ALASKA ENERGY AUTHORITY

Date: **November 9, 2023**
Project: **Emergency Inventory Engines Purchase**
Solicitation No.: **ITB 24064**
Addendum No.: **1**

TO ALL PLAN HOLDERS:

The following changes, additions, clarifications, and/or deletions are hereby made a part of the ITB Documents for the above noted project, fully and completely as if the same were fully contained therein. All other terms, conditions, and specifications of the original Invitation to Bid, remain unchanged.

This amendment must be acknowledged in the space provided on the Bid Schedule.

The Submittal Date and Time is **CHANGED**. It has been extended to: **November 28, 2023 at 2:00 p.m**.

The modifications directed by this Addendum One are described on this page and the following attachments:

CHANGES TO DOCUMENTS:

1. Appendices D and E have been replaced in their entirety, please see attached: 9 pages

END OF ADDENDUM #1

Item No.	Item Description	Quan	Units	Unit Cost	Extended Cost
1	John Deere 4045AFM85 Engine & Accessories	1	Each		
2	John Deere 6068AFM85 Engine & Accessories	1	Each		
3	John Deere 6090AFM85 Engine & Accessories	1	Each		
				BASE BID TOTAL $	
AA1	Modify all three engines to remove alternator and make other modifications in accordance with specification paragraph 2.5 A.	1	Lump		
AA2	Modify all three engines to remove expansion tank and modify coolant piping in accordance with specification paragraph 2.5 B.	1	Lump		
				Firm Delivery Date for 4045AFM85	
				Firm Delivery Date for 6068AFM85	
				Firm Delivery Date for 6090AFM85	

NOTES:

1) See Appendix E for equipment specifications.
2) See Appendix C for scope of work including requirements for submittals, equipment packaging, etc.
3) See Appendix C for F.O.B. point and desired delivery.
4) Provide unit cost and extended cost for each item listed above. Provide a total cost for entire order.
5) Provide a firm delivery in calendar weeks for each type of commodity where indicated above. Note that a firm delivery significantly later than the desired delivery date may cause a bid to be declared non-responsive.
6) For a bid to be considered responsive it must include the following:
   a) This Bid Schedule completed as indicated.
   b) The completed ITB response (page 1 of the ITB).
   c) The completed Debarment Certificate, Appendix B, Page B-4.
   d) The completed Lobbying Certificate Certificate, Appendix B, Page B-5.

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ENGINE GENERATORS

PART 1 - GENERAL

1.1 SCOPE

A. The Work included herein shall consist of providing one of each engine model as specified herein.

1.2 RELATED REQUIREMENTS - Not Used This Specification

1.3 SUBMITTALS

A. Provide Serial Number and Build Code for the engines to be furnished.

1.4 REGULATORY COMPLIANCE

The Environmental Protection Agency (EPA) has issued New Source Performance Standards (NSPS) regulations governing use of stationary diesel engines in remote areas of Alaska. These regulations were revised effective June 29, 2021. The following provision of 40 CFR applies to this solicitation:

A. 40 CFR 60.4216(c) stipulates: Manufacturers, owners, and operators of stationary CI ICE that are located in remote areas of Alaska may choose to meet the applicable emission standards for emergency engines in §§ 60.4202 and 60.4205, and not those for non-emergency engines in §§ 60.4201 and 60.4204, except that for 2014 model year and later nonemergency CI ICE, the owner or operator of any such engine must have that engine certified as meeting at least the Tier 3 PM standards identified in appendix I of 40 CFR part 1039 or 40 CFR 1042.101.

In order to comply with EPA emissions requirements and also be compatible with the intended service applications, the diesel engine furnished under this solicitation shall be a new Tier 3 Marine certified engine.

1.5 QUALITY ASSURANCE

A. The engines shall not have been in service at any time prior to delivery.

1.6 FABRICATOR QUALIFICATIONS

The engines shall be furnished and modified by a qualified fabricator (Fabricator) who is regularly engaged in the business of providing diesel engine driven generator equipment.

