

# Radio Direction Finding 2001

A Pre-College Science and  
Technology Academy



# Math & Science Upward Bound and NASA II PSA Scholars Program

Director:  
Dr. Joe Conner, PhD



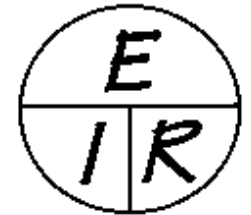
Spring 2001

# Introduction to Your Faculty

- Mark Hayden, KF6DSA, Assistant Professor, Science & Math, Community Education Center



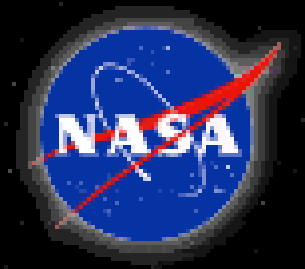
■ Naomi Garcia, Instructor,  
Electronics Assembly  
Community Education Center



- Phil Barnes-Roberts, AD6PQ,  
Senior Electronics Technician,  
Pasadena Jet Propulsion  
Laboratory



**JPL**



- Joe Moell, K0OV, Electronics Engineer and International Amateur Radio Union Region 2 (North and South America) ARDF Coordinator



# ■ What is Radio Direction Finding?



A.K.A. Foxhunting, T-Hunting, Radio Orienteering

# These are the “Foxes”





# And these are the “Foxhunters”!



# Foxhunting is For Everyone!

- Its both a hobby...



## ■ And a Competitive Sport ...



# T-Hunting is a BIG sport in Asia and Europe



In these foxhunts, every person competes for medals as an individual.



# ■ You're Never Too Young

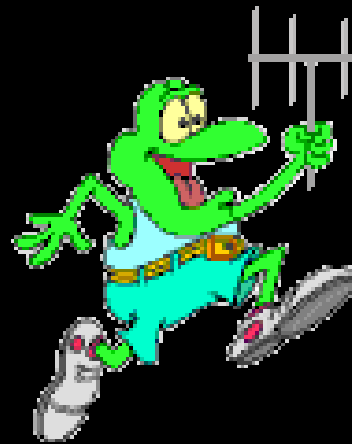


## ■ Or Too Out of Shape



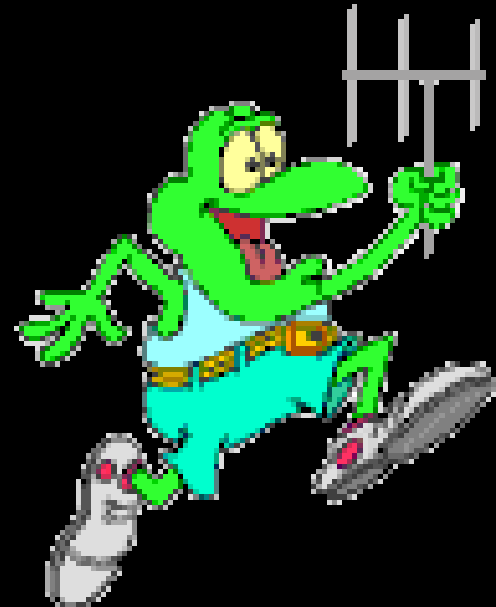
To Enjoy T-Hunting!

# We All Start Out Green!



But Everyone Can Learn  
the Techniques of  
Foxhunting...

