

Project Number: STIN-0185
Project Title: Target Unavailability Optimization for Design of Engineered Facilities
Solicitation Date: 16 March 2022
Proposal Due Date: 15 April 2022

1 Summary

ASME Standards Technology, LLC (ASME ST-LLC) is soliciting proposals for the referenced project. This project will establish a methodology for calculating and optimizing the design features associated with an engineered facility's systems, structures, and components to achieve facility-specific goals related to safety, performance (i.e., public health/safety, production performance), and investment using unavailability targets for plant functions, systems, and components. This project will develop the optimization algorithms that would be used to evaluate component and structure level sources of unavailability in order to achieve the most efficient and effective mix between all systems comprising the facility.

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 Scope of Work

2.1 Background

Often the costs associated with designing and constructing engineered facilities result in reductions in resilience and robustness of the facility to meet safety and performance goals. The balance between safety and production needs to be evaluated with a systematic engineering analysis process that can be repeated across different industrial sectors. These methods can inform decision makers as to those areas where more focus and resources are needed versus those areas where reduced but adequate resources can be applied.

Of paramount importance is the capability of the facility to meet safety goals and performance goals in the most cost-effective means. This method also supports establishing the risk significance of components relative to safety and production. This can be especially useful in providing alternative codes and standards solutions for areas of low risk significance and more robust solutions for areas of high risk significance.

2.2 Summary

The investigator shall establish a methodology for calculating and optimizing the design features associated with an engineered facility's systems, structures, and components to achieve over-arching facility-specific goals related to safety, performance (i.e., public health/safety, production performance), and investment using unavailability targets for plant functions, systems, and components. This will be achieved using risk analysis and other analytical methods (risk logic models, simulation, and optimization methods) to reverse engineer the over-arching plant safety and production goals to allocate unavailability levels at the function, system, and component level and, in so doing, develop a plant design that will meet the over-arching facility-level risk metric and investment goals.

Sources of unavailability are specific to those component types used in the design of various engineered facilities (e.g., electric power, instrumentation & control, piping systems, mechanical-fluid, HVAC, etc.) and involve such events as unavailability due to hardware failures (reliability), planned maintenance, testing, inspection, etc. The time required to overcome such "unavailability" events and return equipment to service can be greatly influenced by the design of the facility. Tradeoffs associated with unavailability sources can be used to optimize facility designs relative to cost, safety, and performance.

The investigator shall develop the optimization algorithms that would be used to evaluate component and structure level sources of unavailability in order to achieve the most efficient and effective mix between all systems comprising the facility. In other words, how can the design be structured so that the facility-level risk metrics (i.e., public safety and production performance) can be met in the most cost-efficient means.

The work performed in this research is technology neutral and can be used for any engineered facility and therefore has a broad application across all organizational elements of ASME. For example, the nuclear industry can highly benefit due to the new aim at reducing unavailability from the design and in this way ensure safer and more economical nuclear power plants.

2.3 Deliverables

The project deliverables shall be:

- Guidance and Methodology Report for Apportioning Unavailability Across Engineered Facility Structures, Systems, and Components
- Technical Paper on Methodology for Apportioning Unavailability Across Engineered Facility Structures, Systems, and Components

Specifically, the investigator shall:

Milestone 1:

- a) Develop an analysis method for establishing acceptable plant risk levels for public health and safety, as well, as facility performance as constrained by the projected investment
- b) Establish a method for establishing and adjusting target unavailability based on quantitative risk assessment, best engineering practices and existing methodologies for design development in the pre-conceptual, conceptual design stages, preliminary, and final design phases that meets the originating safety, performance, and investment goals.

Milestone 2:

- a) Develop a method for establishing and adjusting unavailability targets based on plant functions
- b) Develop a method for establishing and adjusting the unavailability targets for each plant system supporting a plant level function
- c) Develop a method for establishing and adjusting unavailability targets for components supporting each system

Milestone 3:

- a) Develop a cost optimization model that will also meet originating safety and performance goals
- b) Incorporate capability of the optimization model to adjust outputs depending on the type of consequences, be they economic, environmental or for plant workers

Milestone 4:

- a) Develop a software specification and software to perform necessary methodological algorithms and associated calculations
- b) Pilot the methodology in a safety system of an advanced reactor type

2.4 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.

3 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.

4 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 application 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
- Respondent's applicable experience
- Proposal price
- Project schedule
- Any exceptions to this RFP

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

5 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 1 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.

6 Submission Requirements

6.1 Proposal Due Date

Proposal must be submitted by 15 April 2022. Respondents are encouraged to transmit its proposal well before this deadline. Requests for extra time must be sent by 1 April 2022 to the contact listed in Section 7 of this RFP.

