

**JOTA Workbook**

**BSA Jamboree On The Air (JOTA)**

**Fall Camporee 2014**

We are really excited about the upcoming Fall Camporee

(Oct. 17, 18, 19) and all the fun you will have.

In order to **“Be Prepared”** for this Camporee**,** you will need to:

- **PRINT this JOTA Workbook**

(Double Sided is recommended)

- READ the material

- **COMPLETE** the simple assignments…

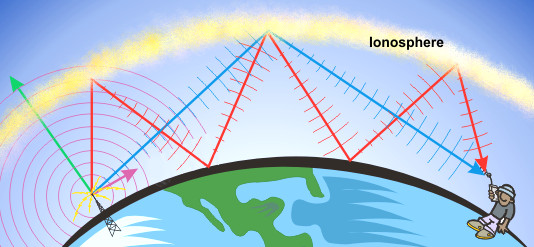
**AND…**  
 - **BRING** your completed **JOTA Workbook**

**So, let’s get started!** ☺

**Communications**

We will be communicating to the outside world using RADIO.

Depending on the frequency these radio signals will either travel “Point-to-Point” on a “Line of Sight” path (144 & 440 MHz), or will propagate by bouncing off the Ionosphere (3.8 – 12 MHz).



**Research Question:**

How high is the Ionosphere above the Earth?*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

**REPEATERS**

We might also use Repeaters that extend our coverage due to local terrain.

A repeater can receive a weak signal, or a signal from a portable user, and re-transmit it over a wider area. A repeater listens on a particular frequency, called the **Input** frequency. If it hears a valid signal, it will re-transmit the signal on the **Output** frequency. Only one person should transmit at a time, otherwise the signals will overlap.

**Radio Stations**

Each radio station has FOUR main components.

1) Transmitter \*

2) Receiver \*

3) Transmission Line (Radio to Antenna)

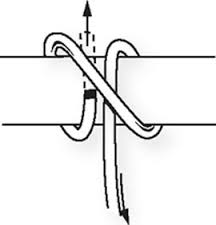
4) Antenna

\* In many amateur radio stations today, the Transmitter and the Receiver are combined together in one box, which is known as a TRANSCIEVER

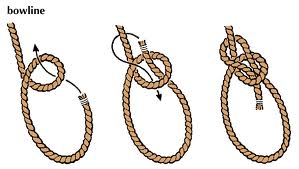
**5 *Knots to KNOW***

(Hint: Practice, Practice, Practice)

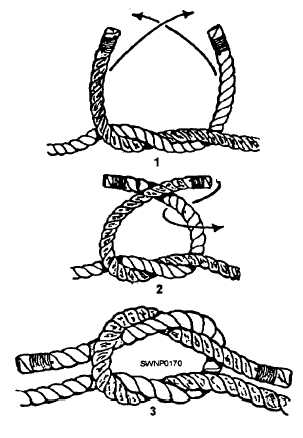
**Clove Hitch --->**



**Bowline**



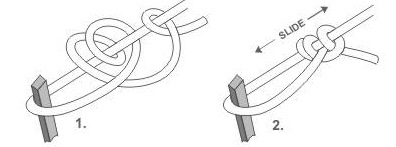
**Square Knot**



**Slip Knot**



**Taut-Line Hitch**



**Mast Building**

Your Patrol will build and erect a supporting structure (mast) for the Antenna.

**You NEED to KNOW how to tie FIVE KNOTS** (See diagrams above).

- Lash 3 pieces of wood together to build a 30’ mast with 3’- 4’ overlaps.

Use TWO lashings per joint (Top & Bottom) for a total of FOUR LASHINGS per Mast.

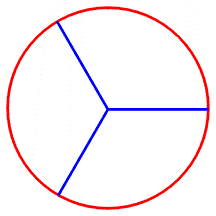
- Tie a Pulley to the top of the Mast using a Clove Hitch around the mast, and use a **Bowline** to attach the Pulley to this rope.

- Attach a 55’ halyard (rope) to the Pulley (to raise and lower the antenna).

Secure both ends in a **Square Knot**

- Add a **Slip Knot** to the halyard (about 1 foot from the Square Knot) as a point to tie the antenna’s Center Insulator on.

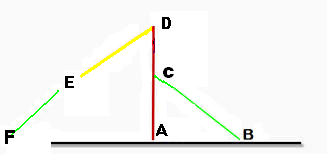
- Separation Angles between the 3 Guy Ropes on the ground = 120 degrees.

