

Project Number: STIN-0161
Project Title: Creep-Fatigue Flaw Growth Analysis to Support Elevated Temperature Flaw Size Acceptance Criteria
Solicitation Date: 04 October 2018
Proposal Due Date: 31 October 2018

1 Summary

ASME Standards Technology, LLC (ASME ST-LLC) is soliciting proposals for the referenced project. The project results will be used in developing rational flaw acceptance criteria for equipment operating in the creep regime and is a logical extension to the current ASME Boiler and Pressure Vessel Code (BPVC) Section I, Code Case 2235 for using ultrasonic test methods in lieu of radiography, and directly supports ASME BPVC Section I modernization.

This Request-for-Proposal (“RFP”) and all open RFPs are posted on the ASME ST-LLC webpage: (http://asmestllc.org/ST-LLC_RequestsProposals.html)

2 Background

There has been a growing momentum to evaluate ASME BPVC Section I in areas that may require modernization. Several years ago Stuart Cameron prepared a paper titled “Review of ASME Section I – Rules for Construction of Power Boilers in Comparison with other International Standards for Power Boilers;” this paper reviewed the structure and content of ASME BPVC Section I and compared it to European Standard (EN) 12952, which is the most recent boiler standard to be issued by standardizing bodies worldwide. EN 12952 considers recent technological advances in plant design to accommodate operation at greater temperatures.

ASME’s Board of Pressure Technology Codes and Standards (BPTCS) appointed a Task Group to address new and improved materials for successful use in applications at elevated temperatures in the ultra-supercritical power plant steam cycle, because ASME BPVC Section I rules for design, materials, and fabrication can be used in undesirable ways respecting component service life, particularly when creep strength enhanced ferritic steels are used.

Manufacturers, operators, regulators, and insurance companies are likely to see the benefits of the proposed referenced project because the project should result in a more economic design and a more robust design, and will affect the in-service inspection rules with the possibility of limiting periods between statutory inspections.

3 Scope of Work

The Independent Consultant may complete the entire Scope of Work in-house or subcontract portions of the Scope of Work. If any portion of the Scope of Work is to be subcontracted by the Independent Consultant, the Independent Consultant shall be responsible for managing all subcontractors.

3.1 Summary

The scope of this project is to analyze a matrix of typical elevated temperature components using recognized creep-fatigue flaw growth analysis methods and data. The key deliverable will be the largest initial flaw size for each case that satisfies the specified transient operating conditions: temperature, pressure, time, and cycles. The transient operating conditions that shall be considered are provided in Attachment 1 of this request for proposal. Conditions (including the inputs given in Attachment 1) are intended to be representative of a typical ultra-supercritical (USC) power plant.

Specified Inputs:

1. Operating Duration: 200,000 hours (22.8 years)
2. Operating Conditions (transient conditions provided in Attachment 1):
 - a. Number of Cold Starts (> 48 hours shutdown) = 100
 - b. Number of Warm Starts (8 to 48 hours shutdown) = 1,000
 - c. Number of Hot Starts (<8 hours shutdown) = 6,000
3. Stresses
 - a. Pressure-induced
 - b. Welding residual equal to 35% of average 0.2% yield strength
 - c. Thermal

Analysis Requirements:

1. Analysis Methods
 - a. American Petroleum Institute (API) 579-1/ASME Fitness-for-Service (FFS)-1, Part 10 (including Annex F material models and data)
 - b. Electricite de France (EDF) Recommended Procedure R5 V4/5 (including R66 material models and data)
 - c. Electric Power Research Institute (EPRI) Boiler Life Evaluation and Simulation System (BLESS) code (including embedded material models and data)
2. Configuration: Girth Weld
3. Components: 1 each
 - a. Superheater tube
 - b. Reheater tube
 - c. Superheater header
 - d. Reheater header

