

Test Application / Test Contract

For Certification of PROFINET IO Products
According to IEC 61158 / IEC 61784

Application for Testing a PROFINET IO Product

Please fill out completely and return with authorized signature to:

pic.industry@siemens.com

Attn: **PROFINET Test Lab**

We,

Company	
Name of Applicant	
Department	
Address Line 1	
Address Line 2	
Email Address	
Telephone	

are applying for certification of the product described in more detail on the next page.
Basis is the test specification for PROFINET IO products of the PROFIBUS User Organization (PNO).

Earliest possible Test Date	
We request to attend the test in-person	☐ Yes OR ☐ No

Required Test Features (Please check all that apply)

Conformance Class (CC-)	☐ A	OR	☐ B	OR	☐ C
<i>Conformance Classes are defined in the PI document: PROFINET Specification "Profiles for decentralized periphery". Note: SecurityClass2/3, RSI, and Conformance Class D testing cannot be certified yet as of today. Please contact us for further information and/or check for a trial PNIO test bundle on the PI website.</i>					
PNIO_Version	☐ 2.44	OR	☐ 2.45	OR	☐ 2.46
<i>In GSDML or CDML file.</i>					
GSDML Version	☐ 2.44	OR	☐ 2.45	OR	☐ 2.46
<i>We recommend that vendors use the latest GSDML version available. Leave blank for controller. Note: The GSDML version cannot be below the PNIO_Version.</i>					
Netload Class	☐ I	OR	☐ II	OR	☐ III
<i>All PROFINET devices must support at least Netload Class I.</i>					
Implementation Type	☐ Stack	OR	☐ Module	OR	☐ ASIC
<i>How the PROFINET protocol is implemented on your product.</i>					

Type of Application	Supported Features	Supported Profiles
☐ IO-Device ☐ IO-Controller ☐ Virtual Device ☐ Virtual Controller ☐ Other Application (specify below):	☐ Alarms ☐ Fast Start-Up ☐ MRP Manager ☐ MRP Client ☐ DHCP ☐ Wireless ☐ System Redundancy ☐ Security Class 1*	☐ PROFIenergy ☐ Other Profile (specify below):
<i>*For Security Class 1 devices, please confirm that you will have a PI-issued smart card and setup to sign the GSDX container in-house before the confirmed test date.</i>		
☐ We will be able to sign the GSDX package in-house before our confirmed test date (highly recommended).		
☐ We will use the signing service from PI and accept that extra test lab time / cost will incur, if the GSDX package cannot be signed in a timely manner.		
<i>Additional information:</i>		

Type of Test	
☐ Full Test	Result is a test report which can be used to apply for a product certificate at PI.
☐ Pre-Test	Result is a list of findings, not a test report valid for a certificate.
☐ Reference Design	Result is a test report (marked as 'Reference Design') as indicator that this implementation is certifiable.

Required Technical Data:

Product Name	
Description File Name (GSDML/CDML)	
Release HW Version ('HardwareRelease' Value in GSDML file)	
Release SW (FW) Version ('SoftwareRelease' Value in GSDML file)	
Vendor Ident Number (0x_ _ _ _)	
Device Ident Number (0x_ _ _ _)	

Optional Information – Virtual Device or Controller

These sections must only be completed if one of the corresponding items is checked in the previous sections.

OPTIONAL APPLICATION: Virtual Device or Controller	
Virtual devices/controllers are dependent on the system running them, and this information helps the test lab understand both your product and your resources to help reproduce any issues that may arise during these tests. The information is also required for the test report. User documentation containing the minimum requirements to run the virtual instance should be provided along with testing.	
☐ <i>The device/controller submitted for certification uses the following reference hardware:</i>	
Operating System	
PC (model, processor, cores, RAM, etc.)	
Virtualization Technology	

Optional Information – Product Variants

Is more than one product based on this exact implementation, and only vary in detail like product name, number of ports, etc., and shall be certified at the same time?
If so, please describe the variant(s) here and list the product(s) below. All these values should correspond with the device's GSDML file. Controller variants may be on multiple CDML files. If controller functions as i-device, fill all three columns.

PRODUCT VARIANTS	Device Access Point Name (e.g. DAP 11) <i>Device Only</i>	DAP Module ID (e.g. 0x000012AB) <i>Device Only</i>	Order Number / Order ID (Device/Controller SKU or Model Number)

Optional Test Features (Please check all that apply)

These sections must only be completed if you have checked one of the corresponding items in the previous section.

OPTIONAL APPLICATION: PROFINET IO-Controller	
Controller testing incorporates manual test cases, and this information helps the test lab understand both your device and your resources to help reproduce any issues that may arise during these tests.	
☐ <i>The controller submitted for certification has been tested with the following equipment:</i>	
Configuration software name (e.g. TIA Portal, PCWorx, ToolboxST, etc)	
Configuration software minimum hardware requirements (e.g. Windows 10 x64, 8 GB RAM, 100 GB HDD, etc.)	
☐ <i>The controller submitted for certification operates with the following performance values:</i>	
Supported SendClock values (e.g. 250 us, 500 us, 1 ms, etc...)	
Minimum supported cycle time (e.g. 250 us, 500 us, 1 ms, etc...)	
Maximum number of simultaneous PROFINET connections (e.g. 10 devices can be connected simultaneously)	
☐ <i>The controller submitted for certification has been tested with the following devices prior to submission for certification testing:</i>	
List of PROFINET devices the Controller will be tested with at customer site (e.g. Siemens ET200SP, Phoenix Contact Axioline, GE RX3iCEP, etc.)	

OPTIONAL PROFILE: PROFIenergy	
<i>The device submitted for certification conforms to the selected PROFIenergy Entity Class, defined in "Test Specification and Test Cases for PROFIenergy - Technical Specification for PROFINET"</i>	
☐ PE Entity Class 1	
☐ PE Entity Class 2	<i>For PROFIenergy Entity Classes 2 and 3, please include your declaration of support for all implemented power switching services.</i>
☐ PE Entity Class 3	

Return Shipping Information

Once a device has completed testing, we retain the device for use in our PROFINET integration test apparatus. If you require the return of your device, please indicate your preferred method of shipping and billing below.

