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SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
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Issuing Office - Bureau de distribution

Public Works and Government Services Canada - Pacific Region
800 Burrard Street, Room 219
800, rue Burrard, pièce 219
Vancouver
British C
V6Z 0B9

Title - Sujet Heating System Upgrade	
Solicitation No. - N° de l'invitation F1700-150801/A	**Amendment No. - N° modif.** 001
Client Reference No. - N° de référence du client	**Date** 2016-01-14
GETS Reference No. - N° de référence de SEAG PW-$PWY-005-7707	
File No. - N° de dossier PWY-5-38350 (005)	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2016-01-26**	**Time Zone** **Fuseau horaire** Pacific Standard Time PST
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☑ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Pillay, Sal (PWY)	**Buyer Id - Id de l'acheteur** pwy005
Telephone No. - N° de téléphone (604) 775-9386 ( )	**FAX No. - N° de FAX** (604) 775-6633
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:** DFO - Institute of Ocean & Sciences - Sidney, BC	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	**Delivery Offered - Livraison proposée**
Vendor/Firm Name and Address **Raison sociale et adresse du fournisseur/de l'entrepreneur** **Telephone No. - N° de téléphone** **Facsimile No. - N° de télécopieur**	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) **Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)** **Signature**	**Date**

Canada

F1700-150801/A **Addendum No. 1**

January 14th 2016

Sidney, BC – IOS - Heating System Upgrade

EXTENSION OF TIME FOR TENDERS

Notice is hereby given that the time for the reception of tenders previously Due at 2:00 PM local time – **22 January 2016** is extended to 2:00 PM local time **26 January 2016**

The following changes to the tender documents are effective immediately. This addendum will form part of the tender / contract documents.

ADDENDUM 1 ITEM LIST:

1. Mech Drawing M-100: Changed wording for description of "Phase 1" and "Sub-Scope" for clarification of scope involved.
2. All Mechanical Drawings: Changed line-types for clarity.
3. Mech Rm Drawings: M-206, M-207, M-304, M-321, M-408, M-409, M-410: Added Note to provide new elbows in place of existing pressure taps.
4. Mech Drawing M-507: Added Partial Plan identifying location of S-8 and S-9.
5. Mech Drawings MD205: Added notes to existing piping detail for clarity.
6. Mech Spec Section 23 05 21: Removed this section, valid specifications merged into Section 23 21 14.
7. Mech Spec Section 23 05 22: Removed this section, valid specifications merged into Section 23 21 14.
8. Mech Spec Section 23 05 23: Removed this section, valid specifications merged into Section 23 21 14.
9. Mech Spec Section 23 21 14: Merged and added all valves and fitting requirements into this section.
10. Mech Spec Section 23 52 00: Added boiler requirement for manufacturer's standard seismically rated supports.

END OF ADDENDUM 1 LIST

Response to Questions Received from Contractors

1. Will the expansion tank be demolished or handed over to PWGSC?

The existing expansion tank shall be demolished and the material recycled per specification 2305000 Common Work Results for Mechanical.

2. Are mechanical grooved fittings allowed?

   Per specification 232116 Hydronic Systems Steel: Only flanged fitting or weld connections are allowed for NPS 2-1/2" (62mm) and over; screwed/threaded allowed only for 2" (500mm) and under, unless smaller existing fittings are flanged, in which case flanged shall be used.

3. Are the new digital pressure sensors differential or absolute type sensors?

   Absolute type P-sensors shall be provided.

4. Are the new digital temperature sensors to be well-type?

   Yes, spare wells are available in some loops, but for the purpose of cost estimation, assume each T-sensor shall require a new well. The details on MD205 has been updated to clarify that the mechanical contractor shall be responsible for providing new T-wells and pressure taps for the new digital sensors.

5. Is there a typographical error for the equipment tag for the variable frequency drives (ET-1) in the equipment schedule list?

   Yes, corrected under Addendum 1 - Item 2.

6. Is there a typographical error for the equipment tag for the variable frequency drives (ET-1) in the equipment schedule list?

   Yes, corrected under Addendum 1 - Item 2.