4. Materials: 4 each
 - a. Grade 22
 - b. Grade 91
 - c. Type 304H
 - d. Grade 23
5. Flaw Orientations:
 - a. Circumferential
 - b. Longitudinal
6. Flaw Locations:
 - a. Inside surface
 - b. Outside surface
 - c. Mid-wall (subsurface)
7. Flaw Geometries:
 - a. Infinite length/full circumferential
 - b. 6:1 (2c vs. a) semi-elliptical

Thus, the Scope of Work includes a matrix of four (4) components by four (4) materials, which results in sixteen (16) component models for each of the three (3) analysis methods. For each component model, there are two (2) flaw orientations by three (3) flaw locations by two (2) flaw sizes, which results in 192 flaw analysis cases (16 x 2 x 3 x 2) per analysis method. In aggregate, there are to be five hundred seventy six (576) analysis cases in the Scope of Work. As seen below in Attachment 2.

The output from the analysis of each of the flaw case is to be the largest permitted starting flaw, and the results of each analysis must be documented in a formal technical report. Acceptance criteria should be consistent with the given analysis method. If no acceptance criteria are given, then failure shall be defined as either a flaw growing to 75% through-wall at its deepest point or gross rupture due to loss of section.

3.2 Deliverables

The project deliverable shall be a comprehensive report providing data and results for three (3) analysis methods each with 192 flaw analysis cases, or five hundred seventy six (576) analysis cases in aggregate as identified in Section 3.1 preceding. The Independent Consultant shall submit all data prior to comprehensive report submittal.

The comprehensive report shall be provided initially as a draft report or multiple draft reports and subsequently as a final report that incorporates the comments of ASME ST-LLC or applicable ASME review committees, such as an ASME Peer Review Group (PRG). One peer review cycle is anticipated and modifications required to the draft, as a result of the review cycle, are the responsibility of the respondent awarded the contract.

All written deliverables shall be provided as an MS Word file that is formatted in accordance with the ASME Style Guide.

3.3 Schedule

The Independent Consultant shall complete the Scope of Work and provide the final deliverable within twelve (12) months of contract execution.

3.4 Progress Reporting

The Independent Consultant shall provide a brief status report on a monthly basis, via email, to the ASME ST-LLC project manager identified herein. The initial status report shall be provided within 30 days of contract execution date. The status report shall identify activities underway, planned and completed, and shall also identify any anticipated delays to the project schedule.

4 Respondent Eligibility Requirements

ASME ST-LLC is seeking proposals from all qualified organizations including, but not limited to, engineering firms, independent consultants, academic institutions, and federally funded research and development centers. In addition to relevant technical qualifications and experience, respondents must possess an understanding of relevant ASME codes and standards.

5 Basis for Selection and Award

ASME ST-LLC will select the winning proposal by evaluating and comparing the merits of each respondent's complete proposal. This process reflects ASME ST-LLC's desire to select a proposal based on its potential to achieve program objectives, rather than solely on evaluated technical merit or cost. Evaluation criteria include, but are not limited to, the following:

- Respondent's technical capabilities, including that of all subcontractors.
- Respondent's applicable experience, including that of all subcontractors.
- Proposal price.
- Project schedule.
- Any exceptions to ASME ST-LLC's standard agreement.

ASME ST-LLC reserves the right to award, in whole or in part, any, all, or none of the proposals/respondents answering this solicitation.

6 Contract Terms and Conditions

The contract to perform the Scope of Work shall be fixed price. A form of ASME ST-LLC's standard agreement applicable to this Scope of Work is attached as Attachment 3 to this RFP.

ASME ST-LLC will provide access to applicable codes, standards, and other technical references as needed to perform the Scope of Work.

7 Submission Requirements

7.1 Proposal Due Date

Proposals must be submitted by 31 October 2018. Respondents are encouraged to transmit its proposal well before this deadline. Requests for extra time must be sent by 19 October 2018 to the contact listed in Section 8 of this RFP.

ASME ST-LLC intends to select the winning proposal within three weeks of the proposal deadline.

