

PRDJ 0709

Letter No. NRC-V10-10-006

July 11, 2010

United States Nuclear Regulatory Commission
Mr. Jonathon Rowley, Project Manager
M/S 12D2
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Subject: Nuclear Safety Related Qualification of the Tricon TMR Programmable Logic Controller (PLC)
– Update to Qualification Summary Report Submittal and “Application for Withholding Proprietary Information from Public Disclosure” (TAC NO. ME2435)

References:

1. Letter, J. Polcyn (Invensys) to NRC, June 1, 2009, subject: NRC Safety Evaluation Report, “Review of Triconex Corporation Topical Reports 7286-545, Qualification Summary Report, and 7286-546, Amendment 1 to Qualification Summary Report, Revision 1”, Letter No. NRC-V10-09-001.
2. Letter, B. Haynes (Invensys) to NRC, April 6, 2010, subject: Nuclear Safety Related Qualification of the Tricon TMR Programmable Logic Controller (PLC) – Update to Qualification Summary Report Submittal and “Application for Withholding Proprietary Information from Public Disclosure” (TAC NO. ME1906), Letter No. NRC-V10-10-003.
3. Letter, B. Haynes (Invensys) to NRC, April 9, 2010, subject: Nuclear Safety Related Qualification of the Tricon TMR Programmable Logic Controller (PLC) – Update to Qualification Summary Report Submittal and “Application for Withholding Proprietary Information from Public Disclosure” (TAC NO. ME1906), Letter No. NRC-V10-10-004.
4. Letter, B. Haynes (Invensys) to NRC, April 23, 2010, subject: Nuclear Safety Related Qualification of the Tricon TMR Programmable Logic Controller (PLC) – Update to Qualification Summary Report Submittal and “Application for Withholding Proprietary Information from Public Disclosure” (TAC NO. ME2435), Letter No. NRC-V10-10-005.

In preparation for the NRC safety evaluation of the V10 Tricon TMR PLC, the staff visited Invensys at its Irvine, California, facility on January 21 and 22, 2010. As part of the information exchange that occurred, Invensys presented to the staff on various technical issues. The staff provided feedback on the technical presentations, and made a number of useful suggestions on the information the staff would need for the safety evaluation of the V10 Tricon TMR PLC. In Reference 2, Invensys committed to submitting the following documents to support the staff review:

- (1) A revised topical report on the V10 Tricon TMR PLC, to include a redline-strikeout version that clearly annotates the differences between the V9 and V10 Tricon versions;
- (2) An additional 54 technical documents pertaining to the V10 Tricon TMR PLC; during the January information exchange with NRC, the staff and Invensys performed a line-by-line review of the ISG6 table to finalize the list of documents to submit for the safety evaluation and identified these additional 54 documents required by the staff;
- (3) A whitepaper, NTX-SER-09-06 describing the process Invensys follows during the development of programmable logic devices, field programmable gate arrays (FPGAs), etc.; the document will address legacy development up to and including V10.5, as well as the process going forward to ensure recent NRC guidance on FPGA-based safety systems is incorporated into future Tricon releases;

D062
NRR

- (4) A revision to document SER Maintenance Process, NTX-SER-09-20, that clarifies and enhances the proposed SER maintenance process as compared to previous revisions of the paper;
- (5) A revision to Tricon V9.5.3 to V10.2.1 Differences Document, NTX-SER-09-05, that provides additional clarity on product software configuration, structure, and development path;
- (6) A revision to the Invensys ISG2 & ISG4 Compliance Paper, NTX-SER-09-10, that incorporates technical details into the discussion on conformance of the V10 Tricon TMR PLC communication features and protocols to the staff guidance on safety system communications;
- (7) A Program Manual that will govern the Tricon TMR PLC nuclear system integration process, including nuclear application software development; this will be a revision to NTX-SER-09-21; and
- (8) A revision to the Invensys Cyber Security Program Plan Licensing Topical Report (LTR) that will address anticipated regulatory changes as presented in Draft Guide-1249.