...and **WIN!**



# Radio Orienteering Requires

- Knowledge
- Skills
- Teamwork
- Patience



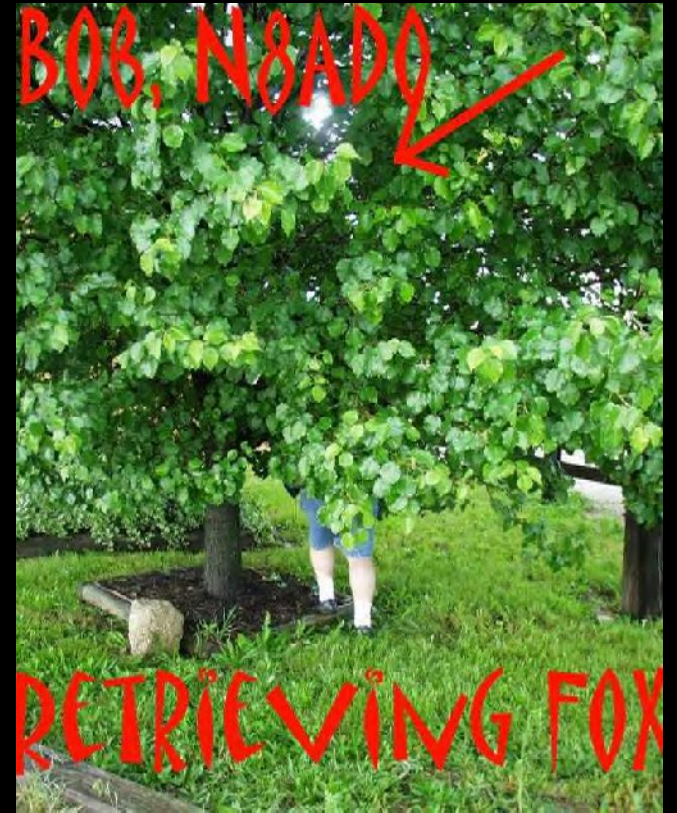
Can You Find  
the Fox?





?

These Foxes are REALLY  
hidden!

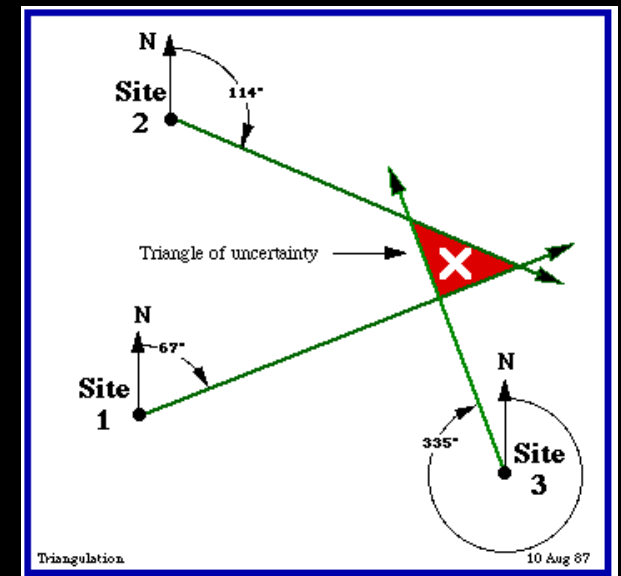
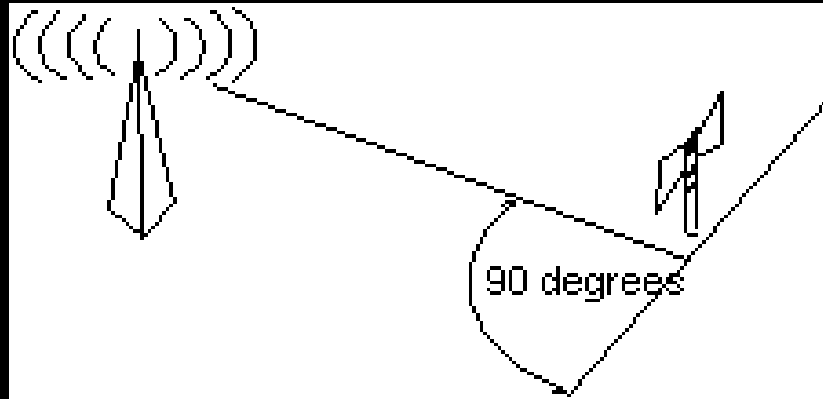