☐ Customer will provide a printed return label with the product	OR	FedEx Account Number (nine digits)	OR	UPS Account Number (six digits)

Items required For Certification

These items are supporting documentation necessary to determine the scope of the Conformance Test and compile a test report. They may all be submitted at different times, but a failure on the part of the customer to provide any of this documentation will lead to a delay in issuing a Test Report.

Required with Application:

- 1) A draft GSDML file for a device test and/or a draft CDML file(s) for a controller test, and a general description of the product.
- 2) A copy of the form/email confirming the VendorID assigned by the PNO.
- 3) DeviceID assigned to the device/controller by the manufacturer (shown above).
- 4) A purchase order addressed to the PROFI Interface Center for the testing fee(s), see Page 5.

Required at the Test Date:

- 1) Descriptions and explanations needed to understand how the product functions, e.g., a product manual, as well as a complete description of the PROFINET functions supported.
- 2) Final GSDML and/or CDML file.
- 3) The exact type designation, and release versions of the hardware and firmware/software.
- 4) If the product does not utilize RJ45 or M12 connectors, the customer must provide any hardware necessary to connect the device to a RJ45 or M12 network.
- 5) In addition to the product itself, any auxiliary equipment required to test the operational functionality of the product, e.g., motor for drive testing, etc.
- 6) Wireshark capture file of the Device submitted for certification connecting to a controller / or for controller tests capture file of the controller connecting to a device. Capture should span the time from the first DCP Identify Request from the controller to at least 100 real-time cyclic frames produced after the controller sends the Application Ready Response.

For complex devices, it is *strongly* suggested that the applicant plan to have a representative at the lab for at least the 1st day of testing to help resolve any unforeseen issues. It is further suggested that this representative have the capability to make any software/firmware changes necessary to resolve any critical issues.

Deliverables from the test lab upon completion of testing:

- 1) For successful tests, a positive test report will be issued from the Test Lab.
- 2) For tests failed after revision, an issue list and a quote for a re-test will be sent from the Lab.
 - a) The new quote will be based on the severity and number of issues the lab finds in the original test.
 - b) Between the issuance of the new quote and the start of the next test cycle, the test lab will answer all email support questions related to the issues cited within 10 business days at no additional charge.
 - c) At customer request, phone support regarding reported issues may be available for an additional fee.

The guidelines described in Attachments 1 and 2 apply to the execution of this order for testing. The applicant agrees to their content.

I understand that if the device is not provided for testing within 6 months, this test application is void and a new test application and purchase order must be supplied.

Signature of Applicant _____

Place _____ and Date _____

Fee Schedule

Conformance Class	Device			Controller	
	A	B	C	A	B
Reserved Lab Time ¹	3 days	4 days	4 days	min. 4 days	min. 5 days
Included Firmware Updates ¹	3	3	3		
Standard Cost ²	\$5,400	\$7,200	\$7,200	<i>*inquire*</i>	<i>*inquire*</i>

¹ If a certification test cannot be completed in the reserved time or with the allotted firmware updates, additional day(s) of lab time may be purchased at a cost of \$1,800 per day, and two firmware updates per day of test time.

² Additional features, such as support for Alarms, Fast Startup, MRP, PROFlenergy, or variants, may incur additional time and cost. Tests that conclude significantly faster than the minimum allotted lab time may be discounted.

PURCHASE ORDER REQUIREMENTS

The services provided by Siemens Industry, Inc. are subject to the attached **Standard Service Terms and Conditions**.

Address PO to:

Siemens Industry, Inc
1000 Deerfield Parkway
Buffalo Grove, IL 60089-4513

Email PO to:

pic.industry@siemens.com

Email for remittance:

ar.industry@siemens.com

Terms:

NET30

To be accepted, the PO must include the following statement:

"Notwithstanding any other references, this order is subject to Siemens Standard Service Terms and Conditions"

Attachment 1 for Test Application

Processing of Test Requests

The PNO-PROFINET Test Lab carries out the tests impartially, in the chronological sequence in which the orders were received. During the entire process, from arrival to return shipment, it is ensured that unauthorized persons will have no access to the test item.

The clients, as well as persons from the PNO advisory board designated by the board of the PNO, have the right to be present during the test as witnesses. The person responsible for the test will ensure that the principle of confidentiality vis-à-vis other clients as well as safety measures are not jeopardized by this.

Processing of the Test Request

For the test, the applicant makes available to the PNO-PROFINET Test Lab the device to be tested, including technical documentation. For the test to be considered a prototype test, the specimen has to correspond to the devices of the series.

On arrival, the test objects are immediately taken to the rooms of the PNO-PROFINET Test Lab. As a rule, this is done with the specimen still packaged. The PNO-PROFINET Test Lab checks and documents the complete shipment.

During arrival inspection, the scope and the testability of the test item are determined and documented. The test request is returned with a corresponding explanation if it is determined that the client's requirements exceed the testing capability of the PNO-PROFINET Test Lab regarding testing scope and measuring accuracy, or that the test item does not meet the technical prerequisites for a test according to the testing methods and testing procedures used as a basis. In addition, all those applications are returned which endanger objective results or which are of small significance.

Storing the Test Object

If testing of the item cannot be started immediately after its receipt, it will be properly stored and placed under lock and key.

Test

The test is carried out exclusively according to PNO guidelines for operating PNO-PROFINET test labs and according to internal instructions of the PNO-PROFINET Test Lab. The test is carried out by appropriately trained personnel expressly assigned by the director of the PNO-PROFINET Test Lab.

The test is based on testing methods, including testing instructions and testing specifications, of the PNO-PROFINET Test Lab recognized by the PNO. The testing procedures, and the results gained through it, are monitored by the director of the PNO-PROFINET Test Lab or his representative. The client will be informed within a reasonable time about discrepancies which occur during testing. Steps to correct them can only be initiated by the client.

After the entire test has been concluded, the PNO-PROFINET Test Lab will summarize the results of the test in a test report.