Items 1 thru 6 in the above list were enclosed in References 2, 3, and 4. Items 7 and 8 are enclosed in this letter and listed on Attachment 1. Item 7 describes the process Invensys follows during safety-related nuclear system integration projects. The document addresses project lifecycle phases for integrating hardware and software into a safety-related system intended for use in a nuclear facility. Item 8 explains conformance of the V10 Tricon TMR PLC to regulatory guidance pertaining to security of nuclear safety systems.

Also enclosed is Revision 3 to the V10 Tricon Topical Report. The revision describes the changes and testing completed for maintenance release V10.5.1. As explained in the Topical Report, the changes affect the Tricon Communication Module and TriStation 1131. Additional documents related to the V10.5.1 maintenance release required by the staff for the safety evaluation will be made available as necessary. Invensys understands that after the staff has formally accepted the V10 Tricon application that further maintenance releases will not be included in the V10 Tricon TMR PLC safety evaluation.

Several issues were identified by the staff during the acceptance review. The staff has agreed that the following issues will be addressed by Invensys in a subsequent transmittal letter(s), as appropriate:

- Invensys position regarding conformance to DI&C-ISG-04 of communications between a safety-related primary RXM and non-safety remote RXM chassis.
- Status of the open items contained in the Critical Digital Review (CDR), Invensys document 9600164-539. Invensys has previously informed the staff that the open items have been addressed in accordance with our Appendix B program. Upon request by the staff, Invensys can provide cross references between the CDR and other Invensys documents clearly describing how the open items were closed.
- Mapping of the Invensys FPGA development process to a software lifecycle that conforms to NRC guidance in BTP 7-14. The staff agreed that this will be handled through requests for additional information as required.

The staff has requested an updated list of documents submitted by Invensys in support of the V10 Tricon TMR PLC safety evaluation. This update is enclosed as Attachment 2 to this letter.

Please find enclosed two CDs containing several documents listed on Attachment 1 that were previously submitted on NRC Letters indicated below. The files are being resubmitted to reflect additional information and clarifications. The files in Enclosure 2 supersede in their entirety the documents previously submitted as shown in the table below:

Table 2. Superseded files.

<i>New File:</i>	<i>Replaces Old File:</i>	<i>Old File Transmittal Letter</i>
<i>[135R1_TR_Rev3.pdf]</i>	<i>[135_TR_Rev2.pdf]</i>	<i>NRC-V10-10-003</i>
<i>[136R1_TR_Rev3_AppA.pdf]</i>	<i>[136_TR_Rev2_AppA.pdf]</i>	<i>NRC-V10-10-003</i>
<i>[137R1_TR_Rev3_AppB.pdf]</i>	<i>[137_TR_Rev2_AppB.pdf]</i>	<i>NRC-V10-10-003</i>
<i>[011R1_NSIPM_P.pdf]</i>	<i>[011E3_PPM_P.pdf]</i>	<i>NRC-V10-09-003</i>
<i>[021R1_NSIPM_NP.pdf]</i>	<i>[021E5_PPM_NP.pdf]</i>	<i>NRC-V10-09-003</i>
<i>[013R1_RG1152.pdf]</i>	<i>[013E4_ISG1_CyberLTR_P.pdf] & [022E5_ISG1_CyberLTR_NP.pdf]</i>	<i>NRC-V10-09-003</i>

Invensys is also providing this letter as our "Application for Withholding" pursuant to the provisions of 10 CFR Part 2.390, Paragraph (b)(1). This submittal contains commercial strategic information proprietary to Invensys and customarily held in confidence. As previously identified in this letter, the proprietary material for which this withholding is requested has been specifically identified. In accordance with 10 CFR Part 2.390, Affidavit No. TCXNRC-10-04 accompanies this transmittal and sets forth the basis for which the identified proprietary information may be withheld from public disclosure. Accordingly, it is respectfully requested that the specified information which is proprietary to Invensys be withheld from public disclosure in accordance with 10 CFR Part 2.390.

Invensys has given its best effort to address all of the staff's comments and questions pertinent to the V10 Tricon TMR PLC to ensure an expeditious safety evaluation. However, we recognize that additional information may be required by the staff. We look forward to supporting the staff on this important effort.

