18	0	02/03
6.6-19	0	02/03
6.6-20	0	02/03
6.6-21	0	02/03
6.6-22	0	02/03
6.6-23	0	02/03
6.6-24	0	02/03
6.6-25	0	02/03
6.6-26	0	02/03
6.6-27	0	02/03
6.6-28	0	02/03
6.6-29	0	02/03
6.6-30	0	02/03
6.6-31	0	02/03
6.6-32	0	02/03
6.6-33	0	02/03
6.6-34	0	02/03
6.6-35	0	02/03
6.6-36	0	02/03
6.6-37	0	02/03
6.6-38	0	02/03
6.6-39	0	02/03
6.6-40	0	02/03
6.6-41	0	02/03
6.6-42	0	02/03
6.6-43	0	02/03

List Of Effective Pages

Page or description	Rev.	Date
6.6-44	0	02/03
6.6-45	0	02/03
6.6-46	0	02/03
6.6-47	0	02/03
6.6-48	0	02/03
6.6-49	0	02/03
6.6-50	0	02/03
6.6-51	0	02/03
6.6-52	0	02/03
6.6-53	0	02/03
6.6-54	0	02/03
6.6-55	0	02/03
6.6-56	0	02/03
6.6-57	0	02/03
6.6-58	0	02/03
6.6-59	0	02/03
6.6-60	0	02/03
6.6-61	0	02/03
6.6-62	0	02/03
6.6-63	0	02/03
6.6-64	0	02/03
6.6-65	0	02/03
6.6-66	0	02/03
6.6-67	0	02/03
6.6-68	0	02/03
6.6-69	0	02/03
6.6-70	0	02/03
6.6-71	0	02/03
6.6-72	0	02/03
6.6-73	0	02/03
6.6-74	0	02/03
6.6-75	0	02/03
6.6-76	0	02/03
6.6-77	0	02/03
6.6-78	0	02/03
6.6-79	0	02/03
6.6-80	0	02/03
6.6-81	0	02/03
6.6-82	0	02/03
6.6-83	0	02/03
6.6-84	0	02/03
6.6-85	0	02/03
6.6-86	0	02/03
6.6-87	0	02/03
6.6-88	0	02/03
6.6-89	0	02/03
6.6-90	0	02/03
6.6-91	0	02/03
6.6-92	0	02/03
6.6-93	0	02/03
7.1-1	7	08/16

Page or description	Rev.	Date
7.1-1a	7	08/16
7.1-2	5	08/12
7.1-2a	5	08/12
7.1-3	0	02/03
7.2-1	2	08/06
7.3-1	2	08/06
7.4-1	2	08/06
8-1	7	08/16
8.1-1	1	03/05
8.1-2	5	08/12
8.1-3	5	08/12
8.1-4	0	02/03
8.1-5	1	03/05
8.1-6	5	08/12
8.1-7	5	08/12
8.1-8	3	08/08
8.1-9	3	08/08
8.1-10	1	03/05
8.1-11	0	02/03
8.1-12	0	02/03
8.1-13	2	08/06
8.1-14	2	08/06
8.1-15	0	02/03
8.1-16	0	02/03
8.2-1	5	08/12
8.2-2	9	03/19
8.2-3	9	03/19
8.2-4	0	02/03
8.2-5	0	02/03
8.2-6	0	02/03
8.2-7	0	02/03
8.2-8	0	02/03
8.2-9	0	02/03
8.3-1	0	02/03
9.1-1	7	08/16
9.1-1a	7	08/16
9.1-2	2	08/06
9.1-3	0	02/03
9.1-4	0	02/03
9.2-1	5	08/12
9.2-2	0	02/03
9.2-3	0	02/03
9.2-4	0	02/03
9.3-1	5	08/12
9.3-2	0	02/03
9.4-1	5	08/12
10.1-1	7	08/16
10.1-1a	7	08/16
10.1-2	5	08/12

List Of Effective Pages

Page or description	Rev.	Date
10.1-3	5	08/12
10.2-1	2	08/06
10.2-2	5	08/12
10.2-3	0	02/03
10.2-4	5	08/12
10.2-5	5	08/12
10.2-6	0	02/03
10.2-7	0	02/03
10.2-8	0	02/03
10.2-9	0	02/03
10.2-10	0	02/03
10.2-11	0	02/03
10.2-12	0	02/03
10.2-13	0	02/03
10.2-14	5	08/12
10.2-15	0	02/03
10.2-16	0	02/03
10.3-1	5	08/12
10.3-2	5	08/12
10.3-3	5	08/12
10.3-4	2	08/06
10.3-5	2	08/06
10.4-1	0	02/03
11-1	7	08/16
11.1-1	0	02/03
11.1-2	0	02/03
11.1-3	0	02/03
11.2-1	5	08/12
11.2-2	0	02/03
11.2-3	0	02/03
11.2-4	0	02/03
11.2-5	0	02/03
11.2-6	0	02/03
11.2-7	0	02/03
11.2-8	0	02/03
11.2-9	0	02/03
11.2-10	0	02/03
11.2-11	5	08/12
11.2-12	0	02/03
11.2-13	0	02/03
11.2-14	0	02/03
11.2-15	0	02/03
11.2-16	0	02/03
11.2-17	0	02/03
11.2-18	0	02/03
11.2-19	0	02/03
11.2-20	0	02/03
11.2-21	5	08/12
11.2-22	0	02/03
11.2-23	0	02/03
11.2-24	5	08/12

Page or description	Rev.	Date
11.2-25	5	08/12
11.2-26	5	08/12
11.2-27	9	03/19
11.2-28	0	02/03
11.2-29	0	02/03
11.2-30	5	08/12
11.2-31	0	02/03
11.2-32	0	02/03
11.2-33	0	02/03
11.2-34	0	02/03
11.2-35	0	02/03
11.2-36	0	02/03
11.2-37	0	02/03
11.2-38	0	02/03
11.2-39	0	02/03
11.2-40	0	02/03
11.2-41	0	02/03
11.2-42	0	02/03
11.2-43	0	02/03
11.2-44	0	02/03
11.2-45	0	02/03
11.2-46	0	02/03
11.2-47	0	02/03
11.2-48	0	02/03
11.2-49	0	02/03
11.2-50	0	02/03
11.2-51	0	02/03
11.3-1	0	02/03
11.3-2	2	08/06
12-1	7	08/16
12-2	5	08/12
12-3	5	08/12
12-4	5	08/12
12-5	9	03/19
12-6	5	08/12
12-7	5	08/12
12-8	5	08/12
12-9	5	08/12
12-10	5	08/12
12-11	5	08/12
12-12	5	08/12
12-13	5	08/12
12-14	5	08/12
12-15	5	08/12
13-1	7	08/16
13.1-1	5	08/12
13.1-2	5	08/12
13.1-3	1	03/05
13.2-1	5	08/12
13.2-2	5	08/12

List Of Effective Pages

Page or description	Rev.	Date
13.3-1	5	08/12
13.3-2	5	08/12
13.3-3	0	02/03
13.3-4	0	02/03
13.4-1	5	08/12
13.5-1	1	03/05
14.1-1	9	03/19
14.1-2	9	03/19
14.1-3	0	02/03
14.2-1	10	03/21
i	9	03/19
ii	9	03/19
iii	9	03/19
iv	9	03/19
v	9	03/19
vi	9	03/19
vii	9	03/19
viii	9	03/19
ix	9	03/19
x	9	03/19
xi	9	03/19
xii	9	03/19
xiii	9	03/19
xiv	9	03/19
xv	9	03/19
A.1.1-1	5	08/12
A.1.1-2	5	08/12
A.1.1-3	2	08/06
A.1.2-1	5	08/12
A.1.2-2	5	08/12
A.1.2-3	5	08/12
A.1.2-4	2	08/06
A.1.2-5	2	08/06
A.1.3-1	5	08/12
A.1.4-1	5	08/12
A.1.5-1	8	08/18
DWG: (sh. 1 of 8) ANUH-01-4001	7 ¹	7/18/18
DWG: (sh. 2 of 8) ANUH-01-4001	7 ²	Not shown
DWG: (sh. 3 of 8) ANUH-01-4001	7 ³	Not shown

¹ Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

² Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

Page or description	Rev.	Date
DWG: (sh. 4 of 8) ANUH-01-4001	7 ⁴	Not shown
DWG: (sh. 5 of 8) ANUH-01-4001	7 ⁵	Not shown
DWG: (sh. 6 of 8) ANUH-01-4001	7 ⁶	Not shown
DWG: (sh. 7 of 8) ANUH-01-4001	7 ⁷	Not shown
DWG: (sh. 8 of 8) ANUH-01-4001	7 ⁸	Not shown
A.2.1-1	5	08/12
A.2.1-2	5	08/12
A.2.1-3	5	08/12
A.2.1-4	5	08/12
A.2.1-5	5	08/12
A.2.1-6	5	08/12
A.2.1-7	5	08/12
A.2.1-8	2	08/06
A.2.1-9	2	08/06
A.2.1-10	2	08/06
A.2.1-11	2	08/06
A.2.1-12	2	08/06
A.2.1-13	2	08/06
A.2.1-14	2	08/06
A.2.1-15	2	08/06
A.2.1-16	2	08/06
A.2.1-17	2	08/06
A.2.1-18	2	08/06
A.2.1-19	2	08/06
A.2.2-1	5	08/12
A.2.2-2	5	08/12
A.2.2-3	5	08/12
A.2.3-1	2	08/06

³ Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

⁴ Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

⁵ Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

⁶ Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

⁷ Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

⁸ Because SAR drawings were revised throughout the licensing period, their revision level may be higher than the overall UFSAR revision level.