# Morse Code Signals the Presence of Hidden Transmitters

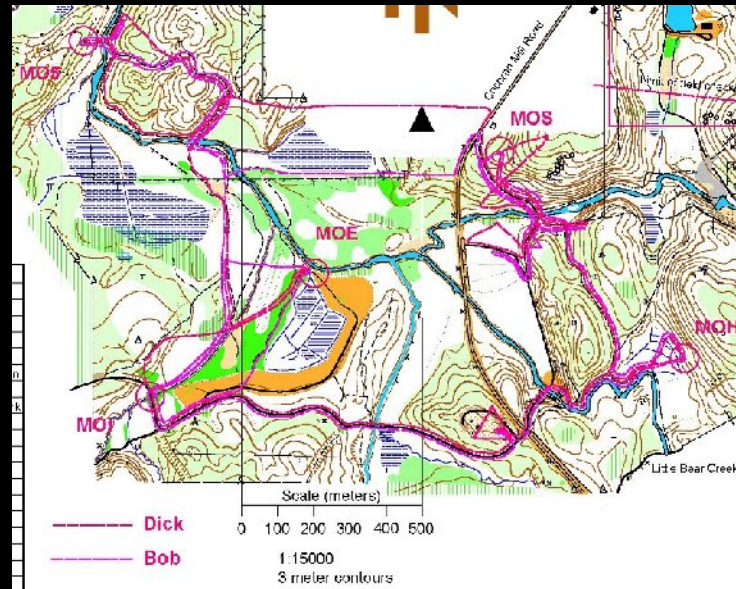




- So You'll Need to Learn Map & Compass



# To Find Several Hidden Transmitters!



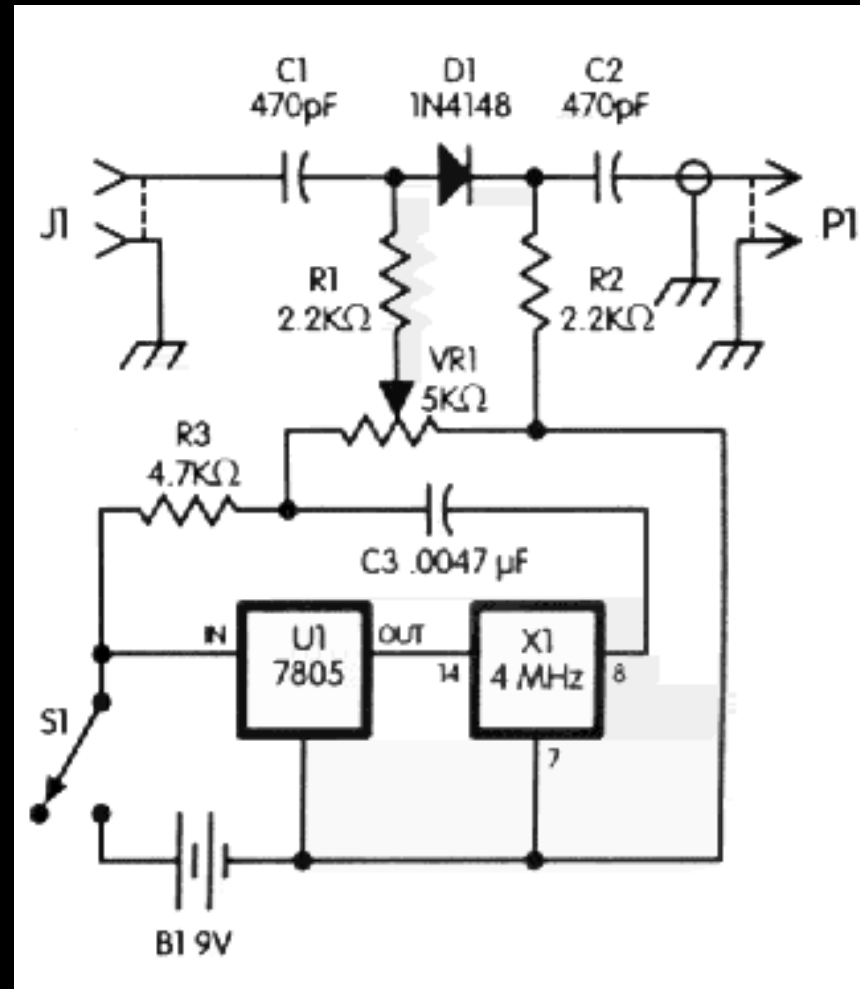
On Your Way to  
The Finish Line!



