AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 3

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0003	22-Dec-2017	W66QKZ71282904	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
USACE PORTLAND DISTRICT 333 SW 1ST AVE PORTLAND OR 97204-3440	W9127N	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		9A. AMENDMENT OF SOLICITATION NO.
	X	W9127N-18-B-0005
	X	9B. DATED (SEE ITEM 11) 22-Nov-2017
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

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

Offer 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)

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

[ ] 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)

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

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

Project: Bonneville Generator Cooler Upgrade Amendment-0003 for W9127N18B0005

The purpose of this amendment is to make necessary technical changes to the specifications. See Summary of Changes and Specification Revisions on the following pages.

No other changes are made or implied. The offeror shall sign block 15A-C of this amendment and return with Bid submission.

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)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 28-Dec-2017

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION SF 30 - BLOCK 14 CONTINUATION PAGE

The following have been added by full text:

AMENDMENT-0003

The following changes have been made to the Technical Specifications, Division 42 13 19.00 26 – Process Heating, Cooling, and Drying Equipment as summarized below:

(1) Subpart 1.3 has been updated: Updated to add two submittals, Casting Material Tension Test Report and Casting Chemical Composition Test.

(2) Subpart 2.4.1.b. has been updated: Language added. “The original coolers have 104, 5/8" O.D. tubes. There are 8 rows of 12 tubes. There are 8 fins per inch.”

(3) Subpart 2.4.1.c. has been updated: Language added. “The original coolers have 288, 5/8" O.D. tubes. There are 12 rows of 24 tubes. There are 8 fins per inch.”

(4) Subpart 2.4.1.d. has been updated: Language added. “Main Units 11-18 original coolers have 92, 5/8" O.D. tubes. There are 4 rows of 23 tubes. There are 14 fins per inch. Fish Units 1-2 original coolers have 72, 5/8" O.D. tubes. There are 4 rows of 18 tubes. There are 14 fins per inch.”

(5) Subpart 2.4.4 has been updated: Language modified. “The supply, drain, and vent header connections/flanges will be the same type and pattern to match original except as modified herein such that the air coolers will directly connect to all original equipment. All connections/flanges will be of stainless steel UNS 30400. Pipe must be stainless steel per ASTM A312/A312M”

(6) Subpart 2.4.4.1 has been updated: Language modified. “The headers and manifolds for Main Units 1-10 may be a new manufactured design or a casting design similar to the original equipment. Unit 3-10 have mirrored heads so there will be two separate designs for these units. Clearly identify each new cooler as to which design it is for installation purposes. Investigate the head design of Units 1-2 to determine if these heads are also mirrored and proceed accordingly. Submit drawings of the headers and manifolds with the shop drawings.”

(7) Subpart 2.4.4.1.1 has been updated: Language modified. “Design new headers and manifolds for Main Units 1-10 using stainless steel, per ASTM A240/A240M, UNS 30400. Provide headers with removable cover plates to allow access to all tubes. All air bleed/vent ports are to be tapped 1/2 inch NPT.”

(8) 2.4.4.1.2 through 2.4.4.1.2.4 have been added: Cast heads and manifold information added.

Attachment A1, Submittal Register: Attachment has been replaced in its entirety (updated to include the two new submittals).

The updated technical section is hereby attached within this amendment.

The following have been deleted:
AMENDMENT-0002

(End of Summary of Changes)

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SECTION TABLE OF CONTENTS

DIVISION 42 - PROCESS HEATING, COOLING, AND DRYING EQUIPMENT

SECTION 42 13 19.00 26

SURFACE AIR COOLERS

	Wire, Profiles, and Tubes
ASTM F2329	(2013) Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners

ASME INTERNATIONAL (ASME)

ASME B16.21	(2011) Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.5	(2013) Pipe Flanges and Flanged Fittings: NPS 1/2 Through NPS 24 Metric/Inch Standard
ASME BPVC SEC VIII D1	(2010) BPVC Section VIII-Rules for Construction of Pressure Vessels Division 1

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC PA 1	(2016) Shop, Field, and Maintenance Coating of Metals
SSPC PA 2	(2015) Procedure for Determining Conformance to Dry Coating Thickness Requirements
SSPC PA 17	(2012) Procedure for Determining Conformance to Steel Profile/Surface Roughness/Peak Count Requirements

[3] 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals having an "I" designation are for information only. Designation following the "G" or "I" designation identifies the office that will review the submittal for the Government. Submit in accordance with SECTION 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Existing Cooler Condition Statement; G, HDC