List Of Effective Pages

Page or description	Rev.	Date
A.2.3-2	5	08/12
A.2.3-3	5	08/12
A.2.3-4	5	08/12
A.2.3-5	5	08/12
A.2.4-1	5	08/12
A.2.5-1	5	08/12
A.2.5-2	5	08/12
A.2.5-3	8	08/18
A.2.6-1	2	08/06
A.3.1-1	5	08/12
A.3.1-2	3	08/08
A.3.1-3	5	08/12
A.3.1-4	5	08/12
A.3.1-5	5	08/12
A.3.1-6	2	08/06
A.3.1-7	2	08/06
A.3.1-8	2	08/06
A.3.1-9	2	08/06
A.3.1-10	2	08/06
A.3.1-11	5	08/12
A.3.1-12	5	08/12
A.3.1-13	2	08/06
A.3.1-14	2	08/06
A.3.1-15	2	08/06
A.3.1-16	2	08/06
A.3.2-1	2	08/06
A.3.2-2	5	08/12
A.3.2-3	2	08/06
A.3.2-4	2	08/06
A.3.3-1	5	08/12
A.3.3-2	5	08/12
A.3.3-3	2	08/06
A.3.3-4	2	08/06
A.3.3-5	2	08/06
A.3.4-1	5	08/12
A.3.4-2	2	08/06
A.3.4-3	2	08/06
A.3.4-4	2	08/06
A.3.5-1	5	08/12
A.3.5-2	9	03/19
A.3.5-3	2	08/06
A.3.5-4	5	08/12
A.3.5-5	2	08/06
A.3.5-6	5	08/12
A.3.5-7	2	08/06
A.3.6-1	2	08/06
A.3.6-2	2	08/06
A.3.6-3	5	08/12
A.3.6-4	2	08/06
A.3.6-5	2	08/06
A.3.6-6	5	08/12

Page or description	Rev.	Date
A.3.6-7	2	08/06
A.3.6-8	2	08/06
A.3.6-8a	2	08/06
A.3.6-9	2	08/06
A.3.6-10	2	08/06
A.3.6-11	2	08/06
A.3.6-12	2	08/06
A.3.6-13	2	08/06
A.3.6-14	2	08/06
A.3.6-15	2	08/06
A.3.6-16	5	08/12
A.3.6-17	5	08/12
A.3.6-17a	2	08/06
A.3.6-18	2	08/06
A.3.6-19	2	08/06
A.3.6-20	2	08/06
A.3.6-21	2	08/06
A.3.6-22	2	08/06
A.3.6-23	2	08/06
A.3.6-24	2	08/06
A.3.6-25	5	08/12
A.3.6-26	2	08/06
A.3.6-27	2	08/06
A.3.6-27a	2	08/06
A.3.6-27b	2	08/06
A.3.6-27c	2	08/06
A.3.6-27d	2	08/06
A.3.6-27e	2	08/06
A.3.6-28	2	08/06
A.3.6-29	2	08/06
A.3.6-30	2	08/06
A.3.6-31	2	08/06
A.3.6-32	2	08/06
A.3.6-33	2	08/06
A.3.6-34	2	08/06
A.3.7-1	5	08/12
A.3.7-2	2	08/06
A.4-1	5	08/12
A.4.1-1	2	08/06
A.4.1-2	2	08/06
A.4.1-3	2	08/06
A.4.1-4	2	08/06
A.4.1-5	2	08/06
A.4.2-1	2	08/06
A.4.2-2	2	08/06
A.4.2-3	2	08/06
A.4.2-4	2	08/06
A.4.3-1	2	08/06
A.4.4-1	2	08/06
A.4.4-2	2	08/06
A.4.4-3	2	08/06

List Of Effective Pages

Page or description	Rev.	Date
A.4.4-4	2	08/06
A.4.4-5	9	03/19
A.4.4-6	2	08/06
A.4.4-7	2	08/06
A.4.4-8	2	08/06
A.4.4-9	2	08/06
A.4.4-10	2	08/06
A.4.4-11	2	08/06
A.4.4-12	2	08/06
A.4.4-13	2	08/06
A.4.4-14	2	08/06
A.4.4-15	2	08/06
A.4.4-16	2	08/06
A.4.4-17	2	08/06
A.4.4-18	2	08/06
A.4.4-19	2	08/06
A.4.4-20	2	08/06
A.4.4-21	4	08/10
A.4.4-22	4	08/10
A.4.4-23	9	03/19
A.4.4-24	2	08/06
A.4.4-25	2	08/06
A.4.4-26	2	08/06
A.4.4-27	2	08/06
A.4.4-28	2	08/06
A.4.4-29	2	08/06
A.4.4-30	2	08/06
A.4.4-31	2	08/06
A.4.4-32	2	08/06
A.4.4-33	2	08/06
A.4.4-34	2	08/06
A.4.4-35	2	08/06
A.4.4-36	2	08/06
A.4.4-37	2	08/06
A.4.4-38	2	08/06
A.4.4-39	2	08/06
A.4.4-40	2	08/06
A.4.4-41	2	08/06
A.4.4-42	2	08/06
A.4.4-43	2	08/06
A.4.4-44	2	08/06
A.4.4-45	2	08/06
A.4.4-46	2	08/06
A.4.4-47	2	08/06
A.4.4-48	2	08/06
A.4.4-49	2	08/06
A.4.4-50	2	08/06
A.4.4-51	2	08/06
A.4.5-1	2	08/06
A.4.6-1	2	08/06
A.4.6-2	2	08/06
A.4.6-3	2	08/06

Page or description	Rev.	Date
A.4.6-4	2	08/06
A.4.6-5	2	08/06
A.4.6-6	2	08/06
A.4.6-7	2	08/06
A.4.7-1	9	03/19
A.4.7-2	2	08/06
A.4.7-3	2	08/06
A.4.7-4	2	08/06
A.4.7-5	2	08/06
A.4.7-6	5	08/12
A.4.7-7	2	08/06
A.4.7-8	2	08/06
A.4.7-9	5	08/12
A.4.7-10	2	08/06
A.4.7-11	2	08/06
A.4.7-12	2	08/06
A.4.7-13	2	08/06
A.4.7-14	2	08/06
A.4.7-15	2	08/06
A.4.7-16	2	08/06
A.4.7-17	2	08/06
A.4.7-18	5	08/12
A.4.8-1	2	08/06
A.4.9-1	5	08/12
A.4.9-2	2	08/06
A.4.9-3	2	08/06
A.4.9-4	2	08/06
A.4.9-5	5	08/12
A.4.9-6	2	08/06
A.4.9-7	2	08/06
A.4.9-8	2	08/06
A.4.9-9	2	08/06
A.4.10-1	2	08/06
A.4.10-2	2	08/06
A.4.10-3	2	08/06
A.4.10-4	2	08/06
A.4.10-5	2	08/06
A.4.10-6	2	08/06
A.4.10-7	2	08/06
A.4.10-8	2	08/06
A.4.10-9	2	08/06
A.4.10-10	2	08/06
A.4.10-11	2	08/06
A.4.10-12	2	08/06
A.4.10-13	2	08/06
A.4.10-14	2	08/06
A.4.10-15	2	08/06
A.4.10-16	2	08/06
A.4.10-17	2	08/06
A.4.10-18	2	08/06
A.4.10-19	2	08/06
A.4.10-20	2	08/06

