



# **A Short Course In Wilderness, Remote, & Expedition Medicine Concepts**

## **Lesson 3: Medical Control, & Communication**

**GMRS, Ltd.**  
**Global Medical Rescue Services**

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*Wilderness, Expedition, & Remote Medicine, Rescue, & Survival*

Global Medical Rescue Services, Ltd. is an international firm based in Belize, Central America. We specialize in the provision of medical, rescue, and survival training and services for extremely remote and difficult environments.

Various aspects of wilderness, remote, expedition, operational, military, humanitarian, disaster, international, and industrial medicine all come into play. Each discipline has information, insight, and experiences that are of benefit to all.

The purpose of this short course is to serve as an introduction to a few of the common aspects and issues that are frequently encountered. Indeed, several of the 8 lessons in the program are directly derived from our teachings, as they are sources of frequent questions and problems for providers.

Our goal is to give you a resource that will be of value to you. Some of you will be familiar with some, perhaps even all of this material. If so, pass it on to others. This program is being distributed to you 'unlocked' so that you may copy, cut, and otherwise pass it around as you desire.

All we ask is that you leave the attributions and authorship statements in place, so that others may contact us if they desire.

The course consists of 8 lessons, which will be sent to you every few days:

- Lesson #1: The Remote Medicine Paradigm
- Lesson #2: Remote Leadership & Followership
- Lesson #3: Physician Medical Direction for Remote Medical Providers
- Lesson #4: Medical & Casualty Evacuation Considerations
- Lesson # 5: United States Evacuation Protocols
- Lesson # 6: United Kingdom & United Nations Evacuation Protocols
- Lesson #7: Remote Medical Guidelines, & Standard Operating Procedures
- Lesson #8: International Travel As A Medical Provider & Medical Team

Stay safe!

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**A Short Course In  
Wilderness, Remote, & Expedition  
Medicine Concepts**

**Lesson 3:  
Medical Control & Communication**

## The Physician Medical Director, How to Interact & Communicate With Them

As a remote medical provider there will be times when you will be working under the control, supervision, and legal authority of a physician medical director, or “PMD” or “medical control” – even if you are a physician. This medical control physician will ultimately be responsible for your actions, the care you give, the guidelines/ protocols/SOP’s you use, and how much authority, responsibility, and autonomy you have.

Understanding the roles and perspectives of the PMD is critical to the success of a remote medic program. If you are a physician, you may well find yourself proving medical control for others. A clear understanding of the role of the PMD, and how medics and PMD’s communicate is *vital* for optimum patient care in the remote setting.

### The Role Of The PMD

The PMD has a considerable number of ‘hats’ to wear when supervising remote medical providers. These include:

- Direct supervision, either physically present or by various communication means, while patient care is done
- Indirect supervision, by after-care review of reports and documentation
- Establishment and periodic updating of guidelines, protocols, and SOP’s that you will use as a remote medical provider
- Quality assessment and improvement programs
- Continuing education training for you and your staff
- Provision of medications and supplies that require a physician’s approval, such as narcotics

PMD’s also often have input into medic hiring decisions and other aspects of the remote medical care process.

### Responsibilities & Perspectives Of The PMD

Because the PMD has so many roles, they also have many responsibilities. The most critical, and most often forgotten by remote medics, is that their PMD is ultimately responsible for every action, success, mistake, good outcome or bad outcome, good care or bad care by that remote medical provider.

That means your PMD has concerns and perspectives – different from yours in many ways – that you need to keep in mind, in order to understand why the PMD does or does not do certain things, permit certain care, etc. Here’s a short perspective for you from Dr. Brown, one of the authors of this module:

“When I was a medic, most patients and situations seemed pretty cut and dried to me. If they were elderly and had fluid in their lungs, they had congestive heart failure or maybe pneumonia if a fever was present. If they were 7 years old and had right sided pain, fever, and peritoneal signs, they had appendicitis.

When I did (or didn’t) get an order in the field from my PMD for some aspect of patient care that was different than what I was wanting, I was confused, concerned, sometimes angry. When I took a patient into the ER I looked at the doctors, and wondered why so much time was spent working up the patient when the diagnosis was obvious, why definitive therapy was started for the obvious problem, etc. I looked at the docs and thought ‘being a doc isn’t so hard, for crying out loud, don’t make such a big damn production out of it’!

