

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

BPA NO.

1. CONTRACT ID CODE

PAGE

OF

1

7

2. AMENDMENT/MODIFICATION NO.
M005

3. EFFECTIVE DATE
SEE BLOCK 15C

4. REQUISITION/PURCHASE REQ. NO.
res-13-426

5. PROJECT NO. (if applicable)

6. ISSUED BY CODE 3100

U.S. Nuclear Regulatory Commission
Div. of Contracts
Attn: Adelis M Rodriguez, 301-287-0935
Mail Stop: 3WFN 05C64MP
Washington, DC 20555

7. ADMINISTERED BY (if other than Item 6) CODE 3100

U.S. Nuclear Regulatory Commission
Div. of Contracts
Mail Stop: 3WFN 05C64MP
Washington, DC 20555

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

SAFEWARE ENGINEERING CORPORATION
SAFEWARE ENGINEERING

180 NICKERSON ST STE 110
SEATTLE WA 981091631

(X) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO.
NRC-HQ-12-C-04-0100

10B. DATED (SEE ITEM 13)
X 09-27-2012

CODE 041496865

FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (if required) Deobligate: \$1,863.50 B&R: 2013-60-11-6-119 JC:V6065 BOC:252A
AppNo.:31X0200 FAIMIS:133278 NAICS: 541330 PSC: R425
DUNS: 041496865

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority) FAR 43.103(a) bilateral agreement

X

E. IMPORTANT: Contractor is not, is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this modification is to modify the statement of work, which reduces the contract ceiling and obligated amount by \$1,863.50 from \$664,221.50 to \$662,348.00. This modification also revises key personnel section and the price schedule of the contract.

See additional pages for details.

Period of Performance: 09/27/2012 - 11/30/2013 (unchanged)

Total Obligated Amount: \$662,348.00 (changed)

Total Ceiling Amount: \$662,348.00 (changed)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect

15A. NAME AND TITLE OF SIGNER (Type or print)
Grady Lee, President

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
Adelis M. Rodriguez
Contracting Officer

15B. CONTRACTOR/OFFICER
(Signature of person authorized to sign)

15C. DATE SIGNED
9/26/13

16B. UNITED STATES OF AMERICA
BY (Signature of Contracting Officer)

16C. DATE SIGNED
9/26/13

NSN 7540-01-152-8070
PREVIOUS EDITION NOT USABLE

STANDARD FORM 30 (REV. 10-63)
Prescribed by GSA - FAR (48 CFR) 53.243

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

OCT 04 2013

ADM002

The purpose of this modification is to modify the statement of work, therefore reducing the contract ceiling and obligated amount by \$1,863.50 from \$664,221.50 to \$662,348.00. This modification also revises key personnel and price schedule sections. Accordingly, the contract is modified as follows:

1. Section B.4 entitled: "Consideration and Obligation Labor Hour Contract (AUG 2011) Alternate I (AUG 2011)" is revised to read as follows"
 - (a) Starting on May 1, 2013, the remaining Labor hour ceiling price to the Government for full performance under this contract is \$460,256.62.
 - (b) The contract includes direct labor hours at specified fixed hourly rates, inclusive of wages, fringe, overhead, general and administrative expenses, and profit.
 - (c) The amount currently obligated under this contract is \$662,348.00.
 - (d) This is an incrementally-funded contract and FAR 52.232-22 - "Limitation of Funds" applies.
2. Section B.5 entitled: "Price Schedule" is modified to add:
 - Dorothy Andreas and Daren Cofer as an expert 1 with a loaded rate of \$256.38
 - Jack Stankovic as an expert 6 with a loaded rate of \$555.48

The revised labor categories and loaded rates will be as follows:

Proposed Labor Categories	Loaded Rate
Team Lead - Moore	[REDACTED]
Safety Engineer - Graham	[REDACTED]
PM - Lee	[REDACTED]
Expert 1 (Andreas, Cofer and travel hours)	[REDACTED]
Expert 2 (Heimdahl, Knight, McDermid and travel hours)	[REDACTED]
Expert 3 (Ericson, Wassying, and travel hours for them)	[REDACTED]
Expert 4 (Leveson and Sztipanovits and travel hours for both)	[REDACTED]
Expert 5 (Chillarege, Broy and travel hours for both)	[REDACTED]
Expert 6 (Stankovic)	[REDACTED]
Total Estimated Hours	[REDACTED]
Total Estimated Labor	\$636,630.00
Total Estimated Travel	[REDACTED]
Goods and Service Tax – Canada	[REDACTED]
Total Estimated Ceiling	[REDACTED]
Minus Cost Reimbursement previously expended (9/27/12-4/30/13)	[REDACTED]
Total Contract Ceiling Remaining	\$460,256.62

3. Paragraph (a) of Section H.2 entitled: "2052.215-70 Key Personnel (JAN 1993)" is modified to add the following technical experts:
 - Dorothy Andreas – technical expert
 - Daren Cofer – technical expert
 - Jack Stankovic – technical expert