 (Top Down View)

- Height of Guy Ropes’ Attach Point on Mast = 20’ (**C**)

- Distance of Guy Stakes from Mast = 80% of the height of the mast **(C),** where the Guy Ropes are attached.

- Raise the Mast, and use 3 Guy Ropes to secure the Mast **(C)** to the 3 ground stakes **(B).**

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**Question #1:**

How far from the base of the Mast (**A**) will you want to place the Guy Rope stakes (**B**)?

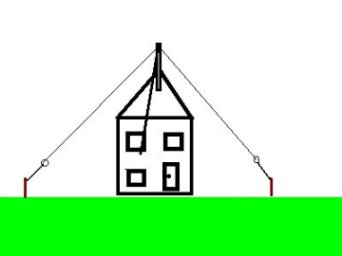
\_\_\_\_\_\_\_\_\_ Feet.

**Question #2:**

How much line will you need for each guy (**Line C-B**)? \_\_\_\_\_\_\_\_\_\_\_ Feet.   
(Be sure to add 3 feet for extra working/knot tying length)

**Antenna Building**

After building and erecting the Mast, your Patrol will construct and erect a Dipole Antenna, which will be set up in an upside–down (inverted) “V” configuration.



Translation: Dipole…

Di = 2 (e.g. Di-Hydrogen Oxide… or H20... or Water)  
Pole = + or - (e.g. Battery Terminals)

So, this will be an antenna with two legs (poles): one has Positive polarity and the other has Negative polarity.

Each patrol will be given one of **FOUR specific fr**equencies at which the antenna must resonate (vibrate naturally – think of a tuned guitar string).

These frequencies are: **3.965 MHz 7.255 MHz 14.245 MHz 21.315 MHz**

**Saturday Surprise…**  
 You won’t know which frequency you will use until it is time to build the antenna.

So, you need to plan ahead and prepare for the event by completing all 4 calculations.

**4 Calculations**

In order to know how much wire you will need cut to have the antenna resonate at that given frequency, you will need to make 4 calculations BEFORE THE WEEKEND using this simple equation:

**FORMULA for a Half Wave Inverted “V” Dipole**

468 /Freq.(MHz) x .95 = Total wire needed (in Feet).

Using a Frequency of: 18.130 MHz…

First: 468 / 18.130 = 25.814 feet

Next: 25.814 x .95 = 24.5 feet

Then ADD 2 feet for connections.

= 24.5’ + 2’ = 26’ 6”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Freq. | 3.965 MHz | 7.255 MHz | 14.245 MHz | 21.315 MHz |
| ½ Wave Length |  |  |  |  |

**Good News:**  
We will be using common Speaker Wire to build this antenna.

Speaker Wire comes as a PAIR of wires joined together, which means we get 2 legs of the antenna from 1 length of paired wire. You will be pulling them apart AFTER you cut the length of wire you need.

Therefore, all you need to do is to:  
- DIVIDE your calculated length of a Half Wave Inverted “V” Dipole in HALF.

**Put New 1/4 Lengths here…**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Freq. | 3.965 MHz | 7.255 MHz | 14.245 MHz | 21.315 MHz |
| ¼  Wave Lengths |  |  |  |  |

- Measure this new length of paired speaker wire,

- Cut it

- Pull the two wires apart to get both legs of the dipole.

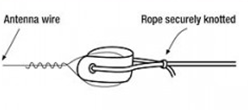
- Strip off 6” of insulation from the wire at each end of the 2 lengths of wire

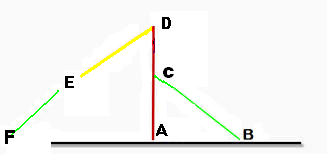
- Twist the ends to keep the wire together (follow the winding).

For Each Leg of the Dipole  
- Connect one end of the wire to one of the terminals on the **CENTER Insulator**.



- Pass the other end of each leg through the **END Insulator,** and start winding/wrapping the wire back over antenna wire. (see below).





The Inverted “V” antenna works best with an angle (apex) of 120 degrees for separation between each leg of the dipole.

- This means each leg will be at 60 degrees to the vertical (i.e. ½ of 120) – **Angle FDA**

**Information given:**   
- Assume that the antenna height is at 30 feet (**Line A-D**).

- To achieve a 60 degrees (**Angle FDA**) from the vertical mast, the distance of each Antenna Guy Rope stake (**F**) from the mast is 40’.

Question:  
How much rope do you need for each antenna leg to reach the stake (**F**) ?