(Laughing) *I didn’t even know what I didn’t know!* What arrogance! Yes, some of the physicians simply did not understand, or trust, the field medics... but that was not always the case... and even when it was, there was so much more to consider than I was aware of... for example, consider the heart failure case mentioned above:

Congestive heart failure is a *symptom* not a disease state. Sure, maybe the elderly patient had chronic heart failure and finally ‘fell over the edge’ and had fluid backing up into the lungs. Maybe that extra dose of diuretic medicine that I wanted beyond my SOP’s was all she needed... except that in fact she had a right side myocardial infarction/heart attack, and the only thing keeping her alive was that ‘fluid overload’ and an extra dose of diuretic might have killed her...

Or that kid with the ‘appendicitis’ that actually had a mesenteric adenitis from *Salmonella* food poisoning...

And so on, *ad infinitum*. Now that I’m on the other side of the fence, but still providing remote field care, let me share these observations with you:

- Most physicians do not understand what field medical providers are trained to do, their skills, limits, etc.
- Most physicians have never done field medicine, especially not under extremely remote, hazardous, and/or resource limited conditions
- Most physicians want exactly what you want, and excellent care
- Most physicians are considering physiology, confounding factors, differential diagnoses, therapies that you may not even know exist
- Most physicians are acutely aware that they are operating half blind and one handed when trying to sort things out through you rather than by being with the patient themselves... and that any mistaken diagnosis, incorrect therapy, or bad outcome is *their* responsibility, morally and legally and all that implies...

All of these factors tend to make doctors pretty damn conservative about care in the field, drives them to question medics judgment until they are confident that the rationale for a particular request is correct, etc.”

With that discussion in mind, let’s look at working with a PMD.

## How to Interact With Your PMD

As a remote medical provider, we hope and assume that your PMD will also be remote trained and experienced – and this is usually the case. If it is not, you have several tasks that you should complete, both to improve patient care and to make your job easier:

- You must educate your PMD about the roles, capabilities, skills, training, and limitations of yourself and all of your medics and staff – they will wrongly assume that you know less and can do less that really can, until you teach them
- You should provide a detailed report – with pictures and video if possible – of the location and conditions you are operating in, so that they gain an appreciation for how limited and remote it is
- You should provide a detailed inventory of what you have, and don’t have, available to you in terms of supplies and resources
- You should send them a copy of Chapter 1 of this module “The Remote Medicine Paradigm” and make sure that they have a correct and current copy of your protocols and SOP’s
- You should encourage your organization to seek out experienced remote PMD’s for you to work with

You will want to develop a friendly working relationship, one based on mutual respect and trust – and both go both ways. You have every right to demand respectful and civil interactions with your PMD. In turn, you should keep the PMD’s perspective in mind and keep any frustration that you feel inside.

While respect can be offered upfront, trust must be earned, by *all* parties. Your PMD will learn to trust you more rapidly if you educate them about your capabilities as above, strive always to offer excellent patient care, show a real desire to learn and improve yourself, and never exceed your capabilities.

**Pay attention, here is the single fastest way to lose and never regain the trust of your PMD:** Run Wild. Exceed your capabilities. Ignore protocols & SOP’s. Do that and you will be forever classified as ‘another damn ambulance driver who’s all balls and no brains.’ You will not only never gain the trust of your PMD, you may well find yourself pulled from your position – remember that ‘input into medic hiring decisions and other aspects of the remote medical care process’ sentence above?

If you are a physician working in a system under a PMD, the same applies to you. You will have different rules and expectations, but you will have them, and be expected to follow them. If you are a PMD, you have to earn the trust of your providers... and keep it, by doing what's needed, when it's needed. Don't be yet another physician who is contemptuous of field providers.

What about errors? Making mistakes is human, and an unfortunate but inevitable part of patient care. Physicians do it everyday. This not something your PMD should ever become angry about – it's simply a learning opportunity, an improvement opportunity. BUT making the same mistake *twice* – that's something to strive never to do! A few repeats and your credibility will be gone.

Finally, failing to ask for help when you get into a situation where you are clearly in need of it and it's available... that's a trust destroyer. Don't let your pride interfere with your patient care.

## How to Communicate With Your PMD

You will have two kinds of interaction with your PMD; routine communications for training, education, quality improvement, and 'shooting the breeze'; and emergent situations when you need medical control to provide direction on care of a specific patient.

Regarding routine interactions, relax! Being respectful doesn't mean being rigid and 'Sir' this and 'Doctor' that... most physicians – certainly those with remote medical experience – will happy to be called 'Doc' or by their given name. If you have had the opportunity to be around an elite small unit – be it a military special operations team or a civilian ICU team – you have seen this sort of interaction between officers and team members, between physicians and the care team, between people with different training but excellent skills and mutual respect for each other as the professionals that you ALL are... this is what to strive for.