The test report lists all test items which were passed, not passed and which are undecided. The test report states explicitly that the test as executed means a single run of the test items indicated, with a single specimen of the customer implementation. From this, neither a general claim of proven standard conformity of the tested implementation can be derived, nor is a statement included regarding stability or quality. On request, the test protocols made by the test system during testing are made available to the customer in their entirety.

Appeal

Within two weeks, the customer can, in writing, **appeal** the test results mentioned in the test report. If, within an additional 4 weeks, no agreement can be reached between the customer and the PROFINET Test Lab, the customer has the right to turn to the advisory board of the PROFIBUS User Organization (PNO) for arbitration, to whom the PNO itself assigns the task of a mediation- and arbitration center, according to its overall requirements for testing and certification (FA1/PNO-PRZ/05 Dec 1992).

Therefore, the PNO advisory board is to be approached first for a mediation discussion. If this effort is not successful, the test customer can call for an expert accepted by both parties.

Shipping/Storing

In accordance with the PNO guideline "PROFINET IO Device Test", the test plant is continually expanded -within the scope of what is technically possible- with a wide spectrum of PROFINET-products by different manufacturers, in order to ensure interoperability of as many PROFINET-products as possible. An agreement must be made between the manufacturer and the PROFINET Test Lab if the customer wishes the device to be returned. It is assumed unless otherwise noted that the product under test will remain at the LAB facility.

Shipping by the PNO-PROFINET Test Lab

If the tested product is to be returned to the customer, the following procedure is followed. Within a reasonable time after the test has been completed, the PNO-PROFINET Test Lab will provide for suitable packaging and proper shipment of the devices, data media and documents. How the items are shipped is to be agreed on with the client beforehand. In every case it is guaranteed that the item is protected from damage and unauthorized interference during storage, transport and shipping. The customer and the PNO-PROFINET Test Lab will receive copies of the shipping papers. Costs for packaging and shipping are borne by the customer.

The Customer Transports Devices, Data Media and Documents Themselves

The customer (or their representative) is provided suitable opportunity and assistance to pack, load and transport the items mentioned above. The transfer is confirmed by the customer or their representative. The customer bears the cost for packaging.

Confidential Treatment of Customer-Specific Information and Products

The employees of the PNO-PROFINET Test Lab are obligated to treat all customer-specific information and products confidentially.

Corresponding to the capacity of the PNO-PROFINET Test Lab, simultaneous processing of test requests is provided for. To ensure confidentiality vis-à-vis different customers, an agreement is made that only one customer (or his representative) respectively shall be present in the PNO-PROFINET Test Lab, and that confidentiality vis-à-vis the other customers is maintained. An agreement can be made that several customers (or their representatives) are present at the same time but this requires the consent of all customers.

Special Arrangement if Orders for Testing are Interrupted

The customer's devices, data media and documents remain in the PNO-PROFINET Test Lab if there is an interruption of the test assignment and the customer doesn't take them back.

If, due to customer delays, the testing is delayed from the agreed-upon start date, the PNO-PROFINET Test Lab reserves the right to void the original test date and reassign a new test date to the customer. If a device has begun testing but the test must be delayed more than three business days (e.g. to update firmware to address issues), the PNO-PROFINET Test Lab may place the test on hold and assign a new test date to the customer.

Documentation of the Test Results

The documentation of the test results which are summarized in the test report ensures that the test can be repeated any time under the same conditions. All documentation is marked unmistakably with at least the following entries:

- name of document
- unmistakable test number
- date

All test results are treated confidentially and are suitably filed. The safekeeping period is 3 years. The documents are saved electronically on a controlled access server. After this time has expired, the documents are destroyed and the data media deleted.

Corrections or additions after the test report has been issued are marked as additions to the test report. The additions are marked with a consecutive number, and are assigned clearly to this test report by its number. Regarding format, the additions correspond to the specifications for test reports. The test reports do not contain advice or suggestions which ensue from the test results.

Attachment 2 for Test Application

Terms of Delivery and Payment

The delivery and payment terms of SIEMENS INDUSTRY, INC. apply.

The contractor only guarantees the following:

- that the tests are carried out correctly by adhering to the latest version of the PNO guidelines when the order was placed, and to the test guidelines agreed on with the client;
- that the data in the documents prepared about these tests corresponds to the test result
- that the evaluations of the product tested are made as conscientiously as is done with the contractor's own products

Warranty

The warranty period is 12 months starting with the return of the tested product by the contractor to the client or after submitting the test report to the client if the tested product remains with the contractor for expanding the test system.

Warranty claims are to be filed including a fault description that is as exact as possible. If the claim is valid, the contractor, under exclusion of further claims, is obligated to remedy the fault at his expense, with a new test if required, and to correct data in the test documents which doesn't apply. If it turns out that the fault reported did not exist, the client has to bear the cost for the new test.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS AND CONSTITUTES THE ONLY WARRANTY OF SIEMENS INDUSTRY, INC. WITH RESPECT TO THE SERVICES PROVIDED.

The foregoing states Clients exclusive remedy against Siemens Industry, Inc. for any defect in the Services or for failure of the Services to be as warranted, whether Client's remedy is based on contract, warranty, failure of such remedy to achieve its essential purpose, tort (including negligence), strict liability, indemnity or any other legal theory, and whether arising out of warranties, representations, instructions, installations or defects from any cause.

Liability

LIMITATION OF LIABILITY- NEITHER SIEMENS INDUSTRY INC. ,NOR ITS SUPPLIERS SHALL BE LIABLE, WHETHER IN CONTRACT, WARRANTY, FAILURE OF A REMEDY TO ACHIEVE ITS ESSENTIAL PURPOSE, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, INDEMNITY OR ANY OTHER LEGAL THEORY, FOR LOSS OF USE, REVENUE OR PROFIT, OR FOR COST OF CAPITAL OR OF SUBSTITUTE USE OR PERFORMANCE, OR FOR INDIRECT, SPECIAL, LIQUIDATED, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS OR COST OF A SIMILAR TYPE, OR FOR CLAIMS BY CLIENT FOR SUCH DAMAGES RESULTING TO ANY THIRD PARTY.