(Be sure to add 2 feet for rope working length to your answer)  
Antenna leg (**Line D-E**) + ? = **Line D-F**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Freq. | 3.965MHz | 7.255MHz | 14.245MHz | 21.315 |
| Guy Rope  (Feet & Inches) |  |  |  |  |

**Bonus Question:**  
What is Line D-F also called? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Jamboree on the Air – Get On The Air**

**(JOTA GOTA)**

This weekend is the annual BSA JOTA weekend where scouts get to contact other scouts and Amateur Radio Operators over the radio and have conversations.

**Some things you need to know…**

**Electromagnetic Spectrum**Using the ranges shown of the Electromagnetic Spectrum (below), include the following in the appropriate range.

* Mark your favorite TV, AM and FM radio stations (1 each) sit on the Spectrum.
* Mark your local Fire Department and Police Department frequencies
* Mark the 4 Frequencies found in the Antenna Building Section

The Electromagnetic Spectrum

0.3 MHz \_\_\_\_\_\_\_\_\_\_\_\_\_\_.880\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3 MHz

WCBS-AM (NYC)

Example

3 MHz \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 30 MHz

30 MHz \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 300 MHz

300 MHz \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3,000 MHz

3,000 MHz \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 30,000 MHz

**SIGNAL REPORTS**

Hams give each other Signal Reports to let each other know how well (or badly) their radio signals are doing that day. They use a system called, “**Readability – Strength – Tone**” (RST).

“Tone” refers to the quality of a Morse Code signal, and is not given in a conversation when using Voice.

So, during your contacts (by voice) you will just give a **Readability and Stregth** report.

Example: “You are FIVE SEVEN”.

|  |
| --- |
| **THE R-S-T SYSTEM** |

|  |  |  |
| --- | --- | --- |
| **Readability** | **Signal Strength** | **Tone** |
| 1-Unreadable | 1-Faint, signals barely | 1-Extremely rough hissing note |
| 2-Barely readable, occasional words distinguishable | 2-Very weak signals | 2-Very rough AC note, no trace of musicality |
| 3-Readable with considerable difficulty | 3-Weak signals | 3-Rough. Low-pitched AC note, slightly musical |
| 4-Readable with practically no difficulty | 4-Fair signals | 4-Rather rough AC note, moderately musical |
| 5-Perfectly readable | 5-Fairly good signals | 5-Musically modulated note |
|  | 6-Good signals | 6-Modulated note, slight trace of whistle |
|  | 7-Moderately strong signals | 7-Near DC note, smooth ripple |
|  | 8-Strong signals | 8-Good DC note, just trace of ripple |
| OsANDEEP bARUAH | 9-Extremely strong signals | 9-Purest DC note |

**The NATO Phonetic Alphabet**

Many times the words we speak on the radio are not clearly understood by the listener at the other end. To clarify what we are saying, we can SPELL OUT the words using a common Alphabet.

The NATO Phonetic Alphabet was developed in the 1950s to be intelligible (and pronounceable) to all NATO allies. It replaced other phonetic alphabets, for example the US military Joint Army/Navy Phonetic Alphabet ("able, baker, etc.") and several versions of Royal Air Force (England) phonetic alphabets.

**N.B. :** It is sometimes inappropriately referred to as International Phonetic Alphabet (IPA), which is actually the official name of an alphabet used in linguistics created in the late nineteenth century.

**The NATO Phonetic Alphabet**

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

Spell out your “First Name”(e.g. Robert)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Spell out “Union CT”

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Spell out your “Home Town” (e.g. Milford)

**Bonus 2 Part Question:** What does “N.B.” stand for, and what does it mean?

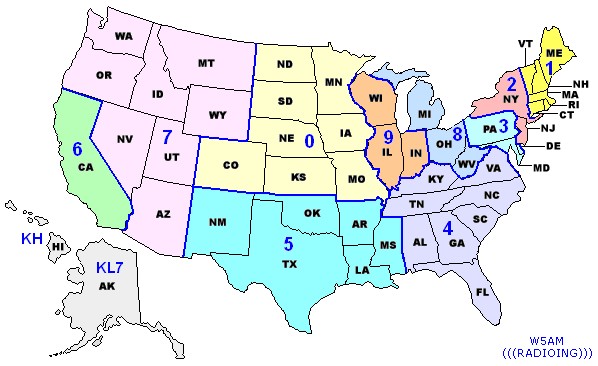
**CALL SIGNS**

In the USA, each Radio Station has a registered Call Sign identifier given by the **F**ederal **C**ommunications **C**ommission (FCC).