When a direct patient care situation arises, things become tighter and more focused. Physicians are trained to gather and transmit data, in the most efficient means possible. That means that when you are discussing a specific patient, they expect you to be able give them the facts, additional material, and your assessments and opinions in a focused, concise, and above all *clear* manner. And in turn they will ask questions and give directions in the same fashion. For those not trained in this style of communication, it often seems harsh, cold, and even abusive. *It is not.* It is efficient and accurate. Be efficient and accurate.

Let's look at a typical Medic-PMD conversation, and then discuss it:

Medic – **“Doctor, this is Remote Medic Smith at Askole Clinic, requesting medical control. Over.”**

Doc – **“Over.”**

Medic – **“I have a 43 year old US male with a possible pulmonary embolism. This patient sustained multiple contusions to the legs via a crushing injury 3 days ago and has been on bed rest since. This AM he developed shortness of breath in bed, a sharp but deep and difficult to localize pain in his right chest, and a cough with blood tinged sputum. This patient is afebrile. Pulse is 120. Respirations are 36. SaO2 is 87% room air. Lungs sounds are diminished in the right middle lobe, but there are no crackles, rhonchi, wheezes. Excursion is normal, no retractions. Percussion is equal. Both lower legs are bruised and swollen, with a strongly positive Homan’s sign, distinct from the prior trauma. EKG, X-ray, and D-Dimers are not available. I have placed this patient on Oxygen at 10 LPM via mask. I think this patient has a pulmonary embolism. I have no evidence of pneumonia, pneumothorax, or other process. I am requesting Heparin 100 Units per kilogram IV push, continue Oxygen, immediate evacuation via ground unit to Skardu with routine supportive care. Over Doctor.”**

Doc - **“Roger that. Is the pain aggravated by deep breathing, constant, or another pattern? Over.”**

Medic – **“It is made worse with deep breaths. Over.”**

Doc - **“I agree with possible Pulmonary Embolism. Give Heparin 100 Units per kilogram IV now. Continue Oxygen & routine supportive care measures. Evacuate as soon as possible. If the patient will not reach Skardu in 6 hours, give an additional dose of Heparin 6 hours after the first dose. You may also give Morphine 1 to 5 mg IV every 10 to 30 minutes as needed for pain and anxiety relief. Over.”**

Medic - **“I copy Heparin 100 Units per kilogram IV now. Continue Oxygen & routine supportive care measures. Evacuate as soon as possible. If the patient will not reach Skardu in 6 hours, give an additional dose of Heparin 6 hours after the first dose. Morphine 1 to 5 mg IV every 10 to 30 minutes as needed for pain and anxiety relief. Do you have further questions or orders for me? Over.”**

Doc - **“No questions or orders. Good job. Doctor Jones out.”**

Clear, concise, to the point. Professionals exchanging information. That is how a medical control communication should proceed.

A few points about the above example:

1. Contact your PMD via whatever means you have available to you. Video, voice only, email or fax, whatever – use this same presentation.
2. Set the tone immediately via using clear, slow speech. This will clue in your PMD that you have a patient care issue. State **“Doctor, this is Remote Medic Smith at Askole Clinic, requesting medical control.”** Wait for them to acknowledge you.
3. Give the patients, age, nationality, sex, and YOUR concern – not the patient’s Chief Complaint! **“I have a 43 year old US male with a possible pulmonary embolism.”** After that, give a short summary of the PERTINANT facts. **“This patient sustained multiple contusions to the legs via a crushing injury 3 days ago and has been on bed rest since. This AM he developed shortness of breath in bed, a sharp but deep and difficult to localize pain in his right chest, and a cough with blood tinged sputum.”**
4. Next, give the PERTINANT findings and data you have gathered. Anything you don’t mention is assumed to be normal, or your PMD will ask for it. **“This patient is afebrile. Pulse is 120. Respirations are 36. SaO2 is 87% room air. Lungs sounds are diminished in the Right middle lobe, but there are no crackles, rhonchi, wheezes. Excursion is normal, no retractions. Percussion is equal. Both lower legs are bruised and swollen, with a strongly positive Homan’s sign, distinct from the prior trauma.”**
5. Next, give info on what you have not done and have done for this patient. **“EKG, X-ray, and D-Dimers are not available. I have placed this patient on Oxygen at 10 LPM via mask.”**
6. Next, tell your PMD either “I Think” (meaning your clinical assessment, but without definite proof) or “I Know” (meaning you can prove a diagnosis), and possible alternatives, if any... **“I think this patient has a pulmonary embolism. I have no evidence of pneumonia, pneumothorax, or other process.”**
7. Next, tell your PMD what you want. **“I am requesting Heparin 100 Units per kilogram IV push, continue Oxygen, immediate evacuation via ground unit to Skardu with routine supportive care.”** The say **“Over Doctor”** to let them know that you are awaiting a reply.
8. They may then respond with specific questions or requests for clarifications, and/or orders, such as: **“Is the pain aggravated by deep breathing, constant, or another pattern? Over.”**
9. Respond with an answer. **“It is made worse with deep breaths. Over.”**

