

General Communication Inter- and Intraflight

Covers the basics of communication used in our squadron between you and your flight as well as with other flights, GCI or AWACS.

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Standard phrases

A brief overview how a call is structured and a collection of commonly used words and phrases.

Structure of a radio call

A standard radio call usually consists of the following:

- Who do you want to talk to? (Recipient's callsign)
- Who is calling? (Your callsign)
- Brief message in standardized phrasiology (What you want)

Example: Magic, Phobator 2-1, request picture.

Keep the message as **short** and **clear** as possible. As long as you talk on the radio, noone else can (does not really apply to MIDS, but in order to not overlap with someone else's call you should still keep it short).

And remember: If you don't understand all phrase or a call in general, **always ask**. If necessary, plain language is also totally acceptable in order to ensure a safe flight environment.

Procedures and certain phrasiology **may vary** depending on where you are. Navy, Air Force, Civilian Airports and even different regions may use different wording or structure in their radio calls. Just make sure to inform yourself about local variations.

Commonly used phrases

This is a collection of standard phrases that are used by all NATO member states to ensure efficient communication.

Procedure Words (Prowords):

- **Affirmative:** Yes/Permission granted/Correct
- **Negative:** No/Permission not granted/Incorrect
- **Roger:** Message recieved and understood
- **Wilco:** Will comply, will execute the given task
- **Stand by:** Wait for further information or instructions
- **Disregard:** Ignore the (last) transmission because of wrong information
- **Copy:** Message was recieved; *When used with "**Say when ready to copy**"/"**Stand by to copy**" this means be prepared to note the following message down*

NATO Phonetic alphabet

Some letters may sound over a radio transmission very similar. To reduce the risk of a misunderstanding, all letters aren't spelled individually, but with a easy to differentiate, pre-determined word.



The ability to communicate and make yourself understood can make a difference in life-threatening situations – imagine for example that you are trying to alert a search and rescue helicopter of the position of a downed pilot. To ensure clear communication, NATO uses a number of well-known formats which are in general use. NATO standardization agreements enable forces from many nations to communicate in a way that is understood by all.

Some standards can be found in everyday civilian and military life. "Bravo Zulu", typically signalled with naval flags on ships at sea and meaning "well done", is also commonly used in written communication by the military, for example by replying "BZ" to an email.

Phonetic alphabet

The NATO alphabet became effective in 1950 and, a few years later, turned into the established universal phonetic alphabet for all military, civilian and amateur radio communications.

International Morse Code

Morse code transmits text through on-off tones, light-flashes or clicks. It was widely used in the 1890s for early radio communication, before it was possible to transmit voice.

Flaghoist communication

Ships use flags as signals to send out messages to each other. The use of flags, known as flaghoist communication, is a fast and accurate way to send information in daylight.



Semaphore

Semaphore is a system in which a person sends information at a distance using hand-held flags – depending on the position of the flags, the message will vary. The signaller holds the flag in different positions that represent letters or numbers.

Panel signalling

Panels are visual signals for sending simple messages to an aircraft. Using a limited code, ground forces can send messages to pilots, for example to request medical supplies.

Numbers			
1	One (<i>wun</i>)		
2	Two (<i>too</i>)		
3	Three (<i>tree</i>)		
4	Four (<i>fow-er</i>)		
5	Five (<i>fife</i>)		
6	Six (<i>six</i>)		
7	Seven (<i>sev-en</i>)		
8	Eight (<i>ait</i>)		
9	Nine (<i>nin-er</i>)		
0	Zero (<i>zee-ro</i>)		

B Bravo (<i>brab-voh</i>) 	C Charlie (<i>char-lee</i>) 	D Delta (<i>dell-tah</i>) 	E Echo (<i>eck-oh</i>) 	F Foxtrot (<i>foks-trot</i>)
G Golf (<i>golf</i>) 	H Hotel (<i>hoh-tel</i>) 	I India (<i>in-dee-ah</i>) 	J Juliett (<i>jeu-lee-ett</i>) 	K Kilo (<i>key-lah</i>)
L Lima (<i>lee-mah</i>) 	M Mike (<i>mike</i>) 	N November (<i>no-tem-ber</i>) 	O Oscar (<i>oss-cah</i>) 	P Papa (<i>pah-pah</i>)
Q Quebec (<i>keh-beck</i>) 	R Romeo (<i>rou-me-oh</i>) 	S Sierra (<i>see-air-nah</i>) 	T Tango (<i>tang-go</i>) 	U Uniform (<i>you-nec-form</i>)
V Victor (<i>vic-tab</i>) 	W Whiskey (<i>whiss-key</i>) 	X Xray (<i>ecks-ray</i>) 	Y Yankee (<i>yang-key</i>) 	Z Zulu (<i>zoo-lou</i>)