Commercial Radio Stations you might recognize: WCBS – New York City,

WICC – Bridgeport, CT, WNLK – New Haven, WDRC – Harford

**In Amateur Radio, the FCC divides the country into 10 AREAS**



For Example: The North-East is AREA 1, and Amateur Radio Station in this ARES are given the #1 in their Call Sign to identify where they were first licensed.

Amateur Radio Stations use a Pre-Fix (first letter/s) of: W, K, N, A

Examples of CT Call Signs: WA1SFH, KC1BAQ, N1LUF, AB1QK  
Note:

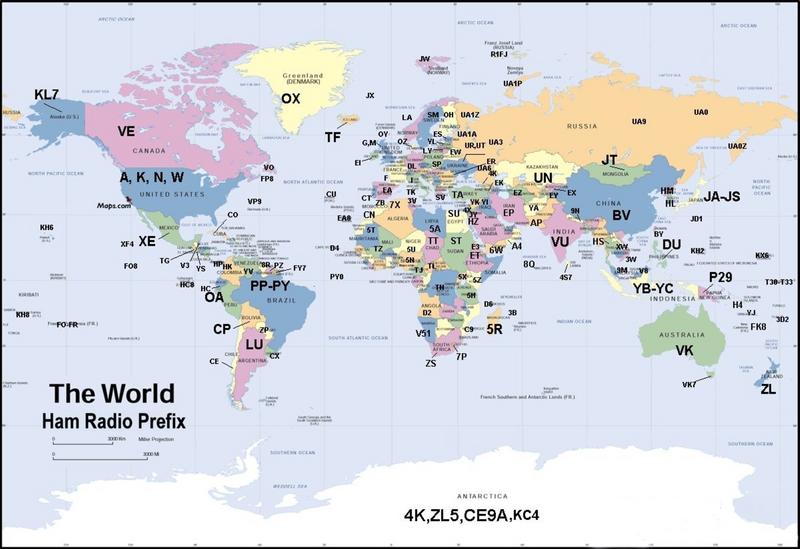
See how the #1 is used in the Call Signs?

Our JOTA Call Sign for this weekend is:

K2BSA/1

**K**ILO TWO **B**RAVO **S**IERRA **A**LPHA **P**ORTABLE ONE

**Call Signs of Foreign Countries**



As mentioned earlier, the USA has call sign prefixes of W,K,N,A

Likewise, each country is given prefix assignments by the International Telecommunications Union (ITU), a part of the United Nations.

**Amateur Radio Callsign Prefixes**

A2 Botswana  
A3 Tonga  
A4 Sultanate of Oman  
A5 Bhutan  
A6 United Arab Emirates  
A7 Qatar  
A8 Liberia EL  
A9 Bahrain  
AA-AG USA W  
AH1-AH0 USA Pacific Islands KH1-KH0  
AI-AK USA W  
AL Alaska KL  
AM-AO Spain including overseas Territories and Islands EA 6 8 9  
AP-AR Pakistan  
AT India VU  
AX Australia and Islands  
AY-AZ Argentina LU

BO Quemoy Matsu BV  
BS Scarborough Reef  
BV Taiwan  
BV9P Pratas I.  
BV9S Spratly Archipelago 9M0  
BY China BA BD BG BT BZ

C2 Nauru  
C3 Andorra  
C4 Cyprus 5B  
C5 Gambia  
C6 Bahamas  
C9 Mozambique  
CE Chile  
CE0 Easter I.  
CE0 San Felix and San Ambrosio Is  
CE0 Juan Fernandez Is  
CF-CK Canada VE  
CL CM Cuba CO  
CN Morocco  
CO Cuba  
CP Bolivia  
CT1CQ-CT2 4-8 0 Portugal  
CT3 CQ-CS3 CT9 Madeira Is  
CU Azores  
CX CV CW Uruguay  
CY CZ Canada VE  
CY9 St Paul Is  
CY0 Sable I.

D2 D3 Angola  
D4 Cape Verde  
D6 Comoros  
D7 Korea (Republic of) HL  
DL DA-DD DF-DH Federal Republic  
DJ DK DP of Germany  
DS Korea (Republic of) HL  
DU DV-DZ Philippines  
DU Spratly Archipelago 9M0

E2 Thailand HS  
E3 Eritrea  
E4 Palestine  
EA EB-EH1-5 7 0 Spain  
EA6 EB6-EH6 Balearic Is  
EA8 EB8-EH8 Canary Is  
EA9 EB9-EH9 Ceuta and Melilla  
EI-EJ Republic of Ireland  
EK Armenia  
EL Liberia  
EM EN EO Ukraine UR  
EP Iran  
ER Moldova  
ES Estonia  
ET Ethiopia  
EU EV EW Belarus  
EX Kyrghyzstan  
EY Tajikistan  
EZ Turkmenistan