# Finding Transmitters Requires Sensitive Electronic Listening Devices

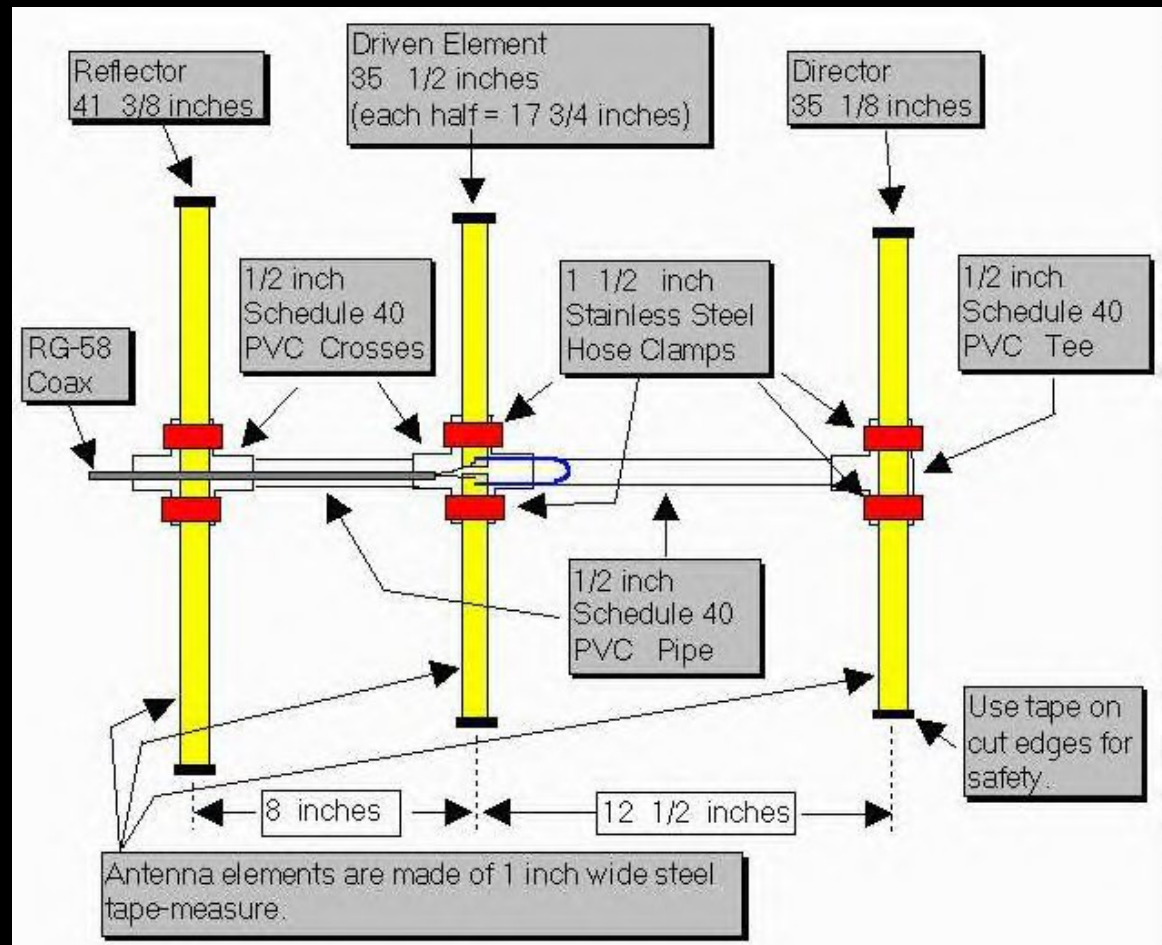


- So You'll Learn about Electronic Schematics



RDF Attenuator Project

## ■ And RDF Antenna Building



Three Element Tape Measure Beam



## ■ Components and Kit Building

### Parts list of the offset attenuator

C1,2 470 pF ceramic disc 272-125 C3 .0047  $\mu$ F ceramic disc 272-130 R1,2 2.2K 1/4 watt 271-1325 R3 4.7K 1/4 watt See Text D1 1N4148 signal diode 276-1122 J1 UG-1094 BNC socket 278-105 VR1 5K audio taper potentiometer 271-1720 S1 Toggle switch 275-625A U1 7805 regulator (+5V) 276-1770 X1 4.0 MHz oscillator RSU11321221 Battery connector 270-325 Knob 274-424 BNC cable 278-964 AWG 24 bare wire 278-1341





# Where Do We Go T- Hunting?

- Parks



## ■ School Campuses



Our First Foxhunt will be at PCC!