Place of Settlement

Governing Law and Assignment- The laws of the State of Tennessee shall govern the validity, interpretation and enforcement of this Agreement. Assignment of this agreement may be made only upon the written consent of both parties, except that Siemens Industry, Inc. may assign this Agreement to a subsidiary of Siemens Industry, Inc. or the parent or a subsidiary of the parent of Siemens Industry, Inc. without the consent of the Client. Any attempted assignment or transfer of any of the rights, duties or obligations of this Agreement by either party, other than as specifically allowed by Siemens Industry, Inc. herein, shall be void. If consent is given, this Agreement shall be binding upon and inure to the benefit of the assigns.

SIEMENS STANDARD SERVICE TERMS AND CONDITIONS

1. APPLICABLE TERMS. This Agreement governs the sale and performance of services provided by Siemens ("Services"). The Standard Terms Addenda, these terms, any other applicable addenda, Siemens' proposal, price quote, purchase order or acknowledgement issued by Siemens form the parties' final agreement ("Agreement"). In the event of any ambiguity or conflict between these documents, precedence shall apply in accordance with the order written in the previous sentence. Siemens' proposal, offer or acceptance is conditioned on Buyer's acceptance of this Agreement. Any additional or conflicting terms in Buyer's request for proposal, specifications, purchase order or any other written or oral communication are not binding on Siemens unless separately signed by Siemens. Siemens' failure to object to Buyer's additional or conflicting terms does not operate as a waiver of the terms contained in this Agreement.

2. PRICING & PAYMENT. Prices and payment terms are: (i) as stated in Siemens' proposal, or if none are stated; (ii) Siemens' standard rates in effect when Siemens receives Buyer's purchase order; or if neither (i) nor (ii) apply, then Siemens' standard rates in effect when the Services are performed.

(a) Payment - Unless stated in Siemens' proposal, all payments are due net thirty (30) days from the invoice date in United States Dollars.

(b) Credit Approval - All orders are subject to credit approval by Siemens. Siemens may modify, suspend or withdraw the credit amount or payment terms at any time. If there is doubt as to Buyer's financial condition, Siemens may withhold performance of Services, require cash payments or advance payments, or require other satisfactory financial security before performance of Services.

(c) Taxes - Unless stated in writing by Siemens, Siemens' rates exclude charges for taxes, excises, fees, duties or other government charges related to the Services. Buyer will pay these amounts or reimburse Siemens. If Buyer claims a tax or other exemption or direct payment permit, Buyer will provide a valid exemption certificate or permit and indemnify, defend and hold Siemens harmless from any taxes, costs and penalties arising from same. Increases, changes (including in application), adjustments or surcharges which may be incurred are for Buyer's account.

(d) Late Payments— Late payments shall bear interest at an annual percentage rate of twelve percent (12%) or the highest rate allowed by law, whichever is lower.

(e) Disputed Invoice - If Buyer disputes all or any portion of an invoice, it must first deliver written notice to Siemens of the disputed amount and the basis for the dispute within twenty-one (21) days of receiving the invoice. Failure of Buyer to timely notify Siemens of any dispute constitutes a waiver of Buyer's claim. If Buyer only disputes a portion of the invoice Buyer must pay the undisputed portion in accordance with Article 2(a). Upon resolution of the dispute in favor of Siemens, Buyer must pay the invoice or the remainder of the invoice, plus any accrued interest on the late payment.

(f) Suspension/Termination Right - Siemens may suspend Services if an undisputed invoice is more than fifteen (15) days past due. Siemens may terminate this Agreement if an undisputed invoice is more than thirty (30) days past due. Unless otherwise prohibited by law, Siemens may also terminate this Agreement immediately in the event of a material adverse change in the Buyer's financial condition, including, but not limited to bankruptcy, insolvency, or liquidation.

3. RISK OF LOSS AND SCHEDULE. Services shall be performed at the location identified in the Agreement ("Site"). Risk of loss of or damage to Buyer's equipment, including "Equipment" (equipment, materials, components and items of any kind for which Siemens is to provide Services under the Agreement), shall remain with Buyer at all times during the performance of the Services hereunder. If Buyer procures or has procured property damage insurance applicable to occurrences at the Site, Buyer shall obtain a waiver by the insurers of all subrogation rights against Siemens.

Any performance or completion dates are estimated dates only. Siemens is not liable for any loss or expense incurred by Buyer or Buyer's customers if Siemens fails to meet any such dates.

4. CANCELLATION. Buyer may cancel this Agreement at any time on thirty (30) days written notice. Except for Siemens right to terminate in accordance with Article 2, either party may terminate this Agreement for material breach of the other party, provided that the breaching party has not remedied the breach or commenced to cure the breach within a reasonable period, having due regard to the nature of the breach. In the event of a termination or cancellation, unless the

Agreement includes a defined termination or cancellation schedule, Buyer is liable for cancellation charges, including without limitation: (i) the full price for any completed Services; (ii) the allocable portion of the price as determined by Siemens for any partially completed Services, including reasonable overhead and profit, (iii) reasonable demobilization costs, and (iv) payments due to subcontractors which cannot be: (1) cancelled without any payment obligation; or (2) refunded.

5. FORCE MAJEURE / DELAYS. If either party is unable to perform or suffers delay in performance, due to any cause beyond its reasonable control (regardless of whether the cause was foreseeable), including without limitation acts of God, inclement or unusually severe weather conditions, strikes, labor shortage or disturbance, fire, accident, war or civil disturbance, delays of carriers, cyber-attacks, terrorist attacks, failure of normal sources of supply, or acts or inaction of government, the time of performance will be extended by a period equal to the length of time it takes to overcome the effect of the event. In addition, Siemens shall be entitled to be compensated by Buyer for reasonable and direct additional costs incurred during such event. Siemens will notify Buyer within a reasonable time after becoming aware of any such event. If there are force majeure delays exceeding 180 days in the aggregate, Siemens may terminate the Agreement pursuant to Article 4. For the avoidance of doubt, failure to pay shall not constitute a force majeure delay.