10. **“Supportive care measures. Evacuate as soon as possible. If the patient will not reach Skardu in 6 hours, give an additional dose of Heparin 6 hours after the first dose. You may also give Morphine 1 to 5 mg IV every 10 to 30 minutes as needed for pain and anxiety relief. Over.”**
  
11. You will then read back to your PMD the orders for confirmation. **“I copy Heparin 100 Units per kilogram IV now. Continue Oxygen & routine supportive care measures. Evacuate as soon as possible. If the patient will not reach Skardu in 6 hours, give an additional dose of Heparin 6 hours after the first dose. Morphine 1 to 5 mg IV every 10 to 30 minutes as needed for pain and anxiety relief. Do you have further questions or orders for me? Over.”** This is also a time when you can ask your PMD to remain on the line for additional discussion, or unrelated matters after the medical control portion of the conversation is completed, something like **“Do you have further questions or orders for me? If not I have an administrative matter I wish to discuss. Over.”**
  
12. The PMD will then respond as appropriate. **“No questions or orders. Good Job. Doctor Smith out.”** Or **“No questions or orders. Good Job. How can I help? Over.”** When satisfied, your PMD will then give you the appropriate orders, perhaps with additions or other orders. **“I agree with possible Pulmonary Embolism. Give Heparin 100 Units per kilogram IV now. Continue Oxygen & routine care.”**

OK, let's look at another example, one a little less clear cut:

Medic – **“Doctor, this is Remote Medic Jones at Sibun Clinic, requesting medical control. Over.”**

Doc – **“Over.”**

Medic – **“I have a 27 year old Belizean female with right lower quadrant & supra-pubic pain, cause unclear. This patient has had progressive pain, dull and aching in nature, progressively worsening over the last 3 days. The patient has nausea but is taking fluids without vomiting, and she remains slightly hungry. No diarrhea or constipation. No dysuria or frequency. She reports no vaginal discharge. She is afebrile, vitals are appropriate. General exam is normal. She does not appear toxic. Abdominal exam shows normal sounds, no organomegaly, no rebound/guarding/rigidity, no flank tenderness. Positive for tenderness on palpation in the right lower quadrant. Dipstick urinalysis is negative. Requesting your input. Over.”**

Medic – **“LMP was 3 weeks ago, normal. She is regular on her cycles. Regarding exams, those were not done; I will complete & call back in 60 minutes. Over.”**

Doc – **“Roger that, standing by.”**

(60 minutes later)

Medic – **“Doctor, this is Medic Jones, continuing with report. Over.”**

Doc – **“Over.”**

Medic – **“Speculum exam showed fishy smelling yellow discharge. Positive Chandelier sign. Positive reproduction of pain on bi-manual exam of right ovary, which is slightly larger than the left. Urine pregnancy test was negative. Wet prep of vaginal discharge showed active Trich organisms. No culture is available. Patient uses no birth control and no condoms, multiple partners. I think this is consistent with Pelvic Inflammatory Disease with Trichomonas infection, and possible a mixed infection by history. I request Rocephin 1 gm IM plus Doxycycline 100 mg PO BID times 14 days, plus patient education. Over.”**

Doc – **“Concur this is PID, possibly mixed organisms. There may also be an element of ovarian inflammation or ovarian cysts on the right side, exacerbated by pre-menses hormone increase. Early ectopic pregnancy, ovarian torsion, and appendicitis could also be present, with pain masking from the PID. Pregnancy test might not be positive in an early presentation. Standby for orders. Over.”**