F France  
FG Guadeloupe  
FH Mayotte  
FJ St Barthelemy (French St Martin) FS  
FK New Caledonia  
FK—-/C Chesterfield Is  
FM Martinique  
FO Austral Is  
FO French Polynesia  
FO Marquesas Is  
FO8X Clipperton I.  
FP St Pierre and Miquelon  
FR Reunion I.  
FR——/E Europa I. FR——/J  
FR——/G Glorioso Is  
FR——/J Juan de Nova  
FR——/T Tromelin I.  
FS French St Martin  
FTnW Crozet Is  
FTnX Kerguelen Is  
FTnZ Amsterdam I. and St Paul I.  
FW Wallis and Futuna Is  
FY French Guiana

G GX England  
GB United Kingdom G GD GI GJ GM GU GW  
GD GT Isle of Man  
GI GN Northern Ireland  
GJ GH Jersey  
GM GS Scotland  
GU GP Guernsey and Dependencies  
GW GC Wales

H2 Cyprus 5B  
H3 Panama HP  
H4 Solomon Is  
H40 Temotu Province  
H5 Bophuthatswana ZS  
H6 H7 Nicaragua YN  
H8 H9 Panama HP  
HA Hungary  
HB Switzerland  
HB0 Liechtenstein  
HC,HD Ecuador  
HC8,HD8 Galapagos Is  
HE Switzerland HB  
HF Poland SP  
HG Hungary HA  
HH Haiti  
HI Dominican Republic  
HK HJ Colombia  
HK0 Malpelo I.  
HK0 HJ0 San Andres and Providencia  
HL Korea (Republic of)  
HP HO Panama  
HR HQ Honduras  
HS Thailand  
HT Nicaragua YN  
HU El Salvador YS  
HV Vatican City  
HZ Saudi Arabia

I IA-IH IK IL IN IP Italy  
IR IT IV-IX  
IS0 IM0 Sardinia  
J2 Djibouti  
J3 Grenada  
J4 Greece SV  
J5 Guinea-Bissau  
J6 St Lucia  
J7 Dominica  
J8 St Vincent and the Grenadines  
JA JE-JS Japan  
JD 7J Minami Torishima  
JD 7J Ogasawara Is  
JT JU JV Mongolia  
JW Svalbard  
JX Jan Mayen  
JY Jordan

K KA-KZ USA and US Islands W KC6xx KG4xx KH1-0 KP1-5  
KC6 x x Republic of Palau  
KG4 x x Guantanamo Bay  
KG6 x x Guam  
KH1 Baker I. and Howland I.  
KH2 ( KG6 ) Guam  
KH3 Johnston I.  
KH4 Midway Is.  
KH5 Palmyra I.  
KH5J Jarvis I. KH5  
KH5K Kingman Reef  
KH6 7 Hawaiian Is  
KH7K Kure I.  
KH8 American Samoa  
KH9 Wake I.  
KH0 North Mariana  
KL Alaska  
KP1 Navassa I.  
KP2 US Virgin Is  
KP3 4 Puerto Rico  
KP5 Desecheo I.

L2-L9 Argentina LU  
LA LB LC LG LI Norway  
LJ LN  
LU LO-LT LV LW Argentina  
LX Luxembourg  
LY Lithuania  
LZ Bulgaria

M MX England G  
MD MT Isle of Man GD  
MI MN Northern Ireland GI  
MJ MH Jersey GJ  
MM MS Scotland GM  
MU MP Guernsey and Dependencies GU  
MW MC Wales GW

N NA-NG NI-NK USA W  
NM-NO NQ-NZ  
NH1-NH0 US Pacific islands KH1-KH0  
NL Alaska KL  
NP1-NP5 US Caribbean Islands KP1-KP5

OA OB OC Peru  
OD Lebanon  
OE Austria  
OH OF OG OI Finland  
OH0 OF0 OG0 Aland Is  
OJ0 OF0M OH0M Market Reef  
OK OL Czech Republic  
OM Slovak Republic  
ON OO-OT Belgium  
OX Greenland  
OY Faroe Is  
OZ Denmark

