Radiotelegraph Operations Guide

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Preface

To all MARS members:

Although radiotelegraph (CW) operation is no longer considered to be in the "mainstream" of military communications, there is a certain cadre of MARS operators who understand that CW is a valuable adjunct to support of the MARS mission and who enjoy the practice of their operating skills in this mode.

Development and use of other higher speed communications means has not decreased the need for well trained operators who can copy through natural and man-made interference. The capability to maintain communications using radiotelegraphy is a vital and basic requirement of USAF MARS. There is conclusive evidence of situations where CW operation provided the only usable method of communicating. MARS members must recognize the continuing requirements to establish and maintain the highest proficiency in radiotelegraph net operations.

There are opportunities to practice and hone your radiotelegraphy skills by participating in the TRANSCON CW operations. For information or the current net schedule contact the National TRANSCON CW Manager.

LISTEN, LISTEN, LEARN IS GOOD ADVICE!

On the nets you will pick up useful information and observe procedures and practices, but be careful that this information and procedures are correct. When in doubt ask your Training Director, State MARS Director (SMD) or an Area/Region official. Remember, we are all here to assist you in any way we can.

"There is no such thing as a dumb question!" The only dumb question is one that is not asked.

FROM THE TRANSCON CW MANAGER AND TRAINING DIRECTOR

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INTRODUCTION

On 22 Nov 2007 the Chiefs of Air Force, Army and Navy-Marine Corps MARS promulgated a document entitled *Standard Operating Procedure for Calling and Operating a Voice Net* (generally referred to as the "*Voice SOP*") setting forth the procedures that would be required to be used on MARS nets as of 01 Jan 2008.

A similar SOP document has not yet been promulgated for other operating modes. However, the direction of the Chiefs is clear in that there should be the opportunity for maximum interoperability among the various MARS services. This interoperability is significantly enhanced if all three MARS services use common and standardized procedures.

The purpose of the SOP is to provide a set of standard procedures that will serve to encourage and support interoperability among the various MARS services. Having standardized procedures allows stations from one MARS service to participate in nets hosted by another MARS service without requiring additional training on the "unique" procedures of the host service. Such interoperability is not only desirable but may be crucial when fulfilling the role of providing emergency communications support.

To minimize confusion, this manual will use the following terms and substitutions:

1. A1B2 is a sample net designator
2. NCS is the net control station (this would be substituted with the net control's actual call sign)
3. ANCS is the alternate net control station (this would be substituted with the alternate net control's actual call sign)
4. FRQ1 represents a frequency designator
5. AAA, BBB, CCC, etc represent stations on the net. (**Note:** these are **not** abbreviated call signs. Abbreviated call signs are not authorized on USAF MARS nets.).

GENERAL CW NET OPERATING PRINCIPLES

All USAF MARS CW nets are directed nets unless declared otherwise by the NCS. This means every station must have NCS permission to transmit.

CW nets are under the direct and immediate control of the net control station (NCS). The NCS is responsible to maintain net discipline and to ensure that all stations are operating within prescribed frequency tolerance.

In the operation of a CW net, it is often expedient (but not a requirement) to have an Alternate Net Control station (ANCS) assigned in advance, or for NCS to designate an ANCS station at the start of the net. Frequency or band conditions may dictate, and/or the NCS could suddenly, and without warning, be gone from the net.

Stations must first be checked into a net before they may conduct any business on the net.

After stations have checked in, all stations are expected to maintain constant watch on the net, be prepared to respond when called, and be prepared to receive traffic at any time. Stations are expected to remain for the duration of the net unless granted permission by NCS to close down sooner.

Superfluous wording must be eliminated from transmissions. Stations are expected to use prescribed procedures at all times. Transmissions shall be short and concise, consistent with clarity.

Stations should strive to use appropriate operating signals. Generally, Z-codes are used on MARS networks. Q-codes may be used if no appropriate Z-code is available. Stations will use only authorized operating signals and abbreviations in accordance with their proper meaning only. See Appendix A for a listing of the most commonly used Operating Signals; Appendix B for a list of Radiotelegraph Prosigns; and Appendix C for list of all "Operating Signals (Q and Z codes)"; see pages A-1, B-1, and C-1 respectively.

Stations should not expect pleasantries or unnecessary explanations during a directed net. The use of personal names is not authorized while a net is in a formal status.

Record traffic must first be listed with the NCS, shall be passed to another station only at the direction of NCS, and only when the net is in directed net status.

Each character must be transmitted clearly and distinctly with correct weighting of code elements. The speed of transmission is governed by prevailing conditions and the capability of the receiving operator.

Accuracy in transmission is more important than speed. The time required sending a message at 18 WPM and that required to transmit it at 25 WPM is slight. Even this slight gain in time may be negated by any added time for repetitions.

The speed at which the receiving operator can copy without having to obtain repetitions is the speed at which the transmitting operator will transmit. When transmitting to more than one station in the net, the governing speed of transmission is that of the slowest receiving operator.

Message headings may be sent at a slower speed than the message text(s) depending on the receiving operator.