## ▪ In the Country



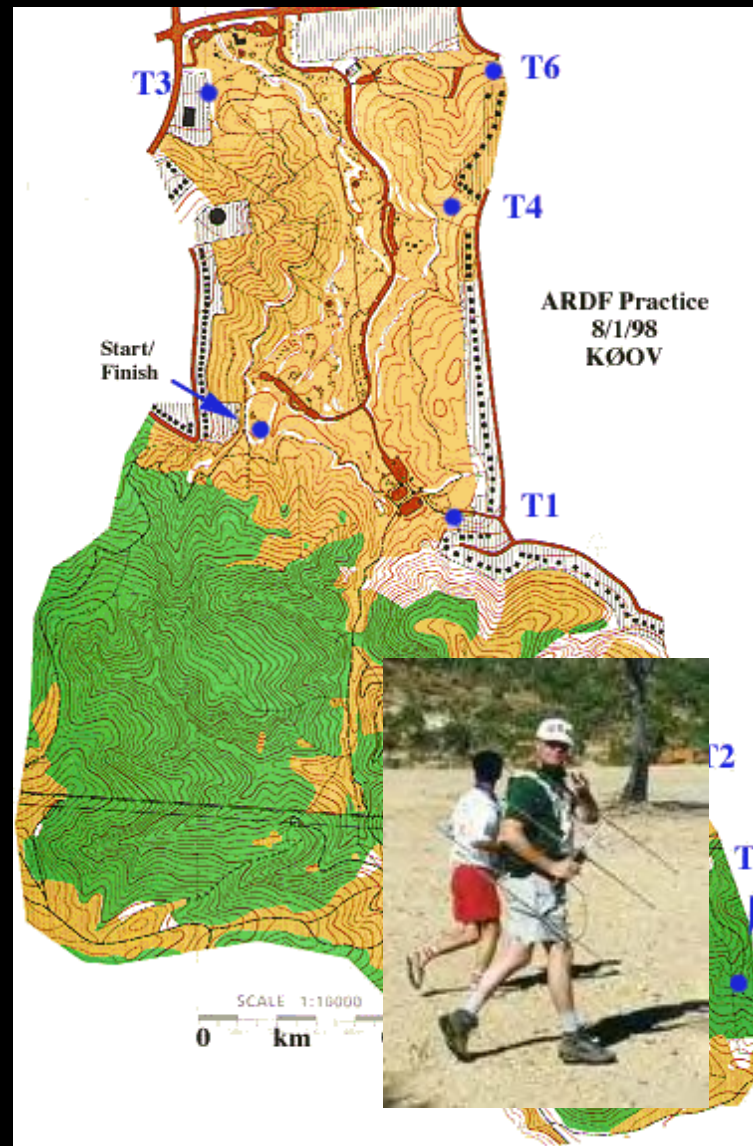
Yes, That's Frost on the  
Ground!