Remove

- Holly Hildreth – technical expert
- Elaine Weyuker – technical expert
- Steve Vestal – technical expert

The revised list of key personnel will be as follows:

- Christopher Graham – Safety Engineer
- Nancy Leveson – Technical Expert
- Mats Heimdahl – Technical Expert
- Ram Chillarge – Technical Expert
- Clifton A. Ericson – Technical Expert
- John C. Knight – Technical Expert
- Alan Wasssyng – Technical Expert
- Joshua Moore – Team Lead
- Grady Lee – Project Manager
- John McDermid – technical expert
- Janos Sztipanovits - technical expert
- Manfred Broy – technical expert
- Dorothy Andreas – technical expert
- Daren Cofer – technical expert
- Jack Stankovic – technical expert

4. The following sections of the statement of work will be modified as follows:

3.1 Specific Tasks:

The Contractor shall provide high quality engineering/scientific experts who shall in turn provide to the NRC with the following range of technical support:

1. Perform an independent technical peer review of the evolving RIL-1101, as identified in Section 3.2. Expertise sought includes global knowledge from research in various safety-critical applications of digital systems as well as knowledge of HA techniques and applications. Specific assignments shall be made to suit project needs in the duration of this contract. The scope of the experts' reviews will be bounded to the context of the NPP safety systems domain. Furthermore, the scope is limited to a digital system effecting the realization of a safety function, a digital system contributing to it, a digital system on which the safety function is dependent, or a digital system that may affect the safety function. Other elements interfacing with, interacting with or affecting such a digital system are treated as parts of its environment. To that extent, such environment is also within the scope.

The technical reviews will be performed at iteratively evolving stages of RIL-1101 (see Section 3.2):

- Written comments as described in the Deliverables section below,
- Followed by teleconferenced walk-through and discussion, and
- Followed by a face-to-face discussion with the NRC staff, when remote communications and interaction are not adequate to understand and resolve the issues.

Each execution of the individual technical reviews will be treated as a knowledge-acquisition cycle from which results will be integrated into the development of RIL-1101 for the next review cycle. Work

performed must be of high quality, and effectively coordinated with the involved individuals, to meet all necessary deadlines.

2. In addition, the Contractor shall:
 - a. Perform peer reviews on the NRC furnished documents including scope boundary, characterization of the application domain, expected deliverables, and expected interactions. The contractor should ensure that the reviews are performed by experts with adequate diversity in order to improve the degree of validity of the affected content.
 - b. As part of the interactions with the NRC staff and the experts, it is expected that the Contractor should:
 - i. Review the experts' technical capability in accordance with the SOW, consolidate all responses, identify gaps and overlaps in review coverage, and interact with NRC/RES staff and experts to fill gaps with adequate diversity, and recommend statement of work, required deliverables, required interactions, and expected travel.
 - ii. Interact with each expert, as needed to ensure that the expert's review includes the expected. Ensure the information included in the Deliverables items 1(a)-1(e), is supported, is usable, and is integrate-able. The contractor should consolidate and organize the information received from various experts, in a manner conducive to understanding, resolving and reconciling the differences, and determine the need for additional information to improve the validity of the affected content.
 - iii. Organize and facilitate teleconferences and face-to-face meetings, as needed, for understanding, resolving and reconciling the differences, and for assessing and improving the degree of validity of the affected content. This process is expected to require multiple modify-review-comment cycles with the experts.
 - iv. Organize and facilitate research seminars with the NRC staff, as needed, for the technical expert to provide an overview of their recent work and research focus topics relevant to the context of the NPP safety systems domain.
 - v. Interact with each expert, as needed to ensure to ensure expert support during the informal public review of RIL-1101.
 - c. The Contractor shall hold a kickoff meeting with NRC staff to: identify, clarify and document goals and the scope of the project. This kickoff meeting shall set expectations and serve as input to the project plan. The Contractor shall keep the NRC's Contracting Office Representative (COR) apprised of any changes or deviations from the agreed-upon tasks, deliverables, and schedule.

3.2 Table 1: Interim stages of the evolving RIL-1101

In contrast to the partitioning of reviews by traditional lifecycle phases (as in the SOW, Table 1), partitions were proposed, such that each partition applies a specialty of expert knowledge recurrently across the lifecycle phases, over specific areas of the document.