PRIOR TO OPENING THE NET

Check In of ANCS

If ANCS(s) have been preassigned for an upcoming net, the NCS will call each in order to determine readability and traffic status:

```
ANCS DE NCS INT QRK K
```

ANCS would respond to the Radio Check and traffic listing:

```
DE ANCS QRK 5 K
```

NCS will acknowledge:

```
DE NCS QRK 4 AR
```

And then proceed to call other assigned ANCS(s).

If an ANCS has not been assigned for the net, or if the NCS is unable to contact assigned ANCS(s), the NCS may appoint ANCS(s) as applicable or necessary after opening the net. See "**Appointing an ANCS**" on page 5

The NCS is responsible for having his/her transmitter accurately tuned to the assigned net frequency. Each station in the net must tune to the NCS even if the NCS is off frequency. If this is the case, net members should inform the NCS using appropriate operating signals.

OPENING A CW NET

Every net has a net designator as determined by type, administrative level, and location of the net. The net designator not only identifies a specific net, it also serves as a special case of collective call sign representing all stations checked into a net, or wishing to check in.

NCS will make sufficient call ups at the start of the net in an effort to capture all the stations wishing to check in. NCS then proceeds with handling listed traffic, then any other net business and comments between stations. Training should be conducted as required, or as directed by competent authority. Training will always be done with the net in directed net status.

Frequent call ups are important throughout the net.

At the designated time the Net Control Station (NCS) will call the net as follows:

NCS starts the net with a call up by transmitting:

A1B2 A1B2 DE NCS NCS ZRF ZRC2 (then depresses key for 10 seconds to permit zero beat)
ZRC1 AR

A1B2 A1B2 DE NCS INT ZKE K

Note:: The net designator is stated twice only in the first call up. This call up serves multiple functions. It announces the net, puts the net in directed net mode, and authorizes stations to transmit for such purposes as checking in and listing traffic.

Optionally: The NCS may use the operating signal ZKA.

A1B2 A1B2 DE NCS ZKA INT ZKE K

Subsequent call ups are made as follows:

A1B2 DE NCS INT ZKE K

Stations wishing to check in proceed to ZKE.

NCS must acknowledge all check ins. This should be done in the order stations checked in. NCS transmits:

A1B2 DE NCS R AAA II R BBB II R EEE II R CCC II R GGG AR

If NCS did not fully hear a station, example CCC, NCS withholds acknowledging that station, finishes the remainder of the acknowledgements, then transmits:

CCC DE NCS IMI K

If NCS heard a station but did not hear the call sign, or only part of the call sign, NCS transmits an unknown station call up. Note that only stations that attempted check in, but were not acknowledged are authorized to transmit at this time. NCS transmits:

AA DE NCS K

or

QRZ DE NCS K

If necessary, NCS may call the ANCS or another station on the net to relay an unknown station's transmission.

If NCS hears no stations during a net call, he/she may transmit:

DE NCS ZGN AR

and continues conducting net operations.

HOW TO CHECK INTO A CW NET

It is essential that every station, before transmitting, listen carefully to avoid doubling.

When you check in to a net, you are answering a collective call made by the NCS. The transmission will include the following elements: the prosign DE, your call sign, Z signal ZKE, your traffic status, and the prosign K. Here are some examples of answers to that call:

DE AAA ZKE QRU K (AAA checks in with no traffic)
DE BBB ZKE ZBO 1R CCC K (BBB checks in with 1 Routine for CCC)
DE CCC ZKE ZBO 1P DDD II 1P SEATTLE K (CCC checks in with 1 Priority for DDD and 1 Priority for Seattle)

FREE AND DIRECTED NET STATUS

All CW nets will always begin in directed net status. This means every station must have NCS permission to transmit. Record traffic may only be passed when the net is in directed net status.

After all traffic, training, and net business has been handled, NCS may put the net into Free Net status if Free Net is authorized by transmitting:

A1B2 DE NCS ZUG ZKB AR

Free Net means stations may contact each other directly without prior permission of NCS. A station may exchange informal comments with another station with the following limitations:

(1) All comments must, in some way, relate to MARS business or the mission of MARS;
(2) Comments need to be brief, consistent with clarity.
(3) Stations must pause between turnovers in transmission to allow for another station to break in.
(4) NCS may interrupt an exchange at any time and stop the exchange by calling a directed net.

The NCS may return the net to directed status by transmitting:

A1B2 DE NCS ZKB AR

or by making a net call:

A1B2 DE NCS INT ZKE K

ABBREVIATED CALL SIGNS

Abbreviated call signs are not authorized on USAF MARS nets.

ALTERNATE NET CONTROL STATION (ANCS)

In the operation of a CW net, it is often expedient (but not a requirement) to have an Alternate Net Control station (ANCS) assigned in advance, or for NCS to designate an ANCS station at the start of the net. Frequency or band conditions may dictate, and/or the NCS could suddenly, and without warning, be gone from the net.