More information on NATO's codes, signals and standards can be found on the NATO Standardization Office (NSO) website: <http://iso.nato.int/iso/> – More on the history of the NATO phonetic alphabet: <http://www.nato.int/docu/other/1999/19990101.htm>

Created by Communications Services, Public Diplomacy Division, NATO HQ, Brussels, Belgium – NATO 2018 ©/B/©/ Phonetic transcription is based on English pronunciation.

This also applies to numbers in a similar fashion:

0: "ZEE-RO" **1:** "WUN" **2:** "TOO" **3:** "TREE" **4:** "FOW-ER" **5:** "FIFE" **6:** "SIX" **7:** "SEV-EN" **8:** "AIT" **9:** "NIN-ER"

Link to the official [NATO Page](https://www.nato.int/alpha/)

Intraflight Comms

Communicating with your flight members.

Intraflight communication

The communication between you and your flight members usually happens via the MIDS Radios in the F18. They offer the best quality, and leave the two UHF/VHF Radios open for communication with ATC, Ground Controller, JTAC, TACCOM, etc.

The communication here is not as strict as on frequencies with other flights or controllers. You should still keep the messages short and informative, but if you are outside of critical phases of the flight like landing, take-off or engagements, you are allowed to talk more freely.

For convenience, you usually don't say your full callsign here, instead you only use the number you have in your specific flight.

Example:

(You are Phobator 2-3, and your leader just gave you a direct order. To tell him that you understood the order, you can simply say "3".)

Phobator 2-1: "3, go into fingertip formation"

Phobator 2-3: "3"

COMM setup

Here we learn about how COMMs are setup for realistic missions.

This Includes:

- VHF/UHF
- AM/FM
- Guardfrq.
- Buttons
- DataLink COMMs/MIDs

F/A-18C Hornet – COMMs and Preset Button Usage

In the F/A-18C Hornet, communication is managed through two ARC-210 radios: **COMM 1** and **COMM 2**, each with 20 programmable preset channels, known as “buttons.” These presets are configured prior to a mission and allow the pilot to quickly access the correct frequency for ATC, AWACS, tanker, strike coordination, and flight communications without manually tuning frequencies in-flight.

Example COMMs Preset Layout

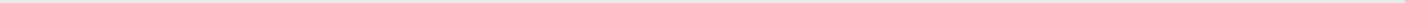
Below is an example preset configuration for a carrier-based mission in the Syria theater, used by a multi-element Hornet squadron:

COMM 1 - ARC-210 (ATC, AWACS, Tankers)

Button	Purpose	Freq.	Additional Info
1	Departure	127.5AM	
2	CSG (STRIKE)	320.0AM	
3	Recovery (Marshal)	127.5AM	55X, 5 ICLS
4	AWACS (MAGIC)	251.0AM	
5	AWACS (IMAGE)	256.0AM	
6	Tanker (Arco 1-1)	254.0AM	11Y
7	Damascus Tower	253.25AM	
8	Ramat David Tower	251.3AM	
11	Tanker (Texaco 1-1)	268.0AM	Recv. 1Y



- **Buttons 1 & 3** are both ATC-related; Button 3 adds ICLS and TACAN info for carrier recovery.
- **Buttons 4-5** cover AWACS callsigns for picture and broadcast.
- **Buttons 6 & 11** are tankers, with TACAN channels for AAR navigation.
- **Buttons 7-8** provide regional tower freqs for Damascus and Ramat David in case of divert or transit ops.

