

# **EAMs and HF-GCS**

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Originally Created March 20<sup>th</sup>, 2014



A B-2 bomber and two F-15's over Andersen Air Force Base

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## **EAMs and Mainsail**

An EAM (Emergency Action Message) is transmitted by the US Military, which contains a high priority and time sensitive message and transmits instructions for their operations. These messages are a high priority since they are also used for strategic military operations including nuclear attacks if it was ever needed, and because of this the format and complete accuracy of the message is necessary.

These messages are broadcasted on the HF-GCS frequencies which are 4724 kHz, 6739 kHz, 8992 kHz, 11175 kHz, 13200 kHz, and 15016 kHz. 6712 kHz is another frequency but is only used by Croughton, UK for part of the day. HF-GCS stands for High Frequency Global Communications Systems which is used by the USAF (United States Air Force) in different countries across the world. You are very likely

to catch an EAM if you stay tuned to one of these frequencies, although there are still a few other backup frequencies used for EAMs. Each of these frequencies is available at certain times, but there are two 24-hour frequencies:

24 Hour Frequencies (kHz):  
8992.0      11175.0

Back up Frequencies (kHz):  
Day:      13200.0 15016.0  
Night:    4724.0 6739.0

These are shown in universal coordinated time (UTC) and are broadcasted in USB (Upper Side Band) mode. The times for the back-up frequencies also change throughout the year.

The format of EAMs starts with a six letter readout that is read in phonetic letters and the typical message is 30 characters long, although there have been many that do not stick to the 30 characters and can be much longer, or even less than that. There has even been an EAM as long as 238 characters long transcribed. Other than containing phonetic letters, an EAM can also contain the numbers two, three, four, five and seven although zero, one, eight and nine can still be heard in rare exceptions. Listed below is the NATO phonetic alphabet:

Alfa (al-fah)	Bravo (brah-voh)
Charlie (char-lee)	Delta (dell-tah)
Echo (eck-oh)	Foxtrot (foks-trot)
Golf (golf)	Hotel (hoh-tell)
India (in-dee-ah)	Juliet (jew-lee-ett)
Kilo (key-loh)	Lima (lee-mah)
Mike (mike)	November (no-vem-ber)
Oscar (oss-cah)	Papa (pah-pah)
Quebec (keh-beck)	Romeo (row-me-oh)
Sierra (see-air-ah)	Tango (tang-go)
Uniform (you-nee-form)	Victor (vik-tah)
Whiskey (wiss-key)	X-Ray (ecks-ray)
Yankee (yang-key)	Zulu (zoo-loo)

Here is an example of an EAM recorded on January 13<sup>th</sup> 2014:

*"G5RTZN G5RTZN G5RTZN stand by, message follows  
G5RTZNMERFOBIV4EDDS3V6MZTHWMTX I say again  
G5RTZNMERFOBIV4EDDS3V6MZTHWMEX this is mainsail out"*

As you can see, before the message they repeat the first six letter readout three times before the message and after the whole message is broadcast, it is also repeated. Messages usually end with mainsail out but this can vary depending on where it is transmitted (ex. Andrews out). Mainsail is the collective callsign for any ground station in the network.

Below is the transcription of the 238 character EAM which was broadcast on October 23<sup>rd</sup> 2010 and was transmitted by Andrews:

"OPJUU6-  
K6NMF5HXBOVS2Y6GIPEU5CLOW5JKBZKOJIRFQSUIRRTSDUCCTZSXKH7LR33LWA3  
BVLWLKLLXXXXLFGV6PPPL5E5Z7TEEZHCCCC6RA7O33333KLPB4HBBB6666P3UBAV  
WAG5FNQNHQS466IAPHMSZ2EPKKCJJRGIGLUCETTTTG24VNAAJHAIHTATWTA2VV  
VV7GNYMG7P6AZVEE22JWF535D55KMMMMQDJIGZYMIR"

Another type of message that is sent is an FDM (Force Direction Message). Although it is a different type of message there is no way to identify whether or not the message is an FDM or just another EAM.

Sometimes tactical callsigns are used, and these messages will not include Mainsail at the end. Before the message is read, the beginning will start with the callsign and will be read as, "For WAITER" or, "For TRINIDY" which these callsigns were heard on July 7<sup>th</sup>, 2013. Some of these names change as often as six hours, but can change slower.

## **Skyking**

Other than EAMs there are Skyking messages transmitted on the HF-GCS, which are also called Foxtrot broadcasts. These messages have a different format which begins with, "Skyking Skyking do not answer". After this follows a trigraph which is three phonetic letters, then two numbers for the time of the hour, and then two more letters for the authentication. These messages are also a higher priority than EAMs, and when a Skyking message needs to be read it will interrupt a regular EAM and will begin reading over it.

These messages are for the Army Material Command and Army Contracting Command airborne forces detailed to the USSTRATCOM (U.S. Strategic Command). Skyking is the collective call sign for all SIOP (Single Integrated Operational Plan) committed aircraft and missile crews. All SIOP committed aircraft and missile crews copy the messages.

Here's an example of a Skyking message recorded on December 29<sup>th</sup>, 2013:

*"Skyking Skyking do not answer... India Mike Alfa, time: zero five, authentication Papa Romeo  
I say again... Skyking Skyking do not answer... India Mike Alfa, time: zero five, authentication Papa Romeo"*

So the trigraph for this message is IMA the time is .05 and the authentication is PR. The reason for "do not answer" is so there is no response which could give away their position. The message is read two times as seen above.

Occasionally the operator will tell them to disregard their last message:

*"Skyking Skyking do not answer, disregard my Sierra Mike Zulu transmitted at .30 time .32 authentication Hotel Charlie, Mailsail out"*

## **Other Information and Transmissions on HF-GCS**

As stated above, EAMs are not the only messages transmitted on HF-GCS frequencies. More common than others but much less common than an EAM, you could hear a broadcast in French. These messages are also for their air-to-ground communications.

Test counts are occasionally read as well, here is an example of a test count transcribed from March 11<sup>th</sup>, 2014:

*"This is mainsail with a test count... testing 1, 2, 3, 4, 5... 5, 4, 3, 2, 1"*

Sometimes you will notice an echo in the background and at certain times can become more noticeable. These echoes are heard due to propagation delays and the result of slow landlines or satellites going to the multiple transmission sites. These sites are widely spread out and are listed below:

### **HF-GCS Sites**

### **ALE**

Andersen Air Base, Guam	GUA
Andrews AFB, Maryland	ADW
Ascension Island	HAW
Croughton AB, United Kingdom	CRO
Diego Garcia Naval Station, Indian Ocean	JDG
Elmendorf AFB, Alaska	AED
Hickam AFB, Hawaii	HIK
Keflavik NAS, Iceland	IKF
Lajes AB, Azores	PLA
McClellan, California	MCC
Offutt AFB, Nebraska	OFF
Salinas, Puerto Rico	JNR
Sigonella Naval Station, Sicily, Italy	ICZ
Yokota AB, Japan	JTY
Air Force Eastern Test Range, Florida	None
"MPA", Unknown	MPA

ALE (Automatic Link Establishment) is a system used to connect to an HF station or a network of stations. These are the callsigns used for the stations above.

## **Sources**

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*Originally published by The Numbers Stations Research and Information Center on March 20<sup>th</sup>, 2014.*