The primary duties of the ANCS are:

- Serve as a back up to the NCS by logging check ins
- Assume NCS duties if the NCS is gone from the net
- Other duties assigned by the NCS

Appointing an ANCS

An NCS may appoint any station checked into the net as an ANCS. Usually this appointment should be made fairly early in the net to maximize the availability of the ANCS. To appoint BBB, for example, as an ANCS the NCS would transmit:

BBB DE NCS ASSUME ANCS K

To which BBB would respond:

DE BBB R K

And NCS will confirm with:

DE NCS R AR

CHANGING NET CONTROL STATION

Occasionally it may be necessary or desirable to transfer net control to another station. This could be for a brief period or for the duration of the net. Assuming NCS wishes to transfer net control to AAA:

AAA DE NCS ZKD K

AAA then responds:

DE AAA R AR

AAA is now NCS. AAA will immediately make a call up

A1B2 DE AAA ZKA II INT ZKE K

This notifies the net that AAA has assumed net control, puts the net in directed status, and authorizes stations to check in or otherwise contact NCS.

Variations could include some instruction from NCS to AAA such as:

AAA DE NCS ZKD 10 MINUTES K or
AAA DE NCS ZKD UNTIL (state a time) K

When the NCS returns and wishes to resume control, he will, at a call up or on a free net, transmit:

AAA DE NCS INT ZKD K

At this point AAA will acknowledge NCS and notify NCS of any changes in net status, new traffic listings, traffic passed, and stations that checked in or closed down while AAA was net control. The NCS will acknowledge this information then make a call up. (It is never acceptable for NCS to tell AAA, "I was monitoring the entire time and have all the information." This does not confirm to AAA that NCS in fact does have all the information.)

Loss of NCS

It may happen that NCS suddenly, and without warning, disappears from the net. This could be due to equipment failure, power outage, sudden change in propagation, or any number of reasons. If an ANCS has been assigned in advance and he or she suspects something has happened to NCS, that station will first attempt to contact NCS. If no contact is made ANCS will ASSUME CONTROL, make a call up, and proceed as outlined above. If no ANCS has been designated any station who hears the net well shall assume NCS duties.

PASSING TRAFFIC

Record traffic must first be listed with the NCS, shall be passed to another station only at the direction of NCS, and only when the net is in directed net status.

The NCS directs the passing of traffic by calling the station holding the traffic and instructs that station to send the traffic to another station; e.g.

AAA DE NCS ZOG P BBB AR

AAA then calls BBB

BBB DE AAA INT QRV K

BBB having heard AAA's call with good readability and being ready to copy the traffic responds:

DE BBB QRV K

If BBB was experiencing difficulty copying AAA, BBB could add a readability qualifier to his response to alert AAA that copy is difficult and that it might be appropriate to send the traffic at a slower speed; such as:

DE BBB QRV QRK 4 K

AAA then proceeds to send the traffic; e.g.

BBB DE AAA NR 2 II P 230234Z APR 2009 II FM JOHN SMITH II TO HENRY FIELD. . .
BT
[Text of Message]
BT
K

If the message was received satisfactorily BBB would transmit:

DE BBB R NR 2 AR

Or alternatively:

DE BBB R AR

Requesting Fills and Repeats

Assume the following message has been sent:

```
BBB DE AAA NR 8 II P II 231426Z APR 2009 II
FM AFA5ZZ II
TO AFA7ZZ II
INFO AFA6ZZ II
GR 13
BT
MY 222300Z APR 2009 PROCEDE ON ASSIGNED MOVEMENTS  MAKE REPORTS
ON CIRCUIT 03A
BT K
```

1) If the receiving station (BBB in our example) was unable to copy the message from the sending station (AAA in our example) and wished to have the entire message repeated, BBB would transmit:

   ```
   DE BBB IMI K
   ```

   AAA would then repeat the entire last transmission. BBB then either receipts for the message or requests additional fills.

2) If the receiving station missed a single word the receiving station can request a repeat of that specific word using the prosign WA to request the word after a correctly copied unique word or the prosing WB to request the word before a correctly copied unique word. For example if BBB missed the word after "CIRCUIT" BBB would transmit:

   ```
   DE BBB IMI WA CIRCUIT K
   ```

   And AAA would respond:

   ```
   DE AAA WA CIRCUIT 03A K
   ```

   AAA would then either receipt for the message or as for additional fills.

3) If the receiving station misses a portion of the message he/she may request a repeat of that portion by requesting a repeat from a specific point in the message to another specific point in the message. For example if BBB missed the addressee and any other information prior to the BT, BBB would send:

   ```
   DE BBB IMI AFA7ZZ TO BT K
   ```

   AAA would respond:

   ```
   DE AAA AFA7ZZ II AFA7ZZ II INFO AFA6ZZ II GR 13 BT K
   ```

   AAA would then either receipt for the message or as for additional fills.

BREAKING THE NET

A station may interrupt the current flow of communications on a net if he or she has a communication of higher precedence which must be conveyed as quickly as possible. Such communications includes:

(a) record traffic of a higher precedence than the traffic being passed;
(b) non-record traffic communication for one or more stations that is urgent, time sensitive, and may impact the safety of persons or property.

The station wishing to break the net should wait for the next natural pause in the communication currently taking place; preferably waiting for the end of that communication. The content of the breaking station's communication should be the determining factor for establishing urgency, not simply that the station has, for example, a PRIORITY precedence message and a ROUTINE message is currently being sent. Breaking the net is a rare event. Normally, waiting a minute or two is not going to make a difference. If the breaking station knows the current communication is lengthy or several messages are going to be sent then interrupting may be necessary.

