STATE OF HAWAIʻI

DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
OFFICE OF ENTERPRISE TECHNOLOGY SERVICES

HONOLULU, HAWAIʻI

Legal Ad Date: Friday September 21, 2018

INVITATION FOR BIDS
No. IFB-19-020

SEALED BIDS
FOR
EMERGENCY REPAIR SERVICES AND CONTINUOUS MONITORING OF THE STATEWIDE DIGITAL MICROWAVE RADIO COMMUNICATIONS SYSTEM AND ITS ASSOCIATED EQUIPMENT

will be received up to and opened at 2:00 pm (HST)
on
Wednesday, November 7, 2018

at the Office of Enterprise Technology Services (ETS) Kalanimoku Building,
1151 Punchbowl Street, Room 431, Honolulu, HI 96813

Technical questions relating to this bid solicitation shall be directed to Mr. Vincent E. Krog, telephone (808) 586-1930 ext. 613, facsimile (808) 586-1962 or e-mail: vincent.e.krog@hawaii.gov.

Procurement questions relating to this bid solicitation shall be directed to Christie L. Ferreira, telephone (808) 587-9743, facsimile (808) 586-1962 or e-mail: christie.l.ferreira@hawaii.gov

Todd Nacapuy, Chief Information Officer

EMERGENCY REPAIR SERVICES AND CONTINUOUS MONITORING
OF THE STATEWIDE DIGITAL MICROWAVE RADIO
COMMUNICATIONS SYSTEM AND ITS ASSOCIATED EQUIPMENT
IFB-19-020

Chief Information Officer
Department of Accounting and General Services
Office of Enterprise Technology Services
State of Hawai‘i
Honolulu, Hawai‘i 96813

Dear Sir:

The undersigned has carefully read and understands the terms and conditions specified in the Specifications, Special Provisions, and in the General Conditions, Form AG-008 (Rev. 02/xx/14) attached to IFB-19-020; and hereby submits the following offer to perform the work specified herein, all in accordance with the true intent and meaning thereof.

The undersigned further understands and agrees that by submitting this offer, 1) he/she is declaring his/her offer is not in violation of Chapter 84, Hawai‘i Revised Statutes, concerning prohibited State contracts, and 2) he/she is certifying that the price(s) submitted was (were) independently arrived at without collusion.

Date: _____
Telephone No.: _____
Fax No.: _____
e-mail Address: _____

Payment address, if other than street address at right:

_____

_____
Hawaii General Excise Tax Lic. I.D. No.:

_____
Social Security or Federal I.D. No.:

Respectfully submitted,

_____
Exact Legal Name of Offeror (Company)

_____
Authorized Signature (Original)

_____
Title

_____
Street Address

_____
City, State, Zip Code

If Offeror shown above is a "dba" or a "division" of a corporation, furnish the exact legal name of the corporation under which the contract, if awarded, will be executed:

_____

Offeror is: ____ Individual ____ Partnership ____ Corporation ____ Joint Venture

State of incorporation: Hawai‘i_____ *Other _____
(Specify jurisdiction)

*If "other", is corporate seal available in Hawaii? ____ Yes ____ No

The following bid is hereby submitted for the Emergency Repair Services and Continuous Monitoring of the Statewide Digital Microwave Radio Communications System and Its Associated Equipment - (IFB-19-020)

A. Emergency Repair Services and Continuous Monitoring of the HAWAIIAN / Overbuild / Harbors Statewide Digital Microwave Radio Communications System and Its Associated Equipment.

$ _____ . Per Month

X 12 = Annual Amount $ _____ . Per Year

B. Aviat NOC Charges
Bid Price for 7x24 NOC services from Aviat

$ _____ . Per Year

C. Additional Link Maintenance (at the State's Option)

1. Cost Per Link Beyond 5 Additional Links.

$ _____ . Per Month

X 12 = Annual Amount $ _____ . Per Year

D. Preventative Maintenance Inspections (at the State's Option)

1. Cost Per Preventative Maintenance Inspection for ALL SITES.

$ _____ . Per PMI Period

BID EVALUATION SUM TOTAL (A+B+C+D) $ _____ .

****NOTE: ALL ITEMS MUST BE BID ON****

EXACT LEGAL NAME OF OFFEROR (COMPANY): _____

AUTHORIZED SIGNATURE (ORIGINAL): _____

TITLE: _____

OFFEROR MUST SIGN PAGE OF-2, AND OF-3 ON THE OFFER FORM WITH BLUE OR BLACK COLOR PERMANENT INK. DOLLAR AMOUNTS AND NAMES OF REFERENCES ON THESE PAGES MUST BE ENTERED IN PERMANENT INK OR TYPEWRITTEN.

INSURANCE COVERAGE (if applicable)

		Carrier	Policy No.
1.	Commercial General Liability	_____	_____
2.	Worker's Compensation	_____	_____
3.	Temporary Disability	_____	_____
4.	Prepaid Health Care	_____	_____
5.	Automobile Insurance	_____	_____

CONTRACTOR LICENSE

Offeror has attached a copy of its current State of Hawai'i C-15b Contractor License.

PERSONNEL LICENSES/CERTIFICATIONS

Offeror has attached copies of the following licenses/certificates for personnel to be assigned to work on this contract (see section 8.9 of IFB):

(a) Copy of FCC General Radiotelephone license or an equivalent industry certification,
(b) Copy of Certified Electronics Technician (CET) license/certificate, and
(c) A statement that reflects the type and duration of experience for each of the service personnel.

REFERENCES

Offeror shall list below the names and addresses of three (3) companies or government agencies to which it has provided or is currently providing services on licensed, high-capacity digital microwave radio systems similar to those requested herein. At least one of the references provided must be for services provided within the State of Hawai'i:

	Name	Address	Contact Person	Telephone No.
1.				
2.				
3.				

EXACT LEGAL NAME OF OFFEROR (COMPANY): _____

AUTHORIZED SIGNATURE (ORIGINAL): _____

TITLE: _____

OFFEROR MUST SIGN PAGE OF-2, AND OF-3 ON THE OFFER FORM WITH BLUE OR BLACK COLOR PERMANENT INK. DOLLAR AMOUNTS AND NAMES OF REFERENCES ON THESE PAGES MUST BE ENTERED IN PERMANENT INK OR TYPEWRITTEN.

WAGE CERTIFICATE
(For Service Contracts)

Subject: IFB/RFP No.: _____

Title of IFB/RFP: _____

_____

_____
(To be completed by Offeror)

Pursuant to Section 103-55, Hawai‘i Revised Statutes (HRS), I hereby certify that if awarded the contract in excess of $25,000, the services to be performed will be performed under the following conditions:

All applicable laws of the federal and state governments relating to workers' compensation, unemployment compensation, payment of wages, and safety will be fully complied with; and

The services to be rendered shall be performed by employees paid at wages or salaries not less than the wages paid to public officers and employees for similar work, with the exception of professional, managerial, supervisory, and clerical personnel who are not covered by Section 103-55, HRS.

I understand that failure to comply with the above conditions during the period of the contract shall result in cancellation of the contract, unless such noncompliance is corrected within a reasonable period as determined by the procurement officer. Payment in the final settlement of the contract or the release of bonds, if applicable, or both shall not be made unless the procurement officer has determined that the noncompliance has been corrected; and

I further understand that all payments required by Federal and State laws to be made by employers for the benefit of their employees are to be paid in addition to the base wage required by section 103-55, HRS.

Offeror _____

Signature _____

Title _____

Date _____

Significant Dates

Legal Ad Date: Friday September 21, 2018

Notification of Attendance: 12:00 PM Thursday September 27, 2018

Site Visits: Monday October 8 – Friday October 19, 2018

Deadline for Questions: 4:00 PM Friday October 26, 2018

Questions Answered: 4:00 PM Friday November 2, 2018

Bids Due / Opening: 2:00 PM Wednesday November 7, 2018

SPECIFICATIONS

1 INTRODUCTION

The Office of Enterprise Technology Services (ETS) of the State of Hawai'i Department of Accounting and General Services (DAGS) operates a microwave system statewide which is comprised of four main parts: The HAWAIIAN, the Overbuild, Anuenue, and Harbors. The Anuenue is co-owned as a partnership between the State and the United States Coast Guard (USCG). Each segment of the network is described herein, however the Anuenue is **not** part of this solicitation. The combination of the HAWAIIAN, Overbuild, and Harbors microwave links will be referred to as ETS Digital Microwave Radio System. All portions of the system were SONET so voice traffic could be prioritized and designed to travel a specific non-dynamic route. Not only are the routes controlled but this also facilitates traffic segregation. There is no method by which any customer data stream could be employed to investigate any other data stream. Ethernet traffic will be considered dynamic since the path it takes through the network is adjustable. In the event the radio path degrades to the point that the full bandwidth can no longer be supported, ethernet links can adjust their bandwidth to maintain connectivity.

One of the statewide digital microwave radio communications systems owned and operated by ETS is known as the HAWAIIAN, the HAwaii Wide Area Integrated Information Access Network. The HAWAIIAN digital microwave system interconnects five State Office Buildings (SOBs) in Lihue, Honolulu, Wailuku, and Hilo and includes equipment at 15 sites located throughout the State. ETS owns and operates DC power plants and dehydrators at all but one of the HAWAIIAN facilities and at other remotely located radio facilities that are not part of the HAWAIIAN system. For the purposes of this specification, the other DC power plants, dehydrators, and channel banks located at non-HAWAIIAN facilities listed herein shall be considered as systems and equipment associated with the HAWAIIAN. Most of the digital microwave radios in the HAWAIIAN system carry a DS3 (45 Mbps) payload; the last link segments into downtown Honolulu include a radio with OC-3 capacity and an OC-12 capacity loop carried both on optical fiber and free space optics (FSO) link connections. Data, voice, and video signals transported in digital form over the HAWAIIAN system provide State departments and agencies with communication services that enable them to perform their daily tasks and serve the public. The HAWAIIAN digital microwave provides essential over-the-water connections to link State government networks on the neighbor islands with each other and to ETS network center at the State office buildings in each county.

A second portion of the digital microwave radio communications systems owned and operated by ETS/DAGS is known as the Overbuild (OB). This digital microwave is intended to augment the HAWAIIAN system with primarily Ethernet carrying OC-3 (155 Mbps) links. At each of the State's radio sites, a Fujitsu 4100ES was installed to route traffic between radio links touching that physical node. These Fujistu multiplexers were put in as part of the Overbuild installation. They not only interconnect OC-3 radios, and OC-12 (620 Mbps) fiber rings, but they also drop out two primary formats, T1s and Point-to-Point (PTP) ethernet links. Cross connects are done through software. The increased capacity and flexibility offered by the Overbuild radios and multiplexers has proved necessary as much of the First Responder systems being produced today employ ethernet interfaces. This portion of the network shall be maintained as part of the contract issued pursuant to this solicitation.

The third portion of ETS/DAGS microwave network is the Anuenue partnership, which is owned and maintained by the USCG. The State provides facilities in exchange for ½ the bandwidth on each OC-3 link. USCG has employed Fujitsu 4100LS at the endpoints of their links for the same interconnect and data handoffs discussed previously with the OB Fujitsu 4100ES. All maintenance, and circuit routing / cross connects are to be done by USCG. If observed while on site, any issues with Anuenue equipment are only, and immediately, to be reported to the Anuenue contact. Take no action unless directed by both the Anuenue contact and ETS technical contact. This portion of the network is NOT maintained as part of the contract issued pursuant to this solicitation.

The last segment of the microwave network was put in to support DOT Harbors Division video traffic. Links were added from each Harbor and through the OB network to augment the available data capacity. All links installed have OC-3 capacity. This portion of the network shall be maintained as part of the contract issued pursuant to this solicitation. Vendor will need to have a Transportation Worker Identification Credential (TWIC) card for all technicians servicing the units at the Harbor locations.

2 SITE LOCATIONS

2.1 All Microwave System Locations

Work on the microwave system shall be performed at the following locations:

Island of Kauaʻi

- Kukuiolono, Kauaʻi: Located on the Kukuiolono Park and Golf Course at 854 Puʻu Road, Kalaheo, HI 96741.

- Kokee, Kauaʻi: Located on Kokee Rd approximately 9.3 miles after turning off Kekaha Road. Not currently used.

- Pōhakuwaʻawaʻa, Kauaʻi: Located near the end of Kokee Road at 22° 8'22.82"N, 159°38'46.62"W, just South of the beginning of the Awaʻawapuhi Trail. This is currently a passive site and therefore will not be part of the scheduled inspection visits in section 7.3.

- Nawiliwili Harbor: Located along Waapa Road and Kanoa Road in Lihue, Kauai. TWIC badge required. Due to the required for TWIC badges for access, this site will only be examined from outside of the harbor as part of the scheduled inspection visits in section 7.3.

- Kauaʻi High School: A passive repeater on a monopole at 3577 Lala Road, Lihue, Kauaʻi. Monopole is near the athletic field. Keys to parking lot near monopole and to fence surrounding the pole can be picked up from a State point of contact in Lihue. Please contact the State Radio Engineer for personnel who will issue keys. **NOTE** because this is a school, it is required to contact the School

Administrative Services Assistant (SASA) no less than 24 hours ahead of time to notify them you will be on site. SASA contact number is (808) 274-3160 ext. 101 or you may call the main line to the school at (808) 274-3160 and ask to speak with the SASA. 24 hour notice is not necessary for emergency related visits/repairs that require immediate attention. Any contractor personnel not providing a minimum 24 hour notice to the school will be removed from the access list, but the contractor will still be contractually obligated to fulfill the terms of their contract. So as to not disturb any school related activities, this site will only be examined from outside of school fenceline as part of the scheduled inspection visits in section 7.3.

- Kauaʻi Civil Defense: Located at Lihue SOB. Not currently used.

- Lihue SOB (Basement and Roof), Kauaʻi: Located at 3060 Eiwa Street, Lihue.

- Mt. Kilohana, Kauaʻi: Located mauka of the agricultural fields above Lihue several miles past the end of Ehiku Road. Four-wheel drive required for access.

- Kukui, Kauaʻi: located on the left side of the road approximately 8.75 miles up Hwy 550 from the turn off Kaumualii Hwy in Waimea.

Island of Oʻahu

- Pahole, Oʻahu: Located past the campground known as “Peacock Flats”. Turn left roughly 2 miles past Waialua High School. At this time access to the compound is arranged through DLNR Moiliili baseyard, contact Ryan Peralta. ETS intends to arrange for keys which will eventually be available at the Assistance Center, Kalanimoku SOB in Honolulu. .

- Mt. Kaʻala, Oʻahu: Located at Mt. Kaʻala Air Force Station (AFS) at the summit of Mt. Kaʻala. The facility is reached by seven-mile long access road that starts off of the Dillingham Highway about 1 mile past Waialua High School. Travel on the steep, single-lane access road is restricted by the Federal Aviation Administration to four-wheel drive vehicles only. Access is ONLY allowed after contractor personnel’s information has been submitted and approved for background check. This site will not be part of the scheduled inspection visits in section 7.3.

- Mauna Kapu Upper (ETS): Located at the very end of Palehua Road which begins at the gate at the end of Umena Street at the top of Makakilo. This is currently an empty site.

- Mauna Kapu Lower (USCG): The access to Mauna Kapu Lower must be arrange through the United States Coast Guard (USCG). Mauna Kapu Lower is a Prime Simulcast site.