A. The Fabricator must have staff with extensive experience in packaging diesel engine driven electrical generators. A list of five successful installations that key staff have worked on may be requested by the Authority after the bid opening and prior to award in order to verify Fabricator qualifications. The list must include installation date, description of installation, and a reference contact for each installation.

B. The Fabricator must maintain a competent service organization that is available for field service calls. A description of the organization including resumes of key

personnel may be requested by the Authority after the bid opening and prior to award in order to verify Fabricator qualifications.

C. The Fabricator must have a fabrication facility with adequate space and appropriate equipment as required to perform the work. The Authority may inspect the Fabricator's shop after the bid opening and prior to award in order to verify Fabricator qualifications.

1.7 FABRICATOR WARRANTIES

A. The Fabricator shall warrant the work for a period of not less than 18 months after delivery to the F.O.B. point.

B. In the event of equipment or component failure during the warranty period, the Fabricator shall repair or replace such defective equipment or components and bear all associated costs. Costs shall include material, parts, and labor. The Fabricator will be allowed to charge for travel and per diem expenses within Alaska related to warranty service at actual cost plus 10%. The Fabricator shall assist the Owner as directed to determine the cause of failure and pursue manufacturer's warranties to the extent necessary to obtain replacement equipment and provide proof of action taken upon request.

1.8 OPERATION AND MAINTENANCE MANUALS.

A. Provide one (1) complete bound set of operation and maintenance (O&M) manuals for each unique engine.

PART 2 - PRODUCTS

2.1 GENERAL CONFIGURATION AND MANUFACTURERS

A. Provide engines of the manufacturer and model as indicated in Paragraph 2.2 - Specific Configuration, no other substitutes except as specifically noted below.

B. Approved equal substitutions of engines will be allowed only by Engineer's approval. To obtain approval, submittals must clearly demonstrate the following:

1. The substitute engine must meet all of the requirements of Paragraph 2.3
2. The substitute engine manufacturer must have at least one factory authorized service representative with a permanent shop in Southcentral Alaska.
3. The size and weight of the substitute engine must not exceed that of the specified engine by more than 10%.
4. The physical layout, piping connections, and service access areas of the substitute engine must be sufficiently similar to that of the specified engine so that no major changes will be required to the power plant design.
5. The substitute engine must meet or exceed the fuel efficiency rate of the specified engine. Provide fuel curve showing fuel consumption (kWh/gallon) at 25%, 50%, 75% and 100% of prime rated capacity.
6. The substitute engine must be provided with a single jacket water cooling circuit without a separate aftercooler circuit.

7. The substitute engine must meet or exceed the heat rejection to the jacket water circuit of the specified engine.
8. The engines must not be equipped, or require to be equipped, with any exhaust emissions equipment including Exhaust Gas Recirculation, Diesel Oxidation Catalyst, Diesel Particulate Filter, or Selective Catalytic Reduction.

2.2 SPECIFIC CONFIGURATION

Furnish Engine Generators of the capacity and configuration listed below:

No. 1: **Engine** - 148 hp, 100 ekW prime, John Deere 4045AFM85, Tier 3 Marine. Configured for generator drive application with 11.5" diameter flywheel and SAE 3 adapter. Starting and Control Voltage = 24 VDC (convert as required).

No. 2: **Engine** - 223 hp, 150 ekW prime, John Deere 6068AFM85, Tier 3 Marine. Configured for generator drive application with 11.5" diameter flywheel and SAE 3 adapter. Starting and Control Voltage = 24 VDC (convert as required).

No. 3: **Engine** - 298 hp, 210 ekW prime, John Deere 6090AFM85, Tier 3 Marine. Configured for generator drive application with 14" diameter flywheel and SAE 1 adapter. Starting and Control Voltage = 24 VDC (convert as required).

2.3 ENGINE STANDARD FEATURES

A. Provide a skid mounted, 1800 RPM, diesel engine complete with generator/alternator and ready for service. The unit shall be of newest design and of recent manufacture.