EXAMPLE:
When a station has determined it is essential to break the net he or she shall wait for a pause in the current transmission. He or she will then transmit a series of long dashes. Upon hearing the attempt to break the net all stations will cease transmissions in order for the higher priority traffic to be cleared.

The breaking station then transmits his/her traffic listing:

NCS DE AAA ZBO 2P HUNTSVILLE AL K

The NCS will acknowledge the traffic listing:

DE NCS R AAA ZBO 2P HUNTSVILLE AL AR

And then clear the traffic. Once the traffic is complete, the NCS will return to the stations that were passing traffic prior to the breaking of the net.

If it is evident that NCS does not hear the breaking station any station on the net may relay by calling NCS and advising him or her of the breaking station. This should normally be one of the stations being interrupted. If NCS hears the breaking station, but it appears the station currently engaged in communications did not, NCS will acknowledge the breaking station by transmitting

AAA DE NCS AS AR

NCS will then take steps to regain control of the net.

CLOSING DOWN THE NET

At the appointed time for a net to end, and NCS is satisfied that all traffic has been handled, NCS will close the net as follows:

A1B2 DE NCS ZKJ1 II ZKJ2 AR

It is imperative that NCS be aware whether a net is authorized to continue on past the designated end time. If it is not, NCS must arrange with stations holding traffic to dispose of that traffic on another net. This must be done well enough in advance of net end time to adequately take care of this business.

In some cases NCS may be authorized to close down a net before the designated end time. For example, B1C3 net is assigned a one hour slot, but is authorized to close down after 30 minutes of operation if there is no further traffic or business to handle.

Once the net is closed down no further transmissions are authorized.

OPERATING SIGNALS (Q and Z Signals) AND PROSIGNS

Operating signals and prosigns are concise and specific signals designed primarily for use by communications personnel in exchanging information incident to the handling of messages or in establishing communications. They are also used in service messages and other forms of messages between communication personnel. Operating signals provide no security and therefore must be regarded as the equivalent of plain language.

The "Z" signals shown in Appendix A and Appendix C are designed to cover military requirements and should be used whenever necessary in military communications. The "Q" signals shown in Appendix A and Appendix C may be used in military communications where no suitable "Z" signal exists. Only "Q" signals will be used in Non-military communications.

The meaning of "Q" and "Z" operating signals may be amplified or completed by the addition of appropriate call signs, time groups, complementary groups, and so forth. Call signs used to complement an operating signal normally follow the signal, but under certain conditions, such as to achieve clarity or to effect separation, they may be placed ahead of the operating signal. Plain language is prohibited except when no other method is provided to complete the meaning.

When desired, an operating signal may be given an interrogative sense:

a) When communicating with military stations by inserting the prosign "INT" before the "Q" or "Z" signal.
b) When communicating with nonmilitary stations, by inserting the prosign "IMI" after the "Q" signal and data used with it.

Operating signals should not normally be used in radiotelephone or voice net procedures. Instead, the operating information will be conveyed by concise phrases. When it is necessary to relay operating signals over voice circuits, that is, in messages, they are transmitted by their phonetic equivalents.

Blank spaces in the meaning of "Q" and "Z" signals will be completed in order in which they appear; however, blank spaces enclosed in parentheses normally will be completed on an optional basis only.

A listing of the most commonly used Operating Signals is shown in Appendix A.

A listing of the most commonly used prosigns is shown in Appendix B.

Appendix A
COMMONLY USED OPERATING SIGNALS

Signal	Meaning	Signal	Meaning
ZAX…..	You are causing interference	**QRK**…..	Readability (1 – 5)
ZBL…..	Do not use break-in	**QRQ**…..	Send faster
ZBO…..	I have traffic	**QRS**…..	Send slower
ZBT…..	Count _____ as ____ group(s)	**QRU**…..	I have nothing for you
ZDE…..	Message undelivered	**QRV**…..	I am ready
ZEU…..	Exercise message	**QRY**…..	Your turn is _____
ZKA…..	I am ncs	**QRZ**…..	You are being called by ____
ZKB…..	Obtain permission before transmitting	**QSA**…..	Signal strength (1 – 5)
ZKD….	Take net control	**QSG…..**	Send ____ messages at a time
ZKJ…..	I am closing down	**QSO**…..	I can communicate with _____
ZKS…..	Following stations are in the net	**QSV**…..	Send V's
ZOD…..	Act as relay	**QSZ**…..	Send words twice
ZOE…..	Send me your message for _____	**QTB**…..	I do not agree with your group count
ZOG…..	Send your message to _____		
ZRA…..	Your frequency is (1. Correct) (2. High) (3. Low)		
ZRB…..	Check your frequency		
ZRC…..	Tune your transmitter to (1. Proper frequency) (2. Zero beat)		
ZRF…..	Send tuning signal		

1. Operating signals have interrogatory sense when preceded by INT.
2. See Appendix C for complete listing of Q and Z code signals.

