

# Anchorage Amateur Radio Club

Next Meeting May 4<sup>th</sup>, 7:00 PM



## MAY PROGRAM

A presentation will be given by Dr. Peter Olson, State of Alaska climatologist, on Global Warming and the potential effects on Alaska.

Also Sam Albanese, from the National Weather Service office will be coming to speak to us about the use of Amateur Radio in the National Weather Service and the weather spotter program.

## GPS, Coordinate Systems and Datums in HAM RADIO

by Heather Hasper, KL7SP

If you are like many amateur radio operators, you have explored modes of communication that require you to utilize Global Positioning System (GPS) coordinates. These activities could include Satellite communications, Automated Position Reporting Systems (APRS),

Whether you are using GPS for general HF operations with your beam or to contact the International Space Station when they make a pass over the sky, you will need to know your location and what coordinate system your location is being calculated in so that you can accurately report your ham stations physical location and position. In an effort to prepare for Field Day and some of our summer activities including antenna installations, public service events, and transmitter hunts, let's take a few moments to try and understand what determines a stations physical location.

### How do I know what my Latitude and Longitude is?

Maybe you just go to QRZ.com or the FCC website and look up a call sign and use their Lat/Long locations. Have you ever compared how accurate the database is to your GPS unit? Have you looked up a station that is down the street or 1/2 a mile away and noticed they have the same lat / long as yours?

If you answered yes, you probably noticed that the QRZ database is limited. While working on our ARES Geographic Information Systems (GIS) data-

base, I noticed this. So I sent an email inquiry to QRZ.com management asking what type of coordinate system they use for their Latitude and Longitudes. I was told *"Our database is based only upon the zip code, not the actual address. You will find that all records within the same zip code will show the same coordinates."* So what this means is all addresses i.e. Ham Stations within the same zip code have the same Lat/Long listing on their website. So you are thinking, well isn't the QRZ.com database based on the FCC database? Yes, even the FCC only determines your location based upon your zip code not your street address or physical location. With that in mind, how many of you know your true location in GPS and could relay it to another station if needed?

The latitude longitude coordinate system uses angular measurements to describe a position on the surface of the earth. The system has been in use, with little change, since the astronomer Ptolemy used them in his first world atlas in A.D. 150. Mariners and aviators have been the primary users of latitude/longitude in the past. The system is used on a world wide basis and many different types of maps have lat/lon markings. Recently, the availability of inexpensive Global Positioning System receivers has made position information available to many more people than ever before. With that comes the need to understand how coordinate systems work, and how to relate them to points on a map.

First lets define a few terms:

**Coordinate Systems:** a coordinate system is simply a unit of measurement. It is a method of representing points in a space of given dimensions by coordinates. It can be applied mathematically in x, y, components (2 dimensional) or X, Y, Z, components (3 dimensional) and many others when you get into Quantum physics.

Latitude, Longitude and height are the most commonly used coordinate system today and represents a system of celestial points in a space of given dimensions. The Prime Meridian and the Equator are the reference planes used to define latitude and longitude.



## Latitude

Lines of latitude measure north-south position between the poles. The equator is defined as 0 degrees, the North Pole is 90 degrees north, and the South Pole is 90 degrees south. Lines of latitude are all parallel to each other, thus they are often referred to as parallels.



The memory rhyme I use to help remember that lines of latitude denote north-south distance is: *"Tropical latitudes improve my attitude"*

One degree of latitude is 60 nautical miles, 69 statute miles or 111 km.

One minute of latitude is 1 nautical mile, 1.15 statute miles, or 1.85 km.

## Longitude

Lines of longitude, or meridians, run between the North and South Poles. They measure east-west position. The prime meridian is assigned the value of 0 degrees, and runs through Greenwich, England. Meridians to the west of the prime meridian are measured in degrees west and likewise those to the east of the prime meridian are measured to by their number of degrees east.



The memory rhyme I use to help remember that lines of longitude denote east-west distance is: *"Lines of **LONG**-itude are all just as **LONG** as one another."*

With this saying in my mind, I picture all of the longitudinal meridians meeting at the poles, each meridian the same length as the next.

For those mathematicians out there: The geodetic latitude (there are many other defined latitudes) of a point is the angle from the equatorial plane to the vertical direction of a line normal to the reference ellipsoid. The geodetic longitude of a point is the angle between a reference plane and a plane passing through the point, both planes being perpendicular to the equatorial plane. The geodetic height at a point is the distance from the reference ellipsoid to the point in a direction normal to the ellipsoid. There are three common formats out there for Latitude and Longitude, they are:

|                |                              |
|----------------|------------------------------|
| DDD° MM' SS.S" | Degrees, Minutes and Seconds |
| DDD° MM.MMM'   | Degrees and Decimal Minutes  |
| DDD.DDDDD°     | Decimal Degrees              |