7. Is there a HazMat Assessment Report for this facility?

   Yes, the comprehensive HazMat Assessments performed in 2005 and 2013 are available upon request (as the electronic files are extremely large).

8. Would be able to inform me as to the size of these proposed units will need to be when the project comes out? We at EJ Walsh are a Manufacturer's Representative for such boilers and would like to be a possible consideration if the size and such conditions fit our product line.

   The capacity and other requirements of the new boilers are provided in the equipment schedule of M-600. Dimensions should allow the 4 boilers to fit within the area specified on drawing M-508.

Attached for your reference is the Site Visit Sign in Sheet.

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation of Hydronic Specialties Equipment.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal

.3 Section 01 78 00 - Closeout Submittals

.4 Section 23 08 01 - Performance Verification

1.3 REFERENCES

.1 American Society of Mechanical Engineers (ASME).

.1 ASME-04, Boiler and Pressure Vessel Code.

.2 American Society for Testing and Materials, (ASTM).

.1 ASTM A47/A47M-99 (2004), Specification for Ferritic Malleable Iron Castings.

.2 ASTM A516/A516M-06, Specification for Pressure Vessel Plates, Carbon Steel, for Moderate - and Lower - Temperature Service.

.3 ASTM A536-84(2004), Specification for Ductile Iron Castings.

.4 ASTM B62-02, Specification for Composition Bronze or Ounce Metal Castings.

.3 Canadian Standards Association (CSA International).

.1 CSA B51-03 (R2007), Boiler, Pressure Vessel, and Pressure Piping Code.

1.4 SUBMITTALS

.1 Submit shop drawings and product data for:

.1 Expansion tanks

.2 Air vents

.3 Valves

.4 Strainers

.5 Suction diffusers

.6 Pressure reducing and relief valves

.2 Closeout Submittals:

.1 Submit maintenance data in accordance with Section 01 78 00 - Closeout Submittals.

1.5 DELIVERY STORAGE AND DISPOSAL

.1 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling

Part 2 Products

2.1 DIAPHRAGM TYPE EXPANSION TANK

.1 Vertical steel pressurized diaphragm type expansion tank.

.2 EPDM Diaphragm sealed in elastomer suitable for 115 ° C operating temperature.

.1 Tank to be suitable for glycol system

.3 Working pressure: 860 kPa with ASME stamp and certification.

.4 Identification plate showing:

.1 Manufacturer's name.
.2 Capacity in litres.
.3 Hydraulic test pressure.
.4 Working pressure.
.5 Code stamping and ASME registered design.

.5 Air pre-charged to 84 kPa (initial fill pressure of system).

.6 Base mount for vertical installation.

.7 Supports: provide supports with hold down bolts and installation templates incorporating seismic restraint systems.

.8 Renewable diaphragm.

.9 Capacity and size: Refer to drawing schedules.

2.2 VALVES

.1 Provide valves with an ANSI/ASME Class 125 service rating, which for 66°C, the pressure rating is 1207 kPa. Valves in sizes larger than 25 mm (1") and used on steel pipe systems, may be provided with rigid grooved mechanical joint ends. Such grooved end valves shall be subject to the same requirements as rigid grooved mechanical joints and fittings and, shall be furnished by the same manufacturer as the grooved pipe joint and fitting system.

.2 Gate Valve:

.1 Gate valves 65 mm 2-1/2" and smaller shall conform to MSS SP-80 Class 125 and shall be bronze with wedge disc, rising stem and threaded, soldered, or flanged ends.

.2 Gate valves 80 mm 3" and larger shall conform to MSS SP-70, Class 125, cast iron with bronze trim, outside screw and yoke, and flanged or threaded ends.

.3 Globe and Angle Valve:

.1 Globe and angle valves 65 mm 2-1/2" and smaller shall conform to MSS SP-80, Class 125.

.2 Globe and angle valves 80 mm 3" and larger shall conform to MSS SP-85, Class 125.

.4 Check Valve:

.1 Check valves 65 mm 2-1/2" and smaller shall conform to MSS SP-80.