Appendix B
RADIOTELEGRAPH PROSIGNS

Prosign	Meaning	Prosign	Meaning
AA (*)	Unknown station	INFO	Information addressee
AA	All After	INT	Interrogatory
AB	All Before	J	Verify with originator and repeat
AR	End of transmission	K	Invitation to transmit
AS	Short wait	M	Deferred
AS AR	Long wait	N	Negative, No, Not received
B	More to follow	NR	Number
BT	Long break	O	Operational immediate
C	Correct, Yes	P	Priority
DE	From	R	Received, Routine
EEEEEEEE	Error	T	Station called transmit to all addressees
F	Do not answer	TO	Action addressee
FM	Originator's callsign	WA	Word after
G	Repeat back	WB	Word before
GR	Group count	XMT	Exempted addressee
SVC	Service Message	Y	Emergency
II	Separative Sign	Z	Flash
IMI	Repeat		

(*). Underlined prosigns designate letters to be sent without any separation between letters.

Appendix C
List of 'Z' Signals from ACP-131

-	**Question:**	**Answer, Advice or Order:**
ZAA	-	You are not observing proper circuit discipline.
ZAL	-	I am closing down (until...) due to...
ZAX	-	You are...(1. Causing interference. Listen before sending. 2. Causing interference by inattention to order to wait; 3. Sending at the same time as...(call sign); 4. Causing delay by slowness in answering. 5. Causing delay by slowness in answering my service or procedure messages; 6. Answering out of turn).
ZBE	-	Retransmit message...to... (for...)(1. Action; 2. Information).
ZBH	-	Make preliminary call before transmitting traffic.
ZBK	Are you receiving my traffic clear?	I am receiving your traffic... (1. Clear; 2. Garbled).
ZBL	-	I am unable to receive you while I am transmitting. Do not use break-in procedure.
ZBO	-	Of what precedence(s)? I have (or...has)...(numeral followed by precedence prosign for each precedence) message(s) for you (or for...).
ZBU	-	Report when you are in radio communication with...
ZDA	-	I have a formal message for you. (precedence is...).
ZDE	-	Message...undelivered...(1. Will continue efforts to effect disposal; 2. Advise disposition; 3. Will not continue further efforts. Request cancel and file; 4. Give more complete address.

-	**Question:**	**Answer, Advice or Order:**
ZDF	-	Message...was received by...(addressee designation) at...Z or was (1. Received by action addressee(s) at...Z; 2. Received by information addressee(s) at...Z; 3. Received by all addressees at...Z; 4. Received by action addressee(s) message center at...Z; 5. Received by information addressee(s) message center at...Z; 6. Received by all addressees' message center at...Z; 7. Delivered by broadcast at...Z; 8. Forwarded by commercial means at...Z; 9. Mailed at...Z).
ZDG	-	Accuracy of following message(s) (or message...) is doubtful. Correction or confirmation will be forthcoming.
ZDH	-	Request corrected copy of message be forwarded to...
ZDK	-	Will you repeat message...(or Following repetition (of...) is made portion...) (or will you rerun in accordance with your request. number)?
ZDO	-	I could not send message...to...
ZDQ	-	Message...was relayed to...at... by...(on...kHz (or MHz)).
ZEK	-	No answer is required.
ZEN	-	This message has been delivered by a separate transmission or by other means (1. Messenger/courier; 2. Mail) to the addressee(s) immediately following this operating signal.
ZEO	-	Transmit this message by rapid means when no charges are involved and to all others by mail.
ZEQ	-	Your message...has been missent to this station...(1. Request you retransmit to correct addressee; 2. I will retransmit to correct addressee).
ZES	-	Your message...has been received...(1 Incomplete; 2. Garbled). Request retransmission.
ZEU	-	Exercise (drill) message.
ZEV	-	Request you acknowledge Message (or message...) is message... acknowledged.

-	**Question:**	**Answer, Advice or Order:**
ZEW	-	Your attention is invited, for... (1. Action; 2. Information) to message...which is in your files.
ZEX	-	This is a book message and may be delivered as a single-address message to addressees for whom you are responsible.
ZFD	-	This message is a suspected duplicate.
ZFE	-	Pass message...(which is in your files) to addressee(s) for whom you are responsible using the indicated supplementary heading
ZFF	-	Inform me when this message (or message...) has been received by... (addressee designation) or by... (1. Action addressee(s); 2. Information addressee(s); 3. All addressee(s); 4. Action addressee's/ addressees' message center; 5. Information addressee's/addressees' message center; 6. All addressees' message center).
ZFG	-	This message is an exact duplicate of a message previously transmitted.
ZFH	-	This message (or message...) is being (or has been) passed to you (or...) for...(1. Action; 2. Information; 3. Comment) (at the request of...)
ZFR	-	Cancel transmission...(made under channel or station serial number...).
ZGE	-	Send your call sign(s) once (or... times) on this frequency (or on ...kHz (or MHz)).
ZGP	-	Answer calls for me on present frequency (or on...kHz (or MHz)).
ZHA	-	Shall I decrease frequency Decrease frequency very slightly (or very slightly (or...kHz) ...kHz) to clear interference. to clear interference?
ZHB	-	Shall I increase frequency Increase frequency very slightly (or very slightly (or...kHz) ...kHz) to clear interference. to clear interference?
ZHQ	-	Please listen for me on...kHz (or MHz) and transmit to me on...kHz (or MHz).