B. The engine shall be a four-cycle, water-cooled, direct injection diesel engine of 4 or 6 cylinder in-line configuration as indicated by model number and shall be provided with a gear driven coolant pump where offered by manufacturer.

C. Cylinder Liners: The engines shall be provided with removable cylinder liners to facilitate field rebuilding.

D. Horsepower: Certified engine power curves and fuel consumption at 25%, 50%, 75%, and 100% loading, shall be submitted showing the manufacturer's approval of the engine rating for engine generator prime power application. Special ratings or "continuous standby" ratings will not be acceptable.

E. Fuel: The engines shall be capable of satisfactory performance on No. 1 or No. 2 Ultra Low Sulphur Diesel (ULSD) Fuel.

F. Fuel System: The engines shall have manufacturer's engine mounted fuel filters with replaceable elements.

G. Lubrication: The engines shall have a gear type lubricating oil pump for supplying oil under pressure to the main bearings, crankshaft bearings, pistons, piston pins, timing gears, camshaft bearings and valve rocker mechanism. Threaded spin-on type, full flow lubricating oil filters shall be provided.

H. Starting: The engines shall be equipped with a 24 VDC electric starting system. The starting system shall be of sufficient capacity to crank the engine at a speed which will allow full diesel starting.

I. Engine Control: All engine control functions will be performed by remote switchgear which will perform all start/stop, speed, paralleling, and load sharing control functions in addition to all engine function monitoring and safety shut downs. Engine manufacturer's electronic control panels shall not be provided.

J. ECU and Isochronous Governor: Provide an Engine Control Unit (ECU) for interface with the switchgear. Program the ECU for nominal 1800 RPM operation at 2.5 VDC input, variable RPM above and below 2.5 VDC input, and idle operation at input less than or equal to 0.5 VDC.

2.4 ENGINE MOUNTED ACCESSORIES, WIRING, AND PIPING

A. Fuel and Oil Hoses: All hoses for fuel, lube oil, vents, mechanical gauges, etc., shall be Aeroquip type FC300, Eaton Weatherhead H569 or approved equal. Minimum hose size shall be 5/16" (#6). Provide with re-useable JIC swivel type fittings. Push-on or barb type hose connections will not be allowed. Route hoses to avoid wear points and to ensure access to normal service points on the engine. Securely support hoses from engine and skid.

B. Glycol Hoses: All hoses for glycol shall be Teflon hose with stainless steel outer braid, Eaton Weatherhead H243 or approved equal. Provide with re-useable plated steel straight JIC swivel ends with NPT adapters. Route hoses to avoid wear points and to ensure access to normal service points on the engine. Securely support hoses from engine and skid.

C. Wire Loom: All wiring for control and instrumentation shall be routed in plastic loom. Provide tee fittings for all branch connections. Route loom to avoid wear points and to ensure access to normal service points on the engine. Securely support loom from engine and skid.

D. Air Cleaners: The engines shall be provided with a metal canister air cleaner with a reusable oiled cotton stock element. John Deere, K&N, Parker, or approved equal. Open disposable type air filters or plastic canisters will not be accepted.

E. ECU Mounting and Accessories: All AFM engines with Generation II Marine Electronics shall be furnished with the following accessories:

1. ECU mounting bulkhead with 10' long engine to ECU interconnect harness.
2. Generator drive adapter harness ECU to 21 pin connection.
3. Fuel pump relay.

F. Sensors and Safety Controls: The engines shall be equipped with the following:

1. Air Restriction Indicator/Switch, Combination visual indication and alarm switch. 1/8" MPT, 22.46" water column limit, manual reset, normally open switch with adjustable setpoint. Donaldson 135578-08420 or approved equal. Shop adjust switch to close at 20" water column and verify function.

2.5 ENGINE MODIFICATIONS – Additive Alternates

A. Under Additive Alternate #1 all engines shall be furnished without a charging alternator. Factory installed components shall be removed as required. Idler pulleys shall be added and belt guards shall be modified as required.