6. BUYER'S REQUIREMENTS. Siemens' performance is contingent upon Buyer timely complying with and fulfilling all of its obligations under this Agreement. These obligations include the Buyer supplying all necessary access to Equipment, where applicable, and all required "Third Party Parts" (parts, components, equipment or materials provided by Buyer or that exist in the Equipment which were not manufactured or supplied by Siemens or which were originally supplied by Siemens and subsequently repaired, serviced or otherwise altered by any party not affiliated with Siemens), documents, permits and approvals needed for Siemens to perform including, but not limited to, accurate technical information and data, drawing and document approvals, and all necessary commercial documentation. Buyer shall provide access to the Site as reasonably required by Siemens for the performance of the Services. Siemens may request a change order for an equitable adjustment in prices and times for performance, as well as to adjust for any additional costs or any delay resulting from the failure of Buyer, Buyer's contractors, successors or assigns to meet these obligations or any other obligations in this Agreement.

Buyer shall also maintain the Site in a safe condition, notify Siemens promptly of any site conditions requiring special care, and provide Siemens with any available documents describing the quantity, nature, location and extent of such conditions, including any Material Safety Data Sheets (MSDS) related to all hazardous materials at the Site which may impact the Services.

7. INDEMNITY. Siemens and Buyer (each as an "Indemnitor") shall indemnify, hold harmless and defend the other ("Indemnitee") from and against all third party claims alleging bodily injury, death or damage to a third party's tangible property, but only to the extent caused by the Indemnitor or its subcontractor's negligent acts or omissions. If the injury or damage is caused by the parties' joint or contributory negligence, the loss and/or expenses shall be borne by each party in proportion to its degree of negligence. No part of Buyer's Site or property of Buyer (or Site Owner) is considered third party property.

Indemnitee shall provide the Indemnitor with prompt written notice of any third party claims covered by this Article. Indemnitor has the unrestricted right to select and hire counsel, and the exclusive right to conduct the legal defense and/or settle the claim on the Indemnitee's behalf. Indemnitee shall not make any admission(s) which might be prejudicial to Indemnitor and shall not enter into a settlement without the express permission of Indemnitor.

8. WARRANTY. (a) Siemens warrants that it will perform the Services in a professional and workmanlike manner. If the Services fail to meet the warranty standards set forth in this Article 8(a) within ninety (90) days from completion of the Services ("Warranty Period"), and Buyer promptly reports such non-conformance to Siemens during the above mentioned Warranty Period, Siemens shall at its own expense re-perform the relevant Services or, in Siemens' sole discretion, refund Buyer the pro rata portion of the fees paid to Siemens under this Agreement allocable to the nonconforming Services (the "Warranty").

(b) Conditions to the Warranties. The Warranties are conditioned on: (i) no repairs, modifications or alterations being made to the Equipment other than by Siemens or its authorized representatives; (ii) Buyer handling, using, storing, installing, operating and maintaining the Equipment in compliance with any parameters or instructions in any specifications attached to, or incorporated into this Agreement, (iii) or in the absence of such conditions, parameters or instructions or to the extent not applicable, in accordance with the generally accepted industry standards applicable in the

locale where the Services are being performed and having regard to the nature of the Services; (iv) Buyer discontinuing use of the Equipment after it has, or should have had knowledge of any defect in the Equipment; (v) Buyer providing Siemens with reasonable access to operating and maintenance data as requested by Siemens, (which may include secure broadband connection). Without expense to Siemens, Buyer shall provide to Siemens and Siemens' subcontractors and their respective employees and agents on a twenty four (24) hours a day, seven (7) days a week basis, access to the Site, and each unit, including rights of way and easements required for safe access of such persons and equipment, as well as, to the extent applicable, online access to the Site, including to an installed remote monitoring system and to all units, as necessary to permit Siemens to perform the Services.; (vi) Equipment not having been subjected to accident (including force majeure), alteration, abuse or misuse; and (vii) Buyer not being in default of any payment obligation. Buyer shall provide, without cost to Siemens, access to the nonconformity by disassembling, removing, replacing and reinstalling any Equipment, materials or structures to the extent necessary to permit Siemens to perform its warranty obligations.

(c) Exclusions from Warranty Coverage. The Warranties do not apply to any Third Party Parts or Equipment or to services not performed by Siemens pursuant to this Agreement. Siemens will have no liability to Buyer under any legal theory for such Third Party Parts, Equipment, services or any related assignment of warranties.

(d) Warranty Notice. Buyer must provide written notice of any claims for breach of Warranty within the applicable Warranty Period. Additionally, absent written notice within the Warranty Period, any use of the Equipment after expiration of the Warranty Period is conclusive evidence that the Warranties have been satisfied.

(e) Remedies. Buyer's sole and exclusive remedies for breach of the Warranties are limited, at Siemens' discretion, to re-performance of the non-conforming portion of the Services, within a reasonable time period, or refund of all or part of the purchase price. The warranty on re-performed Services is limited to the remainder of the original Warranty Period. Unless Siemens agrees otherwise in writing, Buyer will be responsible for any costs associated with: (i) transportation to and from the Siemens factory or repair facility; and (ii) damage to Equipment components or parts resulting in whole or in part from non-compliance by the Buyer with Article 8(b) or from their deteriorated condition.

(f) THE WARRANTIES IN THIS ARTICLE 8 ARE SIEMENS' SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO THE LIMITS OF LIABILITY IN ARTICLE 9 BELOW. SIEMENS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING AND USAGE OF TRADE.

9. LIMITATION OF LIABILITY. NOTWITHSTANDING ANYTHING IN THIS AGREEMENT TO THE CONTRARY, SIEMENS IS NOT LIABLE, WHETHER BASED IN CONTRACT, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, INDEMNITY OR ANY OTHER LEGAL OR EQUITABLE THEORY, FOR: LOSS OF USE, REVENUE, SAVINGS, PROFIT, INTEREST, GOODWILL OR OPPORTUNITY, LOSS OF PRODUCTION, COSTS OF CAPITAL, COSTS OF REPLACEMENT OR SUBSTITUTE USE OR PERFORMANCE, LOSS OF INFORMATION AND DATA, LOSS OF POWER, VOLTAGE IRREGULARITIES OR FREQUENCY FLUCTUATION, CLAIMS ARISING FROM BUYER'S THIRD PARTY CONTRACTS, OR FOR ANY TYPE OF INDIRECT, SPECIAL, LIQUIDATED, PUNITIVE, EXEMPLARY, COLLATERAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR ANY OTHER LOSS OR COST OF A SIMILAR TYPE.