-	**Question:**	**Answer, Advice or Order:**
ZIC	-	What is (are) station serial Station serial number(s) or channel number(s) or channel number(s) number(s) of last message(s) transmitted to me (or to...)? of last message(s) you transmitted to you (or to...) is (are)...
ZID	-	What is (are) station serial Station serial number(s) or channel number(s) or channel number(s) number(s) of last message(s) received of last message(s) received from you (or from...) is (are)... from me (or from...)?
ZIE	-	Station serial number(s) or channel number(s) (from...) has (have) not been received. Repeat message(s) or cancel serial number(s) or channel number(s).
ZJN	-	Message...has been passed to those for whom I am responsible (or to...) (at...) but "L" has not been received.
ZJO	-	Repeat back each group of the text of this message as it is transmitted.
ZKA	Who is controlling station (net control station) on this frequency (or on... kHz (or MHz))?	I am (or...is) controlling station (net control station) on this frequency (or on...kHz (or MHz)).
ZKB	Is it necessary to obtain the permission of the controlling station (net control station) before transmitting messages?	It is necessary to obtain the permission of the controlling station (net control station) before transmitting messages.
ZKC	-	Substitute code sign (call sign) of control station of group (net) in place of this operating signal.
ZKD	Shall I take control of net Take control of the net (for...) (for...) (until...)? (until...).	-
ZKE	-	I (or ...) report(s) into the circuit (net).
ZKF	-	Station leaves net temporarily (or for...minutes) (to communicate with...) (will be on...kHz (or MHz)).
ZKG	-	Observe (or direct...to observe) schedule with...on...kHz (or MHz) (at...).
ZKH	-	Did you (or...) observe I (or...) observed schedule with schedule with...at...? ...(at...).
ZKI	-	Set watch on...kHz (or MHz)... (1. Continuous; 2. Until further notice).

-	**Question:**	**Answer, Advice or Order:**
ZKJ	May I close down (until...)? 2. I am closing down (until...))	...(1. Close down (until...);
ZKL	-	Resume normal radio communication now (or at...).
ZKM	-	Take guard (for...) (on...kHz (or MHz)).
ZKN	-	I have taken over guard on...kHz (or MHz).
ZKO	-	I have handed over guard (to...) (on ...kHz (or MHz)). (Serial number of last message received was...
ZKP	Are you (or is...) radio guard I am (or...is) radio guard for... for... (on...kHz (or MHz))? (on...kHz (or MHz)).	-
ZKR	On what frequencies are you I am (or...is) maintaining watch on (or...) maintaining watch? ...kHz (or MHz)).	-
ZKS	What stations are keeping Following stations are keeping watch on...kHz (or MHz) (or on...kHz (or MHz) (or are in net). are in net)?	-
ZKT	-	Am keeping watch on...kHz (or MHz) for...(1. First five minutes in each half hour; 2. From 10 to 15 and 40 to 45 minutes past the hour; 3. Between...and...minutes past the hour).
ZKU	-	I am (or...is) maintaining continuous watch, or (1. Single operator period; 2. Two operator period; 3. General periods only; 4. Reduced single- operator period) on...(call sign)... Broadcast.
ZKV	-	I am (or...is) standing split phone watch on...and...kHz (or MHz).
ZLN	-	Facility indicated cannot be operated at present.
ZNB	What is authentication of... 1. Message; 2. Last transmission; 3. ...)?	Authentication (of...) is... (1. Message...; (2. Last transmission; 3. ...).
ZNC	-	All transmissions will be authenticated...(1. On all circuits; 2. On this circuit; 3. On...frequency).
ZND	-	You are using authenticator incorrectly...(1. Verify authenticator system key; 2. Check authentication of your last transmission).
ZNE	-	I am prepared to authenticate.

-	**Question:**	**Answer, Advice or Order:**
ZNQ	-	This message (or message...) received at this station... (1. Without authentication (when authentication is in force); 2. Incorrectly authenticated).
ZNR	-	This message may be forwarded without change by radio or non-approved circuit.
ZOB	-	Take (I will take) no further action regarding forwarding message...
ZOC	-	Station(s) called relay this message to addressees for whom you are responsible.
ZOD	-	Act as radio link (relaying station) between me and...(or between...and ...).
ZOE	Can you accept message for...? (1. On-line; 2. Off-line).	Give me your message. I will dispose of it...(1. On-line; 2. Off-line)
ZOF	-	Relay (pass) this message (or message...) to...now (or at...).
ZOG	-	Transmit (pass) this message (or message...) to...(for...) (1. Action; 2. Information).
ZOH	-	Send message for...on...kHz (or MHz) by...(1. Receipt method; 2. Broadcast method; 3. Intercept method).
ZOK	-	Relay this message via...
ZOM	-	Delivery of this message by mail in lieu of broadcast permissible (to...).
ZOP	-	This message (or message...) has been delivered to all broadcast areas (or to the following specific broadcast area(s)...).
ZOQ	-	Deliver this message (or message...) to all broadcast areas (or to the following specific broadcast area(s)...).
ZOR	-	1. Route traffic for...via...area broadcast; 2. Beginning at... traffic for you (or...) will be routed via...area broadcast.
ZOS	Request area routing for messages for...	Area routing for messages for... is...
ZOT	-	Transmit or handle this message at the lower precedence to the station or address designator(s) which follow(s).