P2 Papua New Guinea  
P3 Cyprus 5B  
P4 Aruba  
P5 Korea (Dem Peoples Rep of)  
PA PB PD PE PI Netherlands  
PJ1 PJ2 4 9 Netherlands Antilles  
PJ5 PJ6 7 8 Sint Maarten, Saba and St Eustatius  
PY PP-PX Brazil  
PY0F Fernando de Noronha Archipelago  
PY0M Martim Vaz I. PU0T  
PY0R Atol das Rocas PY0F  
PY0S St Peter and St Paul Rocks  
PY0T Trindade I.  
PZ Suriname

R1A Antarctica  
R1F Franz Josef Land  
R1M Malyj Vysotskij I.  
R RA RK RN RU-RZ European Russia UA  
R RA RK RN RU-RZ Asiatic Russia UA9  
R2 RA2 RK2 RN2 RY2 Kaliningradsk UA2

S2 Bangladesh  
S4 Ciskei ZS  
S5 Slovenia  
S6 Singapore 9V  
S7 Republic of Seychelles  
S8 Transkei ZS  
S9 Sao Tome and Principe  
S0 Western Sahara  
SM SH-SL Sweden  
SP SN-SR Poland  
ST Republic of the Sudan  
SU Egypt  
SV SX-SZ Greece  
SV—/A Mount Athos  
SV5 Dodecanese Is  
SV9 Crete  
SV0 Non-nationals in Greece or on Greek Is SV SV5 SV9

T2 Tuvalu  
T30 West Kiribati  
T31 Central Kiribati  
T32 East Kiribati  
T33 Banaba  
T4 Cuba CO  
T5 Somalia  
T6 Afghanistan YA  
T7 San Marino  
T9 Bosnia-Hercegovina  
TA Turkey  
TD Guatemala TG  
TE Costa Rica TI  
TF Iceland  
TG Guatemala  
TI Costa Rica  
TI9 Cocos I.  
TJ Cameroon  
TK Corsica  
TL Central African Republic  
TM France including overseas Territories and Departments F  
TN Congo  
TO France including overseas Territories and Departments FG FJ FM FP FR FS FY  
TP Council of Europe-Strasbourg F  
TR Gabon  
TT Chad  
TU Cote d’Ivoire  
TX France including overseas Territories and Departments FK FO FW  
TY Benin  
TZ Mali

UA U UA UE 1 3 4 6 European Russia  
UA2 U UA UE 2 Kaliningrad  
UA9 U UA UE 8-0 Asiatic Russia  
UK U8 UJ UK7-9 UM Uzbekistan  
UN UN1-0 UP UQ Kazakhstan  
UR US-UZ Ukraine

V2 Antigua and Barbuda  
V3 Belize  
V4 Federation of St Kitts and Nevis  
V5 Namibia  
V6 Micronesia  
V7 Marshall Is  
V8 Brunei Darussalam  
V9 Vendaland ZS  
VE VA-VG Canada  
VE0 Canadian /MM Stations  
VK VI Australia  
VK9C Cocos Keeling Is  
VK9L Lord Howe I.  
VK9M Mellish Reef  
VK9N Norfolk I.  
VK9W Willis Is  
VK9X Christmas I.  
VK0 Heard I.  
VK0 Macquarie I.  
VO1 VO3 5 7 9 Newfoundland VE  
VO2 VO4 6 8 0 Labrador VE  
VP2E Anguilla  
VP2M Montserrat  
VP2V British Virgin Is  
VP5 Turks and Caicos Is  
VP6 Pitcairn Is  
VP8 Antarctica  
VP8 Falkland Is  
VP8 South Georgia  
VP8 AZ1 5 ED0 L South Orkney Is

UnZx  
VP8 South Sandwich Is  
VP8 CE9 CX0 ED0 South Shetland Is  
HF0 HL5 LUnZx South Shetland Is cont.  
ZX0 4K1  
VP9 Bermuda  
VQ9 Chagos Is  
VR2 Special Administrative Region of Hong Kong  
VU India  
VU Lakshadweep  
VU Andaman Is and Nicobar Is  
VX VY Canada VE  
VY1 Yukon Territory VE  
VY2 Prince Edward I. VE

W WA-WG WI-WK USA  
WM-WO WQ-WZ  
WH1-WH0 US Pacific Islands KH1-KH0  
WL Alaska KL  
WP1-WP5 US Caribbean Islands KP1-KP5

XE XB-XH Mexico  
XF4 Revilla Gigedo Is  
XJ-XO Canada VE  
XQ XR Chile and Islands CE CE9 CE0  
XT Burkina Faso  
XU Cambodia  
XV Vietnam 3W  
XW Lao Peoples Democratic Republic  
XX3 Madeira Is CT3  
XX9 Macao  
XY XZ Myanmar  
XZ5 XZ9 Karen State XZ