1. Remove charging alternator.
2. Install transient voltage protection diode.
3. On 4045 and 6068 model engines install industrial engine fan drive bearing and hub assembly. Replace belt as required. Install custom fabricated belt guard.
4. On 6090 model install custom fabricated damper guard.

B. Under Additive Alternate #2 all engines shall be furnished without a heat exchanger, coolant expansion tank, or accessory reduction gear drive. Factory installed components shall be removed as required. See Paragraph 2.6, Cooling System for detailed description.

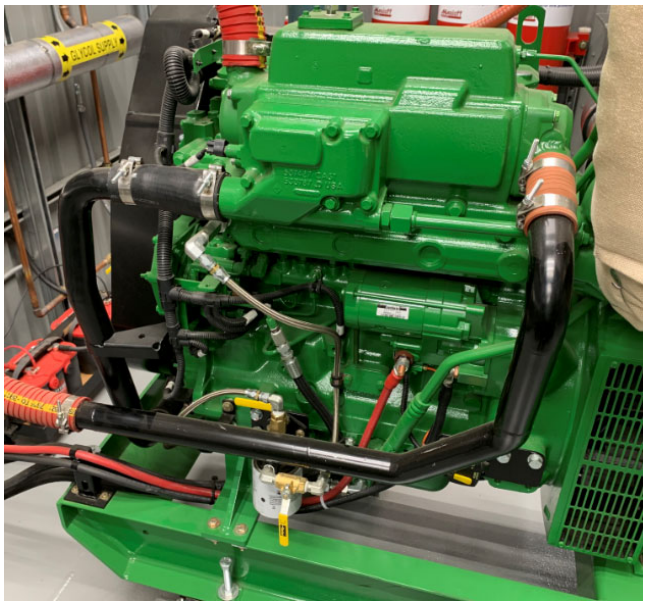
2.6 COOLING SYSTEM

A. Glycol Filter: Provide screw-on canister style filter element with 3/8" NPT connections on head, Wix #24019 head with #24069 element or approved equal. Mount head on steel bracket fixed to front or side of engine. Connect to engine with glycol hoses with 3/8” NPT quarter turn gauge cock isolation valves. Connect inlet to thermostat housing and connect outlet to water pump inlet. On thermostat housing connection provide 3/8” NPT tee fitting with plug for field connection of pre-heat line by others. When filters are provided as part of engine manufacturer’s assembly the standard factory filters may be substituted for the above specified parts; however, equivalent mounting, connections, and isolation valves shall be included.

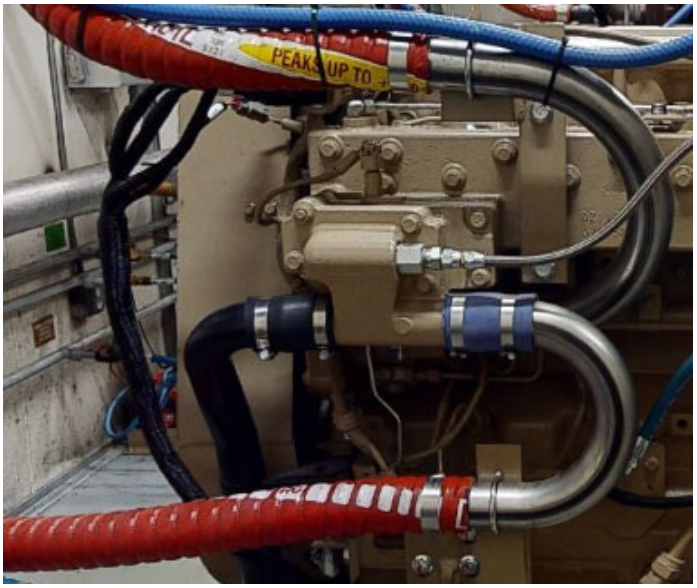
B. Provide an air vent/pre-heat connection at the high point on the engine coolant system. Provide a threaded ball valve with a 1/2" male hose barb fitting.