Medic – **“Roger that, ready for orders, over.”**

Doc – **“Patient is to remain at clinic overnight for observation. Place saline lock. Give Rocephin 1 gm IV, plus Doxycycline 100 mg IV Q 12 hours, plus patient education. Clear liquid diet. Monitor her for loss of appetite, vomiting, peritoneal signs, fever, or acute pain increase. If these occur you are authorized to evacuate her via ground transport to Western Regional Hospital without further PMD contact. If she remains stable you are authorized to discharge her in the AM with Doxycycline 100 mg PO BID times 14 days, Ibuprofen 800 mg PO TID times five days, and recheck at clinic in 14 days or sooner if needed. Over.”**

Medic – **“I copy patient is to remain at clinic overnight for observation. Place saline lock. Give Rocephin 1 gm IV, plus Doxycycline 100 mg IV Q 12 hours, plus patient education. Clear liquid diet. Monitor her for loss of appetite, vomiting, peritoneal signs, fever, or acute pain increase. If these occur I am authorized to evacuate her via ground transport to Western Regional Hospital without further contact. If she remains stable I am**

authorized to discharge her in the AM with Doxycycline 100 mg PO BID times 14 days, Ibuprofen 800 mg PO TID times five days, and recheck in 14 days or sooner PRN. Question – may I administer pain medication while she is under observation tonight? Over.”

Doc – “Tonight you may administer Tylenol 500mg, 1 or 2 PO every 6 hours PRN, give with liquids, plus she may use cold or heat to the area as she desires. Avoid NSAIDS due to the possible need for surgery. Avoid narcotics due to possible masking of worsening symptoms. If you choose to evacuate her, you may administer Morphine IV via standing order. Over.”

Medic – “I copy tonight I may administer Tylenol 500mg, 1 or 2 PO every 6 hours PRN, give with liquids, plus she may use cold or heat to the area as she desires. Avoid NSAIDS due to the possible need for surgery. Avoid narcotics due to possible masking of worsening symptoms. If I choose to evacuate her, I may administer Morphine IV via standing order. Do you have any further questions or order for me? Over.”

Doc – “No questions or orders. Do not hesitate to call overnight if you feel the need. Read up on PID and the differential diagnosis of an acute abdomen. Good job. Dr. Smith out.”

See how the communication remains clear and concise, even over an extended period? See how both orders and education can be combined in short precise communication? See how direction and correction can be given without cluttering up the process, and without being nasty? PMD, medic, or whatever, you should strive to match this level of clarity.

## HOMework

1. Study the following radio communication protocol. They are very generic, and whatever organization you find yourself working with will have their own variations. But if you memorize the pro-words and follow the general instruction contained in this document you will be able to communicate effectively with any civilian or military group, worldwide, as this is the universal model for radio communications.

## **Guide to Radio Communications Standards for DEM Emergency Responders**

GENERAL PROCEDURE  
SPEECH TECHNIQUE  
    Use of Audio Equipment  
    Method of Speech  
AIDS TO ACCURACY  
    Rules for Spelling  
    Rules for Figures  
RADIO CHECKS, SIGNAL STRENGTH AND READABILITY  
    Initiating a Radio Check  
    Signal Reporting – Signal Strength and Readability  
TRANSMITTING A MESSAGE  
RELAY  
REPETITIONS  
CORRECTIONS  
CANCELING MESSAGES  
DO NOT ANSWER TRANSMISSIONS  
READ BACK  
RECEIPT  
ACKNOWLEDGMENT OF MESSAGES  
VERIFICATIONS  
BREAK-IN PROCEDURE  
APPENDIX: COMMON PROWORDS (STANDARD PROCEDURE WORDS)

Communications among DEM Emergency Responders vary with the severity of the incident at hand. They range from simple and straightforward to intense and complex. Flexible standards have been established to guide radio communications accordingly. At one extreme (e.g., in an exchange between regular workmates about a minor incident) the protocol may be nearly (but not quite) as informal as in ordinary conversation. At the other extreme (e.g., among teams from several agencies responding to a major incident) the protocol may be nearly (but not quite) as formal as in a military operation. (See, for example, the Combined Communications-Electronics Board, *Allied Communications Publication 125F*, 5 September 2001, <<http://www.dtic.mil/jcs/j6/cceb/acps/acp125f.pdf>>). The following, adapted from *ACP-125F*, is intended to guide on-air communications as circumstances require.

### **GENERAL PROCEDURE**

- Maintain constant radio watch unless specific instruction or permission has been received to the contrary. Ensure that the correct frequency is in use and that at least one person is assigned to monitor the radio, regardless of the circumstances. Radio procedures presume that stations can respond to a call.
- Answer all calls as promptly as possible.

