**ATTACHMENT 1**

**Generator Installation at Owens Valley VLBA Site**

**Statement of Work**

1. Scope of Work
	1. Background
		1. The NRAO has purchased a standby generator set and automatic transfer switch for its remote site at Owens Valley, CA
		2. The new equipment will supply backup power to the entire site, replacing the existing backup power system which services part of the site
		3. This equipment is expected to be delivered onsite in late spring or early summer
		4. This bid is for the installation of this equipment and the removal of obsolete components as detailed in paragraphs 1.2 and 1.3
	2. Installation
		1. Both the generator set and automatic transfer switch shall be installed near the utility service transformer



Figure 1: Utility Transformer, side view



Figure 2: Utility Transformer, front view

* + 1. Both the generator set and automatic transfer switch shall be bolted to a contractor provided concrete slab
		2. The transfer switch shall be installed such that it will provide power to the entire facility
		3. All new power cabling shall be buried in conduit
	1. Removal
		1. The existing automatic transfer switch shall be removed from service

Figure 3: Existing Transfer Switch

* + 1. NRAO staff may choose to salvage some components from the automatic transfer switch prior to its removal
		2. New power cabling shall be installed, in conduit, in place of the removed transfer switch
	1. Cleanup
		1. The contractor shall handle disposal of all waste generated by this project
		2. The contractor shall handle disposal of the old transfer switch
1. Bid package
	1. All bid packages shall include the following:
		1. A quote for the work described in paragraph 0
		2. A timeline
			1. The timeline shall identify:
				1. The number of days that the VLBA site is without power
				2. The number of days the bidder will be onsite
		3. A statement of availability
			1. This will identify the dates on which the contractor is available to perform the work described in paragraph 0
			and/or
			a statement that the contractor will be available provided with (x) weeks’ notice
2. Documentation
	1. The winning bidder shall provide the following additional documentation:
		1. A construction drawing detailing the concrete pad(s) to be poured
		2. A drawing/sketch showing the position of the generator set and transfer switch in relation to the existing transformer and building
		3. A site specific safety plan
3. Jobsite
	1. Owens Valley
	2. 

Figure 4: Jobsite Location

* 1. Site visit
		1. Bidders will be allowed a site visit
		2. All site visits must be scheduled at least two weeks in advance
		3. Restrictions on number of visitors and building access may be imposed due to Covid concerns
		4. Activities undertaken during visits shall be documented and approved by the NRAO Covid Management Team prior to travel.
		5. Visitors will be required to provide and use appropriate PPE while onsite.
		6. All work performed onsite shall comply with current State of California COVID policies
	2. Directions: Take US 395 South from Bishop CA. to Big Pine CA. Take highway 168 east for 2 miles, turn left on Leighton Lane (at Zurich historical marker) follow paved road for 3.5 miles. Turn right on gravel road. Follow signs to VLBA antenna
1. New equipment
	1. Caterpillar C7.1 PGABR Standby Generator Set
		1. Standby generator set
		2. Fuel type: diesel
		3. ISO8528 nameplate: 125kW emergency/standby electrical service
		4. 208Y/120 volt, 3-phase, 4-wire, 60hz
		5. EPA emission certified for US stationary emergency use
		6. Weather protective enclosure - white Sound Attenuated Level 1
		7. Integral critical grade exhaust system
		8. UL142 closed top double wall fuel tank base; 402 gallon capacity
		9. Lockable fuel cap, fuel level gauge & alarms, sender, vents, reliefs
		10. EMCP 4.2B electronic modular control panel
		11. Modbus RTU communications, configurable accessory I/O, programmable logic control
		12. Remote - programmable annunciation panel (supplied loose)
		13. UL489 main circuit breaker 400 AF 3-pole LSI electronic100% rated
		14. Low coolant level shutdown, low coolant temperature alarm
		15. Cat - lead acid engine start battery set, cables, secure mounting tray
		16. Charging alternator + multi rate 10A battery charger with NFPA alarms
		17. Engine jacket water heater
		18. Digital voltage regulator & excitation module
		19. Fluid fill; engine oil, engine coolant, battery electrolyte (fuel not included)
		20. One round trip provides startup assistance & owner training services
	2. Automatic Transfer Switch
		1. 208Y/120 volt, 3-phase, 4-wire, 60 hertz Service Ent Rated
		2. 400 amp, 3-pole, open transition, contactor type
		3. Contactor switching, open transition transfer
		4. Non-bypass isolation
		5. MX150 digital microprocessor control
		6. MEXEG accessory group
		7. NEMA 3R outdoor enclosure
2. Requests for information
	1. For any questions or clarifications, please contact Magdalene Romero (575-835-7200, mromero@nrao.edu)