.2 Check valves 80 mm 3" and larger shall conform to MSS SP-71, Class 125.

.5 Butterfly Valve:

.1 Butterfly valves shall conform to MSS SP-67, Type 1 and shall be either the wafer or lug type.

.2 Valves smaller than 200 mm 8" shall have throttling handles with a minimum of two locking positions.

.3 Valves 200 mm 8" and larger shall have totally enclosed manual gear operators with adjustable balance return stops and position indicators.

.6 Plug Valve:

.1 Plug valves 50 mm 2" and larger shall conform to MSS SP-78, have flanged or threaded ends, and have cast iron bodies with bronze trim.

.2 Valves 50 mm 2" and smaller shall be bronze with NPT connections for black steel pipe and brazed connections for copper tubing.

.3 Valve shall be lubricated, non-lubricated, or tetrafluoroethylene resin-coated type.

.4 Valve shall be resilient, double seated, trunnion mounted with tapered lift plug capable of 2-way shutoff.

.5 Valve shall operate from fully open to fully closed by rotation of the handwheel to lift and turn the plug.

.6 Valves 200 mm 8" or larger shall be provided with manual gear operators with position indicators.

.7 Ball Valve Full port design:

.1 Ball valves 15 mm 1/2 inch and larger shall conform to MSS SP-72 or MSS SP-110 and shall be cast iron or bronze with threaded, soldered, or flanged ends.

.2 Valves 200 mm 8" or larger shall be provided with manual gear operators with position indicators. Ball valves may be provided in lieu of gate valves.

.8 Square Head Cocks Provide copper alloy or cast-iron body with copper alloy plugs, suitable for 125 psig water working pressure.

.9 Calibrated Balancing Valves:

.1 Copper alloy or cast iron body, copper alloy or stainless internal working parts.

.2 Provide valve calibrated so that flow can be determined when the temperature and pressure differential across valve is known.

.3 Valve shall have an integral pointer which registers the degree of valve opening.

.4 Valve shall function as a service valve when in fully closed position.

.5 Valve shall be constructed with internal seals to prevent leakage and shall be supplied with preformed insulation.

.6 Provide valve bodies with tapped openings and pipe extensions with positive shutoff valves outside of pipe insulation. The pipe extensions shall be provided with quick connecting hose fittings for a portable differential pressure meter connections to verify the pressure differential.

.7 Provide metal tag on each valve showing the liters per second gallons per minute flow for each differential pressure reading.

.10 Automatic Flow Control Valves:

.1 Valve shall automatically maintain the constant flow indicated on the design drawings. Valve shall modulate by sensing the pressure differential across the valve body.

.2 Valve shall be selected for the flow required and provided with a permanent nameplate or tag carrying a permanent record of the factory-determined flow rate and flow control pressure levels. Provide valve that controls the flow within 5 percent of the tag rating.

.3 Valve materials shall be the same as specified for the ball or plug valves.

.4 Provide valve that are electric type as indicated. Valve shall be capable of positive shutoff against the system pump head, valve bodies shall be provided with tapped openings and pipe extensions with shutoff valves outside of pipe insulation. The pipe extensions shall be provided with quick connecting hose fittings and differential meter, suitable for the operating pressure specified. Provide the meter complete with hoses, vent, integral metering

connections, and carrying case as recommended by the valve manufacturer.

.11 Pump Discharge Valve (Triple-Duty Valves):

.1 Valve shall perform the functions of a non-slam check valve, a manual balancing valve, and a shutoff.

.2 Valve shall be of cast iron or ductile iron construction with bronze and/or stainless steel accessories.

.3 Provide an integral pointer on the valve which registers the degree of valve opening. Flow through the valve shall be manually adjustable from bubble tight shutoff to full flow.

.4 Valves smaller than 50 mm 2" shall have NPT connections. Valves 50 mm 2" and larger shall have flanged or grooved end connections.

.5 Valve design shall allow the back seat for the stem to be replaced in the field under full line pressure.

.12 Pressure Relief Valve: Valve shall prevent excessive pressure in the piping system when the piping system reaches its maximum heat buildup.