SIEMENS' MAXIMUM LIABILITY UNDER THIS AGREEMENT UNDER ANY THEORY OF RECOVERY, WHETHER BASED IN CONTRACT, IN TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY), UNDER WARRANTY, INDEMNITY OR OTHERWISE, SHALL NOT EXCEED THE TOTAL PRICE PAID TO SIEMENS UNDER THIS AGREEMENT.

BUYER AGREES THAT THE EXCLUSIONS AND LIMITATIONS IN THIS ARTICLE 9 WILL PREVAIL OVER ANY CONFLICTING TERMS AND CONDITIONS IN THIS AGREEMENT AND MUST BE GIVEN FULL FORCE AND EFFECT WHETHER OR NOT ANY OR ALL SUCH REMEDIES ARE DETERMINED TO HAVE FAILED OF THEIR ESSENTIAL PURPOSE. THESE LIMITATIONS OF LIABILITY ARE EFFECTIVE EVEN IF SIEMENS HAS BEEN ADVISED BY BUYER OF THE POSSIBILITY OF SUCH DAMAGES. THE WAIVERS AND DISCLAIMERS OF LIABILITY, RELEASES FROM LIABILITY AND LIMITATIONS ON LIABILITY EXPRESSED IN THIS ARTICLE 9 EXTEND TO SIEMENS' AFFILIATES, PARTNERS, PRINCIPALS, SHAREHOLDERS, DIRECTORS, OFFICERS, EMPLOYEES, SUBCONTRACTORS, AGENTS AND SUCCESSORS AND ASSIGNS OF SIEMENS.

FOR THE AVOIDANCE OF DOUBT, IN THE EVENT THAT PHYSICAL LOSS OR DAMAGE TO THE BUYER'S PROPERTY RESULTS FROM THE FAILURE OF A PORTION OF THE SERVICES TO CONFORM TO ITS RESPECTIVE WARRANTY DURING THE APPLICABLE WARRANTY PERIOD SIEMENS' LIABILITY SHALL IN NO CASE EXCEED SIEMENS' OBLIGATION TO PERFORM THE REMEDIES SPECIFIED IN ARTICLE 8, AS APPLICABLE, WHICH SIEMENS WOULD HAVE HAD TO PERFORM IF SUCH REMEDY HAD BEEN CARRIED OUT IMMEDIATELY PRIOR TO THE OCCURRENCE OF THE PHYSICAL LOSS OR DAMAGE.

10. INTELLECTUAL PROPERTY.

Siemens will, at its own option and expense, defend or settle any suit or proceeding brought against Buyer based on an allegation that any processes performed by Siemens in connection with the Services constitutes an infringement of any Patent Cooperation Treaty ("PCT") country member's patent or misappropriation of a third party's trade secret or copyright in the country where the Buyer's Site is located. Buyer will promptly give Siemens written notice of the suit or proceeding and the authority, information, and assistance needed to defend the claims. Siemens shall have full and exclusive authority to defend and settle such claim and will pay the damages and costs awarded against Siemens in any suit or proceeding so defended. Buyer shall not make any admission(s) which might be prejudicial to Siemens and shall not enter into a settlement without Siemens' consent. If and to the extent any process performed by Siemens in connection with the Services as a result of any suit or proceeding so defended is held to constitute infringement or its use by Buyer is enjoined, Siemens will, at its option and expense, either: (i) procure for Buyer the right to continue using said process; (ii) replace it with substantially equivalent non-infringing process; or (iii) modify the process so its use is non-infringing.

Siemens will have no duty or obligation under this Article 10 if the process is: (i) performed according to Buyer's design or instructions and compliance therewith has caused Siemens to deviate from its normal course of performance; (ii) modified by Buyer or its contractors after performance; or (iii) combined by Buyer or its contractors with devices, methods, systems or processes not furnished hereunder and by reason of said design, instruction, modification, or combination a suit is brought against Buyer. In addition, if by reason of such design, instruction, modification or combination, a suit or proceeding is brought against Siemens, Buyer must protect Siemens in the same manner and to the same extent that Siemens has agreed to protect Buyer under this Article 10.

THIS ARTICLE 10 IS AN EXCLUSIVE STATEMENT OF SIEMENS' DUTIES AND BUYER'S REMEDIES RELATING TO PATENTS, TRADE SECRETS AND COPYRIGHTS, AND DIRECT OR CONTRIBUTORY INFRINGEMENT THEREOF.

11. CONFIDENTIALITY.

(a) Both during and after the term of this Agreement, the parties will treat as confidential all information obtained from the disclosing party and all information compiled or generated by the disclosing party under this Agreement for the receiving party, including but not limited to business information, the quotation, the Agreement, processes and procedures, know-how, methods and techniques employed by Siemens in connection with the Services, technical data, drawings, flow charts, program listings, software code, and other software, plans and projections. Neither party may disclose or refer to the Services to be performed under this Agreement in any manner that identifies the other party without advance written permission. Except for security surveillance, the observing or recording of the Services or any part thereof, whether by photographic, video or audio devices or in any other manner is prohibited. In the event any such prohibited observation or recording occurs, Siemens may (in addition to any other legal or equitable rights and remedies) stop the Services until Siemens has satisfied itself that the prohibited conduct has ceased, and in such event (a) the date of delivery or time for performance will be extended by a period of time which Siemens determines necessary and (b) Buyer will reimburse Siemens for Siemens' and its Suppliers' additional costs and expenses resulting from such delay, including but not limited to any for demobilization or remobilization. Unless required by appropriate governmental authorities, neither party shall, without the prior written consent of the other party, issue any public statement, press release, publicity hand-out or other material relating to the Services performed on Buyer's Site or Equipment. However, Siemens has the right to share confidential information with its affiliate and subcontractors provided those recipients are subject to the same confidentiality obligations set forth herein.