List Of Effective Pages

Page or description	Rev.	Date
A.4.11-1	5	08/12
A.4.11-2	5	08/12
A.4.11-3	9	03/19
A.4.11-4	9	03/19
A.4.11-5	9	03/19
A.4.11-6	9	03/19
A.4.11-7	9	03/19
A.4.11-8	9	03/19
A.4.11-9	9	03/19
A.4.11-10	9	03/19
A.4.11-11	9	03/19
A.4.11-12	9	03/19
A.4.11-13	9	03/19
A.4.11-14	9	03/19
A.4.11-15	9	03/19
A.4.11-16	9	03/19
A.4.11-17	9	03/19
A.4.11-18	9	03/19
A.4.11-19	9	03/19
A.4.11-20	9	03/19
A.4.11-21	9	03/19
A.4.11-22	9	03/19
A.4.11-23	9	03/19
A.4.11-24	9	03/19
A.5.1-1	5	08/12
A.5.1-2	2	08/06
A.5.1-3	5	08/12
A.5.1-4	2	08/06
A.5.1-5	9	03/19
A.5.1-6	2	08/06
A.5.1-7	2	08/06
A.5.1-8	2	08/06
A.5.1-9	2	08/06
A.5.1-10	2	08/06
A.5.1-11	2	08/06
A.5.2-1	5	08/12
A.5.2-2	2	08/06
A.5.2-3	5	08/12
A.5.2-3a	2	08/06
A.5.2-4	5	08/12
A.5.2-5	2	08/06
A.5.2-6	2	08/06
A.5.2-7	5	08/12
A.5.2-8	2	08/06
A.5.2-9	5	08/12
A.5.2-10	2	08/06
A.5.2-11	5	08/12
A.5.2-12	5	08/12
A.5.2-13	2	08/06
A.5.2-14	2	08/06
A.5.2-15	2	08/06

Page or description	Rev.	Date
A.5.2-16	2	08/06
A.5.2-17	5	08/12
A.5.2-18	5	08/12
A.5.3-1	2	08/06
A.5.3-2	10	03/21
A.5.3-3	2	08/06
A.5.3-4	5	08/12
A.5.3-5	5	08/12
A.5.3-6	5	08/12
A.5.3-7	5	08/12
A.5.3-8	2	08/06
A.5.4-1	2	08/06
A.5.4-2	2	08/06
A.5.4-3	2	08/06
A.5.4-4	2	08/06
A.5.4-5	2	08/06
A.5.4-6	2	08/06
A.5.4-7	2	08/06
A.5.4-8	2	08/06
A.5.4-9	2	08/06
A.5.4-10	2	08/06
A.5.4-11	2	08/06
A.5.4-12	2	08/06
A.5.4-13	2	08/06
A.5.5-1	2	08/06
A.5.5-2	2	08/06
A.5.5-3	2	08/06
A.5.5-4	2	08/06
A.5.5-5	2	08/06
A.5.5-6	2	08/06
A.5.5-7	2	08/06
A.5.5-8	2	08/06
A.5.5-9	2	08/06
A.5.5-10	2	08/06
A.5.5-11	2	08/06
A.5.5-12	2	08/06
A.5.5-13	2	08/06
A.5.5-14	2	08/06
A.5.5-15	2	08/06
A.5.5-16	2	08/06
A.5.5-17	2	08/06
A.5.5-18	2	08/06
A.5.5-19	2	08/06
A.5.5-20	2	08/06
A.5.5-21	2	08/06
A.5.5-22	2	08/06
A.5.5-23	2	08/06
A.5.5-24	2	08/06
A.5.5-25	2	08/06
A.5.5-26	2	08/06
A.5.5-27	2	08/06
A.5.5-28	2	08/06

List Of Effective Pages

Page or description	Rev.	Date
A.5.5-29	2	08/06
A.5.5-30	2	08/06
A.5.5-31	2	08/06
A.5.5-32	2	08/06
A.5.5-33	2	08/06
A.5.5-34	2	08/06
A.5.5-35	2	08/06
A.5.5-36	2	08/06
A.5.5-37	2	08/06
A.5.5-38	2	08/06
A.5.5-39	2	08/06
A.5.5-40	2	08/06
A.5.5-41	2	08/06
A.5.5-42	2	08/06
A.5.5-43	2	08/06
A.5.5-44	2	08/06
A.5.5-45	2	08/06
A.5.5-46	2	08/06
A.5.5-47	2	08/06
A.5.5-48	2	08/06
A.5.5-49	2	08/06
A.5.5-50	2	08/06
A.5.5-51	2	08/06
A.5.5-52	2	08/06
A.5.5-53	2	08/06
A.5.5-54	2	08/06
A.5.5-55	2	08/06
A.5.5-56	2	08/06
A.5.5-57	2	08/06
A.5.5-58	2	08/06
A.5.5-59	2	08/06
A.5.5-60	2	08/06
A.5.5-61	2	08/06
A.5.5-62	2	08/06
A.5.5-63	2	08/06
A.5.5-64	2	08/06
A.5.5-65	2	08/06
A.5.5-66	2	08/06
A.5.5-67	2	08/06
A.5.5-68	2	08/06
A.5.5-69	2	08/06
A.5.5-70	2	08/06
A.5.5-71	2	08/06
A.5.5-72	2	08/06
A.5.5-73	2	08/06
A.5.5-74	2	08/06
A.5.5-75	2	08/06
A.5.5-76	2	08/06
A.5.5-77	2	08/06
A.5.5-78	2	08/06
A.5.5-79	2	08/06
A.5.5-80	2	08/06

Page or description	Rev.	Date
A.5.5-81	2	08/06
A.5.5-82	2	08/06
A.5.5-83	2	08/06
A.5.5-84	2	08/06
A.5.5-85	2	08/06
A.5.5-86	2	08/06
A.5.5-87	2	08/06
A.5.5-88	2	08/06
A.5.5-89	2	08/06
A.5.5-90	2	08/06
A.5.5-91	2	08/06
A.5.5-92	2	08/06
A.5.5-93	2	08/06
A.5.5-94	2	08/06
A.5.5-95	2	08/06
A.5.5-96	2	08/06
A.5.5-97	2	08/06
A.5.5-98	2	08/06
A.5.5-99	2	08/06
A.5.5-100	2	08/06
A.5.5-101	2	08/06
A.5.5-102	2	08/06
A.5.5-103	2	08/06
A.5.5-104	2	08/06
A.5.5-105	2	08/06
A.5.5-106	2	08/06
A.5.5-107	2	08/06
A.5.5-108	2	08/06
A.5.5-109	2	08/06
A.5.5-110	2	08/06
A.5.5-111	2	08/06
A.5.5-112	2	08/06
A.6-1	5	08/12
A.6.1-1	5	08/12
A.6.1-2	5	08/12
A.6.2-1	5	08/12
A.6.2-2	5	08/12
A.6.3-1	5	08/12
A.6.3-2	5	08/12
A.6.3-3	5	08/12
A.6.3-4	5	08/12
A.6.3-5	5	08/12
A.6.3-6	5	08/12
A.6.3-7	2	08/06
A.6.3-8	2	08/06
A.6.3-9	2	08/06
A.6.3-10	5	08/12
A.6.3-11	3	08/08
A.6.3-12	2	08/06
A.6.3-13	5	08/12
A.6.3-14	2	08/06

List Of Effective Pages

Page or description	Rev.	Date
A.6.3-15	2	08/06
A.6.3-16	2	08/06
A.6.3-17	2	08/06
A.6.3-18	2	08/06
A.6.4-1	5	08/12
A.6.4-2	5	08/12
A.6.4-3	5	08/12
A.6.4-4	5	08/12
A.6.4-5	5	08/12
A.6.4-6	5	08/12
A.6.4-7	2	08/06
A.6.4-8	5	08/12
A.6.4-9	5	08/12
A.6.4-10	5	08/12
A.6.4-11	5	08/12
A.6.4-12	5	08/12
A.6.4-13	5	08/12
A.6.4-14	5	08/12
A.6.4-15	5	08/12
A.6.4-16	5	08/12
A.6.4-17	5	08/12
A.6.4-18	5	08/12
A.6.4-19	5	08/12
A.6.4-20	5	08/12
A.6.4-21	2	08/06
A.6.4-22	2	08/06
A.6.4-23	2	08/06
A.6.4-24	5	08/12
A.6.4-25	2	08/06
A.6.4-26	2	08/06
A.6.4-27	2	08/06
A.6.4-28	2	08/06
A.6.4-29	2	08/06
A.6.4-30	2	08/06
A.6.4-31	2	08/06
A.6.4-32	2	08/06
A.6.4-33	2	08/06
A.6.4-34	2	08/06
A.6.4-35	2	08/06
A.6.4-36	2	08/06
A.6.4-37	2	08/06
A.6.4-38	2	08/06
A.6.4-39	2	08/06
A.6.4-40	2	08/06
A.6.5-1	5	08/12
A.6.5-2	2	08/06
A.6.5-3	2	08/06
A.6.5-4	2	08/06
A.6.5-5	2	08/06
A.6.5-6	2	08/06
A.6.5-7	5	08/12
A.6.5-8	5	08/12

