



**Engineering Group
GATR Technologies, Inc.**

GT-E-718

MEMORANDUM

Date: October 22, 2018
To: Kathryn Medley, Engineering Branch Chief, FCC International Bureau Satellite Division
From: John L. Burger, *JLB*
Subject: Hurricane Michael GATR X-band STA Request for Disaster Relief

EXECUTIVE SUMMARY

Cubic|GATR Technologies is requesting Special Temporary Authority to operate several Earth Stations in the X-band frequency spectrum in support of disaster relief efforts for Hurricane Michael. GATR makes portable Inflatable Satellite Antennas (ISA) that are FCC Licensed in Ku-band (Call Sign E080108) and C-band (E090054), and which are certified by the US Army Forces Strategic Command (ARSTRAT) for operation on military satellites in X-band (Certification #'s 12-226, 17-205, 17-208). GATR has received requests from multiple local governments in Florida for satellite communications services while critical local infrastructure is being repaired. GATR's existing Ku-band satellite networks are inadequate to support the additional terminals that are needed to satisfy these requests. The present request for Special Temporary Authority seeks to establish a hub-spoke iDirect network in X-band utilizing 9.6 MHz on XTAR-LANT (30° W) and will provide critical communications to Government entities affected by Hurricane Michael. The network will utilize a GATR 4.0m ISA connected to an iDirect hub in Huntsville, Alabama, and up to Qty 2 GATR 2.4m and up to Qty 2 GATR 1.2m ISAs in and around Panama City, Florida. These systems are presently in Florida, and will operate on the existing lower-bandwidth Ku-band networks pending approval of this STA. GATR currently possesses an FCC Experimental License for X-band (Call Sign WG2XXQ) which received concurrence from NTIA/AFSMO in support of a US Government contract. That STA is limited to Huntsville, AL, and stipulates use must only be in support of that Government contract. GATR requests expedited review and approval of this STA. GATR and XTAR will be providing this humanitarian service gratis and will not be charging the Government or any end-users. GATR is prepared to abide by any conditions and restrictions placed upon this STA grant in order to ensure no interference with federal operations. A stop-buzzer POC is included herein.

This memo includes the terminal and satellite technical data, operating locations, and POCs.

SATELLITE AND FREQUENCIES

Satellite: **XTAR-LANT (30° West)**

Datasheet: http://xtar.com/pdfs/LANT_data.pdf

Beam: C7-C7

Transponder: X06A

Two carriers will be established: a DVB-S2 Downstream carrier from the Hub to the Remotes; and a TDMA Upstream carrier from the Remotes to the Hub. Their frequencies are given below:

Carrier	Uplink			Downlink			Bandwidth (kHz)	Modulating and Coding Rate
	Frequency (MHz)	Pol	Site(s)	Frequency (MHz)	Pol	Site(s)		
Downstream	8,323.510	RHCP	Hub	7,673.510	LHCP	Remotes	5,190	QPSK 2/3 LDPC
Upstream	8,328.300	RHCP	Remotes	7,678.300	LHCP	Hub	4,390	QPSK 4/5 2D16-438B

Above are the currently-allocated frequencies and carrier sizes. Should the frequencies or carriers need to change (due to NTIA coordination or necessary transponder grooming), the carriers could shift in size and position within the following bandwidth segments:

Segment #1

Transponder: X06A

Uplink Frequencies: 8,314 – 8,334 MHz

Downlink Frequencies: 7,664 – 7,684 MHz

Segment #2

Transponder: X05

Uplink Frequencies: 8,234 – 8,306 MHz

Downlink Frequencies: 7,584 – 7,656 MHz

Any changes to the frequencies and carriers will be coordinated as stipulated by the FCC/NTIA.

ANTENNA TECHNICAL DATA

Below is the technical data for the three terminal types. Note that the terminal’s *Maximum Linear EIRP* is listed, as well as the *Required EIRP per Carrier*, which is based on the Link Budget Analysis.

GATR 4.0m Inflatable Satellite Antenna

A GATR 4.0m ISA will be used as the Hub antenna pending grant of this STA.

GATR 4.0m X-band Tx Gain	48.0 dBi
Max Capable Linear EIRP	64.8 dBW
Required EIRP per Carrier	43.7 dBW

Datasheet: <https://www.cubic.com/sites/default/files/GATR%204.0m.pdf>

GATR 2.4m Inflatable Satellite Antenna

There are Qty 2 GATR 2.4m ISA's that may be utilized pending grant of this STA.