7.2 Proposal Preparation Costs

Proposal costs shall be borne by the respondent. This solicitation does not obligate ASME ST-LLC to pay any costs incurred in the preparation and submission of the proposal, in making necessary studies or designs for the preparation thereof, or to acquire or contract for any services.

7.3 Proposal Clarification

ASME ST-LLC reserves the right to request clarification of any proposal and supplemental information. Selection of the winning proposal may be made after few or no exchanges, discussions, or negotiations; therefore, all respondents are advised to submit its most favorable application to ASME ST-LLC. ASME ST-LLC reserves the right, without qualification, to reject any or all proposals received in response to this solicitation and to select any proposal, in whole or in part, as a basis for negotiation and award. ASME ST-LLC reserves the right to modify or cancel this solicitation. All questions relating to this solicitation must be submitted to the contact listed in Section 8 of this RFP. Any amendments to this solicitation will be posted at the ASME ST-LLC website previously referenced.

7.4 Treatment of Proprietary Information

A proposal may include technical and other data, including trade secrets and privileged, confidential commercial, or financial information that the respondent does not want disclosed to the public or used by ASME ST-LLC for any purpose other than proposal evaluation. To protect such data, the respondent should specifically identify the data or information to be protected.

7.5 Proposal Preparation and Submittal Instructions

ASME ST-LLC may form a committee of subject matter experts to evaluate the technical qualifications of respondents. To help facilitate this evaluation, proposals should be separated into two separate documents: (1) a Technical Proposal; and (2) a Financial Proposal.

7.5.1 Technical Proposal contents must include:

- Organization name and contact information.
- Evidence of technical capabilities: credentials, qualifications, capabilities, and experience of individuals and the organization.
- An approach to accomplish the Scope of Work (refer to Section 3).
- Demonstrate agreement with the Scope of Work (refer to Section 3).

7.5.2 Financial Proposal contents must include:

- A fixed-price quotation to complete the Scope of Work.
- Confirm agreement with the form of agreement attached herein or state any requested exceptions to same.



7.5.3 The respondent shall submit the Technical and Financial Proposals files via e-mail to the ASME ST-LLC contact identified in Section 8 of this RFP. Responses must be received on or before the proposal due date identified in Section 7.1 of this RFP.

8 ASME Standards Technology, LLC Contact Information

All correspondence regarding this RFP is to be directed to the following person:

Ms. Selin Sahici, PMP
Project Manager
ASME Standards Technology, LLC
Two Park Avenue
New York, NY 10016
Telephone: 212-591-7046
E-mail: sahicis@asme.org

ATTACHMENT 1: Transient Operating Condition Definition for Analysis

Cold Start								
Time	SH Temp	RH Temp	SH Flow	RH Flow	SH press	RH press	Max SH	Max RH
minutes	°F	°F	klb/h	klb/h	psig	psig	°F	°F
0	68	68	-	-	0	0	68	68
30	176	140	-	-	0	167	212	162
60	320	248	-	-	0	167	356	270
90	464	320	-	-	73	167	500	342
120	536	392	-	-	87	167	572	414
150	644	500	-	-	145	167	680	522
180	680	572	22.1	18.4	218	167	716	594
210	716	626	44.2	18.4	319	167	752	648
240	752	680	66.3	18.4	508	167	788	702
270	788	716	77.3	18.4	609	167	824	738
300	797	734	88.4	18.4	870	167	833	756
330	801	752	441.9	368.2	1017	169	837	774
360	801	761	1,104.9	920.5	1199	178	837	783
390	801	770	1,104.9	920.5	1199	178	837	792
420	806	779	1,104.9	920.5	1199	178	842	801
450	815	788	1,104.9	920.5	1199	178	851	810
480	833	797	1,104.9	920.5	1805	178	869	819
510	896	860	1,546.8	1,288.7	1812	268	932	882
540	968	968	2,430.7	2,025.0	2134	437	1004	990
570	1040	1040	3,314.6	2,761.4	2689	599	1076	1062
600	1114	1126	4,419.4	3,681.9	3789	794	1150	1148