Correspondence with regard to this transmittal should be directed to the following:

Mr. Brian Haynes
Project Manager
Invensys
15345 Barranca Parkway
Irvine, California 92618

If there are any questions on this submittal or any of its enclosures, please contact me at (949) 885-0778.

Sincerely,



Brian Haynes
Project Manager
Invensys

cc: Ms. Stacey Rosenberg, Branch Chief – NRR – CDs Only
Mr. William Kemper, Branch Chief – NRR – CDs Only
Mr. Steve Blair – Invensys – Letter Only
Mr. Andy Sykes – Invensys – Letter Only
Mr. Clayton Scott – Invensys – Letter Only
Mr. Paul Whitacre – Invensys – Letter Only
Mr. Richard Lilleston – Invensys – Letter Only

Attachment/Enclosures

ATTACHMENT 1
Enclosure Listing – CD 16 & 17 Content

<i>Enclosure Description</i>	<i>CD16*</i>	<i>CD17</i>	<i>[filename] [size MB]</i>
<u>Enclosure 1: - Affidavit #TCXNRC-10-04</u>	X	X	[142_Affidavit10_4.pdf] [0.2]
<u>Enclosure 2: Revisions to Previously Submitted Documents</u>			
Topical Report 7286-545-1, Rev 3	X	X	[135R1_TR_Rev3.pdf] [1.1]
Topical Report 7286-545-1, Rev 3, Appendix A, Comp Matrix	X	X	[136R1_TR_Rev3_AppA.pdf] [0.8]
Topical Report 7286-545-1, Rev 3, Appendix B, App Guide	X	X	[137R1_TR_Rev3_AppB.pdf] [0.7]
Nuclear System Integration Program Manual – NTX-SER-09-21, Rev 1*	X	---	[011R1_NSIPM_P.pdf] [0.9]
Nuclear System Integration Program Manual – NTX-SER-09-21, Rev 1**	X	X	[021R1_NSIPM_NP.pdf] [0.7]
Invensys Conformance to Regulatory Guide 1.152 (Security) NTX-SER-10-14, Rev 0	X	X	[013R1_RG1152.pdf] [0.7]

*) Document Contains Invensys Proprietary material

**) Non-proprietary version of Proprietary document (redacted)

Notes:

(a) CD#16 contains Proprietary Documents (among all files). CD#17 contains only Non-Proprietary Documents (Publicly Available).

(b) Document NTX-SER-10-14, Rev 0 did not contain proprietary detail and therefore had only a single document file (public version).

ATTACHMENT 2

Document Submittals to the NRC
(07/11/10)(Current document file status - sorted by filename number)

(bold=most recent change)