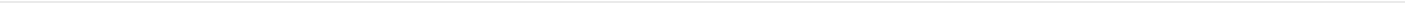


COMM 2 - ARC-210 (Flight COMMs)

Button	Purpose	Freq.
1	Flight (Phobetor 1)	301.0AM
2	Element (Phobetor 1)	301.5AM
3	Flight (Phobetor 2)	302.0AM
4	Element (Phobetor 2)	302.5AM



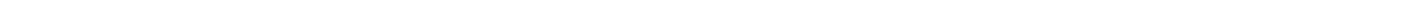
- COMM 2 is reserved for **intra-flight communication**.
- **Flight** refers to all 4 jets in the element; **Element** refers to each 2-ship pair.
- This division helps keep comms concise during tactical execution.



How to Switch Preset Channels

To switch between presets in the F/A-18C:

- 1. Use the UFC (Up Front Controller):**
 - Press the **COM 1** or **COM 2** button on the UFC.
 - Rotate the **channel select knob** just below the UFC screen to cycle through presets (1-20).
 - The currently selected button will appear in the top left of the UFC window.
- 2. Monitor and Talk:**
 - Ensure the desired radio (COMM 1 or COMM 2) is selected for transmission by checking the transmit selector knob on the **Audio Control Panel**.
 - A small dot will appear next to the active radio on the HUD or DDI when transmitting.
- 3. Manual Override (if needed):**
 - You can manually input a frequency via the UFC if a preset is unavailable, but preset switching is faster and less workload-intensive.



Tactical Tips

- Use **COMM 1** for ATC, AWACS, tankers, and base frequencies.
- Use **COMM 2** for **tactical intra-flight communication**.
- Maintain discipline: only speak when necessary and always identify yourself (e.g., “Phobator 1-2, tally two bandits, 240, 15 miles”).

Understanding UHF, VHF, AM, and FM in the F/A-18C Hornet

Effective radio communication in the F/A-18C Hornet depends not only on proper frequency presets but also on understanding the **radio bands** and **modulation types** used: **UHF**, **VHF**, **AM**, and **FM**. These terms describe **how** and **where** a signal is transmitted and received.

▣▣ Radio Bands: UHF and VHF

Band	Frequency Range	Use in F/A-18C	Notes
UHF (Ultra High Freq.)	225.000 – 399.975 MHz	Primary for military ATC, AWACS, strike coordination, and aircraft-to-aircraft comms	Most default military channels are UHF
VHF (Very High Freq.)	30.000 – 174.000 MHz	Used for ground comms (JTAC), ATC (civilian), and some regional towers	VHF is often used for ground-based ops or coalition forces

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- The **ARC-210** radios in the F/A-18C can operate in both UHF and VHF bands. Frequencies are manually entered or selected via preset channels.
- Most **airborne assets (AWACS, tankers, flights)** will use **UHF**.
- **Ground-based assets** (JTAC, civilian ATC, regional towers) may use **VHF**.

▣▣ Modulation Types: AM and FM

Modulation	Use Case	Supported in F/A-18C	Notes
AM (Amplitude Modulation)	Standard for aviation comms	✓ Yes	Used for most UHF/VHF radio calls (ATC, AWACS, flights)

Modulation	Use Case	Supported in F/A-18C	Notes
FM (Frequency Modulation)	Ground forces, JTAC, and CAS	✓ Yes	Typically used in VHF band (30–88 MHz); more resistant to static/interference

- **AM is default** and is used for nearly all aviation communications in DCS.
- **FM is used** when talking to **JTACs or ground units** via VHF (e.g., 30.00–76.00 MHz). The ARC-210 supports this, and DCS will auto-modulate based on frequency.

How to Know What You're Using

- When tuning radios in DCS, you don't explicitly select AM or FM—the **modulation is determined by the frequency entered**.
- Example:
 - 251.000 → UHF AM
 - 30.000 → VHF FM
 - 127.500 → VHF AM
- As a rule:
 - **Above 108 MHz = AM**
 - **Below 88 MHz = FM**
 - **Between 108-174 MHz = AM** unless specifically in FM JTAC band

Quick Comms Summary

Frequency	Band	Modulation	Typical Use
251.000	UHF	AM	AWACS / Tower
127.500	VHF	AM	Carrier ATC / Civil ATC
30.000	VHF	FM	JTAC / Ground troops
320.000	UHF	AM	Strike package net
268.000	UHF	AM	Tanker (Texaco)

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In Practice (DCS Tips)

- Use **AM for all aircraft/airfield comms** unless you're talking to **JTAC or infantry units**.
- If using **SRS (Simple Radio Standalone)**, make sure your SRS settings allow **auto modulation switching** based on frequency.
- The **Hornet's radios do not allow manually selecting modulation type**—it's automatic based on freq.

