EAMs and HF-GCS

By Ryan Schaum and Marcel H.

www.numbers-stations.com

June 1st, 2016

A B-2 bomber and two F-15's over Andersen Air Force Base [© Wikimedia Commons]

EAMs and Mainsail

An EAM (Emergency Action Message) is a high priority message that is transmitted around the world by the US Air Force. These messages are able to be sent globally because of the HFGCS. The HF-GCS stands for High Frequency Global Communications Systems which is used by the US Air Force in different countries across the world. These messages are a high priority for the military since they are used for many of their strategic military operations, including nuclear attacks if it was ever needed.

These messages are broadcasted on the common 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. 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:
8992.0   11175.0

Back up Frequencies:
Day: 13200.0   15016.0
Night: 4724.0   6739.0

These are shown in Zulu time (Same as GMT) 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.

Here is an example of an EAM recorded on January 13th 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 23rd 2010 and was transmitted by Andrews:

*"OPJUU6-
K6NMF5HXBOVS2Y6GIPEU5CLOW5JKBZKOJIRFQSUIRRTSDUCCTZSXKH7LR33L
WA3BVLWLKLLXXXXLFGV6PPPL5E5Z7TEEZHCCCC6RA7O33333KLPB4HBBB6666
P3UBAVWAG5FNQNHQS466IAPHMSZ2EPKKCJJJRGIGLUCETTTTG24VNAAJHAIH
TATWTA2VVVV7GNYMG7P6AZVEE22JWF535D55KMMMMQDJIGZYMIR"*

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. Both EAMs and FDMs are spread to military command centers through the use of a Single Channel Transponder System.

Sometimes there are specific recipients and will not include Mainsail at the end. These messages could read, "For WAITER" or, "For TRINIDY" which these were heard on July

7th, 2013. These messages are usually not repeated twice, and the same recipient is often never heard more than once.

Skyking

Other than EAMs there are Skyking messages that are 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 to indicate the time, and then two more phonetic letters for the authentication code. Sometimes, an alternate code will be used instead of the regular authentication. These messages are also 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 if it has to be read.

These messages are also 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 29th, 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 format for this message would be: IMA/.05/PR. The reason for "do not answer" is to remind the receiver not to respond so they do not potentially reveal their position. The message is read two times as seen above.

Occasionally the operator will tell them to disregard their last message, this could be a result of an error in the letters read or if the task had been cancelled:

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

Test Counts and Stations

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 11th, 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:

USAF HF-GCS Stations	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 an HF system used to connect to an HF station or a network of stations. These are the callsigns used for the stations above.

Sources

Haverlah, Jeff, and Ary Boender. "The USAF Numbers Broadcast." UDXF

Haverlah, Jeff. "What Is an EAM?" Monitoring Times

"HFGCS - USA" Shortwave Listeners Delight

"HF-GCS History." Ominous-Valve

"USAF High Frequency Global Communications System." Radio Reference LLC

"What are Emergency Action Messages (EAM)?" Milcom Monitoring Post

"Emergency Action Messages" National Park Service nps.gov