Page or description	Rev.	Date
A.6.6-1	2	08/06
A.6.6-2	2	08/06
A.6.6-3	2	08/06
A.6.6-4	2	08/06
A.6.6-5	2	08/06
A.6.6-6	2	08/06
A.6.6-7	2	08/06
A.6.6-8	2	08/06
A.6.6-9	2	08/06
A.6.6-10	2	08/06
A.6.6-11	2	08/06
A.6.6-12	2	08/06
A.6.6-13	2	08/06
A.6.6-14	2	08/06
A.6.6-15	2	08/06
A.6.6-16	2	08/06
A.6.6-17	2	08/06
A.6.6-18	2	08/06
A.6.6-19	2	08/06
A.6.6-20	2	08/06
A.6.6-21	2	08/06
A.6.6-22	2	08/06
A.6.6-23	2	08/06
A.6.6-24	2	08/06
A.6.6-25	2	08/06
A.6.6-26	2	08/06
A.6.6-27	2	08/06
A.6.6-28	2	08/06
A.6.6-29	2	08/06
A.6.6-30	2	08/06
A.6.6-31	2	08/06
A.6.6-32	2	08/06
A.6.6-33	2	08/06
A.6.6-34	2	08/06
A.6.6-35	2	08/06
A.6.6-36	2	08/06
A.6.6-37	2	08/06
A.6.6-38	2	08/06
A.6.6-39	2	08/06
A.6.6-40	2	08/06
A.6.6-41	2	08/06
A.6.6-42	2	08/06
A.6.6-43	2	08/06
A.6.6-44	2	08/06
A.6.6-45	2	08/06
A.6.6-46	2	08/06
A.6.6-47	2	08/06
A.6.6-48	2	08/06
A.6.6-49	2	08/06
A.6.6-50	2	08/06
A.6.6-51	2	08/06
A.6.6-52	2	08/06

List Of Effective Pages

Page or description	Rev.	Date
A.6.6-53	2	08/06
A.6.6-54	2	08/06
A.6.6-55	2	08/06
A.6.6-56	2	08/06
A.6.6-57	2	08/06
A.6.6-58	2	08/06
A.6.6-59	2	08/06
A.6.6-60	2	08/06
A.6.6-61	2	08/06
A.6.6-62	2	08/06
A.6.6-63	2	08/06
A.6.6-64	2	08/06
A.6.6-65	2	08/06
A.6.6-66	2	08/06
A.6.6-67	2	08/06
A.6.6-68	2	08/06
A.6.6-69	2	08/06
A.6.6-70	2	08/06
A.6.6-71	2	08/06
A.6.6-72	2	08/06
A.6.6-73	2	08/06
A.6.6-74	2	08/06
A.6.6-75	2	08/06
A.6.6-76	2	08/06
A.6.6-77	2	08/06
A.6.6-78	2	08/06
A.6.6-79	2	08/06
A.7.1-1	5	08/12
A.7.1-2	5	08/12
A.7.1-3	5	08/12
A.7.1-4	2	08/06
A.7.2-1	5	08/12
A.7.3-1	5	08/12
A.7.4-1	5	08/12
A.8.1-1	5	08/12
A.8.1-2	2	08/06
A.8.1-3	5	08/12
A.8.1-4	2	08/06
A.8.1-5	2	08/06
A.8.1-6	5	08/12
A.8.1-6a	5	08/12
A.8.1-7	3	08/08
A.8.1-8	5	08/12
A.8.1-9	2	08/06
A.8.1-10	3	08/08
A.8.1-11	2	08/06
A.8.2-1	9	03/19
A.8.2-2	9	03/19
A.8.2-3	9	03/19
A.8.2-4	2	08/06

Page or description	Rev.	Date
A.8.2-5	2	08/06
A.8.2-6	2	08/06
A.8.2-7	2	08/06
A.8.2-8	2	08/06
A.8.3-1	5	08/12
A.9.1-1	5	08/12
A.9.1-2	5	08/12
A.9.1-3	5	08/12
A.9.1-4	5	08/12
A.9.2-1	5	08/12
A.9.2-1a	5	08/12
A.9.3-1	5	08/12
A.9.4-1	2	08/06
A.10.1-1	5	08/12
A.10.2-1	2	08/06
A.10.2-2	5	08/12
A.10.2-3	2	08/06
A.10.2-4	2	08/06
A.10.2-5	5	08/12
A.10.2-6	2	08/06
A.10.2-7	2	08/06
A.10.2-8	2	08/06
A.10.2-9	2	08/06
A.10.2-10	2	08/06
A.10.2-11	2	08/06
A.10.2-12	2	08/06
A.10.2-13	5	08/12
A.10.2-14	2	08/06
A.10.2-15	2	08/06
A.10.3-1	5	08/12
A.10.3-2	2	08/06
A.10.3-3	5	08/12
A.10.3-4	2	08/06
A.10.3-5	2	08/06
A.10.4-1	2	08/06
A.11-1	5	08/12
A.11.1-1	5	08/12
A.11.1-2	5	08/12
A.11.2-1	5	08/12
A.11.2-2	5	08/12
A.11.2-3	5	08/12
A.11.2-4	5	08/12
A.11.2-5	5	08/12
A.11.3-1	2	08/06
A.12-1	5	08/12
A.12-2	5	08/12
A.12-3	5	08/12
A.12-4	9	03/19

List Of Effective Pages

Page or description	Rev.	Date
A.12-5	5	08/12
A.12-6	5	08/12
A.12-7	5	08/12
A.12-8	5	08/12
A.12-9	5	08/12
A.12-10	5	08/12
A.12-11	5	08/12
A.12-12	5	08/12
A.12-13	5	08/12
A.12-14	5	08/12
A.13-1	2	08/06
A.14.1-1	9	03/19
A.14.1-2	9	03/19
A.14.1-3	2	08/06
A.14.2-1	10	03/21
B-i	7	08/16
B-ii	7	08/16
B-iii	7	08/16
B-iv	7	08/16
B-v	7	08/16
B-vi	7	08/16
B-vii	7	08/16
B-viii	7	08/16
B-ix	7	08/16
B-x	7	08/16
B-xi	7	08/16
B-xii	7	08/16
B-xiii	7	08/16
B-xiv	7	08/16
B-xv	7	08/16
B-xvi	7	08/16
B-xvii	7	08/16
B-xviii	7	08/16
B-xix	7	08/16
B.1-1	7	08/16
B.1.1-1	7	08/16
B.1.1-2	7	08/16
B.1.1-3	7	08/16
B.1.2-1	7	08/16
B.1.2-2	7	08/16
B.1.2-3	7	08/16
B.1.2-4	7	08/16
B.1.2-5	7	08/16
B.1.2-6	7	08/16
B.1.2-7	7	08/16
B.1.2-8	7	08/16
B.1.2-9	7	08/16
B.1.3-1	7	08/16

Page or description	Rev.	Date
B.1.4-1	7	08/16
B.1.4-2	7	08/16
B.1.4-3	7	08/16
B.1.5-1	7	08/16
B.1.5-2	7	08/16
DWG: (sh. 1 of 6) ANUH-01-4002	0	8/9/16
DWG: (sh. 2 of 6) ANUH-01-4002	0	8/9/16
DWG: (sh. 3 of 6) ANUH-01-4002	0	8/9/16
DWG: (sh. 4 of 6) ANUH-01-4002	0	8/9/16
DWG: (sh. 5 of 6) ANUH-01-4002	0	8/9/16
DWG: (sh. 6 of 6) ANUH-01-4002	0	8/9/16
DWG: (sh. 1 of 3) ANUH-01-4003	0	8/9/16
DWG: (sh. 2 of 3) ANUH-01-4003	0	8/9/16
DWG: (sh. 3 of 3) ANUH-01-4003	0	8/9/16
DWG: (sh. 1 of 4) ANUH-01-4004	0	8/9/16
DWG: (sh. 2 of 4) ANUH-01-4004	0	8/9/16
DWG: (sh. 3 of 4) ANUH-01-4004	0	8/9/16
DWG: (sh. 4 of 4) ANUH-01-4004	0	8/9/16
DWG: (sh. 1 of 4) ANUH-01-4005	0	8/9/16
DWG: (sh. 2 of 4) ANUH-01-4005	0	8/9/16
DWG: (sh. 3 of 4) ANUH-01-4005	0	8/9/16
DWG: (sh. 4 of 4) ANUH-01-4005	0	8/9/16
DWG: (sh. 1 of 1) ANUH-01-4006	0	8/9/16
DWG: (sh. 1 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 2 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 3 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 4 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 5 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 6 of 14) NUH-03-4012	0	8/9/16

List Of Effective Pages

Page or description	Rev.	Date
DWG: (sh. 7 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 8 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 9 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 10 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 11 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 12 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 13 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 14 of 14) NUH-03-4012	0	8/9/16
DWG: (sh. 1 of 6) NUH-03-4013	0	8/9/16
DWG: (sh. 2 of 6) NUH-03-4013	0	8/9/16
DWG: (sh. 3 of 6) NUH-03-4013	0	8/9/16
DWG: (sh. 4 of 6) NUH-03-4013	0	8/9/16
DWG: (sh. 5 of 6) NUH-03-4013	0	8/9/16
DWG: (sh. 6 of 6) NUH-03-4013	0	8/9/16
B.2.1-1	7	08/16
B.2.1-2	7	08/16
B.2.1-3	7	08/16
B.2.1-4	7	08/16
B.2.1-5	7	08/16
B.2.1-6	7	08/16
B.2.1-7	7	08/16
B.2.1-8	7	08/16
B.2.1-9	7	08/16
B.2.1-10	7	08/16
B.2.1-11	7	08/16
B.2.1-12	7	08/16
B.2.1-13	7	08/16
B.2.1-14	7	08/16
B.2.1-15	7	08/16
B.2.2-1	7	08/16
B.2.2-2	7	08/16
B.2.2-3	7	08/16
B.2.2-4	7	08/16
B.2.3-1	7	08/16
B.2.3-2	7	08/16
B.2.3-3	7	08/16
B.2.3-4	7	08/16