Document Description	Prop CD*	Public CD	[filename] [size MB]	Trans Letter (s)	Date sent, final
- Affidavit #TCXNRC-09-01	1c	2c	[001E1 Affidavit.pdf] [0.3]	(-001, -002) -003	[10/5/09]
			----(002 Deleted – see History)		
Differences between the Tricon V9.5.3 and the Tricon V10.2.1 System – NTX-SER-09-05, Rev 2*	12		[003R2_DiffV9V10_P.pdf] [1.2]	-10-004	[04/09/10]
EQ Summary Report 9600164-545, Rev 3*	8		[004R2 EQSummaryRep P.pdf] [1.4]	-10-001	[01/05/10]
- Appendix A	3c	4c	[005R1 EQSR AppA.pdf] [0.9]	(-004) -007	[11/17/09]
- Appendix B	3c	4c	[006R1 EQSR AppB.pdf] [0.4]	(-004) -007	[11/17/09]
- Appendix C	3c	4c	[007R1 EQSR AppC.pdf] [0.4]	(-004) -007	[11/17/09]
Software Qualification Report (SQR) – 9600164-535, Rev 1*	8		[008R2 SQR P.pdf] [1.7]	-10-001	[01/05/10]
Critical Digital Review (CDR) – 9600164-539, Rev 1*	1c		[009E3 CDR P.pdf] [1.8]	(-001, -002) -003	[10/5/09]
SER Maintenance Process – NTX-SER-09-020, Rev 1	12	13	[010R1 SERMaint.pdf] [0.2]	-10-004	[04/09/10]
Nuclear System Integration Program Manual – NTX-SER-09-21, Rev 1*	16		[011R1 NSIPM P.pdf] [0.9]	-10-006	[07/11/10]
Compliance with NRC Interim Guidance ISG-2 and ISG-4 – NTX-SER-09-010, Rev 1**	14	15	[012R1_ISG24_NP.pdf] [1.0]	-10-005	[04/23/10]
Invensys Conformance to Reg Guide 1.152 Rev 2 – NTX-SER-10-14, Rev 0	16	17	[013R1 RG1152.pdf] [0.7]	-10-006	[07/11/10]
			----(014 Deleted- see History)		
Differences between the Tricon V9.5.3 and the Tricon V10.2.1 System – NTX-SER-09-05, Rev 2 **	12	13	[015R2_DiffV9V10_NP.pdf] [0.9]	-10-004	[04/09/10]
EQ Summary Report 9600164-545, Rev 3**	8	9	[016R2 EQSummaryRep NP.pdf] [2.0]	-10-001	[01/05/10]
			----(017,018,019 Deleted)		
- Software Qualification Report (SQR) – 9600164-535, Rev 1**	8	9	[020R2 SQR NP.pdf] [3.3]	-10-001	[01/05/10]
- Nuclear System Integration Program Manual – NTX-SER-09-21, Rev 1**	16	17	[021R1 NSIPM NP.pdf] [0.7]	-10-006	[07/11/10]
			----(022 Deleted by 013R1)	-10-006	[07/11/10]
Enclosure 1: - Affidavit #TCXNRC-09-02	3c	4c	[023 Affidavit2.pdf] [3.0]	(-004) -007	[11/17/09]
Environmental Test Report 9600164-525, Rev 0*	8		[024R1 EnvTestRep P.pdf] [1.6]	-10-001	[01/05/10]
Environmental Test Report 9600164-525, Rev 0**	8	9	[025R1 EnvTestRep NP.pdf] [1.9]	-10-001	[01/05/10]
Seismic Test Report 9600164-526, Rev 0*	8		[026R1 SeisTestRep P.pdf] [1.3]	-10-001	[01/05/10]
Seismic Test Report 9600164-526, Rev 0**	8	9	[027R1 SeisTestRep NP.pdf] [0.7]	-10-001	[01/05/10]
EMI/RFI Test Report 9600164-527, Rev 2*	8		[028R2 EMIREP P.pdf] [3.3]	-10-001	[01/05/10]
EMI/RFI Test Report 9600164-527, Rev 2**	8	9	[029R2 EMIREP NP.pdf] [4.7]	-10-001	[01/05/10]
Surge Withstand Test Report 9600164-528, Rev 1*	8		[030R1 SurgeRep P.pdf] [1.5]	-10-001	[01/05/10]
Surge Withstand Test Report 9600164-528, Rev 1**	8	9	[031R1 SurgeRep NP.pdf] [2.5]	-10-001	[01/05/10]
1E Isolation Test Report 9600164-529, Rev 1*	8		[032R1 1EISORep P.pdf] [1.45]	-10-001	[01/05/10]
1E Isolation Test Report 9600164-529, Rev 1**	8	9c	[033R1 1EISORep NP.pdf] [2.5]	-10-001	[01/05/10]