MIDS Voice COMMs in the F/A-18C Hornet

The **MIDS (Multifunctional Information Distribution System)** in the F/A-18C Hornet isn't just for Link-16 data—it also supports **encrypted voice communication** over two digital voice channels: **VOCA** and **VOCB**.

These can be used as additional comm channels for secure, low-latency coordination between flights, elements, or mission commanders—**especially useful when normal UHF/VHF radios are saturated or compromised**.

☐ VOCA and VOCB - What They Are

- **VOCA (Voice Channel A)** and **VOCB (Voice Channel B)** are two **digital voice channels** built into the MIDS terminal.
 - They **do not use traditional UHF/VHF frequencies**—instead, they ride on **Link-16 waveforms**, piggybacking off the tactical data link infrastructure.
 - Voice transmission is **digital, secure, and line-of-sight (LOS)** only.
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⚙️ How MIDS Voice Works in the F/A-18C

1. Channel Selection:

- VOCA and VOCB are each assigned a **MIDS Voice Channel** between **1 and 126**.
- These channels **must be set identically across all aircraft** intending to communicate on the same VOCA or VOCB net.
- Channel **127 is a special case—selecting channel 127 disables MIDS voice on that channel** entirely.

2. Radio Binding:

- Once set, you can transmit over VOCA/VOCB just like a normal radio.
- Voice activity over VOCA/VOCB is not displayed in the normal ARC-210 frequency windows but can be monitored using the **AUDIO PANEL** toggles.

3. Setup in DCS:

- MIDS channels are typically set via the **D/L (Data Link) page** on the UFC or **MIDS Control Panel**.
 - Ensure VOCA/VOCB are on assigned, matching channels across aircraft.
 - Toggle VOCA or VOCB transmit via the **Audio Panel's rotary selector** behind your left hip
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☐ Advantages of MIDS Voice

- ☐ **Encrypted and secure** – immune to most jamming and eavesdropping in DCS.
 - ☐ **Frees up UHF/VHF radios** for other roles (e.g., AWACS, tower, package net).
 - ☐ **Integrated with Link-16**, so all participants on the network have voice and data link automatically aligned.
 - ☐ **Very low latency**, ideal for tactical comms between close-range cooperating flights.
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☐ Limitations / Caveats

- ☐ **Line-of-sight only** – no ground station relays; if terrain blocks LOS, comms will drop.
 - ☐ **No feedback on frequency or signal strength** like UHF/VHF radios.
 - ☐ **Can be hard to manage if your team isn't disciplined about VOCA vs. VOCB roles.**
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☐☐ Quick Setup Checklist (DCS)

1. On the D/L UFC page:
 - Set **MIDS A Voice Channel** to e.g.,
 - Set **MIDS B Voice Channel** to e.g.,
 2. On the **Audio Control Panel**:
 - Rotate COMM selector knob to **VOCA** or **VOCB**
 - Toggle transmit switch ON for that channel
 3. Transmit like any other radio using the assigned COMM switch (usually HOTAS bound)
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☐☐ SRS Note (if using Simple Radio Standalone)

- MIDS voice isn't supported directly in SRS.

- However, VOCA/VOCB behavior can be **simulated** by binding a separate SRS channel (e.g., SRS Radio 3 and 4) and assigning it to your VOCA/VOCB function for training or realism purposes.

Guard Frequency in the F/A-18C Hornet

The **Guard frequency** is a critical part of your communications setup in any aircraft—and the F/A-18C is no exception. In both real-world and DCS operations, monitoring Guard is essential for **safety, coordination, and emergency response**.

▣▣ What Is Guard?