.1 ANSI Z21.22/CSA 4.4 and shall have cast iron bodies with corrosion resistant internal working parts.

.2 The discharge pipe from the relief valve shall be the size of the valve outlet unless otherwise indicated.

.13 Combination Pressure and Temperature Relief Valves: ANSI Z21.22/CSA 4.4, copper alloy body, automatic re-seating, test lever, and discharge capacity based on AGA temperature steam rating.

.14 Drain Valves: MSS SP-80 gate valves. Valve shall be manually-operated, 20 mm ¾" pipe size and above with a threaded end connection. Provide valve with a water hose nipple adapter.

.15 Air Venting Valves:

.1 Manually-operated general service type air venting valves, brass or bronze valves that are furnished with threaded plugs or caps.

.2 Automatic type air venting shall be the ball-float type with brass/bronze or brass bodies, 300 series corrosion-resistant steel float, linkage and removable seat.

.3 Air venting valves on water coils shall have not less than 3 mm 1/8 inch threaded end connections

.4 Air venting valves on water mains shall have not less than 20 mm 3/4 inch threaded end connections.

.5 Air venting valves on all other applications shall have not less than 15 mm 1/2 inch threaded end connections.

.16 Vacuum Relief Valves ANSI Z21.22/CSA 4.4

2.3 PIPE LINE STRAINER

.1 NPS 2 and under: bronze body to ASTM B62, screwed connections, Y pattern.

.2 NPS 2 1/2 and over: cast iron body to ASTM, Class 30, flanged connections.

.3 NPS 2 and over: Y or T type with ductile iron body to ASTM A536 or malleable iron body to ASTM A47M, grooved ends.

.4 Blowdown connection: NPS 1.

.5 Basket Screen: stainless steel or brass with 1.19 mm perforations.

.6 Working pressure: 860 kPa.

.7 Acceptable Products:

.1 Armstrong, Erwel, Kitz, Mech-Line, Muesco, Spirax/Sarco, Toyo, Victaulic.

2.4 PRESSURE REDUCING STATION – COLD WATER

.1 Screwed, bronze or cast iron body, suitable to 1380 kPa, composition seat.

.2 Each reducing station to include:

.1 Gate valve, strainer, union, pressure reducing valve, union, gate valve.

.2 Bypass with globe valve.

.3 20 mm relief valve.

.3 Acceptable Products:

.1 Cashco, Watts.

2.5 Pressure and Vacuum Gauges Gauges,

.1 ASME B40.100 with throttling type needle valve or a pulsation dampener and shut-off valve.

.2 Provide gauges with 115 mm 4.5 inch dial, brass or aluminum case, bronze tube, and siphon. Gauge shall have a range from 0 kPa 0 psig to approximately 1.5 times the maximum system working pressure.

.3 Each gauge range shall be selected so that at normal operating pressure, the needle is within the middle-third of the range.

2.6 Temperature Gauges:

.1 Temperature gauges shall be the industrial duty type and be provided for the required temperature range.

.2 Provide gauges with fixed thread connection, dial face gasketed within the case; and an accuracy within 2 percent of scale range. Gauges shall have Celsius scale in 1 degree Fahrenheit scale in 2 degree graduations scale (black numbers) on a white face. The pointer shall be adjustable.

.3 Rigid stem type temperature gauges shall be provided in thermal wells located within 1.5 m 5 feet of the finished floor.

.4 Universal adjustable angle type or remote element type temperature gauges shall be provided in thermal wells located 1.5 to 2.1 m 5 to 7 feet above the finished floor or in locations indicated.

.5 Remote element type temperature gauges shall be provided in thermal wells located 2.1 m 7 feet above the finished floor or in locations indicated.

.6 Stem Cased-Glass: Stem cased-glass case shall be polished stainless steel or cast aluminum, 229 mm 9 inches long, with clear acrylic lens, and non-mercury filled glass tube with indicating-fluid column.