- Listen carefully before transmitting to ensure that the frequency is clear and to accommodate troubled stations.
- Use correct speech technique (described below).
- Initiate radio contact by identifying the callsigns of the person you aim to reach and yourself.
- Release the pressel (PTT/push-to-talk switch) promptly and ensure that the radio returns to the receive condition.
- Keep messages clear, orderly, and concise, brief and to-the-point. Do not lose your temper or use profanity.
- Use callsigns and recognizable abbreviations or codes when referring to personnel or locations.
- Clearly state your intention and the information you wish to convey. Insofar as possible, plan the message ahead. Written notes reduce the risk of error.
- Use the primary channel only for urgent substantive communication or to establish contact before shifting to a secondary channel. Keep primary channels as free as possible.
- Standard procedure words (prowords) may be used in place of whole sentences. Prowords are easily used and recognized words or phrases with a specific predetermined meaning. (See appended glossary of common prowords)  
For example:  
  - ROGER = "I have received your last transmission satisfactorily."
  - OUT = "This is the end of my transmission to you, and no answer is required or expected"
- End each transmission by saying the proword "OVER," and end radio contact by saying the proword "OUT."

## **SPEECH TECHNIQUE**

### Use of Audio Equipment.

- In transmission, position the microphone as close to the mouth as possible.
- For reception, particularly in noisy or difficult conditions, the use of headsets is preferable to loudspeakers.

### Method of Speech.

The key words to remember are Rhythm, Speed, Volume and Pitch (RSVP).

- Rhythm. Use short sentences divided into sensible phrases (vs. pauses after each and every word) that maintain a natural rhythm. When pausing, release the pressel to minimize transmission time and to permit stations to break in as necessary.
- Speed. Speak slightly slower than for normal conversation. Slow down by increasing the length of pauses between phrases, especially if a message is to be written down by the recipients or if conditions are difficult. (Altering the gaps between words will create an unnatural, halted rhythm that is difficult to understand.) Never speak faster than the station experiencing the worst reception conditions can be expected to receive.
- Volume. Speak at a volume as for normal conversation. Shouting causes distortion.

- Pitch. To improve clarity, pitch the voice slightly higher than for normal conversation.

## **AIDS TO ACCURACY**

### **RULES FOR SPELLING**

- Use the following International Phonetic Alphabet to spell out words or acronyms that may not transmit clearly.

A — Alpha	N — November
B — Bravo	O — Oscar
C — Charlie	P — Papa
D — Delta	Q — Quebec
E — Echo	R — Romeo
F — Foxtrot	S — Sierra
G — Golf	T — Tango
H — Hotel	U — Uniform
I — India	V — Victor
J — Juliet	W — Whiskey
K — Kilo	X — Xray
L — Lima	Y — Yankee
M — Mike	Z — Zulu

- Callsigns and coordinates should always be spelled out phonetically.
- Spelling out may also be necessary to communicate obscure or unpronounceable words or abbreviations. They may be spelled out after the proword, "I SPELL." If the word is pronounceable, say it before and after spelling it out. In difficult conditions it may more effective to use full words than to risk having to spell out an abbreviation.

### **RULES FOR FIGURES**

- Begin radio contact by saying callsigns digit-by-digit.
- Figures in the text of a message may be spoken as in normal speech, but when conditions are difficult or when misunderstanding is likely or dangerous, figures should be spoken digit-by-digit, preceded by the proword "FIGURES." This proword warns that figures follow immediately, to help distinguish them from other similarly pronounced words.

## **RADIO CHECKS, SIGNAL STRENGTH AND READABILITY**

Whenever using a radio for the first time or when there is doubt about its performance, the simplest check that can be done is what is known as a "radio check." Radio checks should be carried out periodically during periods of low traffic.

### **INITIATING A RADIO CHECK**

The person initiating a radio check should say:

- The callsign of the station being called.

- The words “THIS IS.”
- The callsign of the station calling.
- The prowords “RADIO CHECK” (meaning, “What is my signal strength and readability? How do you hear me?”)

### SIGNAL REPORTING

The responder should answer:

- “ROGER” (meaning “I have received your last transmission satisfactorily.”) Strength of signals and readability need not be exchanged unless one station cannot clearly hear another. So, the omission of comment on signal strength and readability is understood to mean that reception is LOUD and CLEAR.
- If reception is other than loud and clear, it must be described with prowords for signal strength and readability, such as:

<b>Signal Strength</b>	
LOUD	Your signal is strong.
GOOD	Your signal is plainly audible.
WEAK	I can hear you, but with difficulty.
FADING	At times your signal fades so much that continuous reception is not dependable.
NOTHING HEARD	I cannot hear you at all.