- Kapolei SOB, Oʻahu: Located at 601 Kamokila Blvd.

- Kalaeloa Harbor: Located at the end of Malakole Street in Kalaeloa. TWIC badge required. Due to the required for TWIC badges for access, this site will only be examined from outside of the harbor as part of the scheduled inspection visits in section 7.3.

- Red Hill Aliamanu Army facility: Located on the Aliamanu Army base. Access is arranged through the Army. ETS does not expect to arrange for keys to be kept at the Assistance Center for this site. This is a future site therefore, will not be part of the scheduled inspection visits in section 7.3.

- Daniel K. Inouye International Airport, Oʻahu: Located in the old control tower atop the Overseas Terminal Administration Building at the Daniel K. Inouye International Airport, 300 Rodgers Blvd., Honolulu. AOA badge required. This site will not be part of the scheduled inspection visits in section 7.3.

- Pier 2 Harbor's Main Office and Pole, located through one of two checkpoints depending upon the existence of a passenger ship in dock. They can be accessed down Channel Street or Forest Avenue. Monopole and equipment room are located at 21°18'0.01"N, 157°51'59.07"W. TWIC badge required. This site will not be part of the scheduled inspection visits in section 7.3. but pictures will be provided to Offeror.

- ETS Round Top, Oʻahu: Located within Puʻu ʻUalakaʻa State Wayside Park at 3270 Round Top Drive, Honolulu.

- Leiopapa A Kamehameha SOB (LAK SOB or State Office Tower or SOT), Oʻahu: 235 Beretania Street, Honolulu.

- Capitol Basement: Located at 415 S Beretania Street, Honolulu, HI 96813. Sheriff Dispatch. This site will not be part of the scheduled inspection visits in section 7.3.

- Kalanimoku SOB (Basement, 5th Floor and Roof), Oʻahu: Located at 1151 Punchbowl Street, Honolulu. Basement equipment is located in the Assistance Center.

- Diamond Head Rim: Located on the rim of Diamond Head Crater. To be accessed by first contacting State Civil Defense or HI-EMA in the bunker known as Birkhimer to the right inside the crater as accessed from the Hawaii Kai side. If access ingress and egress procedures change, the bunker where access is arranged is inside the crater, on the Honolulu side of the tunnel that faces Hawaii Kai.

- Koko Head, Oʻahu: Located within the Hanauma Bay Nature Preserve about one mile south of Kalanianaole Highway, State Route 72, at 7501 Kalanianaole Highway, Honolulu. Hard right when turning into the bay entrance and access the gate just behind the bus stop.

- Waimanalo Ridge: Located at the end of Kamehame Ridge. There are a series of gates to the facility. The FAA compound is at the end of the limited access road.

- Puʻu Manawahua: Located in Makakilo at the end of Palehua Road. Approximately 21°23'10.24"N, 158°6'19.86W

Island of Lānaʻi

- Puʻu Kilea, Lānaʻi: Located in the forest above Lānaʻi City on Munro Trail, approximately 3 miles past the end of the paved section of the trail. Four-wheel drive vehicle required for access. Keys must be retrieved on Oʻahu.

Island of Molokaʻi

- Puʻu Nana, Molokaʻi: Located about ½ mile south of Maunaloa Road, in the Kaluakoi District of Molokai about 11 miles west of Kaunakakai. Four-wheel drive vehicle required for access. Exit the airport and head west 4.5 miles on Mauna Loa Highway. Gate to the dirt road which leads to the facility is on the left. At this time keys must be retrieved from Oʻahu. Access procedures may change.

- Kaunakakai Harbor, located in the Young Brother's Yard out on the pier. TWIC badge required. Due to the required for TWIC badges for access, this site will only be examined from outside of the harbor as part of the scheduled inspection visits in section 7.3.

Island of Maui

- Haleakalā, Maui: Located in the saddle area of the summit of Haleakalā. The site access road begins on the left past the Haleakalā National Park Summit Overlook parking area. There is a large gate after a cattle guard.

- USCG Haleakalā, Maui: Located in the saddle area of the summit of Haleakalā. The site access road begins past the Haleakalā National Park Summit Overlook parking area. Continue on straight and do not turn left at the gate. The USCG site is within the area with the observatories. Access only as arranged with Anuenue partners USCG.

- Wailuku SOB, Maui: Located at 54 High Street, Wailuku. Radio room is on the top floor. Antennas are on the roof.

- Kahului Harbor: Located on the big yellow monopole off Ala Luina Street in Kahului Maui. TWIC badge required. This site will not be part of the scheduled inspection visits in section 7.3. but pictures will be provided to Offeror.

- Puʻu Nia Niau, Maui: Located just off of SR 378 (Haleakalā Crater Road) approximately two-tenths of a mile below the entrance to Haleakalā National Park

(the park entrance is near mile post 10). Access to the site is via a one-half mile long trail. This is a commercial radio site owned by Haleakalā Ranch. Four-wheel drive vehicle required for access.

- Puu Mahoe, Maui: Located 3 miles past Ulupalakua Ranch on the South East side of Haleakala over an unimproved road. This is a MPD site and access must be coordinated with MPD Radio Shop.

Island of Hawaii

- Kawaihae Harbor monopole: Located some 100' SW from the harbor office. TWIC badge required.

- Kahua Ranch: Located approximately 9 miles after turning onto Kohala Mountain Road (Hwy 250) from Kawaihae Road in Waimea. After turning off Kohala Mountain Road, the path takes a winding path through pastures on 1.4 miles of dirt road. Four-wheel drive is recommended. Care must be taken not to disturb the livestock by use of vehicle proximity or vehicle horns.

- Kaupulehu, Hawai'i: Located north of Kona, 2.2 miles mauka of the 29 mile marker on the Mamalahoa highway (State route 190) immediately adjacent to the existing Hawaii Electric Light Company (HELCO) commercial facility. Four-wheel drive vehicle required for access.

- Humuula, Hawai'i: Located on the south slope of Mauna Kea, approximately one mile west of the Mauna Kea access road (turnoff is to the left just past the Mauna Kea Information sign). Four-wheel drive vehicle required for access over a trail that traverses open pasture.

- Mauna Loa: Located about 8.6 miles off Saddle Road. The site is located by turning off Saddle Road (Hwy 200) onto Hilo Kona Road for approximately 4 miles, and then turning left onto Observatory Rd. for 4.4 miles. At the end of the road, turn left and the site is on the right approximately 0.16 miles after the turn.

- Kulani Cone: Roughly 2.2 miles beyond the Kulani Cone Correctional Facility, which is 18.5 miles west of Hwy. 11 on Stainback Hwy. The radio facility has GPS coordinates 19°31'14.43"N 155°17'57.94"W. Access arranged through ETS and prison warden. This site will not be part of the scheduled inspection visits in section 7.3.

- Waiakea, Hawai'i: Located in Hilo, West of Komohana Street on the Water tower access road, approximately 1500 ft. North of Puainako Street.

- Hilo SOB, Hawai'i: Located at 75 Aupuni Street, Hilo. Equipment now exists in spaces located in the basement and roof. During the course of this contract, equipment and/or its upgrades and/or replacements shall be in the new ETS equipment room on the 2nd floor.

- USCG Hilo: Located at 29 Kuhio Street, Hilo Hawaii 96720. U.S. Coast Guard must be contacted one week prior to access.

- Hilo Harbor Office: Located at 80 Kuhio Street, Hilo, Hawaii 96720. Merely 500' N NE of the USCG Hilo tower. TWIC badge required.

3 SCOPE

Everything in this section is to be bid as one lump sum on the bid sheet.

3.1 General Work Requirements

Details on the equipment to be maintained, specifics of the services required, hours of operation, alarm response timeliness requirements, other responsibilities and provider qualifications are listed below.

3.1.1 7x24 Monitoring

Provide continuous monitoring of the operational status of ETS digital microwave radio system and associated equipment as defined herein on a 7x24 (7 days-a-week, 24 hours-per-day) basis with no additional fees or costs to the State;

3.1.2 Preventative Maintenance Inspection (State's Option)

Offeror shall submit with their bid in the section entitled, "Preventative Maintenance Inspection" on the Bid Sheet, a quote to perform one (1) preventative maintenance inspection (PMI) for all HAWAIIAN, Overbuild and Harbors microwave system sites. Maintenance work is as noted in sections 3.5.2 through 3.5.5. At the State's option, a total of up to two (2) preventative maintenance inspections per year may be awarded.

3.1.3 Monthly Alarm and System Status Report

Offeror shall produce and distribute, each month, a summary report of all system alarms, problems, incidents, repairs, upgrades, and any status changes on inventory or items under repair. Reports will be sent in Microsoft Word format by email transmission to the ETS Assistance Center staff, and the State Radio Engineer. Reports may also be sent as otherwise directed by the State Radio Engineer.

3.1.4 Warranty

Procure on an annual basis and maintain for the duration of the contract, the extended factory warranty repair for the Aviat (Harris) microwave radio equipment, if and as available, from Aviat Networks (formerly known as Harris Stratex and Harris MCD) as the Synergy Extended Warranty support program;

3.2 Warehouse Storage

Provide a single warehouse space on O‘ahu, as specified in Section 3.8, for spare parts for the radio systems and associated equipment, restoration spares, and test equipment;

3.3 Subcontracting Services

As described below, subcontracting shall be permitted ONLY when providing NOC services, or riggers for repointing antennas to resolve traffic/link affecting issues.

3.3.1 Link Alignment / Antenna Repointing

While troubleshooting a traffic affecting issue, Receive Signal Level (RSL) may indicate an alignment issue. While extremely rare, dishes can occasionally be found out of alignment for various reasons. ETS strongly recommends the Offeror has on staff, climb certified riggers to facilitate the expedient resolution of any traffic affecting link alignment issue. However the Offeror is not responsible under this specification for employing riggers or skilled tower workers to provide emergency repointing of antennas. In a payload affecting incident, the Offeror is responsible for returning the link to operational status with RSL levels at, or near original design levels. For such repairs, with written approval from ETS, employ the use of certified subcontractors to accomplish the tower work necessary for remediation of the link issues. If employing a subcontractor for tower work, the Offeror is responsible under this specification, at no additional charge to the State, for on-site coordination and monitoring of radio systems when antennas are repointed, re-installed, or replaced. While the Offeror is responsible for all costs associated with the realignment, to offset rigger fees the Offeror may invoice ETS for $5,000 per corrective incident as approved by State Radio Engineer.

3.4 Detailed List of Services to be Performed

The following services shall be performed by the Offeror:

3.4.1 Preventative Maintenance

If this option is awarded, the winning bidder shall complete the first preventative maintenance inspection no later than one hundred twenty (120) days after the receipt of the Notice to Proceed (NTP). PMIs shall be scheduled with ETS a minimum of ten (10) days prior to the servicing, and ETS reserves the right to observe any preventative maintenance inspections.

3.4.2 7x24 Monitoring

Continuous monitoring of the operational status of ETS entire digital microwave radio system, including HAWAIIAN, Overbuild, Harbors, and additional microwave links, and their associated equipment as detailed herein:

- Through the work of trained, certified, and experienced employees who perform this task as their primary function (employee qualifications are detailed in section 4.2); and

- On a 7x24 (7 days-a-week, 24 hours-per-day) basis with no additional fees or costs to the State.

3.4.3 Maintenance Service

Maintenance service shall include on-call remedial maintenance, cleaning, adjustment, and replacement of worn or malfunctioning parts, to maintain the equipment at the original equipment manufacturer's specification.

Note: Any vacuuming of electronic equipment shall be done with a unit by 3M model SV-497AJM ESD Safe Field Service Vacuum or equivalent.

3.4.3.1 Original Equipment Manufacturer's Engineering Changes

During the contract period (including any extension to the contract), the original equipment manufacturers may make technical improvements to existing installed equipment and software. Such changes are usually accomplished through field engineering changes. The Offeror shall install, at no additional cost to ETS, such manufacturer-provided improvements. Such improvements will be installed during the annual PMI site visit if awarded. ETS shall be responsible for any costs to acquire materials from the manufacturer to accomplish these field engineering changes.

3.4.4 Availability

The Offeror's service personnel shall be available 24 hours a day, 7 days a week to perform any required maintenance or repair services. All Offeror's employee costs for work performed after hours, on weekends or holidays, or otherwise on an overtime or emergency basis, are the responsibility of the Offeror.

3.4.4.1 Disruptive Work Must Occur After Hours

Testing and repairs that are disruptive to system operations and/or are traffic affecting shall be performed by the Offeror outside of the State's normal working hours when at all possible. For the purpose of the contract, the State's normal working hours shall be defined as that period on regular State workdays from 7:00 a.m. to 5:00 p.m. Any and all test and repair activities that have the slightest potential to disrupt system operation and/or affect traffic shall be scheduled in advance with the State Radio Engineer and the ETS Assistance Center.

3.4.5 Alarm Acknowledgement

The Offeror shall acknowledge all new Service Affecting or Non-Service Affecting alarm indications or requests for service from ETS personnel, and/or the microwave system, and/or the network monitoring system, whether the alarm notification and/or service request was human initiated or made by automatic alarm notification sent by monitoring system, as soon as possible, and in no case later than thirty (30) minutes after notification. Acknowledgement of an alarm or service request can be accomplished by speaking to the ETS Assistance Center staff or by remotely or directly accessing the monitoring system and using the

information received to plan an appropriate response. Offeror shall monitor, by cell phone, the status of the microwave system by use of the Provision network monitoring system. Offeror shall provide a service center telephone number or an on-call service technician number through which a service request can be made to a qualified service technician at any time of any day.

3.4.6 Response

The Offeror shall ensure the continuous and proper operation of the Harris digital microwave radios, Fujitsu multiplexers, LightPointe FSO equipment, standby and backup components and systems for all units, and associated equipment by providing **rapid response,** as described in sections 3.4.6.1 and 3.4.6.4, to failures, alarms, and out-of-tolerance conditions as defined below.

3.4.6.1 Response to Non-Service Affecting Alarms

On-site response to all other Non-Service Affecting Alarms must occur before 3:00 PM of the next regular business day unless other arrangements are made with ETS during the initial acknowledgement of the alarm.

3.4.6.2 Response to Payload Alarms

The Offeror must respond on site to any and all Payload Affecting Alarms, whether the alarm notification and/or service request was human initiated or made by automatic electronic notification. Acknowledgement to Payload Affecting Alarms shall be as soon as possible, and unless other arrangements are made with ETS during the initial acknowledgement of the alarm, upon direction of the NOC or ETS staff, the Offeror shall respond on-site no later than:

- O‘ahu – two (2) hours; and
- Islands other than O‘ahu – either within eight (8) hours or if event occurs after the last available travel then two (2) hours after the neighbor-island arrival of the next available regular commercial flight from O‘ahu.

3.4.6.3 Response to Non-Microwave Related Alarms

The Offeror is required to report all Non-Microwave Related Alarms to the ETS Assistance Center as soon as possible, and in no case later than 9:00 AM on the next calendar day.