The **Guard frequency** is a set of two international emergency channels that are always monitored by military and civilian aircraft:

- **UHF Guard:** 243.000 MHz – used primarily by **military aircraft**
- **VHF Guard:** 121.500 MHz – used by **civilian aircraft**, but also monitored by many military units

These frequencies are used for:

- **Distress calls (MAYDAY / PAN PAN)**
- **Airspace deconfliction**
- **Lost comm procedures**
- **Emergency coordination**

In DCS, **UHF Guard (243.000)** is the most relevant.

▣▣ How the Hornet Handles Guard

The F/A-18C automatically **monitors UHF Guard in the background**, regardless of which frequency you're actively tuned to—as long as **Guard is enabled on your Audio Control Panel**.

You can listen to and transmit on Guard using the following controls:

☐☐ Guard Monitoring Controls

☐☐ Listening to Guard

1. Look at the **Audio Control Panel** (left console, below the left DDI).
2. The **COMM 1 and COMM 2 knobs** include a setting labeled **G** for **Guard**.
3. Rotate the **selector knob** to **G** to monitor Guard frequency audio.
4. Adjust volume using the corresponding **COMM volume knob**.

“☐☐ Note: You can monitor Guard **alongside any other active frequency**, making it great for picking up emergency calls without missing your flight comms.

☐☐ Transmitting on Guard

If you need to transmit on Guard (rare but possible in emergencies):

1. **Set COMM 1 or COMM 2 to manual mode**
2. **Dial in 243.000 MHz**
3. Transmit as usual using your assigned COMM switch

“☐☐ Most Hornet squadrons **monitor Guard passively** but do not transmit on it unless instructed or in an emergency.

JTAC COMMs

9-line charts and more

Quick guide — 9-Line CAS brief

Purpose

The 9-Line is a compact, standard way for a JTAC/Tactical Controller to give attacking aircrew the essential targeting information they need to prosecute a weapons release safely and effectively. It focuses on the target location/description, friendly positions, weapon/fuze constraints, and ingress/egress.

“ Note: There are several doctrinal variations of the 9-line (service/country differences, doctrinal updates). The version below is the widely used **JTAC → aircraft** functional breakdown (what pilots expect to hear).

Check In as soon as leaving ATC ZONE. Usually 5 miles.

Knight 1-1, Snake 1.

Snake 1, Knight 1-1: pass message.

Knight 1 flight is a 2 ship Hornet; loaded with 4 x AGM65E; 8 x GBU38; 4 x CBU 99. PLAYTIME 30 MINUTES. *NOTE: load out is for entire flight.*

Knight 1, Snake 1; Proceed to the ALPHA HOLD at 22k

Knight 1, Snake 1. At the ALPHA HOLD 22K *(When established at the hold)*

Knight 1-1, Snake 1. Type 2 in effect. Advise when ready to copy 9-line *(Type 2 means only the JTAC/AFAC needs eyes on the target)*

Knight 1-1 ready to copy

1,2,3 N/A; 278ft MSL; Shilka; LM40125-62110; Mark the laser 1688; Troops NW of target; Egress EAST. Advise when ready for remarks and further talk on. *(This could be precise MGRS coords with no lasing)*

Ready to copy remarks *(Once pilot has entered height/coords)*

Use AGM65E; Ingress 120-160 *(May be include ingress to avoid friendly troops)*

278; LM40125-62110; 120-160 *(Pilot reads back height, coords and ingress)*

Readback correct. Report IP inbound 10 miles to target

Knight 1-1 IP Inbound *(Pilot will then call back in at 10 miles to target)*

Continue

Knight 1-1 LASER ON *(At appropriate distance to launch, i.e. in range)*

Laser on. Lasing.

SPOT *(When you have acquired the laser. YOU DO NOT HAVE PERMISSION TO FIRE)*

Cleared in HOT

Knight 1-1 OFF to the EAST *(When attack run is complete)*

Knight 1-1, Return to Alpha hold

Wait instructions for next run in.

Pre-9-Line items

These are the common radio items you should send **before** the 9-line so aircrew can prepare and respond:

- **Check-in** — identifies flight, position or that you're leaving an ATC zone.
Example: "Check in as soon as leaving ATC ZONE. Usually 5 miles. Knight 1-1, Snake 1."
- **Readback/request to copy** — controller tells the flight to be ready to copy the 9-line.
Example: "Knight 1-1 ready to copy."