.7 Bimetallic Dial: Bimetallic dial type case shall be not less than 89 mm 3-1/2 inches, stainless steel, and shall be hermetically sealed with clear acrylic lens. Bimetallic element shall be silicone dampened and unit fitted with external calibrator adjustment.

.8 Liquid-, Solid-, and Vapor-Filled Dial: Liquid-, solid-, and vapor-filled dial type cases shall be not less than 89 mm, 3-1/2 inches, stainless steel or cast aluminum with clear acrylic lens. Fill shall be nonmercury, suitable for encountered cross-ambients, and connecting capillary tubing shall be double-braided bronze.

.9 Thermal Well: Thermal well shall be identical size, 15 or 20 mm 1/2 or 3/4 inch NPT connection, brass or stainless steel. Where test wells are indicated, provide captive plug-fitted type 15 mm 1/2 inch NPT connection suitable for use with either engraved stem or standard separable socket thermometer or thermostat. Mercury shall not be used in thermometers. Extended neck thermal wells shall be of sufficient length to clear insulation thickness by 25 mm 1 inch.

Part 3 Execution

3.1 GENERAL

.1 Install as indicated and to manufacturer's recommendations.

.2 Run drain lines and blow off connections to terminate above nearest drain.

.3 Maintain proper clearance to permit service and maintenance.

.4 Should deviations beyond allowable clearances arise, request and follow DFO Representative's directive.

.5 Check shop drawings for conformance of all tappings for ancillaries and for equipment operating weights.

3.2 AIR VENTS – AUTOMATIC – HIGH CAPACITY TYPE

.1 Install automatic high capacity air vents at each high point in the piping systems and where shown on the drawings.

.2 Install on tees and not on horizontal pipe runs or elbows.

.3 Install a 12 mm minimum isolating gate valve ahead of each air vent, unless air vent has an integral shut-off valve.

.4 Fit all vents on top of an air-collecting chamber.

.5 Pipe all air vent discharge connections separately, to the nearest building drain, using 6 mm hard drawn copper tube. Label ends with permanent labels.

.6 Pipe all air vent discharge connections, (except for glycol) separately, to a water-tight solder jointed, 1.2 mm copper drain pan, using 6 mm (1/4") hard drawn copper tube where exposed and soft copper where concealed. Label ends with permanent labels.

.7 Pipe all air vent discharge connections from the glycol circuit, separately back to the glycol mixing tank, using 6 mm hard drawn copper tube.

3.3 AIR VENTS – MANUAL – HIGH CAPACITY

.1 Install manual air vents at high points in the piping systems where shown on the drawings.

.2 Install on tees and not on horizontal pipe runs or elbows.

.3 Install isolating gate valve ahead of each vent valve.

.4 Pipe air vent discharge connections to nearest building drain.

3.4 AIR SEPARATOR

.1 Install on suction side of system circulation pump.

3.5 STRAINERS

.1 Install in horizontal or down flow lines.

.2 Ensure clearance for removal of basket.

.3 Install ahead of each pump.

.4 Install ahead of each automatic control valve larger than NPS 1 and as indicated.

.5 Provide isolation valves on either side of strainer, to permit cleaning without draining the system.

3.6 EXPANSION TANKS – DIAPHRAGM TYPE

.1 Adjust expansion tank pressure as indicated.

.2 Install gate valve in system connection.

.3 Install globe valve in tank drain connection.

3.7 PRESSURE REDUCING STATIONS – COLD WATER

.1 Install water make-up stations for each hot water, chilled water and other closed water systems where shown on the drawings.

.2 Pipe relief valve to drain.

3.8 PRESSURE SAFETY RELIEF VALVES - WATER

.1 Install pressure relief valve(s) on each heat exchanger to prevent over pressuring.

.2 Select relief valves to relieve full heat input of the heat supply side.

.3 Pipe relief valve to drain.