Paint Contractor Qualification; G, HDC

Shop Pressure Test Plan; G, HDC

SD-02 Shop Drawings

Air Cooler Shop Drawings; G, HDC

SD-03 Product Data

Air Cooler Descriptive Literature and Specifications; G, HDC

Paint # GR10F10626 and recommended primer Product Data Sheet; G, HDC

SD-06 Test Reports

12" x 12" Coating Sample; G, HDC

Inspection Reports; G, HDC

Repair Procedure; G, HDC

Shop Pressure Test Report; G, HDC

Casting Material Tension Test Report

Casting Chemical Composition Test

SD-07 Certificates

Finned Tube Supplier; G, HDC [3]

1.4 QUALITY ASSURANCE

1.4.1 Verification of Dimensions

Become familiar with details of the work and advise the Contracting Officer of any discrepancy before performing any work. The new coolers are interfacing with existing equipment and must fit in the existing site conditions without modification to the existing equipment.

1.4.2 Finned Tube Supplier Qualifications

a. The supplier of the finned tubes must have been in the business of producing finned tubes as specified herein for at least 2 years prior to bid opening. During that time, the finned tube supplier must have produced finned tubing for similar types of coolers for hydroelectric generating units that are specified in this section.

b. Submit the qualifications and resume of the Finned Tube Supplier. The submittal must include examples and references for similar hydroelectric surface air coolers that have been successfully installed.

1.4.3 Product Data

Submit complete, Air Cooler Descriptive Literature and Specifications for each manufactured product used in the coolers. The literature must include original, legible, manufacturer's cut sheets and data sheets that clearly indicate physical construction, operation, mechanical and structural characteristics, and associated hardware, as applicable. For data sheets with extraneous data, clearly indicate which data applies by crossing out other models, or circling or highlighting the correct options. Product data must clearly show conformance with these Specifications, including, but not limited to: product manufacturers' declarations of conformance to applicable technical standards. Submit product data concurrent with the shop drawings.

1.4.4 Shop Drawings

Prepare and submit Air Cooler Shop Drawings for the new surface air cooler assemblies. Show the complete fabrication, assembly, and installation details of the coolers. Show detail views, with appropriate tolerances and material callouts for all fabricated parts. Show all drilling, taping, and weld details. Include a bill of materials or parts list on the drawings.

(5) Maximum allowable working pressure, at temperature;

(6) Weight, empty;

(7) Weight, full of water;

b. Include a sample of the nameplate on the cooler shop drawings.

2.4 SURFACE AIR COOLERS

2.4.1 Surface Air Coolers General

a. The coolers are straight tube type with headers on either end. Supply new coolers that are identical to the existing coolers except where modified by these specifications. The new coolers must be dimensionally interchangeable with the existing coolers so they can bolt into the existing equipment.

[3] b. Detailed air cooler drawings exist for Main Units 3-10. These coolers have mirrored lower heads, a left and right hand design. This is noted on drawing P-5923384. The Contractor must field verify all dimensions and document any additional measurements or features that are needed for fabrication. The original coolers have 104, 5/8" O.D. tubes. There are 8 rows of 12 tubes. There are 8 fins per inch. One in-service cooler is available to ship off site for reverse engineering or to inspect on site. The other hand cooler will be removed from service for the contractor to inspect on site only.

c. Detailed drawings for Main Units 1-2 are not available. These coolers are of the same family and manufacturer as units 3-10 only differing in size. The original coolers have 288, 5/8" O.D. tubes. There are 12 rows of 24 tubes. There are 8 fins per inch. The contractor must certify that these coolers do not have mirrored heads. The contractor will need to inspect and take all measurements of the Main Units 1-2 coolers in order to properly reverse engineer them. Two coolers will be removed from service for the contractor to onsite. One in-service cooler is available to ship off site for reverse engineering.

d. Detailed drawings for Main Units 11-18 and Fish Units 1-2 are not available. Main Units 11-18 original coolers have 92, 5/8" O.D. tubes. There are 4 rows of 23 tubes. There are 14 fins per inch. Fish Units 1-2 original coolers have 72, 5/8" O.D. tubes. There are 4 rows of 18 tubes. There are 14 fins per inch. One existing cooler of each family will be made available to the Contractor for the purpose of reverse engineering off site or to inspect on site. The specifics regarding the availability of the cooler for reverse engineering is located in PARAGRAPH: Cooler Availability for Reverse Engineering. [3]

2.4.2 Finned Tubing Main Units 1-10

a. Use copper L-fins that are tension wound to the copper tube. Make fins from copper that meets the requirements of ASTM B152/B152M.

b. Make the inner tubes from copper, per ASTM B111/B111M, UNS C70600. The minimum allowable wall thickness is 0.049". Expand the tube ends into the tube sheets. Do not use belled ends on the tubes as the original tubes have.