<b>Readability</b>	
CLEAR	Excellent quality.
READABLE	Good quality; no difficulty in reading you.
DISTORTED	Having problems reading you due to distortion.
WITH INTERFERENCE	Having trouble reading you due to interference.
INTERMITTENT	Having trouble reading you because your signal is intermittent.
NOT READABLE	I can hear that you are transmitting but cannot read you at all.

### TRANSMITTING A MESSAGE

- When communication reception is satisfactory, message parts may be transmitted only once.
- When communication is difficult, callsigns should be transmitted twice. (Phrases, words, or groups may be transmitted twice after use of the proword WORDS TWICE. Reception may be verified by use of the proword READ BACK.)

### RELAY

- The proword RELAY used alone indicates that the station called is to redirect the message to all addressees.

- The proword RELAY TO followed by an address designator indicates that the station called is to relay the message to the stations indicated. When more than one station is called, the callsign of the station designated to perform the relay will precede the proword RELAY TO.
- The proword RELAY THROUGH allows a station to indicate a third station that can relay a message.
- The proword THROUGH ME allows a third station to indicate that it is in contact with the required station and able to relay the message.
- In all cases – whether the originating station can or cannot hear the relaying station – the relaying station must inform the originating station if it has not been able to relay the message.

### **REPETITIONS**

- Before receipting a message that is unclear, stations should request repetitions. For this purpose, the proword SAY AGAIN may be used alone or in conjunction with prowords that identify the portion of the message that is unclear (e.g., ALL BEFORE, ALL AFTER, FROM, TO, WORD BEFORE, WORD AFTER). In complying with requests for repetitions, the transmitting station must identify the portion that is being repeated.
- When it is necessary to ask for repetitions after a message has been receipted, identify the message being queried as well as the portion required.

### **CORRECTIONS**

- When an operator makes an error while transmitting a message, he/she should use the proword CORRECTION, followed by the last word or phrase correctly transmitted. Then continue transmission.
- If an operator discovers an error in a message after it has been receipted, he/she should send an abbreviated service message, identifying the message and the portion to be corrected.

### **CANCELING MESSAGES**

- During the transmission of a message (anytime up to the ending proword OVER or OUT), the message may be cancelled by use of the prowords: DISREGARD THIS TRANSMISSION – OUT.
- A message that has been completely transmitted can only be cancelled by another message.

### **DO NOT ANSWER TRANSMISSIONS**

- When it is imperative that the called stations do not answer a transmission, the proword DO NOT ANSWER will be transmitted immediately following the call, and the complete transmission will be sent twice, the full transmission ending with the proword OUT.
- DO NOT ANSWER transmissions must be authenticated.

### **READ BACK**

- To ensure that a message has been accurately received, the originating station may request that all or part of the message be read back, using the proword READ BACK and identifying the segment (e.g., READ BACK TIME, READ BACK GRID, READ BACK TEXT, etc.)

- Specify which stations are to read back by saying their call numbers before the proword READ BACK. Remaining stations should keep silent. When call signs do not precede the proword READ BACK, all recipients are to read back.
- If the station reading back does so incorrectly, the originating station will call attention to the error by using the proword WRONG, followed by the correct version.

### **RECEIPT**

- Receipt indicates a message has been delivered. A receipt may be effected as follows:
  - In abbreviated procedures, if no confusion is likely to arise, a return transmission may be considered a receipt.
  - After each message or string of messages, the receiving station transmits proword ROGER.
  - In the case of a message requiring acknowledgment, the use of the proword WILCO constitutes a receipt. (The meaning of WILCO includes that of ROGER.)
- To increase the speed of handling collective calls, one (and only one) station in the net may be directed to receipt for the message. Other stations may still request repetition.
- Either the originating or receiving station may indicate a wish to add another transmission with the proword MORE TO FOLLOW in the message ending or receipt.

### **ACKNOWLEDGMENT OF MESSAGES**

- It is the prerogative of the originator to request an ACKNOWLEDGMENT to a message from any or all addressees of that message. (An acknowledgment should not be confused with a reply or receipt.)
- The request for acknowledgment of a message normally is included in the text of that message.
- If the message has been transmitted, the request for acknowledgment will constitute a new message.
- Acknowledgments are originated only by the addressee to whom the request for acknowledgment was made.
- A prompt reply referring to the message may serve in lieu of an acknowledgment.