ATTACHMENT 1: Transient Operating Condition Definition for Analysis

Warm Start								
Time	SH Temp	RH Temp	SH Flow	RH Flow	SH press	RH press	Max SH	Max RH
minutes	°F	°F	klb/h	klb/h	psig	psig	°F	°F
0	815	833	-	-	1189	0	815	833
30	824	851	221.0	184.1	1189	167	860	873
60	833	860	331.5	276.1	1190	168	869	882
90	851	878	441.9	368.2	1191	169	887	900
120	860	887	1,104.9	920.5	1201	179	896	909
150	860	887	1,104.9	920.5	1201	179	896	909
180	860	887	1,104.9	920.5	1805	179	896	909
210	914	932	1,988.7	1,656.9	1823	356	950	954
240	1022	1040	3,093.6	2,577.3	2655	559	1058	1062
270	1114	1126	4,419.4	3,681.9	3789	794	1150	1148

Hot Start								
Time	SH Temp	RH Temp	SH Flow	RH Flow	SH press	RH press	Max SH	Max RH
minutes	°F	°F	klb/h	klb/h	psig	psig	°F	°F
0	950	968	-	-	1189	0	950	968
30	950	968	441.9	368.2	1191	169	986	990
60	950	968	1,104.9	920.5	1202	180	986	990
90	950	968	1,104.9	920.5	1720	180	986	990
120	1022	1040	2,298.1	1,914.6	2063	414	1058	1062
150	1085	1103	3,756.5	3,129.6	3034	681	1121	1125
168	1114	1126	4,419.4	3,681.9	3789	794	1150	1148

Shutdown								
Time	SH Temp	RH Temp	SH Flow	RH Flow	SH press	RH press	Max SH	Max RH
minutes	°F	°F	klb/h	klb/h	psig	psig	°F	°F
0	1114	1126	4,419.4	3,681.9	3789	794	1150	1148
30	1114	1126	2,209.5	1,841.0	1779	224	1150	1148
60	941	950	441.9	441.9	1741	170	977	972
75	941	950	-	-	1740	167	977	972



ATTACHMENT 2: ANALYSIS REQUIREMENTS

Component	Material	OD (in.)		Thickness (in.)		Pressure (psig)		Temperature (F)		Flaw Orientation		Flaw Location			Flaw Geometries	
		Min	Max	Min	Max	Min	Max	Min	Max	Circumferential	Longitudinal	Inside surface	Outside surface	Mid-wall (subsurface)	Infinite length/full	6:1 semi-
Superheater Tube	Grade 22	1.25	3	0.0945	0.5	50	4500	850	1125							
	Grade 91	1.25	3	0.1063	0.38	50	4500	1000	1225							
	Grade 304H	1.25	3	0.0945	0.34	50	4500	1000	1550							
	Grade 23	1.5	2.5	0.165	0.38	1200	4500	900	1125							
Reheater Tube	Grade 22	1.25	3	0.0945	0.24	50	2900	850	1125							
	Grade 91	1.25	3	0.1063	0.24	50	2900	1000	1225							
	Grade 304H	1.25	3	0.0945	0.24	50	2900	1140	1550							
	Grade 23	1.5	3	0.5	0.24	500	1000	900	1125							
Superheater Header	Grade 22	8	28	0.375	5	50	3700	850	1175							
	Grade 91	8	22	0.375	3	50	3700	1000	1175							
	Grade 304H	2.5	18	0.375	1.75	50	2900	1140	1550							
	Grade 23	8	28	1	2.5	1200	3700	950	1125							
Reheater Header	Grade 22	8	36	0.594	2.50	50	2900	850	1175							
	Grade 91	8	36	0.594	2.50	50	2900	1000	1225							
	Grade 304H	2.5	18	0.594	1.00	50	2900	1140	1550							
	Grade 23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A							