.4 Where one line vents several relief valves, cross sectional area shall equal sum of individual vent areas.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation of hot water heating boilers:

1.2 RELATED SECTIONS

.1 Section 23 05 00 – Common Work Results for Mechanical

.2 Section 23 21 16 – Hydronic Systems: Steel

.3 Section 23 21 14 – Hydronic Specialties

.4 Section 23 05 93 – Testing, Adjusting and Balancing for HVAC

.5 Section 23 0800 – Mechanical Commissioning

1.3 REFERENCES

.1 American Boiler Manufacturer's Association (ABMA)

.2 American National Standards Institute (ANSI)

.1 ANSI Z21.13-2005/CSA 4.9a-2005, Gas-Fired Low-Pressure Steam and Hot Water Boilers.

.3 American National Standards Institute (ANSI)/ American Society of Mechanical Engineers (ASME)

.1 ANSI/ASME Boiler and Pressure Vessel Code, Section IV, 2004.

.4 Canadian Gas Association (CGA)

.1 CAN1-3.1-77 (R2006), Industrial and Commercial Gas-Fired Package Boilers.

.2 CAN/CSA-B149.1-05, Natural Gas and Propane Installation Code.

.5 Canadian Standards Association (CSA International)

.1 CSA B51-03, Boiler, Pressure Vessel, and Pressure Piping Code.

.6 Electrical and Electronic Manufacturer's Association of Canada (EEMAC)

1.4 SUBMITTALS

.1 Shop Drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.1 Submit drawings stamped and signed by Professional Engineer registered or licensed in Province of Ontario, Canada.

.2 Indicate the following:

.1 General arrangement showing dimensions, terminal points, instrumentation test connections.

.2 Clearances for operation, maintenance, servicing, tube cleaning, tube replacement.

.3 Boiler weight distribution, anchor bolt arrangements.

.4 Piping hook-ups.

.5 Equipment electrical drawings.

.6 Burners and controls.

.7 All miscellaneous equipment.

.8 Flame safety control system.

.9 Breeching and stack configuration.

.10 Stack emission continuous monitoring system to measure C0, 0, N0x, S0, stack temperature and smoke density of flue gases.

.3 Engineering data to include:

.1 Boiler efficiency at 25%, 50%, 75%, and 100% of design capacity.

.2 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.

.1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.2 Instructions: submit manufacturer's installation instructions.

.1 DFO Representative will make available 1 copy of systems supplier's installation instructions.

.3 Closeout Submittals:

.1 Submit operation and maintenance data for incorporation into manual

1.5 QUALITY ASSURANCE

.1 Regulatory Requirements: work to be performed in compliance with CEPA, CEAA, TDGA, and applicable Provincial regulations.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle in accordance with manufacturer's written instructions

.2 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling.

1.7 MAINTENANCE

.1 Extra materials:

.1 Special tools for burners, manholes, handholes and Operation and Maintenance.

.2 Spare parts for 1 year of operation.

Part 2 Products

2.1 GENERAL

.1 Packaged boiler: complete with burner and necessary accessories and controls, and ready for attachment of water supply, return and drain piping, fuel piping, electrical connections, and chimney connection. UL/ULC labelled.

.2 Designed and constructed in accordance with ASME Code requirements.

.3 CRN (Canadian Registration Number), to CSA B51.

.4 Boiler/burner package to bear ULC or CGA label.

.5 Electrical components CSA approved.

.6 Approved by Ontario Safety Authority

.7 Boilers to be test fired before shipment and to be registered with the Provincial Authorities.

.8 Include erection and wiring diagrams and an operating and maintenance manual with boiler package.

.9 Check all available drawings and ensure that the boiler proposed will fit in the space allotted and can be maintained and operated in a normal manner without difficulty.

.10 Performance:

.1 In accordance with American Boiler Manufacturers Association (ABMA).

.2 Capacity: Refer to equipment schedules.

.3 Boiler efficiency: 85 % minimum, at 30% to 100% firing rates.

.4 Flue gas temperature leaving boiler:

.1 Not to exceed 260 degrees C.

.2 Above dew point conditions at minimum firing rate.

.11 Electrical:

.1 Power: 120 V, 1 phase, 60 Hz.

.2 Controls: 120 V, 1 phase, 60 Hz.

.3 Electrical components: CSA approved.

.12 Controls: factory wired. Enclosed in Electrical and Electronic Manufacturers' Association of Canada (EEMAC) 1 steel cabinet.