Stage		Explanation of what is included
ID	Descriptor [see Note1]	
I	Identification of hazards from the environment of the conceived system;	Criteria to evaluate whether hazards have been identified completely and correctly, including assumptions to be verified later, and uncertainties to be resolved later: <ul style="list-style-type: none"> • Hazards from physical environment • Hazards from NPP process and monitored process parameters/variables • Contributing hazards from various NPP modes and mode changes

		<ul style="list-style-type: none"> • Contributing hazards from NPP-wide I&C architecture • Contributing hazards from humans machine interactions and human machine interface devices or automation, and • Contributing hazards from organizational processes
	HA of system concept	<ul style="list-style-type: none"> • Conceptual architecture • Contributory hazards from associated processes
II	HA of Requirements	<ul style="list-style-type: none"> • System requirements: flow-down and decomposing of requirements and constraints, and derivation of additional supporting requirement and constraints • Software requirements; flow-down and decomposing of requirements and constraints, and derivation of additional supporting requirement and constraints, and • Contributory hazards from associated processes
III	HA of Architecture design	<p>System architecture</p> <ul style="list-style-type: none"> • Software architecture • Contributory hazards from associated processes
IV	Hardware-related HA	<ul style="list-style-type: none"> • Hardware-related HA, including application environment • Contributory hazards from associated processes
V	HA relevant to software detailed design	<ul style="list-style-type: none"> • Software detailed design • Contributory hazards from associated processes
VI	HA relevant to software implementation and integration	<ul style="list-style-type: none"> • Software implementation and integration • Contributory hazards from associated processes
Note 1	<p>It provides guidance for evaluation at each stage and includes criteria for evaluation.</p> <p>Precondition: The HA has already gone through an independent verification and validation (IV&V) cycle by a RIL-1101- aware agent. The NRC review is not intended to be another round of IV&V.</p> <p>NRC reviewer's focus: What to watch out for; what is commonly missed; contributory hazards, especially in the system & software development lifecycle, including changes.</p>	

3.3 Deliverables:

1. The deliverable at each stage of the evolving RIL-1101 will be a report, including the following:
 - a) A completed comment table that identifies the item to which a comment applies, with proposed changes (which would bring the reviewed content to the expert's acceptance level), from each expert engaged in that stage;
 - b) Supporting references (incorporated by reference);
 - c) Other supporting rationale or explanation provided by the expert; results of discussions with individual experts;

- d) Supporting examples or case studies in the expert's experience or research to support an assertion or guidance item, e.g. through abduction or induction or other manner of generalization applicable to the scope of RIL-1101.
- e) Identification of items, e.g. Subsections or tables or rows in tables not reviewed.

The Contractor shall provide all required deliverables to the NRC COR in accordance with the anticipated schedule below for review and comment. The technical experts will provide comments to the contractor's project manager no later than (NLT) the number of days specified below. Comments will be provided to the NRC COR by email NLT the number of days specified below. If adjustments to this schedule are required, the revised dates agreed upon by the contractor and the NRC COR will be incorporated into this order via a formal modification to this agreement.

3.4 Deliverables Schedule

The Contractor shall provide to the NRC all comments received from the technical experts as they become available. The Contractor shall edit Deliverables based on comments received prior to supplying finals to the NRC. The Contractor shall continue monthly letter status reports (MLSRs) as previously agreed to and as listed below.

DESCRIPTION	DUE DATE
The NRC COR shall provide a Draft of RIL-1101 to the Contractor.	NLT 30 days from the commencement of this agreement.
The NRC COR shall provide an abridged version of Draft of RIL-1101, review template, research seminar outlined (if applicable), and updated Expert Orientation Slides to the Contractor	NLT 5 working days before the Orientation Meeting with technical expert
The technical experts shall review and provide comments at each review cycle of Draft RIL-1101	NLT 10 working days after receipt of Draft RIL-1101
The technical expert shall review and provide comments of the outline for research seminar (if applicable)	NLT 5 working days after receipt of outline
The technical expert shall review and provide a disposition of the NRC comments for research seminar slides (if applicable)	NLT 5 working days after receipt of NRC comments on research seminar slides
The technical expert shall provide the presentation for research seminar (if applicable)	NLT 1 working day before the Technical Interchange Meeting
Monthly Letter Status Report (MLSR)	20 th of each month

11.0 MEETINGS AND TRAVEL

The NRC staff will approve all travel arrangements on a case-by-case basis prior to actual travel for work on this project. Final details of trips will be worked out cooperatively between Contractor and the NRC staff as appropriate to effectively and efficiently complete the work efforts.

Travel needs are estimated below but will be refined during project planning efforts and finalized upon NRC staff discussion with the Contractor. Travel costs are based on an estimate of \$1,500 for each person per trip.

1. 23 trips Estimate of 12 experts for one-day trip to the NRC Headquarters for the following:
 - a. Orientation Meeting with the technical expert (as needed) to identify, clarify and document goals and the scope of the project.
 - b. Technical Interchange Meeting / Research Seminar:
 - i. Present the results of the technical reviews to the NRC staff, and clarify and resolve issues.
 - ii. Provide research seminar to NRC staff (as needed)

12.0 NRC-FURNISHED MATERIAL

1. A draft version of RIL-1101 at each iterative stage as identified section 3.2 above.
2. A review template specific to each review partition.
3. Orientation Meeting briefing material.
4. Disposition of technical expert review comments.
5. Proposed Research Seminar Outline (as needed).

All other terms and conditions remain unchanged.