Component	Material	OD (in.)		Thickness (in.)		Pressure (psig)		Temperature (F)		Flaw Orientation		Flaw Location			Flaw Geometries	
		Min	Max	Min	Max	Min	Max	Min	Max	Circumferential	Longitudinal	Inside surface	Outside surface	Mid-wall (subsurface)	Infinite length/full	6:1 semi-
Superheater Tube	Grade 22	1.25	3	0.0945	0.5	50	4500	850	1125							
	Grade 91	1.25	3	0.1063	0.38	50	4500	1000	1225							
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	Grade 304H	1.25	3	0.0945	0.24	50	2900	1140	1550							
	Grade 23	1.5	3	0.5	0.24	500	1000	900	1125							
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	Grade 91	8	22	0.375	3	50	3700	1000	1175							
	Grade 304H	2.5	18	0.375	1.75	50	2900	1140	1550							
	Grade 23	8	28	1	2.5	1200	3700	950	1125							
Reheater Header	Grade 22	8	36	0.594	2.50	50	2900	850	1175							
	Grade 91	8	36	0.594	2.50	50	2900	1000	1225							
	Grade 304H	2.5	18	0.594	1.00	50	2900	1140	1550							
	Grade 23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A							

Component	Material	OD (in.)		Thickness (in.)		Pressure (psig)		Temperature (F)		Flaw Orientation		Flaw Location			Flaw Geometries	
		Min	Max	Min	Max	Min	Max	Min	Max	Circumferential	Longitudinal	Inside surface	Outside surface	Mid-wall (subsurface)	Infinite length/full	6:1 semi-
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	Grade 91	1.25	3	0.1063	0.24	50	2900	1000	1225							
	Grade 304H	1.25	3	0.0945	0.24	50	2900	1140	1550							
	Grade 23	1.5	3	0.5	0.24	500	1000	900	1125							
Superheater Header	Grade 22	8	28	0.375	5	50	3700	850	1175							
	Grade 91	8	22	0.375	3	50	3700	1000	1175							
	Grade 304H	2.5	18	0.375	1.75	50	2900	1140	1550							
	Grade 23	8	28	1	2.5	1200	3700	950	1125							
Reheater Header	Grade 22	8	36	0.594	2.50	50	2900	850	1175							
	Grade 91	8	36	0.594	2.50	50	2900	1000	1225							
	Grade 304H	2.5	18	0.594	1.00	50	2900	1140	1550							
	Grade 23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A							

ASME Standards Technology, LLC
REQUEST FOR PROPOSALS
RFP No. 19-01



ATTACHMENT 3: FORM OF AGREEMENT

Attachment 3

ASME Standards Technology, LLC
Nonexclusive Independent Consultant Agreement
Standard Terms and Conditions
[Insert Title]

This Agreement, dated as of [_____], is made between ASME Standards Technology, LLC (“ASME ST-LLC”), a New York not-for-profit corporation with its principal office at Two Park Avenue, New York, New York 10016 and [Insert Consultant Name and Address, spelled out completely without zip code] (the “Independent Consultant”).

W I T N E S S E T H:

WHEREAS ASME ST-LLC desires to engage the Independent Consultant to perform [insert scope description] for [Project name]; and

WHEREAS the Independent Consultant agrees to accept such engagement and to perform the services hereinafter specified;

NOW, THEREFORE, in consideration of the foregoing and the mutual agreements of the parties contained in this Agreement, it is agreed as follows:

1. Engagement. ASME ST-LLC hereby engages the Independent Consultant, on an as needed and nonexclusive basis, to perform the services defined in Annex 1 to this Agreement (the “Work”).