GATR 2.4m X-band Tx Gain	43.5 dBi
Max Capable Linear EIRP	54.7 dBW
Required EIRP per Carrier	44.2 dBW

Datasheet: <https://www.cubic.com/sites/default/files/GATR%202.4M%202%E2%80%A218.pdf>

GATR 1.2m Inflatable Satellite Antenna

There are Qty 2 GATR 1.2m ISA's that may be utilized pending grant of this STA.

GATR 1.2m X-band Tx Gain	37.0 dBi
Max Capable Linear EIRP	48.0 dBW
Required EIRP per Carrier	44.2 dBW

Datasheet: <https://www.cubic.com/sites/default/files/GATR%201.2M%202%E2%80%A218.pdf>

HUB LOCATION

Hub Site – Cubic|GATR Technologies Main Office

Site Address: 330 Bob Heath Drive, Huntsville, AL 35806

Antenna Location: 34.7175° N, 86.6886° W

Antenna Type: GATR 4.0m

REMOTE LOCATIONS

At present, the possible remote locations are located in Bay County, Florida, within a 20 mile radius of 30.15° N, 85.55° W. There are 12 sites that have been identified as possible sites. Their addresses and POC (where available) are listed below. These will use either a GATR 2.4m or GATR 1.2m ISA, with no more than 4 concurrent sites. **Figure 1** shows a graphic of some of the possible remote locations.

Since the disaster relief communication needs frequently change as communications are restored, some locations on this list may no longer require satellite communications. The six “Primary” Remote Sites are ones from recent requests and in the most need at this time, whereas the “Secondary” Remote Sites are ones that were originally requested but may no longer require our communication services.

An STA covering the above 20 mile radius would allow coverage of the currently-known sites. GATR is prepared to coordinate specific site approval as stipulated by the FCC/NTIA, including any additional requests for satellite communications disaster relief services that may arise after this filing.

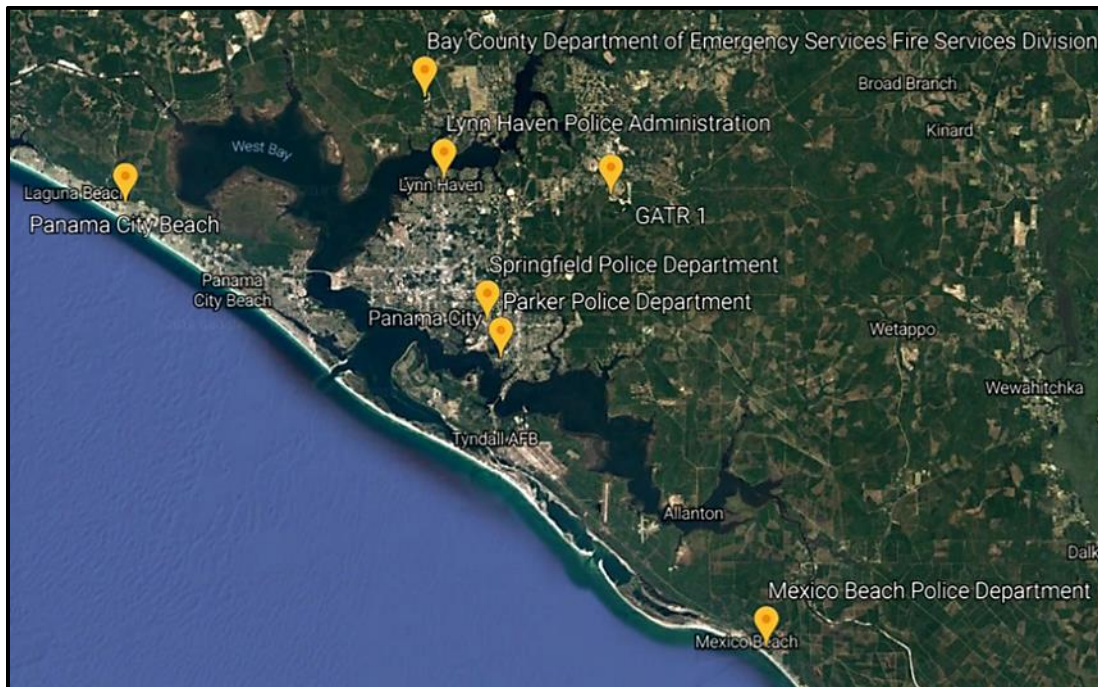


Figure 1. Survey of Several Possible Remote Locations around Panama City, Florida.