3.4.6.4 Response to Service Affecting Alarms

Service Affecting Alarms affects the operation and/or reporting of any element under offerors responsibility as defined herein without affecting payload. The offeror must respond on site to any and all Service Affecting Alarms, whether the alarm notification and/or service request was human initiated or made by automatic electronic notification. Acknowledgement to Service Affecting Alarms shall be as soon as possible, and unless other arrangements are made with ETS during the initial acknowledgement of the alarm, the Offeror shall respond on-site no later than:

- All Islands – by next business day.

3.4.7 Escalation Procedure for Service Affecting Alarms

The Offeror shall follow the Aviat NOC escalation procedure, and shall implement Offeror's own automatic escalation procedure to ensure response to and resolution of problems that cause Service Affecting Alarms. The Contractor will provide ETS throughout the term of the contract with both an updated copy of this escalation procedure and a current list of escalation telephone numbers.

3.4.8 Alarm Connections

The Offeror shall not disable, disconnect, or bypass any alarm without the express written permission of the State Radio Engineer.

3.4.9 Acknowledgement and Response Requirements for Time and Material (T&M) Services.

Acknowledgement and response requirements do not apply to call outs for optional services that are rendered at ETS's option and performed by the Offeror on a time and materials basis. However, the Offeror is expected to respond to all such requests in a rapid and professional manner.

3.4.10 Original Equipment Manufacturer (OEM)

The Offeror shall guarantee that all equipment maintenance, repairs, modifications, upgrades, and/or parts replacement are made in such a manner as to be compatible with the practices recommended by the original equipment manufacturers.

3.4.11 Repair In Place

All maintenance and repair work shall be done at ETS's telecommunications facilities throughout the State unless otherwise authorized by ETS.

3.4.12 Emergency Repair Services & Monitoring Charges

The lump sum charge per month for emergency repair services and continuous monitoring shall include all costs for labor, regular wages and benefits, overtime wages; personnel travel costs and per diem; parts, materials, consumables, Aviat NMS services, hardware and software warranties, and supplies; any additional tools, equipment, and safety gear required; costs for employee training and certification; costs for storage, transportation, shipping, and supervision; as necessary to accomplish the activities described herein.

3.5 Preventive Maintenance Inspection (PMI)

If this option is awarded, the winning bidder shall complete the first preventative maintenance inspection no later than one hundred twenty (120) days after the receipt of the Notice to Proceed (NTP). PMIs shall be scheduled with ETS a minimum of ten (10) days prior to the servicing, and ETS reserves the right to observe any preventative maintenance inspections. A written report detailing the sytem status and the work performed must be produced and provided to the State Radio Engineer thirty (30) days after the completion of the PMI on the last site. PMIs must be completed within forty-five (45) days unless otherwise authorized by ETS.

3.5.1 Preventative Maintenance Inspection Sheets

ETS recommends the use of PMI sheets found on pages PMI-05 through PMI-09, or PMI documents provided by the OEM.

3.5.2 Annual maintenance shall include:

- All items recommended by Harris for annual maintenance of the Constellation, and IRU-600;
- All items recommended by Fujitsu for annual maintenance of the FlashWave multiplexer products;
- Provide full backups of every FlashWave on a 1GB flash (USB) drive;
- In-service testing of off-line (hot-standby) units as well as spare modules for all Constellation radios;
- In-service testing of off-line (hot-standby) units as well as spare modules. Only one-half or one-quarter of the available spares are tested during any annual maintenance activity;
- In-service testing of spare modules for all Fujitsu units;
- All items recommended by LightPointe for annual maintenance of the FlightStrata FSO link equipment, including, but not limited to, cleaning of the exterior of the lens;
- All items recommended by Telecom Solutions for annual maintenance of the DCD 523 Digital Clock Distributor;
- All items recommended by Symmetricom for annual maintenance of the Symmetricom model S350 SyncServer;
- All items recommended by the original equipment manufacturer of the dehydrator for each waveguide dehydrator unit in use, including, but not limited to, replacement of filters and desiccant material; and
- Visual inspection, and, if necessary, cleaning or refurbishment of the network monitoring system computer system, the Decibel Products model DB8830 Sentry paging unit, the Ardax orderwire interface, Hewlett Packard model E6325A T1 Test Advisor test sets, DSX panels, fiber optic jumpers, and facility alarm wiring.
- Produce a written report detailing the system status and the work performed.

3.5.3 Preventative Maintenance of Security Cameras

Certain sites are equipped with digital security cameras. ETS shall have the right to add cameras to other sites thereby increasing the video surveillance to all ETS Radio sites during the period of this contract and any extensions without additional cost.

Annual maintenance of all ETS Radio Facility security cameras shall include the following activities:

- Prior to deployment for maintenance of remote sites, the Offeror shall go to the Kalanimoku Assistance Center, or a new hub site if moved from Kalanimoku, to evaluate the systems performance. Observe each camera view for any needed corrections. Record any views in need of correction, any cameras not reporting and/or recording.
- Once deployed to ETS Radio sites, the Offeror shall clean all camera housing glass at all camera sites by using a microfiber cloth with Windex Glass Cleaner (only) or appropriate alcohol wipes. Camera lens typically would not require cleaning.
- The Offeror shall possess the appropriate software in their computer laptops to access the system to monitor site video prior to leaving site.
- Ensure viewing angle is correct, and if altered, is returned to original setting.

3.5.4 Preventative Maintenance of all Facility DC Power Systems

Maintenance of all Facility DC Power Systems, which includes, but is not limited to:

- Re-torquing of all high-current connections and re-greasing of all battery terminals;

- Measurement and listing in both tabular and graph form of data collected per cell for each battery bank that includes for each cell the cell number, voltage, internal resistance, and inter-cell resistance to the next (numerically higher) cell. Also provide a detailed summary for each bank that indicates the minimum, maximum, and average for each parameter recorded as well as the ambient temperature during the measurement. The use of an Albér CellCorder testing device only is required for these measurements/data;

- Documenting of the DC distribution panel layout with a drawing that indicates DC circuit breakers installed and the name of their connected load;

- Measurement and recording of the temperature of the negative terminal of each battery bank;

- Measurement and recording of the normal operating voltage, load current, and peak-to-peak AC ripple (current and voltage) as measured at the input to the DC distribution panel for each DC power system; and

- Determine and provide a written estimate of the hold time for each DC power system.

3.5.5 Preventative Maintenance Report

The preventative maintenance inspections shall not be deemed complete until the State Radio Engineer accepts the written maintenance report. The maintenance report will include at minimum the information and in a similar format as in the obtainable annual maintenance report entitled "Microwave System Annual Maintenance Report…" The dated report provided to winning bidder will be latest one accessible. This document is available to the successful Offeror upon request and subsequent to Notice to Proceed (NTP). Note that the forms as

used the "Microwave System Annual Maintenance Report" contains more information than recommended by the original equipment manufacturer. All additional information and test and monitoring points measured and recorded in the "Microwave System Annual Maintenance Report" must be provided in all annual maintenance reports produced by the Offeror. The written maintenance report shall also include:

- A Module repair List (include RMA numbers as appropriate);
- Updating of the DS1 routing map (in conjunction with ETS staff);
- Updating of Ethernet routing map (in conjunction with ETS staff);
- Listing of alarm histories for all types of alarms received during the previous twelve (12) months; and
- Production of a tabular listing of Harris, Aviat, Fujitsu, LightPointe, and related equipment and their status. Listing shall indicate make, model, serial number, and any State inventory decal number attached.

In addition, the written maintenance report shall include a comprehensive inventory of all spare parts, test fixtures, and test equipment owned by ETS that is currently in the Contractor's possession. The inventory shall indicate make, model, serial number, and, if available, date of last calibration. The maintenance report must be provided to the State Radio Engineer in both a hard copy (printed) format as well as a soft copy saved on a USB flash drive. Flash drive must be submitted with hard copy and both are due no later than one hundred sixty (160) days after the receipt of the Notice to Proceed (NTP).

3.6 Extended Factory Warranty

Procure on an annual basis and maintain for the duration of the contract the extended factory warranty repair as available from Aviat as Synergy MLA Extended Warranty for the Harris and Aviat equipment. Failure to maintain the Aviat Extended Warranty enforced for the Constellation radios shall result in the immediate termination of the contract.

The Offeror will pay all other repair costs, including any additional shipping charges associated with the shipping of equipment to or from the Aviat Synergy Extended Warranty depot. Unless otherwise agreed by ETS, all shipping to Aviat by the Offeror will use Federal Express "FedEx 2nd Day" or equivalent service. The Offeror shall arrange for parts and modules re-calibrated, repaired, or replaced by Aviat to be shipped directly to ETS to allow for inventory and status monitoring by the State.

Should any component, card, module, sub-assembly or any other portion of the Constellation radios be found to be uneconomical to repair, the Contractor will be responsible for all costs associated with providing a replacement or new item as necessary to maintain the system's continuous and proper operation and the integrity of the spare parts and equipment inventory, provided such replacement is available from the original equipment manufacturer.

3.7 ProVision Warranty

Procure on an annual basis and maintain for the duration of the contract and any extension, the basic software warranty for the ProVision software and the ProVision computer's operating system.

3.8 Storage for Spares

Offeror to provide a single organized, clean, dust-free, secure warehouse space on the island of O'ahu, as specified herein, of no less than 240 square-feet for spare parts for the radio systems and associated equipment, restoration spares, and test equipment. In order to facilitate the storage of equipment racks, the warehouse space shall have a ceiling height of no less than nine (9) feet. The warehouse space shall meet or exceed the recommendations of the original equipment manufacturers of the radio, Fujitsu, and Intraplex equipment recommendations regarding allowable ranges of humidity and temperature for parts storage. Collocation of the storage space in any garage area susceptible to vehicle exhaust fumes and smoke is not acceptable. ETS and its representatives shall have free and unfettered access to this storage area during normal business hours.

3.9 Annual Test Equipment Calibration

Unless noted otherwise, annually calibrate all ETS owned test equipment listed in this specification. The Offeror shall be responsible for all costs to calibrate, ship or transport, and/or insure items during transport of ETS test equipment listed herein.

Only one of the test equipment field kits (consisting of an Agilent 53148A, HP 8481H, and HP 8483A Power Sensor) shall be sent out for calibration at any one time. At least, one complete field kit shall be kept in hand (in the State of Hawai'i) and in current calibration at all times.

In order to contain costs, the IFR model 6843 shall be calibrated every other year; the Offeror shall calibrate the IFR model 6843 during odd contract years (first year, third year (second renewal), and fifth year (fourth renewal)).

3.10 7x24 Monitoring

Offeror shall, as part of the contract and included with their bid, provide Network Operations Center (NOC) functionality to monitor the health of the system and any emergent alarms 24 hours a day, 7 days a week. Offeror must procure this service from Aviat for the sole use of monitoring the State of Hawaii's Digital Microwave Radio Communication System. No other entity will be given access to remotely monitor the system. Offeror will agree to respond to services from Aviat NOC, or State Radio Engineer, or the DAGS Assistance Center within the contractual timeframes specified herein, 24 hours a day, 7 days a week. Aviat is to be instructed to call the State Assistance Center during the hours of 6:00am-9:00pm Monday-Friday, and 8:00am-4:00pm Saturdays, Sundays and Holidays. All times given are Hawaii Standard Time (HST). Outside these hours, Aviat NOC is to call vendor who is awarded this contract directly.

3.10.1 Services Provided by Aviat Network Management Center (NMC)

Provide Aviat Networks bundled services:

Surveillance and Network Monitoring
- Continuously monitor network elements
- Detect / Identify Faults and Alarms

Event Management Triage
- Correlate Alarms where appropriate
- Review Maintenance Schedules / Weather Patterns / Known Issues
- Assess Severity and Service Impact

Troubleshooting
- Diagnose and isolate the fault / alarm
- Coordinate restoration and repair – remotely or onsite
- Actively manage the event from "cradle to grave."
- NOTE: Aviat Networks strives to troubleshoot and resolve issues remotely prior to or in place of dispatching field resources to site.

Notification
- Report events to customer in real-time via Phone / Email / Portal

Trouble Ticketing
- Document the fault
- Manage ticket until fault is resolved
- Generate trouble ticket reports
- Capture lessons learned from each incident into Aviat's Knowledgebase for future reference

Call out and Dispatch
- Dispatch field operations and vendors for physical analysis and repair
- Coordinate all aspects of the dispatch to ensure right resource is at the right location with the right tools / equipment to resolve the problem within the SLA commitment.

Failure Analysis
- Generate a post mortem report to document issue / lessons learned as appropriate
- Drive continuous improvement of process and tools

Reporting
- Monthly reportrs – refer to section 3.1.3 for report description

3.10.2 Specific Escalation Process

Aviat Network Management Center (NMC) will attempt to troubleshoot and resolve issues remotely prior to or in place of dispatching field resources to site. When an alarm is received in the Aviat Network Operations Center (NOC), the team will attempt to determine the root cause by correlating all alarms, look at weather, RSL's, Signal To Noise Ratio (SNR), etc. After troubleshooting, if the situation is determined to be an emergency and therefore onsite dispatch is required, the following process will be followed.

- NOC generates Case to track all aspects of identified issue
- NOC reviews site issues to ensure there are no pre-required approvals needed
- NOC requests dispatch and identifies all pre-requisites including required hardware if hardware failure is identified as the root cause from remote troubleshooting
- NOC confirms dispatch in process to all parties with estimated ETA
- Once Offeror's technician is onsite, SLA time is logged into case and Conference Bridge is initiated with NOC
- Issue is resolved / workaround completed and Ticket is closed by NOC
- Email notification is sent to all identified parties to alert them to closure
- Offeror's Tech takes failed unit (assuming hardware failure) and processes through the Aviat Return Merchandise Authorization (RMA) process
- Offeror's Tech also updates Spares inventory identifying hardware removed and what hardware is being processed via the RMA process.

Aviat Networks Support process – NOC & TAC

- Tier 1: NOC Personnel

NOC Engineer receives alarm notification from the monitoring tools, and opens a Support Case and, based on Customer and Product data, reviews potential impact. Looks at all aspects of the site impacted to understand potential impact from Scheduled Maintenance, Weather, and finally the equipment itself. If after initial review of all aspects that NOC can access, NOC will initiate a field dispatch. At the same time, if not successful in identifying the specific issue impacting performance of the network, will escalate to the next tier of support within Aviat (Tier 2).

The NOC Engineer will identify the severity (Critical, Major, Minor) at the time of escalation to the Technical Assistance Center (TAC) team.

- Tier 2: TAC

If the problem is not resolved within the target resolution time – associated with each of the severity levels, then there is an automatic process by which the issue will escalate to the next level of support to pursue resolution. At this time Management is notified, identifying that the issue has gone beyond accepted timeframe for resolution.

Tier 2 generally is required when the issue is beyond simple hardware failures. Usually involves some level of configuration, hardware not operating exactly as specified, or when problem is intermittent in nature.

- Tier 3: TAC

If the problem is not resolved within the target resolution time, then Aviat Networks will escalate to management for approval to employe the next level of support.

Tier 3 Technical Support Engineer (TSE) typically gets involved when there are complex interoperability issues identified between the microwave and other components in the network, when problem appears to be software related (i.e., a bug), or when new products or software have been introduced into the network and cause issues not previously seen before.

4 OFFEROR QUALIFICATION

4.1 Corporate Licensure Qualifications

Offeror must possess a valid State of Hawai'i specialty Contractor license for the classification C-15b, Telecommunications Contractor's License. A copy of the license must accompany the bid. Offeror must maintain this specialty Contractor's license for the duration of the contract.