2. Performance. The Independent Consultant agrees to perform the services set forth above. The Independent Consultant agrees to perform such services professionally and to the best of its ability, to provide the services in an ethical manner, and to avoid conflicts of interest and any appearance thereof. It is understood that the Independent Consultant may obtain other consulting work and, as a result, may be unavailable, from time to time, to perform consulting services for ASME ST-LLC, but the Independent Consultant agrees to adhere to the ASME Policies on Conflicts of Interest and Ethics. ASME ST-LLC will not set specific daily schedules. ASME ST-LLC will not provide tools, materials, supplies or equipment necessary for the Independent Consultant to perform the Work except for the necessary codes, standards, and procedures. Neither will ASME ST-LLC reimburse the Independent Consultant for the use of its tools, materials, supplies or equipment. The Independent Consultant shall not engage

Attachment 3

ASME ST-LLC
Independent Consultant Agreement
[Consultant]
[Project Title]

subcontractors to perform any portion of the Work without the written approval of ASME ST-LLC. If Independent Consultant services require access to ASME ST-LLC or ASME systems or their internal networks, that access must conform with ASME and ASME ST-LLC use policies.

3. Fees. For all services to be rendered by the Independent Consultant to ASME ST-LLC, as required by ASME ST-LLC, the Independent Consultant will receive fees as specified in Annex 2 to this Agreement. It is understood and agreed that the Independent Consultant is performing services as an independent contractor. As a result, ASME ST-LLC will not withhold any tax, of whatever nature, from payments made by ASME ST-LLC to the Independent Consultant. The Independent Consultant is solely responsible for meeting federal, state, or local income tax liabilities. The total charges for all fees and expenses shall not exceed the contract value specified in Annex 2 to this Agreement.

4. Expenses. Expenses incurred by the Independent Consultant in connection with the Work shall be borne by the Independent Consultant as part of the total compensation for the Work.

5. Terms of Payment. The Independent Consultant shall submit associated invoices for acceptance by ASME ST-LLC prior to payment. Invoices shall be submitted following achievement of milestones specified in Annex 2 to this Agreement. Payment shall be 100 percent net due 30 days after receipt of an acceptable invoice from the Independent Consultant.

6. Benefits. The Independent Consultant is not eligible for, and will not receive, any benefits from ASME ST-LLC based on services performed under this Agreement.

7. Copyright and Ownership. The Independent Consultant agrees that ASME ST-LLC specially ordered and commissioned the Work as “work made for hire” as that term is defined in the United States Copyright Act (17 U.S.C. §101), and that for purposes of the copyright laws, ASME ST-LLC shall be deemed the “author” of the Work. If it is determined that the Work is not a work made for hire under the U.S. Copyright laws, then, as of the creation of the Work, the Independent Consultant hereby assigns exclusively and irrevocably to ASME ST-LLC all worldwide, present and future right, title and interest in the Work, including the copyrights and other proprietary rights existing in the Work (including all United States and

Attachment 3

ASME ST-LLC
Independent Consultant Agreement
[Consultant]
[Project Title]

foreign copyrights, all copyrights under any treaties, conventions, proclamations, or the like, and all extensions of such copyrights; all artistic and literary property rights; all moral rights; all rights to apply for or obtain any registrations for copyright in the Independent Consultant's name; and the right to sue and recover for any infringement of the Work). The Independent Consultant may not reproduce the Work in any form without ASME ST-LLC's prior written permission.

8. Indemnification and Hold Harmless.

a. Obligation of the Independent Consultant – The Independent Consultant shall indemnify, defend and hold harmless ASME ST-LLC and its officers, directors, employees and agents and each of them from any and all claims, actions, causes of action, demands, liabilities of whatsoever kind and nature including judgments, interest, attorney's fees, and all other costs, fees, expenses and charges which ASME ST-LLC, its officers, directors, employees, agents and each of them, may incur arising out of the negligence, gross negligence or willful or wanton misconduct of the Independent Consultant, its officers, directors, employees or agents.

b. Obligation of ASME ST-LLC – ASME ST-LLC shall indemnify, defend and hold harmless the Independent Consultant and its officers, directors, employees and agents and each of them from any and all claims, actions, causes of action, demands, liabilities of whatsoever kind and nature including judgments, interest, attorney's fees, and all other costs, fees, expenses and charges which the Independent Consultant, its officers, directors, employees, agents and each of them, may incur arising out of the negligence, gross negligence or willful or wanton misconduct of ASME ST-LLC, its officers, directors, employees or agents.