## ■ In Urban Areas





## ■ In Suburban Areas



## ■ In the Snow !

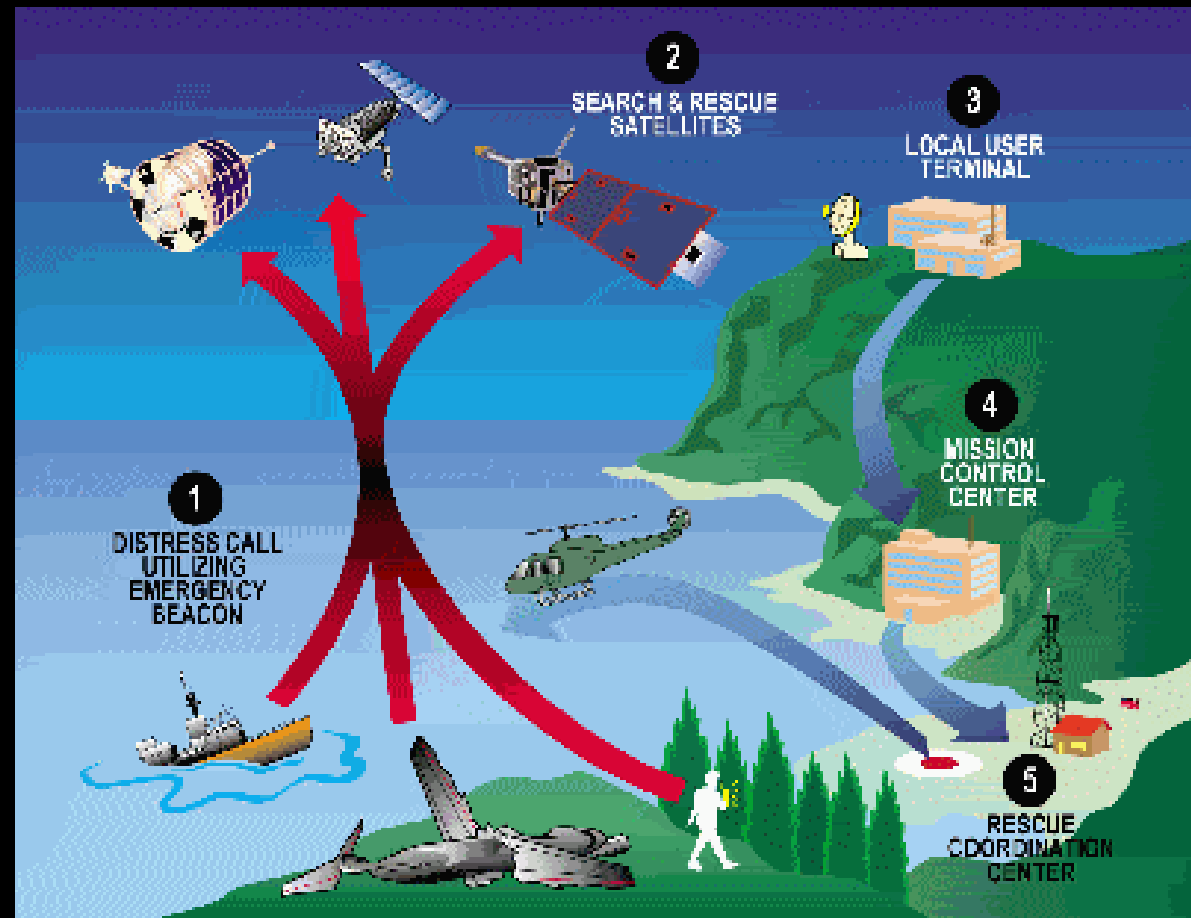


# RDF Saves Lives!

- Fact : Since 1982 over 11,000 lives have been rescued worldwide using RDF-based technology, and over 4,000 lives have been saved in the United States alone!



# Signals from the Ground are “heard” by Search & Rescue Satellites



**Emergency beacons are used to transmit distress signals on either the 121.5, 243 or 406 MHz frequencies.**



# The Types of Emergency Locator Systems

- Emergency Position Indicating Radio Beacons
- Emergency Locator Transmitters
- Personal Locator Beacons



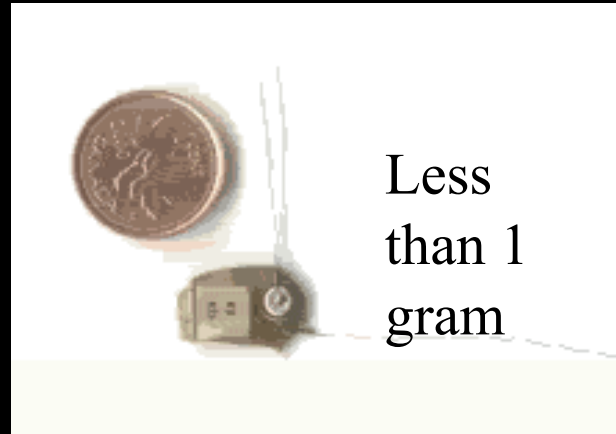
# Bio-Tracking of Endangered Birds Using RDF