.13 Thermal insulation:

.1 50 mm thick mineral fibre. Seal insulation at handholes, manholes, mudholes, piping connections with insulating cement or asphaltic paint. Finish with heat resisting paint.

.14 Jackets: heavy gauge metal, finished with heat resisting paint.

.15 Mounting:

.1 Structural steel base, lifting lugs.

.16 Anchor bolts and templates:

.1 Supply manufacturer's standard for seismically rated installation

.17 Start-up, instruction, on-site performance tests: 2 days.

.18 Trial usage:

.1 DFO Representative may use boilers for test purposes prior to acceptance and commencement of warranty period.

.2 Supply labour, materials and instruments required for tests.

.19 Temporary use by contractor:

.1 Contractor may use boilers only after written approval from DFO Representative.

.2 Monitor and record performance continuously. Keep log of maintenance activities carried out.

.3 Refurbish to as-new condition before final inspection and acceptance.

2.2 HOT WATER BOILERS – FIRE TUBE

.1 Construction:

.1 Packaged flexible steel fire tube boiler designed to resist thermal shock.

.2 Boiler shall be furnished with an adequate number of tappings and inspection openings to facilitate internal boiler inspection and cleaning.

.3 Boiler shall be complete with a heavy gauge insulated metal jacket, finished with heat resistant enamel paint.

.4 All exposed boiler components such as down comers and drum ends to be insulated. If not factory insulated, boiler supplier shall include and arrange for field application.

.5 Provide secure attachment points for seismic anchoring.

.2 Boiler Accessories:

.1 Provide all standard trim items and controls as described in the manufacturer's published product specification including the following:

.1 Flue gas thermometer.

.2 Thermometer and pressure gauge.

.3 Water temperature control operator.

.4 High limit safety control with manual reset.

.5 Low water cutoff with manual reset (manual reset should not be necessary after electrical power interruption).

.6 ASME safety relief valve.

.7 Electronic combustion safety control

.8 Ignition transformer.

.9 Two stage burner unit.

.3 Gas Burner and Control Equipment

.1 Boiler shall be furnished with a forced draft, flame retention gas burner.

.2 Burner shall be complete with integral motor and blower for supplying sufficient combustion air.

.3 Provide all standard trim items and controls as described in manufacturers published product specification including the following:

.1 Flue gas thermometer.

.2 Thermometer and pressure gauge.

.3 Water temperature control operator.

.4 High limit safety control with manual reset.

.5 Low water cutoff with manual reset. Manual reset should not be necessary after electrical power interruption. One normally open set of dry contacts for alarm signal to the EMCS.

.6 ASME safety relief valve(s) to release entire boiler capacity.

.7 Automatic gas valve operator.

.8 Auxiliary safety shut-off valve.

.9 Pilot solenoid valve.

.10 Pilot ignition assembly.

.11 Ignition transformer.

.12 Main manual gas shut-off valve.

.13 Pilot cock.

.14 Pilot and main gas pressure regulators.

.15 Air safety switch.

.16 Electronic combustion safety control with UV sensor.

.4 Accessories:

.1 Modulating gas burner.

.2 Auxiliary low water cutoff.

.3 Alarm horn.

.4 Indicator lights - as specified.

2.3 AUXILIARIES

.1 Provide auxiliaries for each boiler and to meet ANSI/ASME requirements.

.2 Hot water boilers:

.1 Relief valves: ANSI/ASME rated, set to release entire boiler capacity.

.2 Pressure gauge: 90 mm diameter complete with shut-off cock.

.3 Thermometer: 115 mm diameter range 10 to 150 degrees C.

.4 Low water cut-off: with visual and audible alarms.

.5 Auxiliary low water cut-off: with separate cold water connection to boiler.

.6 Isolating gate valves: on supply and return connections.

.7 Drain valve: NPS 2.

.8 Stack thermometer: range 65 to 400 degrees C.

.9 Outdoor controller: to reset operating temperature controller.

.10 One 1 set of cleaning tools.

.3 Pot type chemical feeder.