### **VERIFICATIONS**

- When requested by an addressee, the originating station will verify with the originator and send the correct version.
- When a message to a number of addressees is queried by one station and found to be incorrect, the corrected version must be sent to all addressees.

### **BREAK-IN PROCEDURE**

- A station having a message of higher precedence than the transmission in progress may break in and thus suspend that transmission in the following manner:
  - FLASH – Break in at once and transmit the message (b and c below).
  - IMMEDIATE – May break in at once and pass the message. If necessary, a preliminary call may be made before transmitting the message.

- PRIORITY – As for IMMEDIATE except that only long ROUTINE messages should be interrupted.
- When spoken three times, these prowords, means, “Cease transmissions immediately. Silence will be maintained until the station breaking in has passed the message.”

## APPENDIX: COMMON PROWORDS (STANDARD PROCEDURE WORDS)

Proword	Meaning
ACKNOWLEDGE	Confirm that you have received my message and will comply (WILCO).
AFFIRMATIVE	Yes/Correct.
NEGATIVE	No/Incorrect.
ALL AFTER . . .	Everything that you (I) transmitted after . . .
ALL BEFORE . . .	Everything that you (I) transmitted before . . .
BREAK – BREAK – BREAK!	All stations will immediately cease transmission. The station breaking in has an urgent message. <i>(Used only in extreme emergency.)</i>
CORRECT	You are correct.
CORRECTION	The correct version is . . .
WRONG	Your last transmission was incorrect; the correct version is . . .
DISREGARD THIS TRANSMISSION – OUT	This transmission is an error; disregard it.
DO NOT ANSWER – OUT	Station(s) called are not to answer this call, acknowledge this message, or transmit in connection with this transmission.
FIGURES	Numbers follow (in this message).
MESSAGE.	I have an informal message for you.
MESSAGE FOLLOWS	I have a formal message which should be recorded (e.g. written down).
OVER	I have finished my turn. I await a response.
OUT	Go ahead, transmit. I have finished my transmission.
OUT TO YOU	I have nothing more for you. No reply is expected. Do not reply. I will now call another station on the net. <i>(Note: OVER and OUT are never used together.)</i>
READ BACK	Read back the following message to me exactly as received.
I READ BACK	The following is my reply to your request to read back.
RELAY TO . . .	Transmit the following message to all addressees or to the address immediately following.
RELAY THROUGH . . .	Send this message by way of callsign _____ to _____.
ROGER	I have received your last transmission satisfactorily.
ROGER SO FAR?	Have you received this part of my message satisfactorily?

SAY AGAIN	Repeat all of your last transmission.
SAY AGAIN ALL (WORD) AFTER (BEFORE)	Repeat portion of message indicated.
I SAY AGAIN	I am repeating my transmission or portion indicated.
SEND	Go ahead with your transmission.
SEND YOUR MESSAGE	Go ahead; I am ready to copy.
SILENCE – SILENCE – SILENCE!	Cease all transmission immediately and maintain until lifted. <i>(Used by Communications Officer or Network Operator.)</i>
SILENCE LIFTED	Silence is lifted. Net is free for traffic.
SPEAK SLOWER/FASTER	Adjust the speed of your transmission.
I SPELL	I shall spell the next word phonetically
THROUGH ME	I am in contact with the station you are calling. I can act as a relay station.
MESSAGE PASSED TO . . .	Your message has been passed to . . .
UNKNOWN STATION	The identity of the station calling or with whom I am attempting to establish communication is unknown.
VERIFY	Verify entire message (or portion indicated) with the originator and send correct version. <i>(Used only at discretion of or by the addressee to which the questioned message was sent.)</i>
I VERIFY	That which follows has been verified at your request and is repeated. <i>(Used only as a reply to VERIFY).</i>
WAIT (OR WAIT – WAIT)	I must pause for a few seconds.
WAIT OUT	I must pause longer than some seconds and will call you again when ready.
WILCO	I have received and understood your message and will comply. <i>(Used only by the addressee.)</i>
WORD AFTER . . .	The word of the message to which I refer is the following . . .
WORLD BEFORE . . .	The word of the message to which I refer was the preceding . . .
WORDS TWICE	Communication is difficult, so transmit (“ting”) each phrase twice <i>(Used as an order, request, or information.)</i>