Burrowing Owl



Saw whet Owl

# Transmitters Used in Bio-Tracking



Less  
than 1  
gram

Minature transmitters



Aquatic transmitters



Mammal transmitters

# House Arrest Radio Transmitters



Ankle Bracelet  
Transmitters

Radio  
Frequency  
Tracking



# Amateur Radio Direction Finding Gear Taken to the Max!



# Mobile T- Hunters in Action



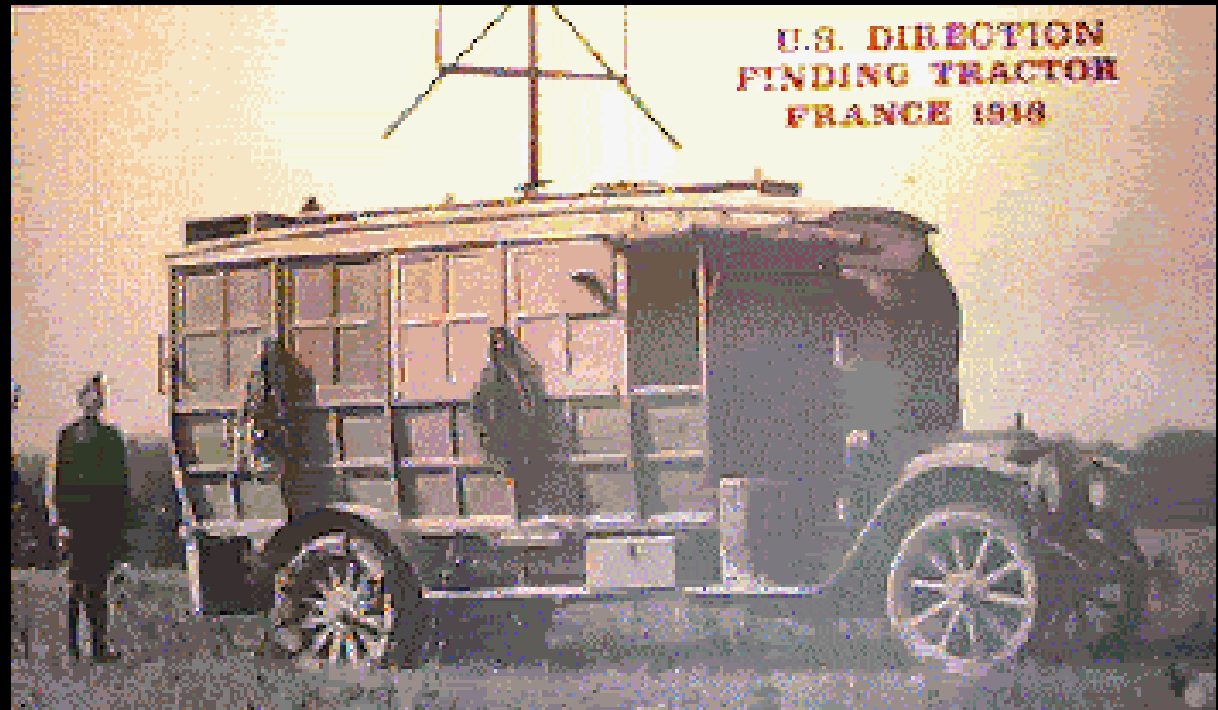




WOW!



Maybe T-Hunting hasn't changed all that much!





# Let's Go T-Hunting!



Come  
Join In  
the  
Fun!

# Let's Go T-Hunting!

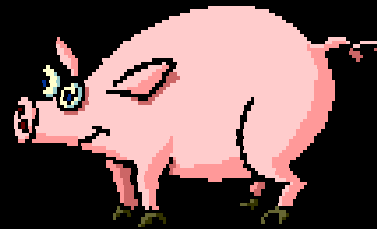


This program was prepared by:  
Mark Hayden, KF6DSA

# Online RDF Resources

- Joe Moell's Website: [www.homingin.com](http://www.homingin.com)
- “Transmitter Hunting – Radio Direction Finding Simplified” , by Joe Moell  
<http://members.aol.com/homingin/THRDFSinfo.html>

# HamStar



# Productions

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