<i>Document Description</i>	<i>Prop CD*</i>	<i>Public CD</i>	<i>[filename] [size MB]</i>	<i>Trans Letter (s)</i>	<i>Date sent, final</i>
EFT Test Report 9600164-521, Rev 1*	8		[034R1 EFTRep P.pdf] [1.5]	-10-001	[01/05/10]
EFT Test Report 9600164-521, Rev 1**	8	9	[035R1 EFTRep NP.pdf] [2.5]	-10-001	[01/05/10]
ESD Test Report 9600164-522, Rev 1*	8		[036R1 ESDRep P.pdf] [1.7]	-10-001	[01/05/10]
ESD Test Report 9600164-522, Rev 1**	8	9	[037R1 ESDRep NP.pdf] [1.5]	-10-001	[01/05/10]
Performance Proof Test – Operation 9600164-566, Rev 0*	8		[038R1 PPOpsRep P.pdf] [2.3]	-10-001	[01/05/10]
Performance Proof Test – Operation 9600164-566, Rev 0**	8	9	[039R1 PPOpsRep NP.pdf] [7.9]	-10-001	[01/05/10]
Performance Proof Test – Prudency 9600164-573, Rev 0*	8		[040R1 PPPruRep P.pdf] [2.2]	-10-001	[01/05/10]
Performance Proof Test – Prudency 9600164-573, Rev 0**	8	9	[041R1 PPPruRep NP.pdf] [6.2]	-10-001	[01/05/10]
Radiation Test Report 9600164-533, Rev 2*	8		[042R1 RadRep P.pdf] [1.1]	-10-001	[01/05/10]
Radiation Test Report 9600164-533, Rev 2**	8	9	[043R1 RadRep NP.pdf] [1.3]	-10-001	[01/05/10]
Reliability/Availability Report 9600164-532, Rev 0*	3c		[044 ReliabilityRep P.pdf] [6.4]	(-004) -007	[11/17/09]
Reliability/Availability Report 9600164-532, Rev 0**	3c	4c	[045 ReliabilityRep NP.pdf] [19.3]	(-004) -007	[11/17/09]
Failure Modes and Effects Analysis 9600164-531, Rev 0*	3c		[046 FMEAREP P.pdf] [1.7]	(-004) -007	[11/17/09]
Failure Modes and Effects Analysis 9600164-531, Rev 0**	3c	4c	[047 FMEAREP NP.pdf] [2.1]	(-004) -007	[11/17/09]
Maximum Response Time Calculation 9600164-731, Rev 0*	3c		[048 MaxRespTime P.pdf] [1.1]	(-004) -007	[11/17/09]
Master Test Plan 9600164-500, Rev 5*	8		[049R1 MTP P.pdf] [4.7]	-10-001	[01/05/10]
Master Test Plan 9600164-500, Rev 5**	8	9	[050R1 MTP NP.pdf] [6.7]	-10-001	[01/05/10]
Nuclear Qualification Quality Plan 9600164-002, Rev 3	3c	4c	[051 NQQP.pdf] [1.6]	(-004) -007	[11/17/09]
TUV Type Approval Report and Certificate (V10.2.1)	3c	4c	[052 TUVCert 10 2 1.pdf] [1.0]	(-004) -007	[11/17/09]