C. Modify engines as follows:

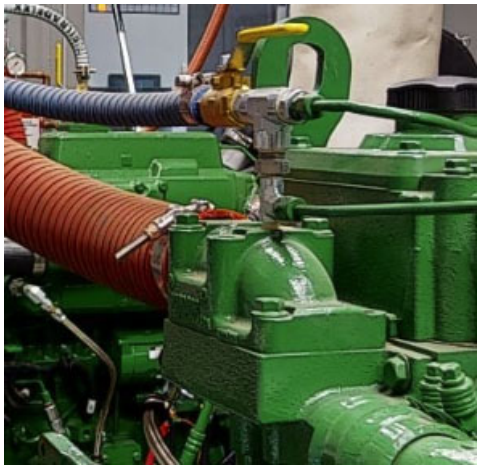
1. John Deere 4045AFM - Remove coolant tank and other accessories that are not required. Note that the 4045AFM85 engines have small ports in the coolant hose connection fittings that are overly restrictive. To provide adequate flow for prime power application remove the coolant discharge and suction connection fittings. Cut off hose ends and drill or bore out a 2.5 inch diameter hole. Furnish new 2 inch aluminum king nipples, cut off threads, and weld to housings. Reinstall connection fittings with discharge oriented vertically and suction oriented horizontally. Install a bent or welded section of 2 inch steel tube routed to the front of the left skid and supported from the skid. Provide hose barbs on each end and connect to engine suction fitting with short section of silicone hose as required. See photographs below for representative installation.



2. John Deere 6068AFM - Remove coolant tank and other accessories that are not required. Modify coolant discharge and suction connections to face horizontally at the front of the engine using bent steel tubing and short sections of silicone hose. Support steel tube from skid and engine. See photograph below for representative installation.



3. John Deere 6090AFM - Remove coolant expansion tank and other accessories that are not required. Manifold vent lines into a single air vent/pre-heat connection near the front. See photograph for representative installation.



2.7 EXHAUST FLEX

A. The turbocharger discharge shall be equipped with a 4-hole square "Cat" flange when available.

B. A flexible, continuous, 18 inch long stainless steel exhaust flex connector with welded connections shall be furnished for each engine, Alaska Rubber, DME, Harco, or approved equal. Provide a mating connection to match the turbocharger at one end and an ANSI 125/150# pattern flange at the opposite end sized as indicated below. Slotted cuff connections are not acceptable. Provide gasket, bolts, v-clamp, or any other components required for connection to the turbocharger. Provide a 90° elbow where required for the flex to be installed vertically. Note that if the exhaust temperature sensor cannot be installed directly in the turbocharger outlet connection, a 1/4" FPT stainless steel thread-o-let shall be welded into the flex between the engine connection and the corrugated hose.

2.8 PAINTING

Each engine shall be factory painted standard John Deere color for that model.

2.9 SPARE FILTERS

In addition to the filters installed on the engines, provide the following quantities of replacement filters for each engine plus break in oil. Package spare filters and oil in boxes and label each box with the engine model.

A. Six (6) oil filters.

B. Two (2) primary fuel filters.

C. Two (2) secondary fuel filters.

D. One (1) air filter plus one air filter service kit.

PART 3 - EXECUTION

3.1 PREPARATION AND SHIPPING

A. Check the cooling system for the presence of water. If any water is in the engine flush the cooling system with extended life 50/50 ethylene glycol mix, Shell Rotella ELC or approved equal. Install covers over the connections.

B. Install a positive mechanical seal consisting of a fitting plate and gasket on exhaust opening. Then install all covers and/or tape on any other openings. Ensure all covers are air tight and weatherproof. Use waterproof, weather resistant type tape. Do not install tape in such a manner as will damage paint when the tape is removed. Install a mechanical protective device over any protruding items, which may be vulnerable to damage during transportation.

C. Securely mount the engine on a shipping skid capable of moving with a forklift and suitable for air transportation.

D. Put a waterproof cover over the entire engine.

E. Package spare filters and any other loose ship parts in a single box with waterproof wrapping.

F. Deliver the engines, spare parts, and O&M manuals to the AEA Warehouse 2601 Commercial Dr Anchorage AK, 99501.

END OF SECTION