YA Republic of Afghanistan  
YBYC YE-YH Indonesia  
YI Iraq  
YJ Vanuatu  
YK Syria  
YL Latvia  
YM TurkeyTA  
YN Nicaragua  
YO YP-YR Romania  
YS El Salvador  
YU YT Yugoslavia  
YV YW-YY Venezuela  
YV0 Aves I.  
YZ Yugoslavia YU

Z2 Zimbabwe  
Z3 Macedonia  
ZA Albania  
ZB ZG Gibraltar  
ZC UK Sovereign Bases on Cyprus-Akrotiri and Dhekelia  
ZD7 St Helena  
ZD8 Ascension I.  
ZD9 Tristan da Cunha and Gough I.  
ZF Cayman Islands  
ZK1 South Cook Is  
ZK1 Northern Cook Is  
ZK2 ZK9 Niue  
ZK3 Tokelau Is  
ZL New Zealand  
ZL7 Chatham Is  
ZL8 Kermadec Is  
ZL9 Auckland I. and Campbell I.  
ZM New Zealand and Islands ZL ZL7 ZL8 ZL9  
ZP Paraguay  
ZS ZR ZU Republic of South Africa  
ZS8 Prince Edward I. and Marion I.  
ZV-ZZ Brazil and Islands PY PY0

1A0 Sovereign Military Order of Malta (Rome, Italy)  
1C Chechnya Rep. (Russian Federation)  
1P Seborga Principato (Italy)  
1S Spratly Archipelago 9M0

2D Isle of Man GD  
2E England G  
2I Northern Ireland GI  
2J Jersey GJ  
2M Scotland GM  
2U Guernsey and Dependencies GU  
2W Wales GW

3A Monaco  
3B6 Agalega Is  
3B7 Cargados Carajos (St Brandon) 3B6  
3B8 Mauritius  
3B9 Rodriguez I.  
3C Equatorial Guinea  
3C0 Annobon I.  
3D2 Republic of Fiji  
3D2 Conway Reef  
3D2 Rotuma I.

3DA0 Swaziland  
3E-3F Panama HP  
3G Chile and Islands CE CE9 CE0  
3V Tunisia  
3W XV Vietnam  
3X Republic of Guinea  
3Y Bouvet I.  
3Y Peter I Island  
3Z Poland SP

4A-4C Mexico and Islands XE XF4  
4D-4I Philippines DU  
4J 4K Azerbaijan  
4L Georgia  
4M Venezuela and Islands YV YV0  
4N1 6-0 Yugoslavia YU  
4S Sri Lanka  
4T Peru OA  
4U United Nations Organization  
4U1ITU 4UnITU United Nations Geneva  
4U1SCO UNESCO, Paris F  
4U1UN 4UnUN United Nations New York  
4U1VIC United Nations Vienna OE  
4U1WB World Bank Washington D.C. W  
4V Haiti HH  
4W East Timor  
4X 4Z Israel

5A Libya  
5B Cyprus  
5C Morocco CN  
5H Tanzania  
5J 5K Colombia and Islands HK HK0  
5L Liberia EL  
5N Nigeria  
5P Denmark OZ  
5R Madagascar  
5T Mauritania  
5U Niger  
5V Togo  
5W Western Samoa  
5X Uganda  
5Y 5Z Kenya

6C Syria YK  
6D-6J Mexico and Islands XE-XF4  
6K 6L Republic of Korea HL  
6O Somalia T5  
6P Pakistan AP  
6T 6U Sudan and Southern Sudan ST ST0  
6W 6V Senegal  
6Y Jamaica

7J-7N Japan JA  
7O Republic of Yemen  
7P Lesotho  
7Q Malawi  
7S Sweden SM  
7X 7W Algeria  
7Z Saudi Arabia HZ

8A 8B 8E 8I Indonesia YB  
8J Japan JA  
8O Botswana A2  
8P Barbados  
8Q Maldives  
8R Guyana  
8S Sweden SM