Planning & Installation Guide 9700077-012 (Feb 009)		5c	[053 PandlGuide NP.pdf] [5.0]	(-005) -008	[11/18/09]
Users Manual for Field Term. 9700052-018 (Feb 2009)		5c	[054 FTGuide NP.pdf] [9.0]	(-005) -008	[11/18/09]
TRICON Comm. Guide 9700088-008 (Feb 2009)		5c	[055 ComGuide NP.pdf] [2.2]	(-005) -008	[11/18/09]
Developers Guide, TS1131 V4.1 9700100-003 (Aug 2006)		5c	[056 DevGuide NP.pdf] [4.7]	(-005) -008	[11/18/09]
Triconex Training Manual 9750002-001 (Rev 1.2)		5c	[057 TrainMan NP.pdf] [6.7]	(-005) -008	[11/18/09]
TRICON Product Guide, V10.2.1 9791007-013 (Aug 2006)		5c	[058 TechProdGuide NP.pdf] [3.4]	(-005) -008	[11/18/09]
Enclosure I: - Affidavit #TCXNRC-09-03	6	7	[059 Affidavit3.pdf] [3.0]	-006	[11/13/09]
Supplemental Test Plan 9600164-800 Rev 0*	6		[060 SupTest 4 16 P.pdf] [0.8]	-006	[11/13/09]
Supplemental Test Plan 9600164-800 Rev 0**	6	7	[061 SupTest 4 16 NP.pdf] [0.7]	-006	[11/13/09]
Master Configuration List 9600164-540 Rev 21*	8		[062R1 MCL P.pdf] [1.0]	-10-001	[01/05/10]
Master Configuration List 9600164-540 Rev 21**	8	9	[063R1 MCL NP.pdf] [2.3]	-10-001	[01/05/10]
Software Quality Assurance Plan 9600164-537 Rev 0	6	7	[064 SQAP.pdf] [1.1]	-006	[11/13/09]
System Description 9600164-541, Rev 0*	6		[065 SysDesc P.pdf] [2.2]	-006	[11/13/09]
System Description 9600164-541, Rev 0**	6	7	[066 SysDesc NP.pdf] [3.1]	-006	[11/13/09]
EFT Test Procedure 9600164-514, Rev 0*	8		[067R1 EFTTestPro P.pdf] [1.7]	-10-001	[01/05/10]
ESD Test Procedure 9600164-512, Rev 1*	6		[068 ESDTestPro P.pdf] [1.7]	-006	[11/13/09]
Radiation Exposure Test Procedure 9600164-511, Rev 0*	6		[069 RadExpTestPro P.pdf] [1.5]	-006	[11/13/09]
Seven Day Elevated DC Voltage Report 9600164-557, Rev 0	6	7	[070 7DayDCTestRep.pdf] [3.6]	-006	[11/13/09]
TSAP Software V&V Plan 9600164-513, Rev2*	6		[071 TSAP SVVP P.pdf] [2.3]	-006	[11/13/09]
TSAP Software V&V Plan 9600164-513, Rev2**	6	7	[072 TSAP SVVP NP.pdf] [1.5]	-006	[11/13/09]
TSAP V&V Report 9600164-536, Rev 0	6	7	[073 TSAP V&VRep.pdf] [1.1]	-006	[11/13/09]
Independent Tricon V10 Equipment Qualification Assessment	6	7	[074 IndAssess.pdf] [0.2]	-006	[11/13/09]