Page or description	Rev.	Date
B.2.4-1	7	08/16
B.2.5-1	7	08/16
B.2.5-2	7	08/16
B.2.5-3	8	08/18
B.2.6-1	7	08/16
B.2.6-2	7	08/16
B.3.1-1	7	08/16
B.3.1-2	7	08/16
B.3.1-3	7	08/16
B.3.1-4	7	08/16
B.3.1-5	7	08/16
B.3.1-6	7	08/16
B.3.1-7	7	08/16
B.3.1-8	7	08/16
B.3.1-9	7	08/16
B.3.1-10	7	08/16
B.3.1-11	7	08/16
B.3.1-12	7	08/16
B.3.1-13	7	08/16
B.3.1-14	7	08/16
B.3.1-15	7	08/16
B.3.1-16	7	08/16
B.3.1-17	7	08/16
B.3.1-18	7	08/16
B.3.1-19	7	08/16
B.3.1-20	7	08/16
B.3.1-21	7	08/16
B.3.1-22	7	08/16
B.3.1-23	7	08/16
B.3.1-24	7	08/16
B.3.1-25	7	08/16
B.3.1-26	7	08/16
B.3.1-27	7	08/16
B.3.1-28	7	08/16
B.3.1-29	7	08/16
B.3.1-30	7	08/16
B.3.1-31	7	08/16
B.3.1-32	7	08/16
B.3.1-33	7	08/16
B.3.1-34	7	08/16
B.3.1-35	7	08/16
B.3.1-36	7	08/16
B.3.1-37	7	08/16
B.3.1-38	7	08/16
B.3.1-39	7	08/16
B.3.1-40	7	08/16
B.3.1-41	7	08/16
B.3.2-1	7	08/16
B.3.2-2	7	08/16
B.3.2-3	7	08/16
B.3.2-4	7	08/16

List Of Effective Pages

Page or description	Rev.	Date
B.3.3-1	7	08/16
B.3.3-2	7	08/16
B.3.3-3	7	08/16
B.3.3-4	7	08/16
B.3.3-5	7	08/16
B.3.3-6	7	08/16
B.3.3-7	7	08/16
B.3.3-8	7	08/16
B.3.3-9	7	08/16
B.3.4-1	7	08/16
B.3.4-2	7	08/16
B.3.4-3	7	08/16
B.3.4-4	7	08/16
B.3.4-5	7	08/16
B.3.4-6	7	08/16
B.3.4-7	7	08/16
B.3.4-8	7	08/16
B.3.4-9	7	08/16
B.3.4-10	7	08/16
B.3.4-11	7	08/16
B.3.4-12	7	08/16
B.3.4-13	7	08/16
B.3.4-14	7	08/16
B.3.4-15	7	08/16
B.3.4-16	7	08/16
B.3.4-17	7	08/16
B.3.5-1	7	08/16
B.3.5-2	7	08/16
B.3.5-3	7	08/16
B.3.5-4	7	08/16
B.3.5-5	7	08/16
B.3.5-6	7	08/16
B.3.5-7	7	08/16
B.3.5-8	7	08/16
B.3.5-9	7	08/16
B.3.5-10	7	08/16
B.3.5-11	7	08/16
B.3.5-12	7	08/16
B.3.5-13	7	08/16
B.3.5-14	7	08/16
B.3.5-15	7	08/16
B.3.5-16	7	08/16
B.3.5-17	7	08/16
B.3.5-18	7	08/16
B.3.5-19	7	08/16
B.3.5-20	7	08/16
B.3.5-21	7	08/16
B.3.5-22	7	08/16
B.3.5-23	7	08/16
B.3.5-24	7	08/16
B.3.6-1	7	08/16
B.3.6-2	7	08/16

Page or description	Rev.	Date
B.3.6-3	7	08/16
B.3.6-4	7	08/16
B.3.6-5	7	08/16
B.3.6-6	7	08/16
B.3.6-7	7	08/16
B.3.6-8	7	08/16
B.3.6-9	7	08/16
B.3.6-10	7	08/16
B.3.6-11	7	08/16
B.3.6-12	7	08/16
B.3.6-13	7	08/16
B.3.6-14	7	08/16
B.3.6-15	7	08/16
B.3.6-16	7	08/16
B.3.6-17	7	08/16
B.3.6-18	7	08/16
B.3.6-19	7	08/16
B.3.6-20	7	08/16
B.3.6-21	7	08/16
B.3.6-22	7	08/16
B.3.6-23	7	08/16
B.3.6-24	7	08/16
B.3.6-25	7	08/16
B.3.6-26	7	08/16
B.3.6-27	7	08/16
B.3.6-28	7	08/16
B.3.6-29	7	08/16
B.3.6-30	7	08/16
B.3.6-31	7	08/16
B.3.6-32	7	08/16
B.3.6-33	7	08/16
B.3.6-34	7	08/16
B.3.6-35	7	08/16
B.3.6-36	7	08/16
B.3.6-37	7	08/16
B.3.6-38	7	08/16
B.3.6-39	7	08/16
B.3.6-40	7	08/16
B.3.6-41	7	08/16
B.3.6-42	7	08/16
B.3.6-43	7	08/16
B.3.6-44	7	08/16
B.3.6-45	7	08/16
B.3.6-46	7	08/16
B.3.6-47	7	08/16
B.3.6-48	7	08/16
B.3.6-49	7	08/16
B.3.6-50	7	08/16
B.3.6-51	7	08/16
B.3.6-52	7	08/16
B.3.6-53	7	08/16
B.3.6-54	7	08/16

List Of Effective Pages

Page or description	Rev.	Date
B.3.6-55	7	08/16
B.3.6-56	7	08/16
B.3.6-57	7	08/16
B.3.6-58	7	08/16
B.3.6-59	7	08/16
B.3.6-60	7	08/16
B.3.6-61	7	08/16
B.3.6-62	7	08/16
B.3.6-63	7	08/16
B.3.6-64	7	08/16
B.3.6-65	7	08/16
B.3.6-66	7	08/16
B.3.6-67	7	08/16
B.3.6-68	7	08/16
B.3.6-69	7	08/16
B.3.6-70	7	08/16
B.3.6-71	7	08/16
B.3.6-72	7	08/16
B.3.6-73	7	08/16
B.3.6-74	7	08/16
B.3.6-75	7	08/16
B.3.6-76	7	08/16
B.3.6-77	7	08/16
B.3.6-78	7	08/16
B.3.6-79	7	08/16
B.3.6-80	7	08/16
B.3.6-81	7	08/16
B.3.6-82	7	08/16
B.3.7-1	7	08/16
B.3.7-2	7	08/16
B.3.7-3	7	08/16
B.3.7-4	7	08/16
B.4-1	7	08/16
B.4.1-1	7	08/16
B.4.1-2	7	08/16
B.4.1-3	7	08/16
B.4.1-4	7	08/16
B.4.1-5	7	08/16
B.4.2-1	7	08/16
B.4.2-2	7	08/16
B.4.2-3	7	08/16
B.4.2-4	7	08/16
B.4.2-5	7	08/16
B.4.2-6	7	08/16
B.4.2-7	7	08/16
B.4.3-1	7	08/16
B.4.3-2	7	08/16
B.4.4-1	7	08/16
B.4.4-2	7	08/16
B.4.4-3	7	08/16
B.4.4-4	7	08/16