4.2 Personnel Qualifications

4.2.1 Staff Count

The Offeror agrees to commit and provide at all times a minimum of two (2) full-time qualified staff members whose primary assignment will be the emergency repair services and continuous monitoring of the operational status of ETS digital microwave radio system and its associated equipment.

4.2.2 Full Time Employees Required

All work done directly on the system shall be performed by qualified and experienced personnel that are regular full-time employees of the Contractor. Use of part time or temporary employees, summer hires, helpers, trainees, or apprentices to perform services under the contract is prohibited. Subcontracting shall be permitted ONLY when providing NOC services, or riggers for repointing antennas to resolve traffic/link affecting issues.

4.2.3 Personnel Qualifications

Personnel assigned to the emergency repair services and continuous monitoring of the operational status of ETS digital microwave radio system and its associated equipment shall have the following qualifications:

Offeror shall host and purchase training by original equipment manufacturers to maintain, repair, and commission links by the original equipment manufacturer on the Harris/Aviat Constellation and IRU-600 radio systems and Aviat ProVision software. Training will include seats for 2 ETS staff at no extra cost to the state. Personnel assigned to the emergency repair services and continuous monitoring of the operational status of ETS digital microwave radio system and its associated equipment shall attend the training described above within 90 days after having the digital microwave maintenance assigned to them as their primary task.

Personnel must have a minimum of two years experience with licensed digital microwave systems that includes experience with at least three of the following five aspects of licensed (or NTIA coordinated) digital microwave radio systems operating in the lower 6 GHz, upper 6 GHz, 7GHz/8GHz, or 11 GHz bands:

- monitored hot standby configured radios;
- multiple hop radio systems;
- multiplexed high-capacity (DS3 or better) digital payloads;
- space diversity receiving systems; and
- high capacity over-water operation.

Personnel must have experience with computer based remote control and monitoring systems used in the telecommunications industry. Experience with license-free radio systems or non-multiplexed radio systems will not meet any aspect of this requirement.

Personnel must also possess either a valid commercial General Radiotelephone license from the Federal Communications Commission or an equivalent industry certification (such as a NARTE Master Technician, Junior Engineer, Senior Engineer, or Master Engineer Certification).

Personnel must also possess Certified Electronics Technician (CET) certification.

A statement of type and duration of experience of each of the service personnel must be submitted with the bid. Copies of personnel licenses or certifications must also be submitted with the bid. Copies of factory training certificates received by service personnel must be provided to ETS within 90 days after receipt of the Notice to Proceed.

5 EQUIPMENT DESCRIPTION

5.1 Payload Bearing Equipment

The payload carrying portion of the digital microwave system is comprised of Harris (now known as Aviat) digital microwave radios and multiplexers as well as equipment made by Fujitsu and LightPointe. The Offeror shall be responsible for all of the equipment, all connections (including radio frequency, signal, telemetry, and power), waveguide branching and interconnections, and hardware located between the first connector on the inside of the building on the exterior run of elliptical waveguide to the antenna system and the front cross connect wiring on the Digital Signal Cross-connect (DSX) panels for ETS digital microwave radio system and its associated equipment. The Offeror shall be responsible for all of the equipment, connections (fiber optic, signal, telemetry, and power) and hardware including the

front cross connect wiring on the Digital Signal Cross-connect (DSX) panels for all SONET, multiplexer, and free space optical systems and hardware described herein as associated with ETS digital microwave radio system. If inter-floor or inter-facility trunk fiber is used, the Offeror shall be responsible for the connections to local fiber termination panel for those trunk fibers but shall not be responsible for the trunk fiber or its termination panels.

5.1.1 Larus Fiber Optic Transport System

The Larus fiber optic transport system is used to transport T1 circuits between the Kalanimoku SOB basement and the Honolulu Municipal Building (HMB) radio room. The Larus equipment consists of Larus model 1187 mounting shelves and FT2ER 4-T1 fiber transport units.

5.1.2 LightPointe and Fujitsu OC-12 Loop System in Honolulu

The Honolulu OC-12 loop interconnects the LAK SOB, HMB basement, HMB radio room, Honolulu Police Dispatch radio room, and the USCG facility in the PJKK Federal Office Building on O‘ahu. The Honolulu OC-12 equipment consists of four (4) LightPointe FlightStrata 622 OC-12 free space optics links (or eight (8) units total) and five (5) Fujitsu FlashWave 4100 multiplexers. Note that the Honolulu OC-12 loop system does not include the LightPointe free space optics link connecting LAK SOB and the Kalanimoku SOB.

Equipment used on the last link segments into downtown Honolulu include a LightPointe FlightStrata Free Space Optical (FSO) duplex laser link operating at OC-12 capacity Fujitsu FlashWave 4100ES multiplexers, and a FlashWave Small Shelf. The Fujitsu multiplexers support an OC-12 loop between the LAK SOB roof radio room and the Kalanimoku SOB Basement that transits both the LightPointe FSO link and ETS LuxN fiber optic systems that interconnect those buildings. The Offeror is only responsible for the FSO portion of the loop and the optical jumper connections to the nearest ETS LuxN equipment that supports the other half of the OC-12 loop. The LightPointe FSO OC-12 link includes two (2 each) LFSA-0622-1KS-S3S FlightStrata-622 single mode interface head units and two (2 each) LPC-D12 DC power supplies with -48 VDC power input. Please note that ETS will be changing out the LuxN fiber equipment in the near future.

5.1.3 Microwave Links

Link #	Radio Type	Location 1	Location 2
1	Constellation	Lihue SOB	Kilohana
2	Constellation	Lihue SOB	Kilohana
3	IRU	Lihue SOB	Kilohana
4	IRU	Kukui	Kukuiolono
5	IRU	Kukuiolono	Puu Manawahua
6	Constellation	Kilohana	Mt. Kaala
7	Constellation	Kilohana	Mt. Kaala
8	IRU	Kilohana	Nawilliwilli

9	IRU	Pahole	Mt. Kaala
10	Constellation	Mt. Kaala	Round Top
11	IRU	Mt. Kaala	Round Top
12	IRU	Mt. Kaala	Round Top
13	Constellation	Round Top	LAK
14	Constellation	Round Top	LAK
15	IRU	Round Top	LAK
16	IRU	Round Top	LAK
17	IRU	LAK	Pier 2
18	IRU	Round Top	Puu Kilea
19	IRU	Round Top	Puu Kilea
20	Constellation	Round Top	DH Rim
21	IRU	Round Top	DH Rim
22	Constellation	Round Top	HNL Airport
23	IRU	Puu Kilea	Haleakala ICSD
24	IRU	Puu Kilea	Haleakala ICSD
25	IRU	Puu Kilea	Haleakala ICSD
26	IRU	Puu Kilea	Haleakala ICSD
27	IRU	Puu Kilea	Haleakala ICSD
28	IRU	Puu Kilea	Puu Nana
29	IRU	Puu Kilea	Puu Nana
30	Constellation	DH Rim	Koko Head
31	IRU	DH Rim	Koko Head
32	IRU	DH Rim	Koko Head
33	IRU	Koko Head	Waimanalo Ridge
34	IRU	Koko Head	Puu Nana
35	Constellation	Koko Head	Puu Nana
36	IRU	Puu Nana	Kaunakakai Pier
37	IRU	Puu Nana	Haleakala USCG
38	Constellation	Puu Nana	Haleakala USCG
39	IRU	Puu Nana	Haleakala USCG
40	IRU	Haleakala ICSD	Kaupulehu
41	IRU	Haleakala ICSD	Kaupulehu
42	IRU	Haleakala ICSD	Haleakala USCG
43	IRU	Haleakala ICSD	Haleakala USCG
44	Constellation	Haleakala ICSD	Wailuku SOB
45	IRU	Haleakala ICSD	Wailuku SOB
46	Constellation	Haleakala USCG	Kahua Ranch
47	Constellation	Kahua Ranch	Kaupulehu
48	IRU	Wailuku SOB	Kahului Harbor

49	IRU	Wailuku SOB	Puu Mahoe
50	Constellation	Wailuku SOB	Puu Nia Niau
51	IRU	Kaupulehu	Puu Mahoe
52	IRU	Kaupulehu	Kawaihae
53	Constellation	Kaupulehu	Humuula
54	IRU	Kaupulehu	Humuula
55	IRU	Kaupulehu	Humuula
56	IRU	Kaupulehu	Humuula
57	IRU	Kaupulehu	Humuula
58	IRU	Humuula	Kulani Cone
59	Constellation	Humuula	Waiakea
60	IRU	Humuula	Waiakea
61	IRU	Humuula	Waiakea
62	IRU	Humuula	Waiakea
63	IRU	Humuula	Waiakea
64	IRU	Humuula	Waiakea
65	Constellation	Waiakea	Hilo SOB
66	IRU	Waiakea	Hilo SOB
67	IRU	Waiakea	Hilo SOB
68	IRU	Kapolei SOB	Kalaeloa
69	IRU	Mauna Kapu	Kapolei SOB
70	Constellation	Mauna Kapu	LCC

5.1.4 Replacement and Additions During the Contract Period

During the contract period (including any extension to the contract), ETS shall have the right, without incurring additional charges under the contract, to replace the Constellation Radio Links with IRU radios, following radio links and equipment (through other procurement). Offeror shall maintain the IRU-600 radios installed to replace the Constellations – and the Offeror shall maintain these replacement radios without additional compensation.

ETS anticipates the radio links and hardware replacement listed above should be completed within the first year or the first extension of the contract. Once the radio link and hardware replacement listed above occurs, the Offeror shall at the end of the new equipment warranty period, assume responsibility under the contract without additional compensation for these replacement radio links and all associated hardware, including, but not limited to waveguide branching systems, DC-DC converters, and DSX panels.

The Offeror understands and agrees that once the Provision network monitoring system notification methodology is installed, the Offeror shall have additional responsibilities regarding the acknowledgement and reporting of status and alarm conditions of equipment as described in the section regarding alarm response.

5.1.4.1 Link Replacements

During the contract period (including any extensions to the contract) the State shall have the right, without incurring additional charges under the contract, to replace radios as upgrades.

5.1.4.2 Replacement Link Maintenance

For any microwave radio system replacements the Offeror, at the end of the new equipment warranty period, shall assume responsibility for the maintenance of the new hardware and systems under the contract without additional compensation.

5.1.4.3 Replacement Link Monitoring

Once the link is installed and commissioned to carry traffic, the Offeror shall add the new equipment/systems to the monitoring software and begin continuous monitoring of the newly installed equipment/systems.

5.1.4.4 New Radio Links

During the contract period (including any extensions to the contract), ETS shall have the right to add up to 5 OC3 links statewide without additional charges under the contract.

Once installed and commissioned to carry traffic, each link is typically covered by a one (1) year manufacturer's warranty. For each microwave radio system link addition the Offeror, at the end of the new equipment warranty period, shall assume responsibility for the maintenance of the new hardware and systems.

Offeror shall submit with their bid, a quote for each additional link beyond the five mentioned above, in the section on the Bid Sheet entitled, "Additional Link Maintenance".

5.1.4.5 New Link Monitoring

Once the link is installed and commissioned to carry traffic, the Offeror shall add the new equipment/systems to the monitoring software and begin continuous monitoring of the newly installed equipment/systems.

5.1.5 Fujitsu Mulitplexers

While the Aviat IRU-600 radios can drop out Ethernet payload, the Constellation radios are only capable of handing off T1 traffic so ETS has employed Fujitsu 4100ES (Extended Shelf) Optical Multiplexers at most sites. The 4100ES allows ETS to distribute the link payload and also facilitates software cross connects of OC-12 fiber payload, OC-3 links, and DS3 links between radios at the site whether they are reconfigured or pass-through.

5.1.5.1 Locations with Fujitsu Multiplexers

If the site does not currently contain a 4100ES, ETS reserves the right to install one there during the contract period. In section 5.1.5.2, the Contractor is instructed to maintain them as

part of the contract. Until notified otherwise, Offeror shall consider all locations identified in Section 5.1.3 to be locations for existing and possible future, 4100ES Multiplexers to be maintained.

5.1.5.2 Reconfiguration of Multiplexers and Radio Payload

During the contract period (including any extensions to the contract), ETS shall have the right to redeploy, decrease, and/or increase the number of cards installed in the radios, and/or Fujitsu multiplexers at any time without additional charges under the contract. During the contract period (including any extension to the contract), the State shall have the right to reconfigure the system payload connections without additional charges under the contract.

5.1.6 Replacement and Additions Planned During the Contract Period

Although there are many new links planned, most new 4100ES shelves are slated to be installed only at the new sites such as Harbors, Pahole, Kamehame, and Waiakea. No new 4100ES shelves are planned for existing sites with new links.

5.2 Associated Equipment

The Offeror shall also be responsible for the following equipment associated with ETS digital microwave radio system:

5.2.1 Provision Network / Legacy FarScan Monitoring Systems

The FarScan computer system which consists of a Compac DeskPro EP computer system with a Windows NT version 4.0 operating system and FarScan for Windows version 3.3 software, monitor, and a printer. The Provision Computer system which consists of a server, operating system, Provision software, Compac DeskPro EP computer system, Provision client software, operating system, and monitor.

5.2.2 Assentria SiteBoss Alarm Reporting Systems

All SiteBoss 550 units installed, including any yet to be installed, up to one (1) per site.

5.2.3 Order Wire / Site Phones

An Ardax orderwire interface, with DTMF FXO, DSSS, and power supply modules, that is connected to the Harris radio system orderwire to provide an interface between the orderwire and the public telephone system so that telephone calls can be made to and from the orderwire.

5.2.4 Dehydrators

All waveguide dehydrators connected to the Microwave system, and UH systems at all sites listed; including non-HAWAIIAN sites: Koko Head, Puʻu Nana, and Kahua Ranch. Most of the waveguide dehydrators (air dryers) in use are Puregas model P-550-3 units capable of supplying 0.3 SCFM with factory installed alarm options P-PEC3287 (low pressure), P-05444

(compressor run time), and P-PEC4382 (humidity). Other models and brands of dehydrators, such as those made by Andrew, are also used. The Offeror is also responsible for all of the components of the dehydrator systems, such as air manifolds (with valves and indicating gauges), hoses and fittings, and external in-line low pressure alarm sensors and switches.

5.2.5 Waveguide

Offeror Responsibility
Unless stated otherwise, the Offeror is responsible for all interior waveguide components at all radio sites, including but not limited to: rigid waveguide, waveguide bends, flexible waveguide sections, waveguide hangars, circulators, isolators, attenuators, loads, and other components that make up the waveguide combining systems.

Waveguide systems in the radio shelter also include all rigid and flex waveguide segments connecting to the University of Hawaii (UH) radio assemblies; the UH is responsible for its radios beginning at the waveguide flange or coaxial connector on the rear of the UH radio equipment. The Offeror is responsible for the waveguide pressure windows used in ETS and UH systems.

Not Offeror's Responsibility
The Offeror is not responsible for any of the waveguide systems at Puu Kilea and Haleakalā that are the property of the Maui Electric Company (MECO). The Offeror is not responsible for any of the waveguide systems at Kaupulehu that are the property of HELCO. The Offeror is not responsible for the inside portion or the connector of the elliptical waveguide that exits the building and connects to the antenna.