<i>Document Description</i>	<i>Prop CD*</i>	<i>Public CD</i>	<i>[filename] [size MB]</i>	<i>Trans Letter (s)</i>	<i>Date sent, final</i>
Triconex QA Manual	6	7	[075 QAM.pdf] [1.2]	-006	[11/13/09]
Analog I/O Machine Count Calc 9600164-730, Rev 0*	6		[076 AIO Calc P.pdf] [1.1]	-006	[11/13/09]
ETP Interface Cable Similarity Analysis 9600164-538, Rev 0*	6		[077 CableSimAnalysis P.pdf] [1.0]	-006	[11/13/09]
Change Impact Analysis 9600164-542, Rev 0*	6		[078 ChangeImpactAnalysis P.pdf] [1.9]	-006	[11/13/09]
Enclosure 1: - Affidavit #TCXNRC-09-04	8	9	[079 Affidavit4.pdf] [3.0]	-10-001	[01/05/10]
MDM 12.1, Production Order Tag Report*	10		[080 MDM 12 1 P.pdf] [0.5]	-10-003	[04/06/10]
QPM 2.1, Quality Planning*	10		[081 QPM 2 1 P.pdf] [0.5]	-10-003	[04/06/10]
QPM 13.2, Product Discrepancies*	10		[082 QPM 13 2 P.pdf] [0.5]	-10-003	[04/06/10]
EDM 11.03, Process and Product Quality Assurance*	10		[083 EDM 11 03 P.pdf] [0.5]	-10-003	[04/06/10]
EDM 12.00, Product Development Process*	10		[084 EDM 12 00 P.pdf] [0.7]	-10-003	[04/06/10]
EDM 12.10, Project Planning*	10		[085 EDM 12 10 P.pdf] [0.6]	-10-003	[04/06/10]
EDM 12.50, Requirements Management*	10		[086 EDM 12 50 P.pdf] [0.6]	-10-003	[04/06/10]
EDM 20.00, Configuration Management*	10		[087 EDM 20 00 P.pdf] [0.6]	-10-003	[04/06/10]
EDM 21.30, Change Impact Analysis*	10		[088 EDM 21 30 P.pdf] [0.6]	-10-003	[04/06/10]
EDM 24.00, Software Configuration and Change Control*	10		[089 EDM 24 00 P.pdf] [0.5]	-10-003	[04/06/10]
EDM 74.00, Nuclear Qualification of Triconex Products*	10		[090 EDM 74 00 P.pdf] [0.7]	-10-003	[04/06/10]
EDM 76.00, Dedication of Products for Nuclear Service*	10		[091 EDM 76 00 P.pdf] [0.6]	-10-003	[04/06/10]
EDM 90.00, Product Verification*	10		[092 EDM 90 00 P.pdf] [0.6]	-10-003	[04/06/10]
EDM 90.10, Product Validation (New since V9 SER)*	10		[093 EDM 90 10 P.pdf] [0.6]	-10-003	[04/06/10]
EDM 90.30, Control of Tools and Test Software*	10		[094 EDM 90 30 P.pdf] [0.6]	-10-003	[04/06/10]
9100055-001, Nuclear Dedicated Parts List*	10		[095 NDPL P.pdf] [0.8]	-10-003	[04/06/10]
9100055-103, DPE-03*	10		[096 DPE03 P.pdf] [0.8]	-10-003	[04/06/10]
9100055-105, DPE-05*	10		[097 DPE05 P.pdf] [0.4]	-10-003	[04/06/10]
9600164-534, System Accuracy Specifications	10	11	[098 SysAccSpec.pdf] [1.2]	-10-003	[04/06/10]
9100112-001, Safety Concepts*	10		[099 SafetyConcepts P.pdf] [1.9]	-10-003	[04/06/10]
9100042-002, NGIO System Architecture Specification*	10		[100 NGIOSysArch P.pdf] [1.4]	-10-003	[04/06/10]
6200152-002, TCM System Architecture Specification*	10		[101 TCMSysArch P.pdf] [1.0]	-10-003	[04/06/10]
6200106-001, ETSX Software Architecture Specification*	10		[102 ETSXSArch P.pdf] [1.0]	-10-003	[04/06/10]
9100113-001, Safety Requirements*	10		[103 SafetyReqmts P.pdf] [0.6]	-10-003	[04/06/10]
7100222-001, Tricon Main Processor Hardware Design Spec*	10		[104 MPHWDDesSpec P.pdf] [3.9]	-10-003	[04/06/10]
9100042-001, NGIO System Requirements Specification*	10		[105 NGIOSysReq P.pdf] [0.7]	-10-003	[04/06/10]
6200152-001, TCM System Requirements Specification*	10		[106 TCMSysReq P.pdf] [0.8]	-10-003	[04/06/10]
6200156-001, NGIO Core Software Architecture and Des Spec*	10		[107 NGIOCoreArch P.pdf] [1.0]	-10-003	[04/06/10]
6200152-004, TCOM Software Design Specification*	10		[108 TCOMSWDes P.pdf] [1.9]	-10-003	[04/06/10]
9100046-001, NGIO EPP, Engineering Project Plan*	10		[109 NGIOEPP P.pdf] [0.7]	-10-003	[04/06/10]
6200155-001, NGIO Core Software Reqmts Specification*	10		[110 NGIOCoreSRS P.pdf] [0.9]	-10-003	[04/06/10]
6200152-003, TCOM Software Requirements Specification*	10		[111 TCOMSRS P.pdf] [0.7]	-10-003	[04/06/10]
6200033-001, TriStation 1131 Software Requirements Spec*	10		[112 TS1131SRS1 P.pdf] [1.0]	-10-003	[04/06/10]
6200033-002, TriStation 1131 V4.1 Software Reqmts Spec*	10		[113 TS1131SRS2 P.pdf] [0.4]	-10-003	[04/06/10]
9100098-001, NGIO Core H/W Requirements Specification*	10		[114 NGIOCoreHRS P.pdf] [0.6]	-10-003	[04/06/10]
9100098-002, NGIO Core H/W Design Specification*	10		[115 NGIOCoreHDS P.pdf] [0.9]	-10-003	[04/06/10]