Page or description	Rev.	Date
B.4.4-5	7	08/16
B.4.4-6	7	08/16
B.4.4-7	7	08/16
B.4.4-8	7	08/16
B.4.4-9	7	08/16
B.4.4-10	7	08/16
B.4.4-11	7	08/16
B.4.4-12	7	08/16
B.4.4-13	7	08/16
B.4.4-14	7	08/16
B.4.4-15	7	08/16
B.4.4-16	7	08/16
B.4.4-17	7	08/16
B.4.4-18	7	08/16
B.4.4-19	7	08/16
B.4.5-1	7	08/16
B.4.5-2	7	08/16
B.4.5-3	7	08/16
B.4.5-4	7	08/16
B.4.5-5	7	08/16
B.4.5-6	7	08/16
B.4.5-7	7	08/16
B.4.5-8	7	08/16
B.4.5-9	7	08/16
B.4.5-10	7	08/16
B.4.5-11	7	08/16
B.4.5-12	7	08/16
B.4.5-13	7	08/16
B.4.5-14	7	08/16
B.4.5-15	7	08/16
B.4.5-16	7	08/16
B.4.5-17	7	08/16
B.4.5-18	7	08/16
B.4.5-19	7	08/16
B.4.5-20	7	08/16
B.4.5-21	7	08/16
B.4.5-22	7	08/16
B.4.5-23	7	08/16
B.4.5-24	7	08/16
B.4.5-25	7	08/16
B.4.5-26	7	08/16
B.4.5-27	7	08/16
B.4.5-28	7	08/16
B.4.5-29	7	08/16
B.4.5-30	7	08/16
B.4.5-31	7	08/16
B.4.5-32	7	08/16
B.4.5-33	7	08/16
B.4.5-34	7	08/16
B.4.5-35	7	08/16
B.4.5-36	7	08/16
B.4.5-37	7	08/16

List Of Effective Pages

Page or description	Rev.	Date
B.4.5-38	7	08/16
B.4.5-39	7	08/16
B.4.5-40	7	08/16
B.4.5-41	7	08/16
B.4.5-42	7	08/16
B.4.5-43	7	08/16
B.4.6-1	7	08/16
B.4.6-2	7	08/16
B.4.6-3	7	08/16
B.4.6-4	7	08/16
B.4.6-5	7	08/16
B.4.6-6	7	08/16
B.4.6-7	7	08/16
B.4.6-8	7	08/16
B.4.6-9	7	08/16
B.4.6-10	7	08/16
B.4.6-11	7	08/16
B.4.6-12	7	08/16
B.4.6-13	7	08/16
B.4.6-14	7	08/16
B.4.6-15	7	08/16
B.4.6-16	7	08/16
B.4.6-17	7	08/16
B.4.6-18	7	08/16
B.4.6-19	7	08/16
B.4.6-20	7	08/16
B.4.6-21	7	08/16
B.4.6-22	7	08/16
B.4.6-23	7	08/16
B.4.6-24	7	08/16
B.4.6-25	7	08/16
B.4.6-26	7	08/16
B.4.6-27	7	08/16
B.4.6-28	7	08/16
B.4.6-29	7	08/16
B.4.6-30	7	08/16
B.4.6-31	7	08/16
B.4.6-32	7	08/16
B.4.6-33	7	08/16
B.4.6-34	7	08/16
B.4.6-35	7	08/16
B.4.6-36	7	08/16
B.4.6-37	7	08/16
B.4.6-38	7	08/16
B.4.6-39	7	08/16
B.4.6-40	7	08/16
B.4.6-41	7	08/16
B.4.6-42	7	08/16
B.4.6-43	7	08/16
B.4.6-44	7	08/16
B.4.6-45	7	08/16
B.4.6-46	7	08/16

Page or description	Rev.	Date
B.4.6-47	7	08/16
B.4.6-48	7	08/16
B.4.6-49	7	08/16
B.4.6-50	7	08/16
B.4.6-51	7	08/16
B.4.6-52	7	08/16
B.4.6-53	7	08/16
B.4.6-54	7	08/16
B.4.6-55	7	08/16
B.4.6-56	7	08/16
B.4.6-57	7	08/16
B.4.6-58	7	08/16
B.4.6-59	7	08/16
B.4.6-60	7	08/16
B.4.6-61	7	08/16
B.4.6-62	7	08/16
B.4.6-63	7	08/16
B.4.6-64	7	08/16
B.4.7-1	7	08/16
B.4.7-2	7	08/16
B.4.7-3	10	03/21
B.4.7-4	7	08/16
B.4.7-5	7	08/16
B.4.7-6	7	08/16
B.4.7-7	7	08/16
B.4.7-8	7	08/16
B.4.8-1	9	03/19
B.4.8-2	7	08/16
B.4.9-1	7	08/16
B.4.9-2	7	08/16
B.4.9-3	7	08/16
B.4.9-4	7	08/16
B.4.9-5	7	08/16
B.4.9-6	7	08/16
B.4.9-7	7	08/16
B.4.10-1	7	08/16
B.4.10-2	7	08/16
B.4.10-3	7	08/16
B.5-1	7	08/16
B.5-2	7	08/16
B.5.1-1	7	08/16
B.5.1-2	7	08/16
B.5.2-1	7	08/16
B.5.2-2	7	08/16
B.5.2-3	7	08/16
B.5.2-4	7	08/16
B.5.2-5	7	08/16
B.5.2-6	7	08/16
B.5.2-7	7	08/16
B.5.2-8	7	08/16
B.5.2-9	7	08/16

List Of Effective Pages

Page or description	Rev.	Date
B.5.2-10	7	08/16
B.5.2-11	7	08/16
B.5.3-1	7	08/16
B.5.3-2	7	08/16
B.5.3-3	7	08/16
B.5.4-1	7	08/16
B.5.4-2	7	08/16
B.5.4-3	7	08/16
B.5.4-4	7	08/16
B.5.4-5	7	08/16
B.5.4-6	7	08/16
B.5.4-7	7	08/16
B.5.5-1	7	08/16
B.5.5-2	7	08/16
B.5.5-3	7	08/16
B.5.5-4	7	08/16
B.5.5-5	7	08/16
B.5.5-6	7	08/16
B.5.5-7	7	08/16
B.5.5-8	7	08/16
B.5.5-9	7	08/16
B.5.5-10	7	08/16
B.5.5-11	7	08/16
B.5.5-12	7	08/16
B.5.5-13	7	08/16
B.5.5-14	7	08/16
B.5.5-15	7	08/16
B.5.5-16	7	08/16
B.5.5-17	7	08/16
B.5.5-18	7	08/16
B.5.5-19	7	08/16
B.5.5-20	7	08/16
B.5.5-21	7	08/16
B.5.5-22	7	08/16
B.5.5-23	7	08/16
B.5.5-24	7	08/16
B.5.5-25	7	08/16
B.5.5-26	7	08/16
B.5.5-27	7	08/16
B.5.5-28	7	08/16
B.5.5-29	7	08/16
B.5.5-30	7	08/16
B.5.5-31	7	08/16
B.5.5-32	7	08/16
B.5.5-33	7	08/16
B.5.5-34	7	08/16
B.5.5-35	7	08/16
B.5.5-36	7	08/16
B.5.5-37	7	08/16
B.5.5-38	7	08/16
B.5.5-39	7	08/16
B.5.5-40	7	08/16

Page or description	Rev.	Date
B.5.5-41	7	08/16
B.5.5-42	7	08/16
B.5.5-43	7	08/16
B.5.5-44	7	08/16
B.5.5-45	7	08/16
B.5.5-46	7	08/16
B.5.5-47	7	08/16
B.5.5-48	7	08/16
B.5.5-49	7	08/16
B.5.5-50	7	08/16
B.5.5-51	7	08/16
B.5.5-52	7	08/16
B.5.5-53	7	08/16
B.5.5-54	7	08/16
B.5.5-55	7	08/16
B.5.5-56	7	08/16
B.5.5-57	7	08/16
B.5.5-58	7	08/16
B.5.5-59	7	08/16
B.5.5-60	7	08/16
B.5.5-61	7	08/16
B.5.5-62	7	08/16
B.5.5-63	7	08/16
B.5.5-64	7	08/16
B.5.5-65	7	08/16
B.5.5-66	7	08/16
B.5.5-67	7	08/16
B.5.5-68	7	08/16
B.5.5-69	7	08/16
B.5.5-70	7	08/16
B.5.5-71	7	08/16
B.5.5-72	7	08/16
B.5.5-73	7	08/16
B.5.5-74	7	08/16
B.5.5-75	7	08/16
B.5.5-76	7	08/16
B.5.5-77	7	08/16
B.5.5-78	7	08/16
B.5.5-79	7	08/16
B.5.5-80	7	08/16
B.5.5-81	7	08/16
B.5.5-82	7	08/16
B.5.5-83	7	08/16
B.5.5-84	7	08/16
B.5.5-85	7	08/16
B.5.5-86	7	08/16
B.5.5-87	7	08/16
B.5.5-88	7	08/16
B.6-1	7	08/16
B.6.1-1	7	08/16
B.6.2-1	7	08/16