5.2.6 Site DC Power Systems

The Offeror is responsible for site DC power systems and components such as chargers and station battery systems, including, but not limited to, all conduit and wiring from the electrical power main source (AC breaker panel) to the charger (or rectifier) systems or modules, the DC distribution breaker (or fuse) panels, battery disconnect breakers (or fuses), DC low-voltage load disconnect panels, DC fuse and breaker panels in the racks that support the microwave equipment, DC battery systems (including battery cells, battery racks, battery supports, spill containment systems, and eye wash stations) and all DC-to-DC converters and their interconnecting wiring. The following list of DC systems may have changed since the inception of this document and is meant to provide the Offeror an approximate picture of the systems to be maintained:

- Kukui -48 VDC
- Kukuiolono -48 VDC
- Nawiliwili Harbor -48 VDC
- Port Allen Harbor -48 VDC
- Lihue SOB roof -48 VDC and the DC-DC converter system
- Lihue SOB basement -48 VDC
- Mt. Kilohana -48 VDC
- Kaena Point Will be -48VDC

- Pahole -48 VDC
- Kalaeloa Harbor -48 VDC
- Kapolei SOB -48 VDC
- Mauna Kapu upper Will be -48 VDC
- Mt. Kaʻala -24 VDC, -48 VDC, and +12 VDC
- Round Top -48 VDC, and the DC-DC converter system
- LAK SOB -48 VDC and +12 VDC
- Kalanimoku roof -48 VDC, and the DC-DC converter system
- Kalanimoku basement -48 VDC
- Diamond Head Rim -48 VDC
- Koko Head -48 VDC
- Waimanalo Ridge -48 VDC
- Puu Papaa -48 VDC
- Kawela -48 VDC
- Puʻu Nana -48 VDC
- Kaunakakai Harbor -48 VDC
- Puʻu Kilea -48 VDC
- Kaumalapau Harbor, -48 VDC
- Haleakalā -24 VDC and -48 VDC
- Wailuku SOB -48 VDC
- Kahului Harbor -48 VDC
- Puʻu Nia Niau -48 VDC
- Kahua Ranch -48 VDC
- Kawaehai Harbor -48 VDC
- Kaupulehu -48 VDC
- Humuula -24 VDC and -48 VDC
- Mauna Loa -48 VDC
- Waiakea -48 VDC
- Alala Cone Will be -48 VDC
- Moanuiahea -48VDC
- Kulani Cone -48 VDC
- UH Hilo -48 VDC Moving to Waiakea
- Hilo SOB -48 VDC

5.2.7 Replacements and Additions During the Contract Period

During the contract period (including any extension to the contract), the State shall have the right, without incurring additional charges, to replace rectifiers/batteries, or add rectifiers/batteries to establish redundancy. For any DC power system additions the Offeror shall, at the end of the new equipment warranty period, assume responsibility for the maintenance and continuous monitoring of the new hardware and battery systems under the contract without additional compensation.

5.2.8 Larus Fiber Optic Transport System Locations

Maintenance work on the Larus Fiber Optic Transport System shall be performed at the following locations:

- Kalanimoku SOB (Basement).
- Honolulu Municipal Building (Roof), O‘ahu located at 650 South King Street.

5.2.9 LightPointe OC-12 Loop Equipment and Systems

Work on the LightPointe OC-12 Loop Equipment and systems shall be performed at the following locations:

- Kalanimoku SOB (Roof).
- Honolulu Municipal Building (Roof).
- Honolulu Police Dispatch, O‘ahu, located at 801 South Beretania Street.
- Prince Jonah Kuhio Kalanianaole (PJKK) Federal Office Building (FOB), O‘ahu, located at 300 Ala Moana Blvd., Honolulu.

ETS reserves the right to relocate LightPointe optical links as needed. Offeror shall continue to maintain the optical links in their new location(s).

5.2.10 Inverter Systems

Work on the Inverter Systems at SOB locations that are used to convert -48 VDC to 120 VAC shall be performed at the following locations:

- Lihue UNIPOWER IX5U-2-TS50S-D2N-120 Shelf
  1500W Modules: SABRE LITE Series INV1548 DC-to-AC inverter
  Unit not yet installed
- Kalanimoku Unit not yet defined.
- Wailuku UNIPOWER IX5U-2-TS50S-D2N-120 Shelf
  1500W Modules: SABRE LITE Series INV1548 DC-to-AC inverter
- Hilo UNIPOWER IX5U-2-TS50S-D2N-120 Shelf
  1500W Modules: SABRE LITE Series INV1548 DC-to-AC inverter

5.2.11 DSX Panels

Maintenance work shall be performed on DSX patch panels including all line side and drop side DSX panels connected to the HAWAIIAN radio equipment and multiplexers, all DSX panels at non-SOB locations (except for those owned by MECO, HELCO, UH or State Civil Defense), and, at the Kalanimoku SOB, all DSX panels installed on the Fujitsu 4100 multiplexer and Telecom Solutions clock source racks. Responsibilities for DSX panels includes DC power connections, ground connections, plug-in jacks, patch cords, and wired cross connects.

5.2.12 Fiber Jumpers

Fiber optic jumpers from the HAWAIIAN equipment interface connector to the served equipment and/or the in-room fiber optic termination panel are considered part of “Associated Equipment”. Offeror is responsible for maintaining these jumpers.

5.2.13 Clock Timing System at Kalanimoku

Maintenance work shall be performed on the Telecom Solutions equipment at the Kalanimoku SOB basement that provides the Building Integrated Timing Source (BITS) for the HAWAIIAN microwave and other ETS systems. The BITS equipment includes the Telecom Solutions model DCD 523 Digital Clock Distributor with the modules including two (2 each) 40010-01 clock interfaces, two (2 each) 40019-03 ST3E clock modules, three (3 each) 40012-02 T1 output modules, and one (1 each) 45014-02SAI module.

5.2.14 Symmetricom GPS Network Time Servers

Maintenance work shall be performed on Symmetricom model S350 SyncServer GPS Network Time Servers with the following factory-installed options: -48 VDC powered with primary and secondary -48 VDC inputs; Rubidium Atomic Clock Oscillator; and T1 output with ESF framing and B8ZS line coding. The S350 SyncServer units are installed at Kalanimoku SOB 5th floor and LAK SOB. As the need is identified, ETS may deploy redundant timing sources throughout the network. Offeror is required to maintain any GPS network timing units at sites listed herein, whether existing or newly deployed by ETS during the term of the contract including extensions.

5.2.15 Alarm Sensors & Wiring

Facility alarm wiring connected between the Harris radio alarm and the control point demarcation points of door entry alarm switches, over-temperature sensors, independent power fail relays, emergency power generators, automatic generator control equipment, power transfer switches, air conditioning control and alarm systems, fire protection systems, DC power (charger) system status contacts (including but not limited to commercial power input failure, charger fail, distribution fuse alarm, over-voltage, and under-voltage alarms). The Offeror is responsible for the maintenance and replacement, if necessary, of door entry alarm switches. The Offeror is also responsible for stand-alone over-temperature sensors, i.e., those room temperature sensors that are not an integral part of the air conditioning systems.

5.2.16 T1 Test Sets

Maintenance work shall be performed on three (3 each) Hewlett Packard model E6325A T1 Test Advisor test sets installed at the Kalanimoku SOB basement.

5.2.17 Intraplex

Maintennace work shall be performed on the HAWAIIAN telemetry and alarm network equipment that consists of Intraplex TDM-165 and Intraplex TDM-163 channel banks. Once the Equipment Replacement and Additions Planned During the Contract Period in Section 5.1.6 are completed, the HAWAIIAN telemetry and alarm network equipment will consist of

five (5 each) Intraplex DCS-9560 Cross Connect Servers, seven (7 each) TDM-165 and/or ACS-165 channel banks, and eight (8 each) TDM-163 and/or ACS-163 channel banks. For the purposes of this specification, the two (2 each) Intraplex DCS-9560 Cross Connect Servers that are part of the State Law Enforcement Coalition radio system located at LAK SOB shall be considered as systems and equipment associated with the HAWAIIAN.

5.2.18 Restoration Spares In Current Inventory

A copy of the current list of restoration spares in the current inventory that are held by the maintenance vendor will be provided on request.

5.2.19 Restoration Spares Received During the Contract Period

The Offeror shall be responsible for testing and adding to the inventory spares received by ETS as part of the "Replacements and Additions During the Contract Period." A list of restoration spares to be tested and added to the inventory at the beginning of the contract by this process will be provided on request.

5.3 Test Equipment and Special Tools

The Offeror shall be responsible for the following test equipment associated with ETS HAWAIIAN digital microwave radio system:

5.3.1 Field Kits

Two test equipment field kits (one kept by ETS, one used by Offeror), each consisting of:

- Agilent model 53148A microwave frequency counter (measures frequencies up to 26.5 GHz), power meter, and digital volt meter with sensor-to-meter cable;
- HP model 8481H Power Sensor, 50-ohm, 10 MHz to 18 GHz, 100 uW to 3 W;
- HP model 8483A Power Sensor, 75-ohm, 100 kHz to 2 GHz, 1 uW to 100 mW;
- 50-ohm N Male to 75-ohm Female N adapter;
- 75-ohm BNC Male to 75-ohm Female N adapter.

5.3.2 Loose Field Test Equipment Consisting of:

- HP 8485A Power Sensor, 50-ohm, 50 MHz to 26.5 GHz, 1 uW to 100 mW;
- HP 1250-1744 metrology grade N Male to SMA Female adapter;
- HP 8493C 10 dB SMA attenuator; and
- Pasternak PE7005-20 20 dB SMA attenuator.

5.3.3 Special Tools:

Utica HJ5322 9-inch-ounce Torque Wrench with 5/16" wrench for SMA;

5.3.4 Microwave System Analyzer

The Offeror shall be responsible for maintaining an IFR model 6843 Microwave System Analyzer, 20 GHz capable, with High Power option.

5.4 Alarm Types

Alarms are classified as Service Affecting, Non-Service Affecting, and Payload alarms.

5.4.1 Service Affecting Alarms

A "Service Affecting Alarm" is defined as any of the following, occurring either singly or in combination:

- any equipment alarm or condition that causes a new "System Major" alarm to occur on the Harris equipment or a new "Critical" or "Major" alarm to occur on the Fujitsu equipment or a new "Sync loss" alarm to occur on the LightPointe equipment;

- any equipment failure or condition that causes the FarScan software to indicate a "Major Alarm";

- any **partial** or total failure of any DC power systems unless caused by an AC source failure associated with the loss of commercial power and/or failure of the automatic transfer switch and/or generator to provide power. The Offeror shall understand and agree that partial failures and/or minor alarms associated with DC power systems, if left unattended, can cause a DC power failure that will cause a total failure of a radio site. The Offeror shall provide a response to such partial failure or minor DC power alarms as if they are a Service Affecting Alarm until it can be proven beyond a doubt that such alarms will not cause a site DC power failure or the loss of traffic;

- when any radio or FSO link is off the air;

- when the Telecom Solutions DCD 523 BITS or any Symmetricom model S350 SyncServer indicates a major alarm;

- when any payload circuit is inoperable (as tested from radio digital signal cross connect (DSX) to far end radio link DSX), or determined at any Ethernet port;

- when any T1 span (as tested from radio DSX to far end radio link DSX) is performing with a bit error rate (BER) of worse than 10e-3 for more than a total of ten (10) seconds in any one day;

- when the service quality on any T1 span (as tested from radio DSX to far end radio link DSX) is worse than 10e-6 BER for more than a total of sixty (60) seconds in any one day;

- when any RSLdrops 15dB below value established at commissioning or recorded during previous PMI.

5.4.2 Non-Service Affecting Alarms

A "Non-Service Affecting Alarm" is defined as any of the following, occurring either singly or in combination:

- any equipment alarm or condition that causes the "System Minor" alarm to occur on the Harris equipment or the "Minor" alarm to occur on the Fujitsu equipment;

- any equipment or condition that causes the FarScan/Provision software to indicate a "Minor Alarm;"

- any alarm or failure that is not a Service Affecting Alarm that is associated with the LightPointe equipment, the FarScan computer system, the Decibel Products model DB8830 Sentry paging unit, the Ardax orderwire interface, any waveguide dehydrator, interior waveguide components, any DSX panel, any fiber optic jumper, the Telecom Solutions model DCD 523 BITS, Symmetricom model S350 SyncServer, facility alarm wiring, any Hewlett Packard model E6325A T1 Test Advisor test sets, and any component of the telemetry and alarm network equipment such as Intraplex cross connect servers and channel banks.

5.4.3 Payload (Input) Alarms

A "Payload Alarm" is defined as that alarm which occurs on the Harris or Fujitsu equipment because of an external change made to the payload input of the system equipment.

5.5 Equipment Not Included

The Offeror is not responsible under this solicitation for the maintenance and continuous monitoring of:

- emergency power generators,
- automatic generator control equipment,
- power transfer switches,
- air conditioning control systems,
- fire protection systems,
- the State/United States Coast Guard (USCG) Rainbow system alternate route multiplexer equipment,
- the State/USCG Anuenue digital microwave radio system radio or multiplexer systems and equipment other than those components described herein as the responsibility of the Offeror
- the UH microwave radio or multiplexer systems and equipment, or
- the MECO and HELCO microwave radio or multiplexer systems and equipment.

The Offeror is also not responsible under this specification for the maintenance of microwave tower structures, exterior grounding systems and connections, radio site real estate, buildings, or other structures.

6 GENERAL REQUIREMENTS

6.1 Site Access and Security

The Offeror shall follow ETS's site security and access procedures as they now exist or may be amended from time to time. The Offeror shall provide personal background information for its employees and a unique employee identifying number such as last four digits of employee Social Security number or similar unique number.

The Offeror shall not show, give tours, or invite third parties to view or visit any of ETS radio facilities or inspect ETS equipment or spares without the express written permission of the State Radio Engineer.

Access to Mt. Kaala requires the approval of the Air National Guard and, as such, is beyond the control of ETS. The Offeror accepts all risks and responsibilities associated with providing personnel to work on Mt. Kaala and in ensuring their ability to receive clearance from the Air National Guard. Access to Mt. Kaala is by four-wheel drive vehicle ONLY. The narrow one-lane road to the site at the Mt. Kaala summit has a steep grade and many blind curves.

ETS has recently made available the possibility of retrieving keys from the SOB in each respective county, pending availablitiy of DAGS neighbor island staff. Please call ahead to verify access to staff and keys. The original location for access verification and key retrieval, the Assistance Center, is still available should neighbor island staff not be present or if the keys are checked out. The Assistance Center is located in the basement of the Kalanimoku Building at 1151 Punchbowl Street, Honolulu, HI 96813.

6.2 Safety

The Offeror and its employees shall comply with all applicable health and safety regulations including, but not limited to, rules and regulations of the federal Occupational Safety and Health Administration (OSHA) and the State of Hawai‘i Department of Labor and Industrial Relations (DLIR).

The Offeror and its employees shall comply at all times with standards regarding work activities in and around radio transmission facilities including, but not limited to, OSHA General Industry Standard 29 CFR 1910.268 sub-section p. Offeror must ensure that all employees are familiar with the hazards associated with exposure to radio-frequency (RF) radiation and the precautions that must be taken when working in a "controlled" RF environment as described in FCC Rules, Part 1, section 1.1310, as the same exists or may be amended from time to time.