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

6.2 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.

6.3 Proposal Clarification

ASME ST-LLC reserves the right to request clarification of the proposal and/or supplemental information. The award 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/or award. ASME ST-LLC reserves the right to modify or cancel this solicitation. All questions relating to the solicitation must be submitted to the contact listed in Section 7 herein. Any amendments to the solicitation will be posted on the ASME ST-LLC website previously referenced.

6.4 Treatment of Proprietary Information

A proposal may include technical and/or other data, including trade secrets and/or privileged, confidential commercial or financial information, which 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.

6.5 Proposal Preparation and Submittal Instructions

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

6.5.1 Technical Proposal contents must include:

- Provide organization name and contact information.
- Provide evidence of technical capabilities: credentials, qualifications, capabilities, and experience of individuals and the organization.
- Describe approach to accomplish the Scope of Work (refer to Section 2), including a proposed timeline.
- Demonstrate agreement with the Scope of Work (refer to Section 2).

6.5.2 Financial Proposal contents must include:

- Provide a fixed-price quotation.
- Provide a schedule to complete each milestone.
- Confirm agreement with the form of agreement attached herein, or state any requested exceptions to same.

6.5.3 The respondent shall submit the Technical and Financial Proposals files via e-mail to the ASME ST-LLC contact identified in Section 7 of this RFP. Responses must be received on or before the proposal due date identified in Section 6.1 of this RFP.

7 ASME Standards Technology, LLC Contact Information

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

Mr. Dan Andrei
Project Manager
ASME Standards Technology, LLC
Two Park Avenue
New York, NY 10016
Telephone: 212-591-7146
E-mail: andreid@asme.org

ASME Standards Technology, LLC
REQUEST FOR PROPOSALS
RFP No. 22-02



ATTACHMENT 1: FORM OF AGREEMENT

ASME Standards Technology, LLC
Nonexclusive Independent Consultant Agreement
Standard Terms and Conditions

[Project Number: Title]

This Agreement, dated as of [], is made between ASME Standards Technology, LLC (“STLLC”), 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] (the “Independent Consultant”).

W I T N E S S E T H:

WHEREAS STLLC desires to engage the Independent Consultant to perform [insert scope description]; 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. STLLC 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 STLLC, but the Independent Consultant agrees to adhere to the ASME Policies on Conflicts of Interest and Ethics. STLLC will not set specific daily schedules. STLLC 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 STLLC reimburse the Independent Consultant for the use of its tools, materials, supplies or equipment. The Independent Consultant shall not engage subcontractors to perform

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

3. Fees. For all services to be rendered by the Independent Consultant to STLLC, as required by STLLC, 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, STLLC will not withhold any tax, of whatever nature, from payments made by STLLC 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 STLLC 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. In the event of delay in project or milestone completion, the Independent Consultant shall pay liquidated damages to STLLC in the amount of 10% per week for the milestone that is delayed unless it is pre-approved by STLLC, not to exceed the total dollar amount of the milestone.

7. Benefits. The Independent Consultant is not eligible for, and will not receive, any benefits from STLLC based on services performed under this Agreement.

8. Copyright and Ownership. The Independent Consultant agrees that STLLC 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, STLLC 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 STLLC 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 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 STLLC's prior written permission.

9. Indemnification and Hold Harmless.

a. Obligation of the Independent Consultant – The Independent Consultant shall indemnify, defend and hold harmless STLLC 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 STLLC, 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 STLLC – STLLC 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 STLLC, its officers, directors, employees or agents.

10. 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.

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

Independent Consultant shall have the right to terminate this agreement upon 14 days' notice in writing to STLLC at any time that the Independent Consultant shall in its judgment decide that such termination is in the best interests of the engineering profession. In the event of such termination, STLLC 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.

12. 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.

13. Trademark Usage. Independent Consultant may not use any of STLLC's trademarks or other identifiers (including the STLLC logo) in any manner without STLLC's prior written approval or consent. STLLC 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.

14. Publicity Release and Public Affairs. The Independent Consultant shall not make without prior review and approval of STLLC, 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.

15. 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.

16. 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.

17. 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).

IN WITNESS WHEREOF, STLLC 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: Steven Ferguson
Title: President

INDEPENDENT CONSULTANT

By: _____
Name:
Title:
[Federal Tax ID number] | [Social Security] | [Other]

Annex 1 – Statement of Work

Background

Scope of Work

Annex 2 – Financial Terms

Fees and Expenses

Contract Maximum: Fixed price of \$XX,000 including all expenses.

Invoicing & Payment

The Independent Consultant shall submit invoices for applicable milestone payments achieved to STLLC via email to AccountsPayable@asme.org with an email copy the STLLC Project Manager.