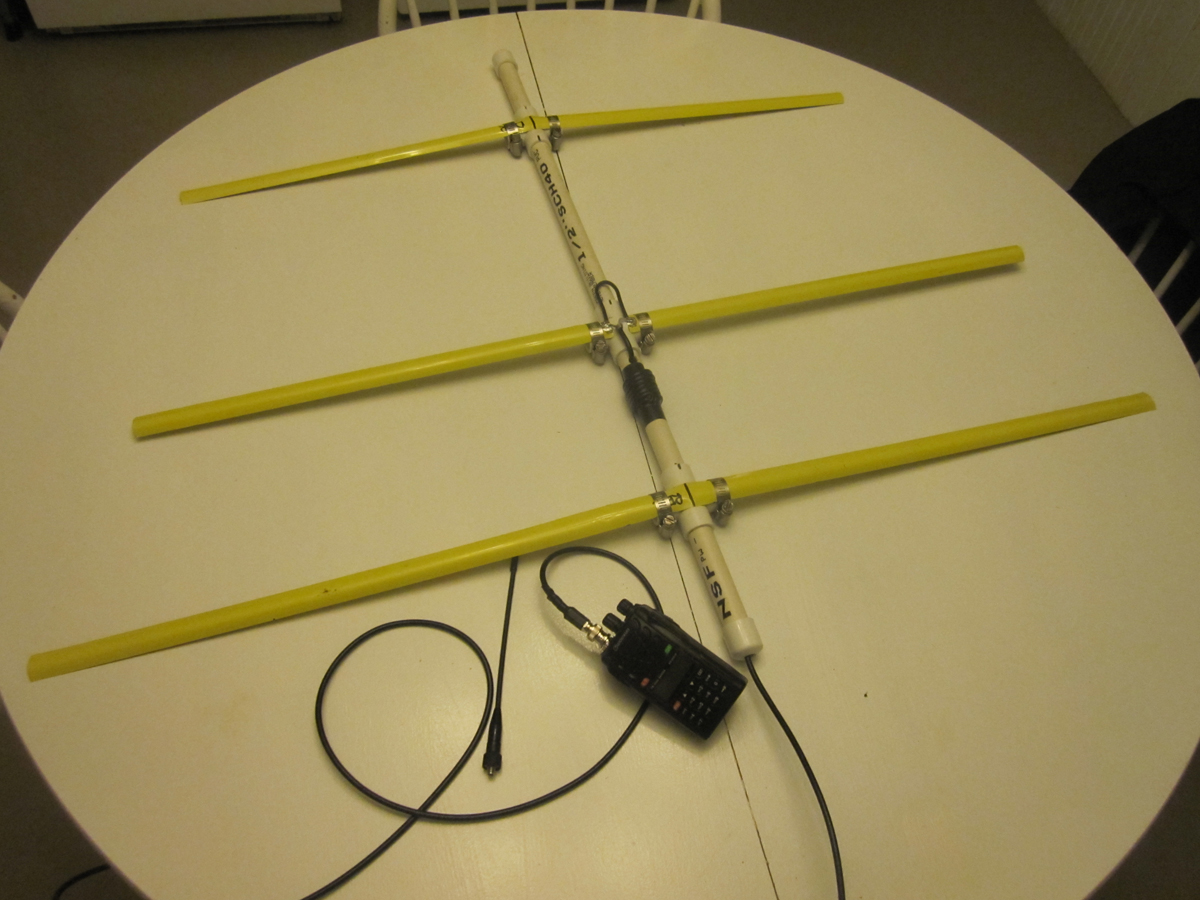
9A Croatia  
9G Ghana  
9H Malta  
9J 9I Zambia

9K Kuwait  
9L Sierra Leone  
9M2 Malaya (Malaysia)  
9M6 Sabah (Malaysia) 9M8  
9M8 Sarawak (Malaysia)  
9M0 BV9S 1S DU Spratly Archipelago  
9N Nepal  
9Q 9R Democratic Republic of Congo  
9U Burundi  
9V Singapore  
9W Malaysia (including Sabah & Sarawak) 9M2 8  
9X Rwanda  
9Y 9Z Trinidad and Tobago

**SAR – Find “The Lost Patrol”**

Your Patrol will be doing a **S**earch **A**nd **R**escue (SAR) drill using Radio Direction Finding (RDF) techniques using Amateur Radio equipment to find a Hidden Transmitter (The Lost Patrol). In Amateur Radio this exercise is known as Amateur Radio Direction Finding (ARDF) and “Fox Hunting”.

**Equipment:**

a Directional (Beam) Antenna, a hand-held 2 meter (144-148 MHz) Radio (Handi-Talkie or “HT”), and earphones (optional)

**PEAK and NULL**

Knowing the direction of both the Peak Signal (max strength) and the Null Signal (zero signal) will help you find the Hidden Transmitter.

Sweep the antenna from left to right to find the Peak and Null directions to help steer you to the transmitter.

When you get close, if your antenna does not have a Signal Attenuator on it, use your body as a shield to reduce signal overload and give you more precise direction indications.



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Troop 1, Milford

and

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