Alcoholic beverages, illegal drugs, fireworks, and firearms are prohibited at all facilities. Hunting is prohibited on or near ETS facilities or while commuting to or from working at an ETS facility.

All ETS radio facilities are smoke free; smoking and e-cigarettes are prohibited at all times inside any of ETS facilities. The Offeror must obey signs and posted notices.

6.3 Parts

Parts replaced or supplied by the Offeror shall be only original equipment manufacturer's parts, either new or as equivalent to new as certified and approved by the original equipment manufacturer.

At Notice to Proceed (NTP), ETS will provide to the Offeror an existing inventory of State-owned spare parts, spare modules, material, and test equipment. ETS will hold in a separate inventory, the "ETS Inventory," those State owned excess and/or unique items, including, but not limited to, spare parts, spare modules, material, and test equipment that ETS determines are not immediately required for the Contractor to perform its contract services. At the start of the contract, parts, modules, material, and test equipment provided to Contractor will be in good working condition, free of defects, clean, appropriately packaged, and (if appropriate) in current calibration, to the best of the State's knowledge. Any claims/questions resulting from the turnover must be reported to the State within thirty (30) calendar days from the NTP. The Contractor will be required to sign acceptance of the State provided inventory received at the start of the contract and will be responsible to return an equal number of each item received upon termination or expiration of the contract. Any part or module purchased or received as replacement inventory by the Contractor must be equal or better in specification and quality and be accepted by the original equipment manufacturer as a replacement subject to availability, obsolescence, and or discontinuance by the original equipment manufacturer. At the end of the contract, all parts, modules, material, and test equipment must be returned in good working condition, free of defects, clean, appropriately packaged, and (if appropriate) in current calibration. Also, at that time, all manufacturers' warranties against defects in materials and workmanship for parts, modules, material, and equipment received in replacement of ETS provided inventory shall be transferred to ETS.

At any time during the contract term, including extensions, upon request by ETS, the Offeror shall provide within five calendar days a written current inventory of all parts, equipment and material received from the State.

6.4 Tools, Equipment, and Supplies

The Offeror shall provide all necessary tools and supplies (in accordance with the terms described herein), paint, materials, supplies, and consumables; any additional tools, equipment, machines, and safety equipment required. Storage of any of these items in ETS' facilities is prohibited without the prior written consent of the State Radio Engineer. Offeror shall take full responsibility for the security and well being of the Offeror's tools, equipment, machines and supplies used or stored on the jobsite. The Offeror agrees to defend, hold harmless, and indemnify the State for any damage to or loss of Offeror's tools, equipment, machines, documentation, and supplies used or stored on the jobsite.

Note: Any vacuuming of electronic equipment shall be done with a unit by 3M model SV-497AJM ESD Safe Field Service Vacuum or equivalent.

6.5 Clean Up

The Offeror shall keep the job sites free of debris, litter, refuse, etc. The Offeror shall remove all tools, equipment, and machines from the areas upon completion of the work.

6.6 Inspection

All work done and all materials furnished shall be subject to inspection and approval by the State Radio Engineer or his representative so as to ascertain that the services rendered are in accordance with requirements and intentions of this solicitation and resultant contract.

7 SPECIAL PROVISIONS

7.1 Scope

The furnishing of Emergency Repair Services and Continuous Monitoring of the Statewide Digital Microwave Radio Communications System and Its Associated Equipment for ETS as specified herein, shall be in accordance with these Special Provisions, Specifications, the General Conditions, and Chapter 103D, Hawai‘i Revised Statutes, and its implementing rules.

7.2 Pre-Bid Meeting

There is no Pre-Bid Meeting for this IFB.

7.3 Examination of Sites, Facilities, and Equipment; Site Visits

Prospective Offerors should visit each site to inspect the sites, facilities, and equipment listed herein; familiarize themselves with the existing conditions; understand the amount and type of work to be performed. No additional compensation will be made due to any misunderstanding or error regarding conditions at the sites and facilities or the amount and type of work to be performed by the Offeror. Offeror shall consider the equipment to be in “as is” condition. Prospective Offerors are responsible for their traveling expenses incurred for the examination of the radio sites and equipment.

ETS has scheduled **one-time-per-site inspection visits** as follows:

SITE	DATE
Day 1:	**Monday October 8, 2018**
USCG Hilo & Hilo Harbor Office Meet at the Hilo Harbor Office	**8:00 AM**
Hilo SOB Meet at Hilo SOB 75 Aupuni Street Hilo, Hawaii.	**9:15 AM**
Waiakea Meet at corner of Puainako Street and Komohana Street Stop for short lunch before heading to Humuula	**10:45 AM**
Humuula Meet at the corner of Saddle Rd and Mauna Kea Access Rd.	**1:30 PM**
Mauna Loa Meet at the corner of Saddle Rd and Mauna Kea Access Rd.	**3:00 PM**
Day 2:	**Tuesday October 9, 2018**
Kahua Ranch Meet at Waimea McDonalds, 65-1154 Mamalahoa Hwy, Waimea, Hawaii.	**10:00 AM**
Kawaihae Harbor Meet at Kahua Ranch located at 65-1154 Mamalahoa Hwy, Waimea, Hawaii. Due to TWIC cards needed for access, this site may be examined from outside the Habor perimeter and discussed.	**12:30 PM**
Kaupulehu, Hawaii Meet at the Pine Tree Cafe, 73-4040 Hulikoa Drive, Kailua-Kona, Hawaii	**2:00 PM**
Day 3:	**Wednesday October 10, 2018**
Pu‘u Nia Niau, Maui Meet at Krispy Kreme, 433 Kele Street, Kahului, Maui	**8:30 AM**
Haleakalā & USCG Haleakalā, Maui Meet at Haleakala Park entrance. Pay fee to enter.	**10:30 AM**
Wailuku SOB Meet at Wailuku SOB, 54 S High St, Wailuku	**2:30 PM**

Day 4: Thursday October 11, 2018

Pu‘u Mahoe, Maui 8:30 AM

Meet at Krispy Kreme, 433 Kele Street, Kahului, Maui

Kahului Harbor 1:00 PM

Meet at Whole Foods Parking Lot. Due to TWIC cards needed for access, this site will be shown from outside the harbor perimeter and discussed.

Day 5: Friday October 12, 2018

Kauanakakai Harbor 9:00 AM

Meet at DAGS Maintenance Baseyard,
45 Makaena Place,
Kaunakakai, Molokai, HI 96748
Due to TWIC cards needed for access, this site will be shown from outside the harbor perimeter and discussed.

Puu Nana, Molokai 10:00 AM

Meet at Kaunakakai Harbor Office following review of Harbor site viewing.

Day 6: Monday October 15, 2018

Puu Kilea, Lanai 10:00 AM

Meet at the Blue Ginger Cafe, 409 7th, Lanai City

Day 7: Tuesday October 16, 2018

Waimanalo Ridge 8:00 AM

Meet at the end of Kamehame Ridge. There are a series of gates to the facility

Koko Head 9:30 AM

Meet at Hanauma Bay gate to Koko Head facility.

Diamond Head Rim 11:30 AM

Leaving Koko Head meet at Birkhimer Bunker in Diamond Head. Hard right turn immediately after entering the crater through the drive in tunnel.

Round Top 1:00 PM

Depart Diamond Head Rim and allowing for a short lunch. Meet at the site. Located within Pu‘u ‘Ualaka‘a State Wayside Park at 3270 Round Top Drive

LAK SOB 2:30 PM

Meet in LAK lobby, 235 South Beretania Street, Honolulu
Recommend parking at the church across Beretania.

Kalanimoku SOB 3:30 PM

Meet at Room B10, Kalanimoku SOB, 1151 Punchbowl Street, Honolulu, HI 96813.
Enter Makai door from underground parking.

Day 8: **Wednesday October 17, 2018**

Pahole **8:00 AM**

Meet at the road gate roughly 2 miles past Waialua High School.

Kapolei SOB **11:00 AM**

Meet at Kapolei SOB, entrance closest to parking lot.

Kalaeloa Harbor **12:15 PM**

Departing Kapolei SOB at 11:30am, allowing for a short lunch.
Meet at the Kalaeloa Harbor Office. Due to TWIC cards needed for access, this site will be shown from outside the harbor perimeter and discussed. If possible, **ETS will attempt to arrange access at this Harbor, however escort and access are entirely dependent on Harbor security and the arrival of containers.**

Pu‘u Manawahua **1:15 PM**

Departing Kalaeloa Harbor area at 12:45pm, meet at the beginnning of Palehua Road in Makakilo. ETS does not currently have equipment at this site but the link will soon be established to Kukuiolono, Kauai.

Mauna Kapu Lower (USCG) **2:15 PM**

Departing Pu‘u Manawahua 2:00pm, this site is just about ½ mile futher up the same ridge.

Day 9: **Thursday October 18, 2018**

Kukui **9:00 AM**

Meet at site.

Kukuiolono **11:00 AM**

Meet in parking lot of Kukuiolono Golf Course

Nawiliwili Harbor **1:00 PM**

Meet at the Nawiliwili Harbor Office

Kaua‘i High School **1:30 PM**

Meet at 3577 Lala Road, Lihue Kaua‘i

Day 10: **Friday October 19, 2018**

Lihue SOB **9:00 AM**

Meet at Lihue SOB. Lihue, Kaua‘i. Kaua‘i Civil Defense equipment is also here.

Kilohana **1:00 PM**

Meet at gate on Ehiku St. Lihue, Kauai.

Offerors planning to attend a site inspection visit must notify the State Radio Engineer no later than 12:00pm September 27, 2018. If no prospective Offerors notify ETS of their interest to attend, ETS may cancel the inspection visit(s). Inspection visits cancelled for lack of interest by prospective Offerors will not be rescheduled.

The State and ETS will not be responsible for the Offeror's inability to bid due to either: the unavailability of ETS personnel to arrange and/or accompany Offerors on site visits; or if Offeror's representative is unable to visit the sites and facilities during the scheduled site inspection visit.

Offerors are not permitted to visit ETS sites and facilities without an ETS escort.

Offerors are not required to visit the facilities to submit a bid.

Questions regarding the bid specifications must be submitted in writing to ETS no later than 4:00pm on October 26, 2018.

Submission of bid shall be evidence that the Offeror has familiarized himself/herself with the various equipment, facilities, and site locations; understands and shall comply with the specifications if awarded the contract.

8 BID PREPARATION

8.1 Legal Name

Offeror is required to submit its offer using Offeror's exact legal name as registered with the Department of Commerce and Consumer Affairs (DCCA), if applicable; and to indicate exact legal name in the appropriate spaces on OFFER FORM, pages OF-1 through OF-3. Failure to do so may delay proper execution of the contract.

Offeror's authorized signature shall be an original signature in black ink. If OFFER FORM, page OF-1 through OF-3, are unsigned or the affixed signature is a facsimile or a photocopy, the offer shall be automatically rejected unless accompanied by other material, containing an original signature, indicating the Offeror's intent to be bound.

8.2 Bid Quotation

The bid prices shall be all inclusive and include all costs for labor, personnel travel costs and per diem; parts (in accordance with the terms described herein), materials, supplies and consumables; any additional tools, machines, equipment and safety equipment required; costs for storage, transportation, shipping and supervision; taxes; and costs for commercial general liability insurance as required herein by the State as necessary to accomplish the Emergency Repair Services and Continuous Monitoring of the Statewide Digital Microwave Radio Communications System and Its Associated Equipment as specified herein.

8.3 Hawaii General Excise Tax License

Offeror shall submit its current Hawaii General Excise Tax I.D. number in the space provided on OFFER FORM, page OF-1, thereby attesting that it is doing business in the State, and that it will pay such taxes on all sales made to the State.

8.4 Responsibility of Offeror

Offeror is advised that if awarded a Contract under this solicitation, Offeror shall, upon award of the Contract, furnish proof of compliance with the requirements of §103D-310(c), HRS:

1. Chapter 237, tax clearance;
2. Chapter 383, unemployment insurance;
3. Chapter 386, workers' compensation;
4. Chapter 392, temporary disability insurance;
5. Chapter 393, prepaid health care; and
6. Chapter 103D-310(c), Certificate of Good Standing (COGS) for entities doing business in the State.

The Offeror, if awarded a Contract pursuant to this IFB, shall comply with all laws governing entities doing business in the State. The Offeror shall obtain and provide to the State:

Responsibility of Lowest Responsive Offeror. Reference §103D-310(c), HRS. A compliance document (see **Hawaii Compliance Express** below) or equivalent must be submitted **prior to the State awarding the Contract**.

Final Payment Requirements. Contractor is required to submit a tax clearance certificate for final payment on the contract. A tax clearance certificate, not over two months old, with an original green certified copy stamp, must accompany the invoice for final payment on the contract.

In addition to the tax clearance certificate, an original "Certification of Compliance for Final Payment" (SPO Form-22), will be required for final payment. A copy of the Form is available at www.spo.hawaii.gov. Select "Forms for Vendors/Contractors" from under the "Quick Links" menu at the right of the webpage.

Hawaii Compliance Express. Vendors may use the Hawaii Compliance Express (HCE) to show proof of compliance with the requirements of §103D-310(c), HRS. The HCE allows businesses to register online through a simple wizard interface at http://vendors.ehawaii.gov for an annual fee payable to Hawaii Information Consortium, LLC (currently $12.00) to acquire a "Certificate of Vendor Compliance," which provides current compliance status as of the issuance date. The "Certificate of Vendor Compliance" indicating that vendor's status is compliant with the requirements of §103D-310(c), HRS, is accepted for both contracting purposes and final payment.

Vendors not utilizing HCE to demonstrate compliance shall provide the paper certificates as instructed below. All certificates must be valid on the date it is received. All applications for applicable clearances are the responsibility of the Offeror.

HRS Chapter 237 tax clearance requirement for award. Instructions are as follows:

Pursuant to §103D-328, HRS, lowest responsive Offeror shall be required to submit a tax clearance certificate issued by the Hawai'i State Department of Taxation (DOTAX) and the Internal Revenue Service (IRS). The certificate shall have an original green

certified copy stamp and shall be valid for six (6) months from the most recent approval stamp date on the certificate. It must be valid on the date it is received.

The tax clearance certificate shall be obtained on the State of Hawai'i, DOTAX *TAX CLEARANCE APPLICATION* Form A-6 (Rev. 2017) which is available at the DOTAX and IRS offices in the State of Hawai'i or the DOTAX website, and by mail or fax: DOTAX Website (Forms & Information): http://tax.hawaii.gov/forms/a1_1alphalist/

HRS Chapters 383 (Unemployment Insurance), 386 (Workers' Compensation), 392 (Temporary Disability Insurance), and 393 (Prepaid Health Care) requirements for award.

Pursuant to §103D-310(c), HRS, the lowest responsive Offeror shall be required to submit a certificate of compliance issued by the Hawai'i State Department of Labor and Industrial Relations (DLIR). The certificate is valid for six (6) months from the date of issue and must be valid on the date it is received. A photocopy of the certificate is acceptable.

The certificate of compliance shall be obtained on the State of Hawai'i, DLIR *APPLICATION FOR CERTIFICATE OF COMPLIANCE WITH SECTION 3-122-112, HAR*, Form LIR#27 which is available at http://labor.hawaii.gov/forms/ or at the neighbor island DLIR District Offices. The DLIR will return the completed form to the Offeror.