9. Term. It is mutually agreed that the Independent Consultant will commence work on this project immediately upon execution of this Agreement, and continue until completion, estimated as on or about [Contract End Date]. This termination date may be extended by mutual agreement, which must be confirmed in writing.

10. Termination. ASME ST-LLC shall have the right to terminate this agreement upon 14 days notice in writing to the Independent Consultant at any time that ASME ST-LLC shall in its judgment decide that such termination is in the best interests of ASME ST-LLC. Conversely, the Independent Consultant shall have the right to terminate this agreement upon 14 days' notice in writing to ASME ST-LLC at any time that the Independent

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[Consultant]
[Project Title]

Consultant shall in its judgment decide that such termination is in the best interests of the engineering profession. In the event of such termination, ASME ST-LLC shall pay the Independent Consultant on a pro rata basis for percent of work completed as determined by mutual agreement subject to the provisions of Sections 3 and 4 of this Agreement.

11. Force Majeure. The parties' performance under this contract is subject to acts of God, war, government regulation, terrorism, disaster, strikes, civil disorder, curtailment of transportation facilities, or any other emergency beyond the parties' control, making it inadvisable, illegal or which materially affects a party's ability to perform its obligations under this contract. Either party may terminate this contract for any one or more of such reasons upon written notice to the other party.

12. Trademark Usage. Independent Consultant may not use any of ASME ST-LLC's trademarks or other identifiers (including the ASME ST-LLC logo) in any manner without ASME ST-LLC's prior written approval or consent. ASME ST-LLC reserves the right to review any approved use of its trademarks and to require changes in any further use, and Independent Consultant agrees to comply with those requirements.

13. Publicity Release and Public Affairs. The Independent Consultant shall not make without prior review and approval of ASME ST-LLC, any publicity release of any nature of general, non-technical information in connection with this Agreement. For purposes of this Agreement, general, non-technical information means any information concerning the existence of the Agreement, the identity of the parties, and the scope and general character of the research or technical activity.

14. Entire Agreement. This Agreement entirely supersedes, terminates, and replaces any and all prior agreements between the parties relating to the subject matter hereof and may not be amended except by an instrument in writing signed by both parties to this Agreement.

15. Notices. Any notices hereunder shall be given to the parties at their respective addresses set forth above by registered mail until a new and different address shall be established for either party on the basis of notice given to the other party.

16. Governing Law. This Agreement shall be subject to and governed by the substantive laws of the State of New York (without regard to its conflict of laws rules).

Attachment 3

ASME ST-LLC
Independent Consultant Agreement
[Consultant]
[Project Title]

IN WITNESS WHEREOF, ASME ST-LLC has caused this Agreement to be executed on its behalf by its officer thereunto duly authorized and the Independent Consultant has executed this Agreement as of the day and year first above written.

ASME STANDARDS TECHNOLOGY, LLC

By: _____

Name:

Title:

INDEPENDENT CONSULTANT

By: _____

Name:

Title:

[Social Security] or [Federal Tax ID number]: [_____]

Attachment 3

ASME ST-LLC
Independent Consultant Agreement
[Consultant]
[Project Title]

ANNEX 1

Annex 1 – Statement of Work

Scope Description

[TBD]

Attachment 3

ASME ST-LLC
Independent Consultant Agreement
[Consultant]
[Project Title]

ANNEX 1

Attachment 3

ASME ST-LLC
Independent Consultant Agreement
[Consultant]
[Project Title]

ANNEX 2

Annex 2 – Financial Terms

Reporting

Fees and Expenses

Technical services rate: [_____].

Travel rate (if applicable): [_____].

Travel expenses: [_____].

Contract Maximum: [_____].

Attachment 3

ASME ST-LLC
Independent Consultant Agreement
[Consultant]
[Project Title]

ANNEX 2