(b) Nothing in this Agreement requires a party to treat as confidential any information which: (i) is or becomes generally known to the public, without the fault of the receiving party; (ii) is disclosed to the receiving party, without obligation of confidentiality, by a third party having the right to make such disclosure; (iii) was previously known to the receiving party,

without obligation of confidentiality, which fact can be demonstrated by means of documents which are in the possession of the receiving party upon the date of this Agreement; or (iv) was independently developed by receiving party or its representatives, as evidenced by written records, without the use of discloser's confidential information, or (v) is required to be disclosed by law, except to the extent eligible for special treatment under an appropriate protective order, provided that the party required to disclose by law will promptly advise the originating party of any requirement to make such disclosure to allow the originating party the opportunity to obtain a protective order and assist the originating party in so doing.

(c) It is Siemens' policy not to unlawfully or improperly receive or use confidential information, including trade secrets, belonging to others. This policy precludes Siemens from obtaining, directly or indirectly from any employee, contractor, or other individual rendering services to Siemens confidential information of a prior employer, client or any other person which such employee, contractor, or individual is under an obligation not to disclose. Buyer agrees to abide by this policy.

(d) Siemens shall retain all intellectual property rights in the Services, works, Siemens' documents, processes, Siemens' confidential information, and any design information and/or documents made by (or on behalf of) Siemens. Upon receipt of all fees, expenses and taxes due in respect of the relevant Services, Siemens grants to the Buyer a non-transferable, non-exclusive, royalty-free license to copy, use and communicate Siemens' documents for the sole purpose of operation and maintenance of the facility upon which the Services have been performed.

12. COMPLIANCE WITH LAWS. The parties agree to comply with all applicable laws and regulations.

13. CHANGES IN SERVICES. No change will be made to the scope of Services unless Buyer and Siemens agree in writing to the change and any resulting price, schedule or other contractual modifications. If any change to any law, rule, regulation, order, code, standard or requirement impacts Siemens' obligations or performance under this Agreement, Siemens shall be entitled to a change order for an equitable adjustment in the price and time of performance.

14. NON-WAIVER. Any waiver by a party of strict compliance with this Agreement must be in writing, and any failure by the parties to require strict compliance in one instance will not waive its right to insist on strict compliance thereafter.

15. MODIFICATION OF TERMS. These terms may only be modified by a written instrument signed by authorized representatives of both parties.

16. ASSIGNMENT. Neither party may assign all or part of this Agreement, or any rights or obligations under this Agreement without the prior written consent of the other; but either party may assign its rights and obligations, without recourse or consent to, any parent, wholly owned subsidiary or affiliate or affiliate's successor organization (whether as a result of reorganization, restructuring or sale of substantially all of a party's assets). However, Buyer shall not assign this Agreement to a competitor of Siemens; an entity in litigation with Siemens; or an entity lacking the financial capability to satisfy Buyer's obligations. Any assignee expressly assumes the performance of any obligation assigned. Siemens may grant a security interest in this Agreement and/or assign proceeds of this Agreement without Buyer's consent.

17. APPLICABLE LAW AND JURISDICTION. This Agreement is governed by and construed in accordance with the laws of the State of Delaware, without regard to its conflict of laws principles. The application of the United Nations Convention on Contracts for the International Sale of Goods is excluded. BOTH SIEMENS AND BUYER KNOWINGLY, VOLUNTARILY AND IRREVOCABLY WAIVE ALL RIGHTS TO A JURY TRIAL IN ANY ACTION OR PROCEEDING RELATED IN ANY WAY TO THIS AGREEMENT. Each party agrees that claims and disputes arising out of this Agreement must be decided exclusively in a federal or state court of competent jurisdiction located in a state in which either Buyer or Siemens maintains its principal place of business. Each party submits to the personal jurisdiction of such courts for the purpose of litigating any claims or disputes.

18. SEVERABILITY. If any provision of this Agreement is held invalid, illegal or unenforceable, the remaining provisions will not in any way be affected or impaired. A court may modify the invalid, illegal or unenforceable provision to reflect, as closely as possible, the parties' original intent.

19. EXPORT/IMPORT COMPLIANCE. Buyer acknowledges that Siemens is required to comply with applicable export/import laws and regulations relating to the sale, export, import, transfer, assignment, disposal and use of goods or information provided in the performance of the Services, including any export/import license requirements. Buyer agrees that

such goods or information shall not at any time directly or indirectly be used, exported, imported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with any export/import laws and regulations. Siemens' continuing performance hereunder is conditioned on compliance with such export/import laws and regulations at all times.

20. NUCLEAR. In the event the Services provided under the Agreement are to be performed at or in any manner in connection with a nuclear installation, the following conditions shall apply:

A. Buyer's Insurance

(1) If Buyer procures property damage insurance applicable to occurrences at the Site and third party non-nuclear liability insurance, or either of such types of insurance, such insurance will name Siemens and its subcontractors as additional insureds.

(2) Buyer shall have at its own cost, prior to the arrival of nuclear fuel at the Site, secured and shall thereafter maintain in force protection against liability arising out of or resulting from a Nuclear Incident (as defined in the Atomic Energy Act of 1954, as amended) as required by the Nuclear Regulatory Commission; provided, however, that if the nuclear liability protection system in effect on the date of the Agreement expires or is repealed, changed, or modified, Buyer will, without cost to Siemens, maintain liability protection through government indemnity, limitation of liability, and/or liability insurance which will not result in a material impairment of the protection afforded Siemens and its subcontractors by such nuclear liability protection system which is in effect as of the date of the Agreement, taking into account the availability of insurance, customary practice in the industry for plants of similar size and character, and other relevant factors in light of then existing conditions. In any event, the protection provided pursuant to this Article shall remain in effect until the decommissioning of the nuclear plant.

B. Waivers by Buyer: Neither Siemens, nor its subcontractors shall be liable for any loss of, damage to, or loss of use of property or equipment wherever located, arising out of or resulting from a "Nuclear Incident." Buyer waives and will require its insurers to waive all rights of recovery against Siemens and its subcontractors on account of any such loss, damage, or loss of use. All such waivers shall be full and unrestricted and in a form acceptable to Siemens.