The application for the certificate is the responsibility of the Offeror, and must be submitted directly to the DLIR.

Compliance with Section 103D-310(c), HRS, for an entity doing business in the State. The lowest responsive Offeror shall be required to submit a *CERTIFICATE OF GOOD STANDING* (Certificate) issued by the State of Hawaii Department of Commerce and Consumer Affairs Business Registration Division (BREG). The Certificate is valid for six months from date of issue and must be valid on the date it is received. A photocopy of the certificate is acceptable.

To obtain the Certificate, the Offeror must first be registered with the BREG. A sole proprietorship, however, is not required to register with the BREG, and therefore not required to submit the certificate.

On-line business registration and the Certificate are available at http://cca.hawaii.gov/breg/. To register or to obtain the Certificate by phone, call (808) 586-2727 (M-F 7:45 to 4:30 HST). Offerors are advised that there are costs associated with registering and obtaining the Certificate.

Timely Submission of all Certificates. If a valid certificate is not submitted on a timely basis as determined by the Procurement Officer for award of a contract, an bid otherwise responsive and responsible may not receive the award.

8.5 Offer Guarantee

A bid security deposit is NOT required for this IFB.

8.6 Original Proposal and Copies to be Submitted

One (1) original and four (4) copies shall be submitted on the forms specified in this IFB to the ETS office located in Room 431 of the Kalanimoku SOB, 1151 Punchbowl Street, Honolulu, HI. The original shall be clearly marked "ORIGINAL" and copies shall be clearly marked "COPY." It is imperative that the Offeror submit only one original and the required number of copies. The State will not provide any reimbursement for the cost of developing, presenting, submitting, or evaluating any bid in response to this IFB.

Offeror is encouraged to submit typewritten bids. If handwritten, it should be clearly printed. Offeror is cautioned that illegible bids of any item(s) may be automatically rejected.

The official receipt of bid shall be the time indicated on the time stamp clock in the Office of Enterprise Technology Services (ETS) located in Room 431 of the Kalanimoku SOB, 1151 Punchbowl Street, Honolulu, HI.

8.7 Insurance

Offeror shall provide insurance information as requested on Offer Form Page OF-3.

8.8 Contractor License

As noted on the Offer Form Page OF-3, Offeror shall provide a copy of its current State of Hawai'i C-15b Contractor License.

8.9 Personnel Licenses/Certifications

The Offeror is required to submit at the time of bid the copies of the following licenses/certificates for personnel to be assigned to work on the emergency repairs, monitoring and possible preventative maintenance of the ETS digital microwave system:

a. Copy of FCC General Radiotelephone license or an equivalent industry certification (i.e. NARTE Master Technician, Junior Engineer, Senior Engineer, or Master Engineer Certfiication)

b. Copy of Certified Electronics Technician (CET) license/certificate.

c. A statement that reflects the type and duration of experience of each of the service personnel

8.10 References

Offeror shall list on Offer Form Page OF-3 at least three (3) references in the State of Hawaii, other than the State of Hawaii government, for whom Offeror has performed maintenance of

a comprehensive nature that included continuous monitoring of systems and equipment that is similar in nature and volume to work specified herein. The State reserves the right to contact the references provided.

8.11 Wage Certificate

The Offeror is required to complete and submit at the time of bid a Wage Certificate by which the Offeror certifies that wages will be paid and work will be performed in accordance with HRS Section 103-55.5 and Chapter 104. See Wage Certificate at W-1.

9 CAMPAIGN CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS

Offerors are hereby notified of the applicability of HRS section 11-355, which states that campaign contributions are prohibited from specified State or county government contractors during the term of the contract if the contractors are paid with funds appropriated by a legislative body. For more information, FAQs are available at the Campaign Spending Commission webpage (http://ags.hawaii.gov/campaign/). Information on spending issues should be directed to the Campaign Spending Commission's Executive Director or its General Counsel at (808) 586-0285.

10 AWARD

10.1 Method of Award

Award, if any, will be made to the responsive and responsible Offeror submitting the lowest Cumulative Bid as calculated below:

- The **annual** cost of the emergency repair services and continuous monitoring of the HAWAIIAN / Overbuild / Harbors Statewide Digital Microwave Radio Communications System and Its Associated Equipment; and

- The **annual** cost for 7x24 NOC services from Aviat; and

- The **annual** cost of Additional Link Maintenance, cost per link beyond 5 additional links **(at the State's Option)**

- The cost per Preventative Maintenance Inspection for ALL SITES **(at the State's Option)**

Sum = Cumulative Bid

10.2 Certifications Required Prior to Award

Prior to awarding contract(s), the State will require certification of the following insurance coverage, in accordance with the requirements specified below in Section 11.4:

Commercial General Liability (occurrence form); and Worker's Compensation.

Prior to awarding contract(s), the State will require certification of the following insurance coverage, if applicable:

Temporary Disability
Unemployment Insurance
Prepaid Health Care
Automobile Insurance

10.3 Acceptance of Bid

Acceptance of bid, if any, will be made within one hundred twenty (120) calendar days after the opening of offers, and the prices quoted by the Offeror shall remain firm for the one hundred twenty day period.

11 CONTRACT

11.1 Contract Execution

The State shall forward a formal contract to the successful Offeror for execution. The contract shall be signed by the successful Offeror and returned within ten (10) calendar days after receipt of the Offeror. NO PERFORMANCE AND PAYMENT BONDS ARE REQUIRED. The contract shall include the General Terms and Conditions.

11.2 Term of Contract

Contractor shall enter into a contract for furnishing emergency repair services and continuous monitoring for HAWAIIAN statewide digital microwave radio communications system and its associated equipment for a period of twelve (12) months from the commencement date on the Notice to Proceed. Unless terminated, the contract may be extended for not more than four (4) additional twelve (12) month periods or portions thereof without rebidding, upon mutual agreement, provided that the contract price remains the same or lower than the initial contract.

If the extension is mutually agreed upon, Contractor shall be required to execute a supplement to the contract.

11.3 Notice to Proceed (NTP)

No work shall be undertaken by the successful Contractor prior to the commencement date specified on the Notice to Proceed. The State is not liable for any work, contract costs, expenses, loss of profits, or any damages whatsoever incurred by the successful Offeror prior to the official starting date.

11.4 Liability Insurance

NOTE: Minimum insurance requirements are different from those in prior bid specifications.

Offeror shall maintain insurance acceptable to the State in full force and effect throughout the term of this contract. The policy or policies of insurance maintained by the Offeror shall provide the following limit(s) and coverage(s):

Coverage Limits

Commercial General Liability	Minimum bodily injury and broad form (occurrence form) property damage combined single limits of liability of **$1,000,000** combined single limit per occurrence for bodily injury and property damage, and **$2,000,000** in the aggregate
Workers Compensation	Statutory Minimum coverage: **$100,000** Employers Liability each accident, **$100,000** Employers Liability disease per each employee, and **$500,000** disease policy limit
Automobile Insurance	Minimum coverage of **$1,000,000** per accident

Each insurance policy required by this contract shall contain the following clauses:

1. For Commercial General Liability coverage, "The State of Hawaii is added as an additional insured as respects to operations performed for the State of Hawaii."

2. "It is agreed that any insurance maintained by the State of Hawaii will apply in excess of, and not contribute with, insurance provided by this policy."

3. “Waiver of Subrogation in favor of the State applies to the CGL, Workers Compensation, and Auto policies.”

The Contractor shall maintain the minimum insurance required in full compliance with the Hawaii Insurance Code throughout the entire term of the contract, including supplemental agreements. The policy or policies of insurance maintained by the Contractor shall provide the limits and coverages specified herein.

The Contractor shall deposit with ETS on or before the effective date of the contract, certificate(s) of insurance necessary to satisfy the State that the insurance provisions of this IFB and the contract have been complied with and to keep such insurance in effect and the certificate(s) therefor on deposit with the State during the entire term of the contract, and any extensions thereof. Upon request by the State, Contractor shall furnish a copy of the policy or policies.

Failure of the Contractor to provide and keep in force such insurance shall be regarded as a material default under the contract, entitling the State to exercise any or all of the remedies provided in the contract for a default of the Contractor.

The procuring of such required policy or policies of insurance shall not be construed to limit Contractor's liability or to fulfill the indemnification provisions and requirements of the contract. Notwithstanding said policy or policies of insurance, the Contractor shall be obliged for the full and total amount of any damage, injury, or loss caused by negligence or neglect connected with the contract.

11.5 Service Requirements

Any adjustments to the contract shall be made through a contract modification.

11.6 Inspection of Work

All work done and all materials furnished shall be subject to inspection and approval by the ETS Technical Representative or the Technical Representative's representative so as to ascertain that the services rendered are in accordance with requirements and intentions listed herein.

12 INVOICING AND PAYMENT

The Contractor shall submit a billing statement upon completion and acceptance of the work, sending the original invoice and three (3) copies of the invoice to:

Department of Accounting and General Services
Office of Enterprise Technology Services
P.O. Box 119
Honolulu, HI 96810-0119
Attention: Fiscal Office

Payment shall be made to the Contractor at the contracted price upon certification by the State that the Contractor has satisfactorily performed the required services. All invoices shall reference the contract number.

A tax clearance certificate, not over two months old, with an original green certified copy stamp, or an HCE Certificate of Compliance, must accompany the invoice for final payment on the contract or an HCE Certificate of Compliance.

13 LIQUIDATED DAMAGES

Refer to Section 9 of the General Conditions. Liquidated damages are a fixed sum of THREE HUNDRED DOLLARS ($300.00) for each and every calendar day the Offeror delays in the completion of any item of the contract after the required date of said completion.

14 TERMINATION

In addition to any other reasons that the contract may be terminated, failure by Contractor to maintain the Aviat Extended Warranty in force for the Constellation radios shall result in the immediate termination of the contract.

15 AUTHORITY

This IFB is issued under the provisions of the State Procurement Code (HRS Chapter 103D) and the State Procurement Office's applicable Directives, Circulars and administrative rules. All prospective Offerors are charged with the presumptive knowledge of all applicable legal authorities. Submission of a valid executed bid by any prospective Offeror shall constitute admission of such knowledge on the part of such prospective Offeror.

Any agreement arising out of this solicitation is subject to the approval of the Department of the Attorney General as to form, and to all further approvals, including the approval of the Governor, required by statute, regulation, rule, order, or other directive.

16 CANCELLATION OF SOLICITATIONS AND REJECTION OF OFFERS

The solicitation may be cancelled or the offer may be rejected, in whole or in part, when the best interest of the purchasing agency, as provided in §§3-122-95 through 3-122-97, HAR.

17 PROTEST

A protest based upon the content of the solicitation shall be submitted in writing within five (5) working days after the aggrieved persons knows or should have known of the facts giving rise thereto; provided further that the protest shall not be considered unless it is submitted in writing prior to the bid opening date.

A protest of an award or proposed award shall be submitted within five (5) working days after the posting of award of the contract. The notice of award resulting from the solicitation will be posted on the Hawaii Awards and Notices Data System (HANDS) site: https://hands.ehawaii.gov/hands/

Any protest pursuant to §103D-701, HRS, and Section §3-126-3, HAR, shall be submitted in writing to the Procurement Officer, ETS, 1151 Punchbowl Street, Room 431, Honolulu, Hawai‘i 96813.

18 Example Constellation / Radio PMI Instructions

Offeror shall perform the following:

M**icrowave Radio Testing:**

1. Perform all necessary tests as specified on the microwave test data work sheet.
   a) Measure power output from transmitters and record.
   b) Measure power output at transmitter (top of rack) monitor test point.
   c) Calibrate transmitter power output reading to keypad.
   d) Check receive level voltage with receiver chart and note RSL on data sheet.
   e) Check receive level data read off chart with keypad reading. Should be within + or – 2 db.
   f) Check receive level data with receiver sensitivity for predicted Fade Margin estimate. Should be within 2 db of predicted value. Over water hops shall be an estimate since constant fluctuations in receive levels are caused by fades.
   g) Ensure MHSB functionality switching capability by faulting A1/A2 xmitters and receivers to verify units switching properly.
2. Vacuum accumulated dust or debris from Constellation radio.
3. Every 6 months, replace the fans in every IRU. Fan replacement will be annually only if the State chooses to award only 1 PMI period per year.
4. Remove fan assembly from Constellation radio chassis and brush and vacuum dust.
5. Note any or all discrepancies with the microwave radio equipment.
6. Record all pertinent data to MW Radio Summary Data Sheet.
7. DC power cables feeding the Kugler blocks shall be checked for tightness in the block.
8. Perform a physical inspection of radio, all connections, waveguides and flexible waveguides, etc…. for possible issues.

Note: Any vacuuming of electronic equipment shall be done with a unit by 3M model SV-497AJM ESD Safe Field Service Vacuum or equivalent.

DC Rectifier Checks & Battery Testing:

1. Perform battery cell testing per Alber Corp.'s test procedures.
2. Record all accumulated data for batteries and label appropriately for ease of identification.
3. Record any and all discrepancies and enter in comment section of battery report.
4. If any inter-strap resistance is extraordinarily high or higher than the norm then the technician shall as part of the preventative maintenance inspection take corrective action. Corrective action shall be to remove the battery plant from service, remove the offending inter-strap, clean and re-grease the strap and battery terminal. The battery plant shall be placed back into service and the offending strap shall be re-tested and recorded into memory of the Cellcorder.
5. All battery connections shall be re-torqued per manufacturer's specifications.

6. Any corrective actions shall be stated in the comment section of the battery report for that battery plant.
7. Batteries and shelving shall be cleaned by wiping dust and grease off the battery and/or shelves should it be necessary.
8. Rectifier units shall be checked for proper output (float) charging voltage. Technician shall turn off the temperature controlled setting and check that each rectifier module is set to -54.0 Vdc. This is done by removing as many modules as feasible (not to cause excessive loading to a rectifier module or modules) and try to balance the output voltage as read at the battery plant for -54.0 Vdc. After completion of all rectifier voltage adjustments the system shall be placed back into temperature controlled function. This ensures batteries are not over charged.
9. The technician shall record a screenshot of the rectifier system and place on a Word document to be used as part of the "PMI Report".

Dehydrator Testing:

1. Technician shall close all manifold valves to each waveguide line for no less than one hour (1 hr) to check for leaks.
2. Dehydrator shall be tested for trip point (verify turn-on pressure level). (Dehydrator should run when air in reserve tank reaches 2 lbs psin)
3. Dehydrator shall be checked for leaks once air lines to the individual waveguides have been turned off.
4. Dehydrator shall be either vacuumed or blown free of dust and/or debris.
5. Any detected leaks shall be corrected if at all possible during the PMI session. If corrective action is not possible during the PMI an estimate of cost for corrective action must be given to the State Radio Engineer for approval.
6. Report any dehydrator discrepancies or line leaks as part of site survey sheet.