Document Description	Prop CD*	Public CD	[filename] [size MB]	Trans Letter (s)	Date sent, final
6200159-001, NGIO Core Software Test Plan*	10		[116 NGIOCoreSTP P.pdf] [0.5]	-10-003	[04/06/10]
6500155-000, TCM Software Test Plan*	10		[117 TCMSTP P.pdf] [0.5]	-10-003	[04/06/10]
TCM A Traceability Report.doc*	10		[118 TCMATrace P.pdf] [0.9]	-10-003	[04/06/10]
Traceability Matrix NGIO CORE SYRS to NGIORVP.doc*	10		[119 NGIOCoreTrace P.pdf] [0.6]	-10-003	[04/06/10]
Traceability Matrix NGAI SYRS to NGAIRVP.doc*	10		[120 NGAISysTrace P.pdf] [0.5]	-10-003	[04/06/10]
Traceability Matrix NGDO SYRS to NGDORVP.doc*	10		[121 NGDOSysTrace P.pdf] [0.5]	-10-003	[04/06/10]
9600127-004, System Test Procedure*	10		[122 SysTestProc004 P.pdf] [9.2]	-10-003	[04/06/10]
9600158-002, Tricon V10.1 Sys Functional Validation Proc*	10		[123 10 ISysValProc P.pdf] [0.9]	-10-003	[04/06/10]
9600038-001, Tricon V9+ I/O Modules Functional Val Proc*	10		[124 V9 IOValProc P.pdf] [1.1]	-10-003	[04/06/10]
6500106-003, Enh Tricon Sys Executive Software Test Descr*	10		[125 SysExecSTD P.pdf] [12.5]	-10-003	[04/06/10]
6200157-001, NGIO Core Software Test Description*	10		[126 NGIOSTD P.pdf] [0.8]	-10-003	[04/06/10]
6500155-011, TCM TSAA Software Test Description*	10		[127 TCM TSAASTD P.pdf] [0.8]	-10-003	[04/06/10]
V&V Final Report Tricon V10.2 and V10.2.1*	10		[128 V&VRep 10 2 1 P.pdf] [8.9]	-10-003	[04/06/10]
SQA Validation Summary Report Tricon I/O 451-515, V9.X *	10		[129 SQAValSummaryRep P.pdf] [9.7]	-10-003	[04/06/10]
Tricon V10.1 Validation Report*	10		[130 ValRep 10 1 P.pdf] [1.1]	-10-003	[04/06/10]
6200003-195, Tricon V10.2 Release - Software Release Def*	10		[131 SRD 10 2 P.pdf] [0.7]	-10-003	[04/06/10]
6200003-196, Tricon V10.2.1 Release - Software Release Def*	10		[132 SRD 10 2 1 P.pdf] [0.6]	-10-003	[04/06/10]
Dedication Package Example – 022210*	10		[133 DedicationPkg P.pdf] [1.1]	-10-003	[04/06/10]
Enclosure 1: - Affidavit #TCXNRC-10-01	10	11	[134 Affidavit10 1.pdf] [0.3]	-10-003	[04/06/10]
Topical Report 7286-545-1, Rev 3	16	17	[135R1 TR Rev3.pdf] [1.1]	-10-006	[07/11/10]
Topical Report 7286-545-1, Rev 3, Appendix A, Comp Matrix	16	17	[136R1 TR Rev3 AppA.pdf] [0.8]	-10-006	[07/11/10]
Topical Report 7286-545-1, Rev 3, Appendix B, App Guide	16	17	[137R1 TR Rev3 AppB.pdf] [0.7]	-10-006	[07/11/10]
Enclosure 1: - Affidavit #TCXNRC-10-02	12	13	[138 Affidavit10 2.pdf] [0.2]	-10-004	[04/09/10]
Triconex Development Processes for Programmable Logic Devices in Nuclear-Qualified Products – NTX-SER-09-06, Rev 0*	12		[139 PLDDDev P.pdf] [3.0]	-10-004	[04/09/10]
Enclosure 1: - Affidavit #TCXNRC-10-03	14	15	[140 Affidavit10 3.pdf] [0.2]	-10-005	[04/23/10]
Compliance with NRC Interim Guidance ISG-2 and ISG-4 – NTX-SER-09-010, Rev 1*	14		[141 ISG24 P.pdf] [1.3]	-10-005	[04/23/10]
Enclosure 1: - Affidavit #TCXNRC-10-04	16	17	[142 Affidavit10 4.pdf] [0.2]	010-006	[07/11/10]