In the event Buyer recovers damages from a third party based on losses at the Site resulting from the hazardous properties of source, special nuclear or byproduct material (as defined in the Atomic Energy Act of 1954, as amended), Buyer shall defend, indemnify and hold Siemens and its subcontractors harmless against claims by such third party which are based on Buyer's recovery of such damages. In addition, Buyer waives and will require its insurers to waive all rights of recovery against Siemens and its subcontractors, for any and all costs or expenses arising out of or in connection with the investigation and settlement of claims or the defense of suits for damage resulting from the nuclear energy hazard.

C. Third Party Property Protection: Buyer will indemnify and hold Siemens and its subcontractors harmless for any liability arising out of loss of or damage to property at the Site which arises out of a Nuclear Incident. In addition, Buyer shall obtain for the benefit of Siemens and its subcontractors, protection against liability for, arising out of, or resulting from damage to any property or equipment located at the Site which is used or intended for use by Buyer in connection with the operation of the nuclear power plant (including but not limited to fuel) and which is owned by parties other than Buyer.

D. Decontamination: Buyer shall, without cost to Siemens, perform any required decontamination and health physics necessary for, related to or resulting from Siemens performance of its contractual obligations. This includes but is not limited to decontamination of any Siemens equipment or tools used in the performance thereof. Buyer shall provide documentation demonstrating that components or parts being returned to Siemens after such decontamination meet the requirements designated for unrestricted release as set forth in the United States Code of Federal Regulations, Title 10 Part 20.

21. SURVIVAL. The Articles entitled "Intellectual Property," "Limitation of Liability," "Indemnity", "Confidentiality," "Risk of Loss and Schedule," "Export/Import Compliance," and "Nuclear" survive any termination, expiration or cancellation of this Agreement.

22. SITE SAFETY. Buyer shall comply with all federal, state, and local safety regulations and standards applicable to the Site and to the Equipment on which Siemens will perform the Services. Siemens shall not be obligated to commence or

perform Services unless Buyer's Site complies with all applicable safety requirements. In the event Buyer's Site safety is non-compliant, Siemens may suspend the Services until such time as Buyer corrects the non-compliance. To the extent Siemens incurs additional time and expense as the result of Buyer's non-compliance, Siemens shall be entitled to an equitable adjustment in the schedule, price and other affected provisions of the Agreement.

23. ENVIRONMENTAL COMPLIANCE. To the extent that the performance of Services at the Site may involve the generation of hazardous waste as such term is defined in the Resource Conservation and Recovery Act (42 U.S.C. 6901, et seq.), the laws of the state in which the Site is located and the rules or regulations issued thereunder as are now in effect or hereafter amended from time to time (such generated hazardous waste being herein referred to as "Hazardous Waste") shall apply.

Buyer shall at its expense and in accordance with all applicable federal, state and local laws, rules, regulations and ordinances (i) furnish Siemens with containers for Hazardous Waste, (ii) designate a storage area at the Site proximate to the Services where such containers are to be placed; and (iii) handle, store and dispose of Hazardous Waste. Buyer shall reimburse Siemens for additional costs, if any, incurred in complying with any such laws, regulations, rules and/or ordinances.

Siemens shall have no responsibility or liability with regard to any Hazardous Waste which it does not know or have reason to know will be generated or released in the performance of the Services, and Buyer shall indemnify and hold Siemens harmless for all damages, losses, costs, liabilities, fines and penalties, (including reasonable attorneys' fees) related to pollution and environmental impairment arising from the Buyer's property, the Equipment or the Services.

24. ASBESTOS

The terms "Asbestos" and "Presumed Asbestos Containing Material" shall have the meanings set forth in United States Code of Federal Regulations Chapter 29 Section CFR 1926.1101 et seq., and "ACM" shall mean Asbestos and Asbestos containing materials.

(1) The Buyer warrants and represents that, in any areas which may be accessed by Siemens or its Suppliers, any ACM which is or is contained in thermal insulation or sprayed-on surfacing material is conspicuously and specifically marked as ACM, and any other ACM is in a lawful condition.

(2) Prior to Siemens' commencement of Services at any Site:

(a) The Buyer shall, at Buyer's expense remove all thermal insulation, sprayed-on surfacing material, and/or Presumed Asbestos Containing Material (any or all of the foregoing hereinafter "PACM"), and ACM which may be disturbed during or removal of which is required for the performance of the Services; and,

(b) The Buyer shall ensure that any areas where any activities involving the abatement or removal of PACM or ACM shall be conspicuously identified, posted and isolated, all as required by applicable law.

BUYER EXPRESSLY ACKNOWLEDGES AND AGREES THAT, IN PERFORMING THE SERVICES AND DISPATCHING EMPLOYEES TO WORK AREAS, SIEMENS IS RELYING UPON THE AGREEMENTS, WARRANTIES, AND REPRESENTATIONS MADE BY BUYER IN THIS ARTICLE 24. Without limiting its other rights and remedies, Siemens (i) shall not be obligated to commence, and may stop any affected Services, unless and until it is fully satisfied that the Buyer is in compliance with this Article 24, and (ii) shall be entitled to an equitable adjustment in the schedule, price and other provisions of the Agreement resulting from Buyer's non-compliance.

(3) In no event shall Siemens be obligated to install, disturb, handle, or remove any PACM.

(4) Siemens makes no representation that it is licensed to abate ACM.

(5) Buyer shall defend, indemnify and hold Siemens harmless against any and all claims, demands, damages, losses, liabilities, fines, penalties, costs or expenses, including without limitation any clean up or remedial measures arising out of, connected with, or resulting from the Buyer's failure to comply with the provisions of this Article 24.

25. THIRD PARTY PARTS

Buyer warrants that any and all Third Party Parts which may be the subject of any Services shall (a) be fully compatible with the corresponding part, component, equipment or material of the Original Equipment Manufacturer ("OEM") in terms of form, fit, and function; (b) shall be timely provided to Siemens hereunder; and (c) shall be capable of installation in the same manner and within the same time as the corresponding OEM part, component, equipment, or material.