Racks and Mux Equipment: Intraplex Equipment-DSX Panels

1. Check for any changes to channel banks, if any. A previously recorded data sheet of modules housed in the channel bank shelf shall be provided.
2. All channel banks shall be cleaned and free of dust and debris.
   Note: Any vacuuming of electronic equipment shall be done with a unit by 3M model SV-497AJM ESD Safe Field Service Vacuum or equivalent.
3. Test a "Live" T1 circuit by monitoring the receive side by monitoring for at least 1 hour. If no errors have been noted during this time it shall be logged on the Constellation PMI data sheet in the comments section. An HP37741A or equivalent shall be used to verify.
4. Download circuit configuration on all Intraplex DACS' (digital access cross-connect server) using Intraplex "Intraguide Program".
5. Check all rack mounting to floor and overhead supports.
6. Check to ensure grounding standards are met. Each shelf should have a ground strap from the shelf to the rack (14 awg jumper). (Some shelves do not have a ground tie point. Chassis provides ground connection to rack).

7. Inspect DSX panels for proper grounding.
8. Inspect equipment shelves for any corrosion, damages, paint chips, scratches, etc. Make note if such exists and take care of the discrepancy at that time, if possible or at a later date.
9. Note any DSX connections (T1 Drops) to the provided DSX-T1-Log Sheet. Also show cross-connects for each circuit.

Stratum Clocks:

1. Check to ensure unit is in timing lock status.
2. Check to ensure antenna input cables to the respective antenna input ports are firm and tight.
3. Check and note any and all alarms seen. Upon finding any alarms the technician shall connect a computer laptop to the Stratum Clock unit (Larus) to investigate the nature of the alarm and take appropriate action to rectify the problem.
4. Should a bad module or component be discovered during the preventive maintenance activity the technician shall note the problem, remove bad module (if possible) and notify his supervisor.
5. Clean the Stratum Clock unit by vacuuming and/or wiping with a cloth to remove any dust or debris off the unit.

Fujitsu Flashwave (FW) SONET:

1. While logged into the FW and monitoring alarms and constellation HLM cards and ensuring payload stays operational check for proper operation of the fiber protection switching by removing fiber pairs on Primary and protected one side at a time to ensure proper protection switching occurs. Ensure all alarms clear prior to switch back to primary.
2. Check hardware and firmware versions of modules housed in the shelf. Pictorial drawing of the shelf depicting actual cards housed in the chassis shall be provided.
3. Download configuration file for storage.
4. Clean equipment shelf of dust and debris. An antistatic vacuum cleaner shall be used.
5. Check blower fan for proper operation.
6. Check and clean filter by removing accumulated dust and debris from the filter. Filter shall be vacuumed.
7. All connections including dc power feeds, cat 5 cables, fiber jumpers, etc. shall be checked for tightness or firmness in their appropriate sockets or jacks.

Fiber Optic Cable Maintenance:

1. Check all fiber connections for improper bends near input and output jacks of equipment.
2. Check to ensure all excess fiber cables are properly laid in their respective trays and no excessive bends or pinching of cables exist.

3. Check to ensure no fiber inner-ducts are being crushed by other cables on the cable trays.
4. Check to ensure no fiber cables passing through the side door shields of the Constellation Microwave radios are being pinched by the cabinet door when opened.
5. Check to ensure all fiber cable bundles are loosely secured (if tie-wraps are used, they should be loose) or Velcro straps for fiber cable bundling shall be used.
6. Report any or all fiber cable damage if found.

Network Monitoring System Servers, Software, Switches, Routers, Firewalls and Associated Equipment:

1. Shall be vacuumed and/or wiped of all dust and debris.
2. Any and all fans and filters shall be vacuumed.
3. Shall be visually inspected for any physical damage or scrapes.
4. Shall report any alarms found on any unit.
5. Shall perform personality/configuration downloads necessary to ensure a backup is available should there be any catastrophic loss of parameters needed to configure such devices.
6. The configuration files shall be placed on disc and left at site and a “Master Disc” containing all devices shall be left with the State Radio Engineer.

DC Distribution Panels:

1. Check panels against previously recorded data.
2. Record any new connections being made to the distribution panels. Include any changes in site PMI report to State Radio Engineer.
3. Verify DC fuse sizes and equipment supported.
4. Clean shelves of dust and debris.

Site Alarms:

1. Site alarms noted for the site shall be tested to ensure its operational status.
2. Any alarms not functioning properly shall be troubleshot and corrected if possible during the preventative maintenance inspection. If the repair cannot be corrected during a PMI visit then the State Radio Engineer must approve remobilization for repair.

Site Survey Sheet:

1. All pertinent site data will be recorded on this form.
2. Any discrepancies noted on any particular test data sheet shall be recorded on this form.
3. Areas in and around radio equipment shall be kept clean and any materials shall be kept in an orderly manner.
4. All external radio equipment such as towers, antennas, cable trays, cable hangers, mounting brackets, tie-back pipes, tower lighting, generator fuel lines/gauges shall

be visually looked at from the ground vantage point and discrepancies noted on the Survey Sheet. A photo or photos are to be provided with each discrepancy noted and attached to the Site Survey Sheet.

Antenna Systems Maintenance:

1. Shall be performed once during a contract year.
2. All personnel performing the inspection shall be a certified climber.
3. All personnel climbing shall use climbing harness and fall arrest equipment that is certified by the industry.
4. All antenna nuts and bolts holding the antenna mounting bracket to the back of the dish, tie-back arms with their associated brackets and hardware, radome covers and associated spring assemblies, cable hangers for waveguides shall be checked and retightened or re-torque as necessary.
5. Any missing hardware such as nuts and/or bolts shall be recorded in the report and picture of the missing item taken.
6. Ensure waveguides are marked to indicate proper dish and polarity at the radio, entrance ports, base of tower and at the dish antenna.
7. Any discrepancies requiring replacement of components due to extensive wear or corrosion shall be reported to the State Radio Engineer in the Site Maintenance report. The report shall contain a description of when and where it was found, along with pictures of the component or hardware needing replacement.

PMI Reports:

1. A Summary Sheet of all major readings from the microwave radio testing will be included.
   Original test data shall be kept by Offeror for reference.
2. A separate section providing discrepancies that were either repaired or pending further action or awaiting approval to proceed shall be included.
3. A separate section providing recommendations to the customer shall be included.
4. Shall provide a picture of discrepancies noted in the “Report” whenever possible.
5. Any pertinent reports deemed necessary to the customer will be included.
6. Provide all saved Fujitsu Flashwave configuration from PMI on disc and copies given with report.
7. Provide all saved configuration files from “Networking” equipment to CD disc or paper depending on agreed format.

Note: All maintenance shall be performed with test equipment calibrated for the performance year.

Example Constellation / Radio PMI SHEET

19 Example Constellation / Radio PMI SHEET

Constellation

Field Test Data / Radio Hop Test

Customer:

Site Name: _____ **Rack #** _____

1.0	**Measure Source Voltage:** 24V (21 to 28) or 48V (42 to 56)			VDC
1.1	**Verify 3dB attenuators in CAC MUX output for 3DS3 MHSB:**			
1.2	**Verify local traffic continuity in IF loopback:**			
2.0	**Tx Reference Frequency:** (100.000 MHz ± 100 Hz)	A1		MHz
	Measured at the **REF MON** Test point on the transmitter assembly	A2		MHz
3.0	**Tx LO Output Frequency:** Calculated Frequency, (± 1 KHz)	A1		MHz
	Measured at **LO MON** Test Point on the Transmitter Assembly	A2		MHz
4.0	**Tx Power Output:**	A1		dBm
	Measured at SMA connector, **TX OUT**	A2		dBm
5.0	**Tx Power Output**:	A1		dBm
	Measured with keypad (Status > System > Tx Pwr)	A2		dBm
6.0	**Rx Reference Frequency:** (100.000 MHz ± 100 Hz)	A1		MHz
	Measured at **REF MON** test point on the Receiver Assembly	A2		MHz
7.0	**Rx LO Output Frequency:** Calculated Freq. (± 1 KHz)	A1		MHz
	Measured at the **LO MON** test point on the Receiver Assembly	A2		MHz
8.0	**RSL:** Calculation from path data sheet			dBm
8.1	**Existing equipment RSL:**	A		dBm
8.2	**Existing equipment type:**	B		dBm
9.0	**RSL:** Measured with keypad (Status > System > RSL)	A1		dBm
		A2		dBm
9.1	**10E-6 RSL:** Measured with keypad (Status > System > RSL)	A1		dBm
	Coordinate Tx faded to reach threshold	A2		dBm
10.0	**RSL:** Top of Rack	A1		dBm
	☐Measured at Receiver Filter Output (or) ☐Measured by Farscan Interpolation	A2		dBm
11.0	**Bit Error Rate Test (BERT) —** 1 Hour	A1		
	Objective: ≤$1x10^{-9}$, one way, unfaded.	A2		

Example Constellation / Radio PMI SHEET

	Aviat Representative	Customer Representative
Name:	_____	_____
Date:	_____	_____

Constellation Field Test Plan
Radio Hop Tests

1.0 Measure Source Voltage

2.0 On 3DS3 MHSB using 3DS3 splitter card and CAC MUX, verify a 3dB attenuator is installed in the outputs of all CAC MUX equipment.

3.0 Local loopback the IF of the radio using keypad. Verify traffic continuity on #1 side of radio. Repeat for #2 side of radio.

4.0 Measure Transmitter Reference Frequency at REF MON Test Point on Transmitter Assembly (Spec: 100.000000MHz ± 100Hz Initial, Tolerance: ± 300 Hz). If reading is out of tolerance use keypad to adjust per Manual, Chapter 9, Routine Maintenance

5.0 Measure Transmitter LO Output Frequency at LO MON Test Point on Transmitter Assembly (Spec: Calculated Frequency, ± 1KHz Initial, Tolerance ± 6KHz). If reading is out of tolerance use keypad to adjust per Manual, Chapter 9, Routine Maintenance.

6.0 Measure Transmitter Power Output at SMA connector TX OUT on Transmitter Assembly.

7.0 Measure Transmitter Power Output using Keypad (Status>System>TX PWR).

8.0 Measure Receiver Reference Frequency at REF MON Test Point on Receiver Assembly (Spec: 100.000000MHz ± 100Hz Initial, Tolerance: ± 300 Hz). If reading is out of tolerance use keypad to adjust per Manual, Chapter 9, Routine Maintenance.

9.0 Measure Receiver LO Output Frequency at LO MON Test Point on Receiver Assembly (Spec: Calculated Frequency, ± 1KHz Initial, Tolerance ± 6KHz). If reading is out of tolerance use keypad to adjust per Manual, Chapter 9, Routine Maintenance.

10.0 Record predicted Receive Signal Level (RSL) that is on Path Data Sheet.

11.0 Measure and record RSL on radio. Use Keypad (Status>system>RSL).

Example Constellation / Radio PMI SHEET

11.1 Fade coordinate Tx to reach 10-6 BER. Use Keypad to remotely measure RSL, record value.

12.0 Measure and record RSL at Top of Rack. Indicate where measurement is taken.

13.0 For the Main T/R perform one (1) hour BERT (Bit Error Rate Test), for the standby T/R perform a one (1) hour BERT at the DSX level and record the results. Performance Objective: 1×10^{-9} BER one-way unfaded. Attach BERT printouts to Field Test Data Sheet.

Example Constellation / Radio PMI SHEET

Preventive Maintenance Check	
Indoor Radio	
	Is the correct voltage present per the radios' user guide, as measured at the DC input connector?
	Is each piece of equipment individually fused with the correct size breaker as per the equipments' user guide?
	Is the equipment DC cable run free of any exposed hot wires?
	Is the DC cable run separated from other cable families in the cable runway by a minimum of 50mm (2in)?
	Is there any damage to any radio?
	Are all radio chassis securely fastened to the rack?
	Are all screws and module fasteners tight?
	Are all module blank panels or doors installed to ensure proper air flow?
	Are all waveguide connection bolts tight?
	If dehydrators are used, are all fittings tight and secure at the waveguide pressure inlet?
	Is the pressure for all waveguides at the dehydrators manufacturer's published spec.?
	Is the dehydrator grounded to the Master Ground Bar?
	Calibrate the Temperature Controller Crystal Oscillator (TCXO) +/- 2ppm
	Calibrate the top of the rack (See Datasheet for reference)
	Clean fan screen
Switching	
	Performed switching of the RF units to ensure both paths work properly (This function will be traffic affecting)
	Perform switching on the SPU
Equipment Rack	
	Appropriate gauge of wiring for power and grounding
Cables/Connectors	
	All cables with damage have been replaced
	All cables are labeled correctly
	All cable runs within the cable manufacturer's minimum bend radius
	All optical cables free of cracks near the connectors?
	Verify that all SMA connectors are properly in place and secured with the proper torque (8 to 9 inch-pounds)
	Ensure all cables are proper lengths
	Are all coaxial connectors tight?
	Are all cables (tributaries, NMS, etc.) secure in its' connector.
	Are all cables labeled correctly?
	Have all cables within the rack and runway system been cut to length with no excess coiled and placed around the rack or on the cable runway?
	Are any radio cables (DC, Ground, IF, waveguide, NMS, etc.) routed over AC lines or conduit in the cable runway system?
	Are all cable bends within the rack and runway system within the manufacturers' minimum bend radius spec?
	Do all optical cables have a minimum bend radius of 50mm (2in)?
	Have all cables within the cable runway system been supported at intervals no greater than 60cm (2ft)?
	Are all cables within the rack supported with non-metallic fasteners?

Example Constellation / Radio PMI SHEET

Grounding	
	Verify that the rack and all interfacing equipment grounding meet site specifications (Office and Earth)
	Ensure that ground connections are not corroded, have correct contact with ground panels, and are securely crimped to ground lugs,
	Check ground integrity all the way to the master ground
	Ensure that ground attachment points have been protected with the agreed anti-corrosive/conductive grease or paint preparation
	Is each piece of communication equipment individually grounded to the rack ground bar? (No daisy-chaining)
	Is each equipment ground a minimum of 4mm^2 (12AWG)?
	Are both of the equipment ground wire ends terminated with the correct size termination?
	Is each of the equipment ground to rack ground bar less than 1 ohm as measured with a clamp-on ground tester?
	Is each rack to Master Ground Bar ground conductor impedance less than 1 ohm?
	Is there a rack ground bar installed?
	Is the rack ground bar isolated from the rack in some way?
	Is the rack grounded to the Master Ground Bar?
	Is the rack ground conductor terminated at the Master Ground Bar with a 2-hole compression lug?
	Has No-Ox been applied beneath the 2-hole lug at the Master Ground Bar?
	Is the Master Ground Bar to external ground ring impedance less than 1 ohm?
	Are all ground conductors going from metallic objects such as air conditioners, etc., to the Halo ground less than 1 ohm?
	Are all coax/waveguide grounds less than 1 ohm?
	Are all ODU grounds less than 1 ohm?
	Are all lightning protection device grounds less than 1 ohm?
	Are all tower legs and ground conductor impedances less than 1 ohm?
	Is the ground conductor between the service meter and electrodes less than 1 ohm?
	Is the security fence bonded to the external ground ring in at least two places?
	If it's possible to check a ground rod to soil impedance, check to make sure it is less than 5 ohms.
	In the case of a rooftop installation, is there a perimeter ground ring installed?
	Is the perimeter ground ring bonded to building steel in at least two places?
	Does the perimeter ground to building steel conductors have an impedance of less than 1 ohm?
	Are all security fence corners bonded to the external ground ring?
	Is there a ground jumper between the gate posts and the gates?
	Is single point grounding employed at the site?