List Of Effective Pages

Page or description	Rev.	Date
B.6.3-1	7	08/16
B.6.3-2	7	08/16
B.6.3-3	7	08/16
B.6.4-1	7	08/16
B.6.4-2	7	08/16
B.6.4-3	7	08/16
B.6.4-4	7	08/16
B.6.4-5	7	08/16
B.6.4-6	7	08/16
B.6.4-7	7	08/16
B.6.4-8	7	08/16
B.6.4-9	7	08/16
B.6.4-10	7	08/16
B.6.4-11	7	08/16
B.6.4-12	7	08/16
B.6.4-13	7	08/16
B.6.4-14	7	08/16
B.6.5-1	7	08/16
B.6.5-2	7	08/16
B.6.6-1	7	08/16
B.6.6-2	7	08/16
B.6.6-3	7	08/16
B.6.6-4	7	08/16
B.6.6-5	7	08/16
B.6.6-6	7	08/16
B.6.6-7	7	08/16
B.6.6-8	7	08/16
B.6.6-9	7	08/16
B.6.6-10	7	08/16
B.6.6-11	7	08/16
B.6.6-12	7	08/16
B.6.6-13	7	08/16
B.6.6-14	7	08/16
B.6.6-15	7	08/16
B.6.6-16	7	08/16
B.6.6-17	7	08/16
B.6.6-18	7	08/16
B.6.6-19	7	08/16
B.6.6-20	7	08/16
B.6.6-21	7	08/16
B.6.6-22	7	08/16
B.6.6-23	7	08/16
B.6.6-24	7	08/16
B.6.6-25	7	08/16
B.6.6-26	7	08/16
B.6.6-27	7	08/16
B.6.6-28	7	08/16
B.6.6-29	7	08/16
B.6.6-30	7	08/16
B.6.6-31	7	08/16
B.6.6-32	7	08/16
B.6.6-33	7	08/16

Page or description	Rev.	Date
B.6.6-34	7	08/16
B.6.6-35	7	08/16
B.6.6-36	7	08/16
B.6.6-37	7	08/16
B.6.6-38	7	08/16
B.6.6-39	7	08/16
B.6.6-40	7	08/16
B.6.6-41	7	08/16
B.6.6-42	7	08/16
B.6.6-43	7	08/16
B.6.6-44	7	08/16
B.6.6-45	7	08/16
B.6.6-46	7	08/16
B.6.6-47	7	08/16
B.6.6-48	7	08/16
B.6.6-49	7	08/16
B.6.6-50	7	08/16
B.6.6-51	7	08/16
B.6.6-52	7	08/16
B.6.6-53	7	08/16
B.6.6-54	7	08/16
B.6.6-55	7	08/16
B.6.6-56	7	08/16
B.6.6-57	7	08/16
B.7.1-1	7	08/16
B.7.1-2	7	08/16
B.7.2-1	7	08/16
B.7.3-1	7	08/16
B.7.4-1	7	08/16
B.8-1	7	08/16
B.8.1-1	7	08/16
B.8.1-2	7	08/16
B.8.1-3	7	08/16
B.8.1-4	7	08/16
B.8.1-5	8	08/18
B.8.1-6	8	08/18
B.8.1-7	7	08/16
B.8.1-8	7	08/16
B.8.1-9	7	08/16
B.8.1-10	7	08/16
B.8.1-11	7	08/16
B.8.1-12	7	08/16
B.8.1-13	7	08/16
B.8.1-14	7	08/16
B.8.2-1	9	03/19
B.8.2-2	9	03/19
B.8.2-2a	9	03/19
B.8.2-3	9	03/19
B.8.2-4	9	03/19
B.8.2-5	7	08/16

List Of Effective Pages

Page or description	Rev.	Date
B.8.2-6	7	08/16
B.8.2-7	7	08/16
B.8.3-1	7	08/16
B.8.3-2	8	08/18
B.9-1	7	08/16
B.9.1-1	7	08/16
B.9.1-2	7	08/16
B.9.1-3	7	08/16
B.9.1-4	7	08/16
B.9.1-5	7	08/16
B.9.1-6	7	08/16
B.9.1-7	7	08/16
B.9.1-8	7	08/16
B.9.1-9	7	08/16
B.9.1-10	7	08/16
B.9.2-1	7	08/16
B.9.3-1	7	08/16
B.9.4-1	7	08/16
B.9.4-2	7	08/16
B.10.1-1	7	08/16
B.10.1-2	7	08/16
B.10.1-3	7	08/16
B.10.2-1	7	08/16
B.10.2-2	7	08/16
B.10.2-3	7	08/16
B.10.2-4	7	08/16
B.10.2-5	7	08/16
B.10.2-6	7	08/16
B.10.2-7	7	08/16
B.10.2-8	7	08/16
B.10.2-9	7	08/16
B.10.2-10	7	08/16
B.10.2-11	7	08/16
B.10.2-12	7	08/16
B.10.2-13	7	08/16
B.10.2-14	7	08/16
B.10.2-15	7	08/16
B.10.2-16	7	08/16
B.10.2-17	7	08/16
B.10.2-18	7	08/16
B.10.3-1	7	08/16
B.10.3-2	7	08/16
B.10.3-3	7	08/16
B.10.3-4	7	08/16
B.10.3-5	7	08/16
B.10.4-1	7	08/16
B.11-1	7	08/16
B.11.1-1	7	08/16
B.11.1-2	7	08/16

Page or description	Rev.	Date
B.11.1-3	7	08/16
B.11.2-1	7	08/16
B.11.2-2	7	08/16
B.11.2-3	7	08/16
B.11.2-4	7	08/16
B.11.2-5	7	08/16
B.11.2-6	7	08/16
B.11.2-7	7	08/16
B.11.2-8	7	08/16
B.11.2-9	7	08/16
B.11.2-10	7	08/16
B.11.2-11	7	08/16
B.11.2-12	7	08/16
B.11.2-13	7	08/16
B.11.2-14	7	08/16
B.11.2-15	7	08/16
B.11.2-16	7	08/16
B.11.2-17	7	08/16
B.11.2-18	7	08/16
B.11.2-19	7	08/16
B.11.2-20	7	08/16
B.11.2-21	7	08/16
B.11.2-22	7	08/16
B.11.2-23	7	08/16
B.11.2-24	7	08/16
B.11.2-25	7	08/16
B.11.2-26	7	08/16
B.11.2-27	7	08/16
B.11.2-28	7	08/16
B.11.2-29	7	08/16
B.11.2-30	7	08/16
B.11.2-31	7	08/16
B.11.2-32	7	08/16
B.11.2-33	7	08/16
B.11.2-34	7	08/16
B.11.3-1	7	08/16
B.12-1	7	08/16
B.12-2	7	08/16
B.12-3	7	08/16
B.12-4	7	08/16
B.12-5	9	03/19
B.12-6	7	08/16
B.12-7	7	08/16
B.12-8	7	08/16
B.12-9	7	08/16
B.12-10	7	08/16
B.12-11	7	08/16
B.12-12	7	08/16
B.12-13	7	08/16
B.12-14	7	08/16
B.12-15	7	08/16

List Of Effective Pages

Page or description	Rev.	Date
B.12-16	7	08/16
B.12-17	7	08/16
B.12-18	7	08/16
B.12-19	7	08/16
B.13-1	7	08/16
B.14.1-1	9	03/19
B.14.1-2	9	03/19
B.14.1-3	7	08/16
B.14.2-1	7	08/16

Table 1.2-2
Known Fabricated NUHOMS[®] Transfer Casks Licensed for Use Under CoC 1029

Fabricated NUHOMS[®] transfer casks (TCs) listed in the table below have design compatibility with the TC design basis models indicated. These fabricated TCs may have been fabrication-certified to one or more of the indicated compatible amendments. Determination of the fabrication-certification, the maintenance history, and current condition of these casks, in order to determine suitability for use under a particular amendment, would be achieved through contractual agreement between general licensees and the owner of the TC in question.

Fabricated TC Serial Number*	TC Design Basis Model	Amendment TC Design Initially Licensed Under	Amendments Currently Licensed Under	Design Variants Licensed
OS197-1	OS197	0	0, 1, 3, and 4	none
OS197-2				
OS197H-3	OS197H	1	1, 3, and 4	none
OS197H-4				
OS197H-6				
OS197H-7				
OS197H-8				
OS197H-9				

*These fabricated casks are to the best of *TN Americas LLC's* knowledge as of this UFSAR revision.

Table 3.1-1
Codes and Standards for the Fabrication and Construction of Principal Components

Component, Equipment, Structure	Code of Construction
24PT1-DSC	ASME Code, Section III, 1992 Edition through 1994 Addenda, supplemented by Code Case N-595-1 and ISG 4, Rev. 2.
AHSM	<ul style="list-style-type: none">- ACI 318-89 (92)- AWS D1.1-98 (<i>or later</i>)- AWS D1.6-99 (<i>or later</i>)- ACI 349-97- AISC Ninth Edition- Load Combinations from ANSI 57.9-1984

estimated. This results in a conservative flux estimate at the surface, and this radiation will be more energetic than the actual radiation. Hence, the dose rate is over estimated. Similarly, an azimuthal cylindrical model is built to estimate the dose rates on the lower half (floor models) of the AHSM. Radiation doses are evaluated on the surface with similar conservatism as in the “roof model.”

Finally, in the X-Z-model, in addition to conservatism similar to those mentioned for the R-Z models above, and due to the axial symmetry (along Y), the source is over-estimated as being of infinite length with no axial leakage.