2.4 EMISSION CONTROL

.1 Rate of discharge of air contaminants from boiler not to exceed:

.1 For nitrogen oxides expressed as nitrogen dioxide:

.1 22 ng/J of heat input when fired with gaseous fuel.

.2 For carbon monoxide, 125 ng/J of heat input.

2.5 OTHER REQUIREMENTS

.1 Shop Tests – Hot Water Boilers:

.1 The packaged boiler must receive factory tests to check the construction, controls, and operation of the unit. All tests may be witnessed by the purchaser, if desired.

.2 Start Up Service – Hot Water Boilers:

.1 After boiler installation is completed, the manufacturer shall provide the services of a field representative for starting the unit and training the operator. A factory approved and authorized start-up report shall be submitted to the customer/user at the time of start-up.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

.2 Make required piping and electric connections including any control wiring between boiler control panel and oil pump starter.

.3 Pipe relief valves and air vent on hot water boilers to floor drain.

.4 Do not deviate from required service and maintenance clearances.

.5 Mount unit level.

.6 Natural gas fired installation to CAN1-B149.1-05.

.7 Manufacturers' representative to:

.8 Certify Installation.

.9 Provide start-up and burner adjustment service

.10 Carry out on-site performance verification tests.

.11 Provide maintenance and operating instructions.

.12 Test reports to be submitted for review and inclusion in maintenance manuals.

3.2 INSTALLATION

.1 Install in accordance with ANSI/ASME Boiler and Pressure Vessels Code Section IV, regulations of Province of Ontario having jurisdiction, except where specified otherwise, and manufacturers recommendations.

.2 Make required piping connections to inlets and outlets recommended by boiler manufacturer.

.3 Maintain clearances as indicated or if not indicated, as recommended by manufacturer for operation, servicing and maintenance without disruption of operation of any other equipment/system.

.4 Mount unit level using specified vibration isolation in Section 23 05 48 - Vibration and Seismic Controls.

.5 Pipe hot water relief valves full size to nearest drain.

.6 Pipe blowdown/drain to blowdown tank/floor drain.

.7 Natural gas fired installations - in accordance with CAN/CSA-B149.1.

3.3 MOUNTINGS AND ACCESSORIES

.1 Safety valves and relief valves:

.1 Run separate discharge from each valve.

.2 Terminate discharge pipe as indicated.

.3 Run drain pipe from each valve outlet and drip pan elbow to above nearest drain.

3.4 FIELD QUALITY CONTROL

.1 Commissioning:

.1 Manufacturer to:

.1 Certify installation.

.2 Start up and commission installation.

.3 Carry out on-site performance verification tests.

.4 Demonstrate operation and maintenance.

.2 Provide DFO Representative at least 24 hours' notice prior to inspections, tests, and demonstrations. Submit written report of inspections and test results.

END OF SECTION

Site Visit Sign-In

Solicitation No: F1700-150801/A

Location: Institute of Ocean & Sciences Building, Sidney, BC

Project Description: DFO IOS Heating System Upgrades

Site Visit Date and Time: January 12, 2016 at 10:30 am

Company Name*	Name of Representative	Phone / Email Address	Signature
Capital Power & Communication	JOE SOUSA	250-384-0926 projects@capitalpowervictoria.com	
CLEMCO MECHANICAL (2010) LTD.	JEREMY DOERN	250-361-9996 JEREMY@CLEMCO.CA	
Emery Electric	[illegible]	250 896-1159	
RAM MECHANICAL LTD.	ROB MARCHIORI	604-434-4530 RAMMECHANICAL.CA	
AJPH	DAN PULLEN	250 754-2232 dan@ajph.com	
ISLAND TEMPERATURE CONTROLS	BILL PHILLIPS	250 382 2161 bill@islandtemp.com	
Island Temperature Controls	Matt Pakura	250 588 0174 matt@islandtemp.com	
Thomas Electric Ltd	Wayne Thompson	250 883 1695 wayne@thomselectric.com	
Houle Electric	Steve Tratton	250-544-0059 stratton@houle.ca	