2.4.3 Finned Tubing Main Units 11-18 and Fish Units 1-2

a. Use a bimetallic E-fin tube with fins that are continuously extruded. The inner tube must be continuously mechanically bonded to the outer tube so as to totally enclose it, except at the tube ends.

b. Make fins from aluminum that meets the requirements of ASTM B221. Make the inner tubes from copper, per ASTM B111/B111M, UNS C70600. The minimum allowable wall thickness is 0.049". Expand the tube ends into the tube sheets.

[3] 2.4.4 Headers and Manifolds

The supply, drain, and vent header connections/flanges will be the same type and pattern to match original except as modified herein such that the air coolers will directly connect to all original equipment. All connections/flanges will be of stainless steel UNS 30400. Pipe must be stainless steel per ASTM A312/A312M.

2.4.4.1 Main Units 1-10

The headers and manifolds for Main Units 1-10 may be a new manufactured design or a casting design similar to the original equipment. Unit 3-10 have mirrored heads so there will be two separate designs for these units. Clearly identify each new cooler as to which design it is for installation purposes. Investigate the head design of Units 1-2 to determine if these heads are also mirrored and proceed accordingly. Submit drawings of the headers and manifolds with the shop drawings.

2.4.4.1.1 Manufactured Heads and Manifolds

Design new headers and manifolds for Main Units 1-10 using stainless steel, per ASTM A240/A240M, UNS 30400. Provide headers with removable cover plates to allow access to all tubes. All air bleed/vent ports are to be tapped 1/2 inch NPT.

2.4.4.1.2 Cast Heads and Manifolds

The following subparagraphs shall apply to corrosion-resistant steel castings

2.4.4.1.2.1 General

Castings must not be warped or otherwise distorted. The structure of the castings shall be homogeneous and free from excessive inclusions. An excessive segregation of impurities or alloys at critical points in a casting will be cause for its rejection.

2.4.4.1.2.2 Materials

a. Corrosion resisting steel castings must conform to ASTM A351/A351M class CF8.

b. Mechanical test coupons shall be taken from each lot of material for tension test specimens. The location of the test coupons shall be shown on the casting drawings and the tractability of the coupons shall be maintained. Casting Material Tension Test Report detailing the results of the mechanical testing shall be submitted to the Government. Submit drawings of all steel castings, showing the location of specimens.

c. Each lot of material used for a casting pour shall be tested for chemical composition to prove that it conforms to the material requirements specified in the applicable ASTM standard. The results of the Casting Chemical Composition Test shall be submitted to the Government.

2.4.4.1.2.3 Inspection

a. Prior to finishing and/or machining, castings must be 100 percent examined visually (VT) and by the magnetic particle (MT) method. The inspections must conform to the applicable portions of SECTION 40 05 13.96 26 and applicable requirements of Section V of the ASME Boiler and Pressure Vessel Code. Acceptance standards for castings shall be as set forth in Appendix 7 of Section VIII of the Code,
ASME BPVC SEC VIII D1. All defects in castings disclosed by the VT and/or MT examinations, regardless of casting thickness, which exceed the degree permitted by the Code's Appendix 7, paragraph 7-3(a)(3), or as otherwise specified herein, must be repaired. The surfaces examined shall have a 420 micro-inch rms or better finish.

b. Finished or machined surfaces of castings shall be liquid penetrant (PT) examined as set forth in Section V of the ASME Boiler and Pressure Vessel Code. PT acceptance standards shall be as set forth in Appendix 7, ASME Section VIII of the Code, paragraph 7-3(a)(4). The magnetic particle (MT) method and acceptance criteria specified in subparagraph "a" above may be used in place of PT on finished or machined surfaces of castings.

c. All defects, regardless of casting thickness, disclosed by the PT or MT examinations which exceed the limits allowed by the applicable section of the Code, or a specified herein, shall be repaired.

d. Alternate steel casting inspection systems and acceptance standards, including acceptance standards that have different criteria for higher and lower stressed areas, may be submitted for Government review and approval. If accepted by the Government there will be no monetary/price adjustment or compensation to the Contractor. A copy of the proposed standard shall also be provided with a comparison to the specified standard.

e. A report of findings of NDT inspections, including a mapping of defect size and location, and recommendations shall be submitted for each individual casting. Reports shall include findings of all inspections, be they performed prior to repairs, during the repair process or after completion of repairs. The Government shall be given Notice of Final Casting NDT Inspection/examination dates.