- **Mission/ordnance and brief note** — brief description of the flight loadout or playtime.
Example from picture: “Knight 1 flight is a 2 ship Hornet; loaded with 4 x AGM65E; 8 x GBU38; 4 x CBU 99. PLAYTIME 30 MINUTES. NOTE: load out is for entire flight.”
 - **Hold / IP / clearance to engage** — where to hold and when to expect the IP call.
Example: “Proceed to the ALPHA HOLD at 22k. Report IP inbound 10 miles to target.”
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The 9 lines — explanation + example mapping

Line 1 — **IP/BP or Call-in** (Initial Point / Battle Position)

- **What it conveys:** Method of attack reference point for the run; where the aircraft will start the attack (or “IP inbound”).
- **Example from picture:**
“Knight 1-1 IP Inbound (Pilot will then call back in at 10 miles to target)”
— or the controller may simply say “IP inbound 10 miles to target” as part of the pre-brief.

Line 2 — **Heading (attack heading / bearing to target)**

- **What it conveys:** Attack heading or the magnetic/true bearing the aircraft should fly over the target (or heading from IP to target).
- **Example:** your screenshot shows “**Use AGM65E; Ingress 120-160 (May be include ingress to avoid friendly troops)**” — the 120-160 is the ingress corridor/attack heading. In a 9-line you’d give: “**Attack heading 120-160.**”

Line 3 — **Distance**

- **What it conveys:** Distance from IP to target (or distance from the aircraft position given at the time). Could be nautical miles.
- **Example mapping:** The screenshot implies distances implicitly (IP inbound 10 miles). In a 9-line you might say: “**Distance: IP to target 10 NM.**”

Line 4 — **Target elevation / height**

- **What it conveys:** Elevation of the target or height above mean sea level (MSL). Important for fuzing and sensor slant.
- **Example from picture:** “278ft MSL” appears in the sample. So Line 4 = “**Target elev:** 278 ft MSL.”

Line 5 — **Target description**

- **What it conveys:** One-line description of the target (type, size, known threats nearby). Keep it short and unambiguous.
- **Example from picture:** “Shilka” (a AAA threat) — you could expand to: “**Target:** Shilka SPAAG (vehicle).”

Line 6 — **Target location**

- **What it conveys:** Grid reference (MGRS), lat/long, or other precise coordinates. If laser code/bearing used, include here.
- **Example from picture:** “LM40125-62110” (looks like a grid/MGRS) — so Line 6 = “**MGRS:** LM40125-62110.”

Line 7 — **Mark / Type of attack / Orbit direction**

- **What it conveys:** How the target will be marked (laser, smoke, IP talk-on) and the attack profile (type of ordnance or attack heading). Could also include the ballistics/markings laser code.
- **Example from picture:** “Mark the laser 1688; Laser on. Lasing.” → Line 7 = “**Mark: Laser (Code 1688).**”
Also the weapon selection/remarks earlier could be included here (e.g., “Using AGM-65E”).

Line 8 — **Friendlylies (location of friendly troops / restrictions)**

- **What it conveys:** Location of friendly elements relative to the target — direction and distance or MGRS. Also may include restrictions.

- **Example from picture:** “Troops NW of target” and the additional safety: “**SPOT (When you have acquired the laser, YOU DO NOT HAVE PERMISSION TO FIRE).**”
So Line 8 = “**Friendlylies: Troops NW of target (distance if available).**”

Line 9 — **Egress / Remarks / Fuze / Clearance (ROE)**

- **What it conveys:** Egress direction, clearance level (Type 2/3, Restricted), fuzing or other restrictions, or additional remarks.
- **Example from picture:**
 - “**Egress EAST.**” (egress direction)
 - “**Type 2 in effect.**” (level of control — Type 2 means JTAC has to see/mark the target and give clearance)
 - “**Advise when ready for remarks and further talk on.**”
So Line 9 could be: “**Egress: East. Remarks: Type 2 in effect. Advise when ready for remarks.**”