5.3.1.2 Loading/Unloading Configurations

The dose rates on the surface, and at 1 and 3 feet from the surface of the 24PT1-DSC/ Transfer Cask are evaluated with DORT. Three different key configurations representing the 4 stages in the loading/unloading of the spent fuel are analyzed. The four different stages modeled are, (1) Cask decontamination, (2) Wet Welding, (3) Dry Welding and (4) Transfer.

Definition of Transfer Cask and 24PT1-DSC Loading Stages

- 1) Cask decontamination. The 24PT1-DSC and the Transfer Cask are assumed to be completely filled with water, including the region between 24PT1-DSC and cask, which is referred to as the “Cask/24PT1-DSC annulus.” The 24PT1-DSC top shield plug is assumed to be in place and the temporary shielding has not yet been installed.
- 2) Wet welding. The water level in the 24PT1-DSC cavity is assumed to be lowered four inches below the bottom of the top shield plug. Temporary shielding consisting of three inches of NS3 and one inch of steel is assumed to cover the 24PT1-DSC top shield plug. *The temporary shielding may be constructed of other materials that provide equivalent or better shielding.* The Cask/24PT1-DSC annulus is assumed to remain completely filled with water.
- 3) Dry welding. The 24PT1-DSC cavity is assumed to be completely dry, the 24PT1-DSC inner and outer top cover plates have been installed, and temporary shielding consisting of three inches of NS3 and one inch of steel *or equivalent* covers the outer top cover plate of the 24PT1-DSC. The Cask/24PT1-DSC annulus is assumed to remain completely filled with water.
- 4) Transfer. The 24PT1-DSC and 24PT1-DSC/Cask annulus are dry.

Figure 5.4-4 through Figure 5.4-7 provide the DORT generated material ID, mesh ID and dimensions used with the above configurations. Dose analysis results for the above conditions are provided in Table 5.1-3 through Table 5.1-5.

5.3.1.3 Transfer Configuration

For the transfer configuration the Transfer Cask/24PT1-DSC annulus is completely dry. The 24PT1-DSC inner and outer top cover plates are installed. The top end of the Transfer Cask is in place which consists of a 3” thick carbon steel cover plate and a 2” thick solid neutron shield, and a ¼” thick stainless steel plate cover is over the NS3 shield.

14.2 Supplemental Informational

14.2.1 References

- [14.1] Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors."
- [14.2] NUHOMS[®] MP187 Multipurpose Cask Transportation Package, Certificate of Compliance No. 9255, Revision 9, Docket Number 71-9255.
- [14.3] U.S. Nuclear Regulatory Commission, Title 10 Code of Federal Regulations, Part 61, "Licensing Requirements for Land Disposal *of* Radioactive Waste".
- [14.4] Safety Analysis Report for the TN-32 Cask, Docket 72-1021, Revision 0, January 2000.

the welding machine is not installed. The geometry for this configuration (top end only) is shown in Figure A.5.4-8.

Wet welding – The water level in the 24PT4-DSC cavity is lowered approximately four inches below the bottom of the shield plug. Temporary shielding consisting of three inches of NS3 and one inch of steel replaces the outer top cover plate, which is not installed. *The temporary shielding may be constructed of other materials that provide equivalent or better shielding.* The Cask/24PT4-DSC annulus remains filled with water. The geometry for this configuration (top end only) is shown in Figure A.5.4-9.

Dry welding – The 24PT4-DSC cavity is completely dry, the 24PT4-DSC shield plug and outer top cover plate have been installed, and temporary shielding consisting of three inches of NS3 and one inch of steel *or equivalent* covers the outer top cover plate of the 24PT4-DSC. The Cask/24PT4-DSC annulus remains filled with water. The geometry for this configuration (top end only) is shown in Figure A.5.4-10.

Dose analysis results for the above conditions are provided in Table A.5.1-3 through Table A.5.1-5.

A.5.3.1.3 Transfer Configuration

For the transfer configuration the Transfer Cask/24PT4-DSC annulus is completely dry. The 24PT4-DSC shield plug and outer top cover plate are installed. The lid of the Transfer Cask is in place, which consists of a 3” thick carbon steel cover plate, a 2” thick solid neutron shield, and a ¼” thick stainless steel plate cover over the NS-3 shield. The geometry for this configuration is shown in Figure A.5.4-5 through Figure A.5.4-7.

The Z-axis in the MCNP models coincides with the axis of rotation of the Transfer Cask and the 24PT4-DSC. Minor features, such as the 24 Neutron Shield Panel (NSP) support angles, the 4 trunnions, relief valves, clevises, eyebolts, etc., are not modeled. With the exception of the 24 neutron shield support angles and the trunnions, the balance of these items are local features that increase the shielding in a small area without replacing any of the shielding material which is included in the model. The additional shielding material that these features provide is not smeared into the bulk shielding, nor is any credit taken for it for the occupational exposure calculation. The 24 neutron shield support angles provide support for the neutron shield skin, which contains the water for the neutron shield. The steel that forms these angles is not smeared with the water in the neutron shield; rather it is modeled as water. This is conservative for gamma radiation because water is less than one seventh the density of steel. The density of the neutron shield water used in the cask MCNP models is 0.96 g/cm^3 . This density corresponds to water at a temperature of 212°F. Although some boiling may occur in the 24PT4-DSC, it would be localized, near the top of the 24PT4-DSC due to the lower hydrostatic pressure. This will have little impact on the Z-axis model as most of the water will not be boiling and therefore the use of a water density corresponding to 212°F temperature is appropriate. The resultant reduction in the hydrogen density as compared to full density water results in the water attenuating the neutron dose rate at about the same rate as that for full density steel. Therefore, replacing the steel with the lower density water results in little to no effect on the neutron dose rate outside the cask.

A.14.2 Supplemental InformationalA.14.2.1 References

- [A14.1] Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors."
- [A14.2] Certificate of Compliance No. 9302 for the NUHOMS[®] MP197 Transport Packaging, Revision 0, July 2002, (US NRC Docket No. 71-9302).
- [A14.3] U.S. Nuclear Regulatory Commission, Title 10 Code of Federal Regulations, Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste."
- [A14.4] Safety Analysis Report for the TN-32 Cask, Docket 72-1021, Revision 0, January 2000.

With

W_{no_FAs} = Weight of water without fuel assemblies in the 32PTH2 DSC cavity = 15,900 lbs,

W_{no_FAs} = Weight of water with 32 fuel assemblies in the 32PTH2 DSC cavity = 10,400 lbs.

The volume of helium outside the active fuel region of the FAs ($V_{free_out_FAs}$) is calculated as:

$$V_{free_out_FAs} = V_{free_in_cavity} - V_{free_in_FAs} = 288,000 - 207,000 = 81,000 \text{ in}^3.$$

B.4.7.2 Average Cavity Gas Temperatures

Based on the discussion presented in Section B.4.7, the bounding average cavity gas temperatures ($T_{cavity,avg}$) for normal, off-normal, and accident cases occur for transfer operations. Therefore, transfer operations are considered as bounding events to determine the maximum 32PTH2 DSC internal pressures. The bounding average temperatures for normal, off-normal and accident operations as noted in Section B.4.7 are selected to calculate the average cavity gas temperature in the 32PTH2 DSC cavity ($T_{cavity,avg}$) as follows:

$$\begin{aligned} T_{cavity,avg} &= (T_{free_in_FAs} \times V_{free_in_FAs} + T_{free_out_FAs} \times V_{free_out_FAs}) / V_{free_in_cavity} \\ &= (T_{free_in_FAs} \times 207,000 + T_{free_out_FAs} \times 81,000) / 288,000 \end{aligned}$$

Where

$T_{cavity,avg}$ = Average cavity gas temperature (°F),

$T_{free_in_FAs}$ = Average helium temperature within the active fuel region in the fuel compartments (°F),

T_{free,out_FAs} = Average helium temperature excluding active fuel region in the fuel compartments (°F).

The volumes of helium in the above equation, $V_{free_in_cavity}$, $V_{free_in_FAs}$ and $V_{free_out_FAs}$ are calculated in Section B.4.7.1.

Based on the above equation, the bounding average cavity gas temperatures to calculate maximum internal pressures are listed below.

Bounding Average Cavity Gas Temperatures for Storage and Transfer Conditions

Operation Conditions	Bounding Load Case	$T_{free_in_FAs}$ (°F)	$T_{free_out_FAs}$ (°F)	$T_{cavity,avg}$ (°F)
Normal Transfer	T5A	609	496	577
Off-Normal Transfer	T3	594	474	560
Accident Transfer	T9	751	613	712
Helium Backfill	(1)	391	273	358

(1) Bounding average cavity gas temperature for helium backfill operation is based on thermal analysis results for the heat load of 31.2 kW (HLZC#4) as discussed in Section B.4.7.3.