Remote Site #1 (Primary) – Panama City Mayor’s Office

Address: 819 E 11th Street, Panama City, FL 32401

POC: Steven Buoni, System Administrator, City of Panama City, 850-597-1210

Remote Site #2 (Primary) – Panama City Utilities Department

Address: 3000 W 19th Street, Panama City, FL 32405

POC: Jared Jones, Systems City Manager, City of Panama City, 850-832-0118

Remote Site #3 (Primary) – Bay County Fire Department

Address: 11771 US-231, Youngstown, FL 32466

POC: Lt. Ike Smith, 850-819-6615

Remote Site #4 (Primary) – City of Lynn Haven Customer Service Center

Address: 817 Ohio Avenue, Lynn Haven, FL 32444

POC: Ian Hill, IT Specialist, City of Lynn Haven, 850-774-2124

Remote Site #5 (Primary) – Lynn Haven Police Department

Address: 108 E 9th Street, Lynn Haven, FL 32444

Remote Site #6 (Primary) – Bay County Roads and Bridges Division

Address: 4741 Fire Tower Road, Panama City, FL 32404

Remote Site #7 (Secondary) – Bay County Sheriff’s Office

Address: 3221 N Highway 77, Panama City Florida, 32405

POC: Wayne Wilkes, IT Director, Bay County Sheriff’s Office, 850-258-4370, 469-439-2278

Remote Site #8 (Secondary) – Bay County EMS

Address: 700 Hwy 2300, Southport, FL 32409

Remote Site #9 (Secondary) – Mexico Beach Police Department

Address: 118 14th Street, Mexico Beach, FL 32456

Remote Site #10 (Secondary) – Parker Police Department and Utilities

Address: 1001 W Park Street, Panama City, FL 32404

Remote Site #11 (Secondary) – Springfield Police Department

Address: 3529 E 3rd Street, Panama City, FL 32401

Remote Site #12 (Secondary) – Bay County Jail

Address: 5700 Star Lane, Panama City, FL 32404

GOVERNMENT COORDINATION

Earlier last week GATR received a request from the Bay County Sheriff’s Office to establish communications at several of their sites (listed above). The formal letter requesting support is shown in **Figure 2**. This is a photograph of a handwritten letter since their computer systems did not have Internet communications.

Stemming from this request, GATR contacted one of its U.S. Army customers, PEO-C3T. GATR possesses several ISA terminals that are owned by PEO-C3T which were used as test assets during the T2C2 Program of Record acquisition. PEO-C3T has authorized GATR to use four of their Government Owned ISA terminals for these disaster relief efforts. The four remote terminals that would be operating within this X-band network are all Government-owned assets. Government POCs are provided below.

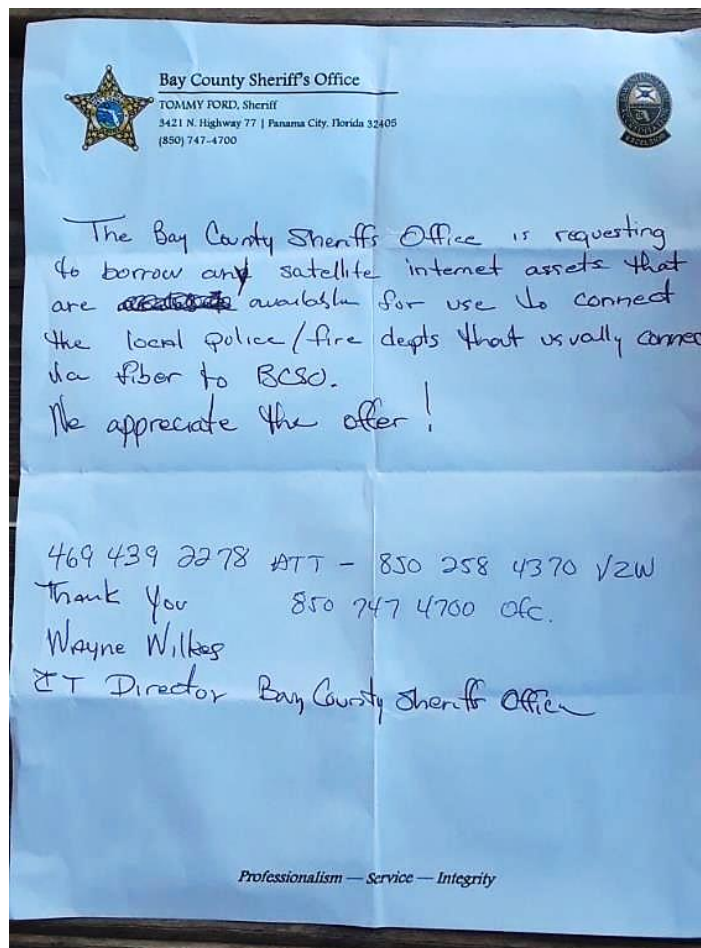


Figure 2. Letter from Bay County Sheriff’s Office.

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