-	**Question:**	**Answer, Advice or Order:**
ZOU	How should traffic for... be routed?	Route traffic for...through...(on... kHz (or MHz)).
ZOV	-	Station designation preceding this operating signal is the correct routing for this message, rerouted by...
ZOY	-	Relay this message only to the station(s) whose designation(s) precede this operating signal.
ZPA	-	Your speech is distorted.
ZPB	-	Your transmitter has strong radiation while idling.
ZPC	-	Your signals are...(1. Fading badly; 2. Fading slightly; 3. Good for... ...words per minute; 4. Getting stronger; 5. Getting weaker).
ZPE	-	Maximum power is now being radiated.
ZPF	What is the readability of the signals of the group (net) (or of...)?	The readability of the signals of the group (net) (or of...) is... (1 to 5).
ZPG	What is (are) signal strength(s) of group (net) (or of...)?	Signal strength(s) of the group (net) (or of...) is... (1 to 5).
ZPO	-	The text of this message is to be relayed in precisely the same format as that in which it is received. No characters or machine functions are to be added, inserted or deleted and the relative positions of the groups are to be retained.
ZPT	-	This transmission is a transmitter pre-acceptance trial. Request expeditious strength and readability reply.
ZPW	-	This message cancelled at time indicated. File without further transmission.
ZRA	How does my frequency check?	Your frequency is...(1. Correct; 2. Slightly (or...Hz (or kHz)) high; 3. Slightly (or...Hz (or kHz)) low; 4. Stable on steady mark; 5. Stable on steady space; 6. Unstable; 7. Erratic).
ZRB	-	Check your (or...'s) frequency on this circuit (or on...kHz (or MHz)).
ZRC	Shall I tune my transmitter? (1. Proper frequency; 2. Zero beat with your (or...) transmitter).	Tune your transmitter to... (1. Proper frequency; 2. Zero beat with my transmitter (or...) to...

-	**Question:**	**Answer, Advice or Order:**
ZRD	What is the frequency of the... radio facility now in operation?	The frequency of the...radio facility now in operation is...
ZRE	On what frequency do you hear me best?	I hear you best on...kHz (or MHz).
ZRF	Will you send tuning signal on your present frequency (or on...kHz (or MHz)) for one minute or until AS is given?	Am about to send tuning signal on my present frequency (or on...kHz (or MHz)).
ZRG	When will a change of frequency (to...kHz (or MHz)) be necessary?	A change in frequency (to...kHz (or MHz)) will be necessary at approximately...
ZRH	Is my frequency shift correct?	Your frequency shift is...(1. Too wide; 2. Too narrow; 3. Not linear; 4. Correct) (by Hz).
ZRJ	Will you check your...?	I will check my...
ZRQ	-	Change to other sideband.
ZRR	-	Message(s) number(s)...will no longer be broadcast but are effective and of interest (to units indicated).
ZRS	-	Your carrier is...(1. Over-suppressed; 2. Under-suppressed).
ZRT	-	Radiate full unmodulated power for...minutes.
ZRU	Are my tone and frequencies correct?	Your tone for...(1. Marking spacing are high; 2. Marking and spacing are low; 3. Marking and spacing are correct).
ZTJ	-	Cease using...
ZTK	Are you (or is...) connected to...?	I am (or...is) connected to...
ZTL	Are you (or is...) about to disconnect?	I am (or...is) about to disconnect.
ZTM	-	I (or...) is unable to use...
ZTS	Is the line satisfactory?	The line is...(1. Satisfactory; 2. Unsatisfactory).
ZUA	Request a timing signal now (or at...).	Timing signal will be transmitted now (or at...) The numerals indicating the time will be followed by a five-second dash terminating exactly at the time indicated.
ZUB	-	At...
ZUC	-	From...to...
ZUD	-	Until further orders (or until...).

-	**Question:**	**Answer, Advice or Order:**
ZUE	-	Affirmative (Yes).
ZUG	-	Negative (No).
ZUH	-	Unable to comply.
ZUJ	-	Stand by.
ZVR	-	Retransmit this message (or message...) at once to all-subordinate stations.
ZWL	-	No forwarding action to the designation(s) immediately following is required.
ZWM	-	Correct answer to last question (or question...) is...(or will be found in...).
ZWN	-	Correct version of the part of the last message (or message...) which was sent incorrectly is...(or will be found in...).
ZXD	-	This message is to be delivered to the addressee(s) in tape form.
ZXO	-	Request you obtain retransmission of messages...from station...
ZXT	-	This message is not to be transmitted by radio telegraph or radiotelephone in any form over part of its route
ZXW	-	This message has been delivered to all action addressees whose designations follow this operating signal.
ZXX	-	This message has been delivered to all information addressees whose designations follow this operating signal.
ZXY	-	Transmit this message to the addressee(s) indicated by the numeral(s) following... All addressees are to be counted consecutively as they appear (numbers to be separated by the Separative Sign).