2.4.4.1.2.4 Repair

If removal of metal for repair of defects reduces the stress-resisting cross section of the casting to such an extent that the Contractor-computed unit stress in the remaining metal is more than 30 percent in excess of the allowable stress, the casting may be either rejected or repaired at the option of the Government. A welding repair procedure shall be submitted to the Government, and no repairs of major or minor casting defects shall be made without prior approval of the weld procedure and the actual repair. Defects will be considered major when the depth of the cavity when properly prepared for welding, exceeds 20 percent of the actual wall thickness or

one inch, whichever is smaller, or when any cavity prepared for welding has a finished surface area greater than 10 square inches. Only qualified welders shall perform welding. Cracks and other defects disclosed when the castings are cleaned or during machining operations shall be removed to sound clean metal by grinding, chipping, machining, carbon arc-air followed by grinding (to remove all residual carbon) or by plasma arc. All repaired areas shall be nondestructively tested (radiograph, magnetic particle, liquid penetrant, or/and ultrasonic) before and after repairs are made. Castings requiring welding repairs at any stage of manufacture after the first annealing, and castings involving welding fabrication, shall be stress-relieved unless otherwise approved. [3]

2.4.4.2 Main Units 11-18 and Fish Units 1-2

Fabricate headers and manifolds of Main Units 11-18 and Fish Units 1-2 from stainless steel, per ASTM A240/A240M, UNS 30400.Provide headers with removable cover plates to allow access to all tubes.Submit drawings of the new design with the shop drawings

2.4.5 Tube Sheets

Make tube sheets from naval brass, per ASTM B171/B171M, UNS C46400.

2.4.6 Cooler Frame

Make the cooler frame from hot dip galvanized carbon steel that meets the requirements of ASTM A36/A36M and ASTM A123/A123M.

2.4.7 Gaskets

Provide all gaskets to seal the air cooler assembly. Make gaskets out of neoprene or other synthetic material suitable for the service. Material must have good resistance to Ozone. Provide gaskets that meet the requirements of ASME B16.5 and ASME B16.21. When these standards do not apply due to original equipment having non standard flange patterns provide gaskets that match the original equipment.

2.4.8 Painting

The air coolers for Units 1-10 protrude through the generator housing and are painted to match the top of the generator housing. The work specified in this section includes requirements for preparing and applying coating systems to these air coolers.

2.4.8.1 Paint Contractor Qualification

Certified as SSPC QP 3 for shop application. The Contractor must follow:

a. SSPC PA 1

b. SSPC PA 2

c. SSPC PA 17

2.4.8.2 Surface Preparation

Prepare all surfaces to be painted in accordance with the coating manufacture product data application instructions. The finished coating must be free from holidays, pinholes, bubbles, runs, drops, ridges, waves,

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			Training Plan	1.7.3	G													
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			Accident Prevention Plan (APP)	1.8	G													
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REPLACED IN ITS ENTIRETY A1-1 AMD# 0003

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		01 45 00.00 25	Contractor Quality Control Plan	3.2	G													
			Construction Quality	3.4.3														
			Management for Contractors															
		01 78 23.00 25	SD-01 Preconstruction Submittals															
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			SD-10 Operation and Maintenance															
			Data															
			Operation and Maintenance	1.3	G													
			Manual															
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			Record Drawings Execution Plan	1.4	G													
			Working As-Built Drawings	1.5														
			SD-11 Closeout Submittals															
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			Preliminary CAD Drawings	1.7.2.2														
			Final Record Drawings	1.8	G													
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			SD-06 Test Reports															
			Inspection and Test Reports	1.4	G HDC													
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			Procedure Qualification Test	1.6.1	G C	HDC												
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			Written Practice Manual	1.6.3.2	G C	HDC												
			Welding Repair Plan	3.3	G C	H												

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		40 05 13.96 26	SD-03 Product Data														
			Electrode and Filler Metal	1.6.1	G C	HDC											
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			Welder Certification	1.6.2	G C	HDC											
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			Air Cooler Descriptive Literature	1.4.3	G HDC												
			and Specifications														
			Paint # GR10F10626 and	2.4.8.3	G HDC												
			recommended primer Product														
			Data Sheet														
			SD-06 Test Reports														
			12' x 12' Coating Sample	2.4.8.3	G HDC												
			Inspection Reports	2.4.8.4	G HDC												
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		42 13 19.00 26	Casting Material Tension Test Report	2.4.4.1.2.2														
			Casting Chemical Composition Test	2.4.4.1.2.2														
			SD-07 Certificates															
			Finned Tube Supplier	1.4.2	G	HDC												