List of 'Q' Signals from ACP-131

	Question:	**Answer, Advice or Order:**
QRA	What is the name of your station?	The name of my station is...
QRG	Will you tell me my exact frequency (or that of...)?	Your exact frequency (or that of...) is...kHz (or MHz).
QRH	Does my frequency vary?	Your frequency varies.
QRI	How is the tone of my transmission?	The tone of your transmission is: 1) good. 2) variable. 3) bad.
QRJ	How many radiotelephone calls have you to book?	I have...radiotelephone calls to book.
QRK	What is the intelligibility of my signals (or those of...)?	The intelligibility of your signals (or those of...) is... 1) bad. 2) poor. 3) fair. 4) good. 5) excellent.
QRL	Are you busy?	I am busy (or I am busy with...) Please do not interfere
QRM	Are you being interfered with?	I am being interfered with (1. nil 2. slightly 3. moderately 4. severely 5. extremely).
QRN	Are you troubled by static?	I am troubled by static (1. nil 2. slightly 3. moderately 4. severely 5. extremely).
QRO	Shall I increase transmitter power?	Increase transmitter power.
QRP	Shall I decrease transmitter power?	Decrease transmitter power.
QRQ	Shall I send faster?	Send faster (...words per minute).
QRR	Are you ready for automatic operation?	I am ready for automatic operation. Send at...words per minute.
QRS	Shall I send more slowly?	Send more slowly (...words per minute).
QRT	Shall I stop sending?	Stop sending.
QRU	Have you anything for me?	I have nothing for you.
QRV	Are you ready?	I am ready.
QRW	Shall I inform...that you are calling him on...kHz (or MHz)?	Please inform...that I am calling him on...kHz (or MHz).
QRX	When will you call me again?	I will call you again at...hours (on...kHz (or MHz)).
QRY	What is my turn?	Your turn is number...(or according to any other indication).
QRZ	Who is calling me?	You are being called by...(on...kHz or MHz)).
QSA	What is the strength of my signals (or those of...)?	The strength of your signals (or those of...) is... 1) scarcely perceptible. 2) weak. 3) fairly good. 4) good. 5) very good.
QSB	Are my signals fading?	Your signals are fading.
QSD	Is my keying defective?	Your keying is defective.
QSG	Shall I send...telegrams at a time?	Send...telegrams at a time.

	Question:	**Answer, Advice or Order:**
QSH	Are you able to home on your D/F equipment?	I am able to home on my D/F equipment (on station...).
QSI	(N/A)	I have been unable to break in on your transmission or Will you inform...(call sign) than I have been unable to break in on his transmission (on...kHz (or MHz).
QSJ	What is the charge to be collected to...including your internal telegraph charge?	The charge to be collected to... including my internal telegraph charge...francs.
QSK	Can you hear me between your signals and if so can I break in on your transmission?	I can hear you between my signals; break in on my transmission.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.
QSM	Shall I repeat the last telegram which I sent to you (or some previous telegram)?	Repeat the last telegram which you sent me (or telegram(s) number(s)...
QSN	Did you hear me (or...(call- sign)) on...kHz (or MHz)?	I did hear you (or...(call sign)) on...kHz (or MHz).
QSO	Can you communicate with... direct or by relay?	I can communicate with...direct (or by relay through...).
QSP	Will you relay to...free of charge?	I will relay to...free of charge.
QSR	Shall I repeat the call on the calling frequency?	Repeat your call on the calling frequency; did not hear you (or have interference).
QSS	What working frequency will you use?	I will use the working frequency...kHz (normally only the last three figures of the frequency need be given).
QSU	Shall I send or reply on this frequency (or on...kHz (or MHz) (with emissions of class...)?	Send or reply on this frequency (or on...kHz (or MHz)) (with emission of class...).
QSV	Shall I send a series of V's on this frequency (or...kHz(or MHz))?	Send a series of V's on this frequency (or on...kHz (or MHz)).
QSW	Will you send on this frequency (or on...kHz (or MHz)) (with emissions of class...?	I am going to send on this frequency (or on...kHz (or MHz)) (with emissions of class...).
QSX	Will you listen to...(call- sign(s)) on...kHz (or MHz)?	I am listening to...(call sign(s)) on...kHz (or MHz).
QSY	Shall I change to transmission on another frequency?	Change to transmission on another Change to transmission on another
QSZ	Shall I send each word or group more than once?	Send each word or group twice (or...times).
QTA	Shall I cancel telegram number...?	Cancel telegram number...
QTB	Do you agree with my counting of words?	I do not agree with your counting of words; I will repeat the first letter or digit of each word or group.

	Question:	**Answer, Advice or Order:**
QTH	What is your position in latitude and longitude (or according to any other indication)?	My position is...latitude...longitude (or according to any other indication).
QTR	What is your time?	The time is…
QTU	What are the hours during which your station is open?	My station is open from...to...hours.
QTV	Shall I stand guard for you on the frequency of...kHz (or MHz) (from...to...hours)?	Stand guard for me on the frequency of...kHz (or MHz) (from...to... hours).
QTX	Will you keep your station open for communications?	I will keep my station open for communications.
QUA	Have you news of …?	I have news of ….