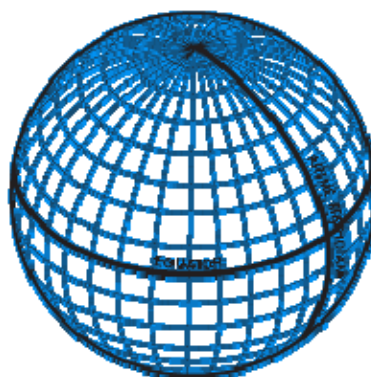
They are represented by:

|   |         |
|---|---------|
| ° | Degrees |
| ' | Minutes |
| " | Seconds |

### Which format should you use?

First off, if you are working with other people who have agreed upon a format to use, then you should probably use that format. Next, you will want to look at the maps, lists of coordinates, and any software you may be using. If you can find a consistent format among them, your work will be easier. You can set your GPS to display any one of these three formats. Locations can be entered into the GPS with the selected format, and then by switching the display format setting, viewed in a different form.

Often the N-S and E-W designators are omitted. Positive values of latitude are north of the equator, negative values to the south. Watch the sign on the longitude, most programs use negative values for west longitude, but a few are opposite. This saves a programmer from having to type in a minus sign before most of their longitude values.



I frequently choose to use the Degrees and Decimal Minutes format, even though the USGS maps I'm using are marked in Degrees, Minutes and Seconds. The markings on the map are all at either 0, 15, 30, or 45 seconds. By remembering the "quarter minute conversions" of 0.00, 0.25, 0.50, and 0.75, I can quickly do the conversions in my head.



### What is a DATUM?

A datum describes the model that was used to match the location of features on the ground to coordinates and locations on the map. A geodetic datum is defined as: "A set of constants specifying the coordinate system used for geodetic control, i.e., for calculating the coordinates of points on the Earth."

A set of constants for calculating the coordinates of points on the earth. Datums define the size and shape of the earth and the origin and orientation of the coordinate systems used to map the earth. Hundreds of different datums have been used to frame position descriptions since the first estimates of the earth's size were made by Aristotle. Datums have evolved from those describing a spherical earth to ellipsoidal models derived from years of satellite measurements. Modern geodetic datums range from flat-earth models used for plane surveying to complex models used for international applications, celestial mechanics which completely describe the size, shape, orientation, gravity field, and angular velocity of the earth. While cartography, surveying, navigation, and astronomy all make use of geodetic datums, the science of geodesy is the central discipline for the topic.

Datums and the coordinate reference systems based on them were developed to describe geographic positions for surveying, mapping, and navigation. Through a long history, the "figure of the earth" was refined from flat-earth models to spherical models of sufficient accuracy to allow global exploration, navigation and mapping. True geodetic datums were employed only after the late 1700s when measurements showed that the earth was ellipsoidal in shape. Prior to satellite mapping technology, the best approximation of the shape of the earth was the mathematically calculated geoid, which evolved into slightly flattened spheroids or ellipsoids. Geographic coordinate systems use a spheroid to calculate positions on the earth. A datum defines the position of the spheroid relative to the center of the earth. As surveying technology improved and data acquisition increased worldwide, the mathematical formulas and the related parameters used to describe the shape of our irregular earth continually improved and were expressed in spheroids such as Everest 1830, Airy 1849, Clarke 1866, Clarke 1880, and Krasovsky 1940. A lot of Alaska's older maps utilize the Clarke 1866 datum for reference.

Referencing coordinates to the wrong datum can result in position errors of hundreds of meters. Different nations and agencies use different datums as the basis for coordinate systems used to identify positions in geographic in-

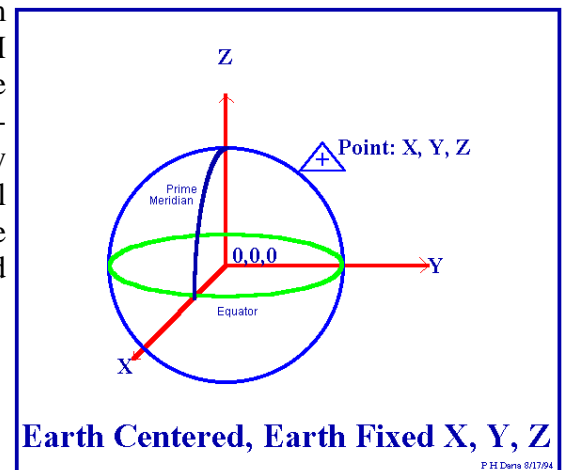
formation systems (GIS), precise positioning systems, and navigation systems. The diversity of datums today and the technological advancements that have made possible GPS measurements within less than 1 meter accuracies requires careful datum selection and careful conversion between coordinate systems in different datums. If your ham shack is calculated incorrectly, you may not be able to make contact with another station because your beam is off by a cumulative error, or when you go to map your station on Google earth and it shows up in the middle of the Susitna River or Cook Inlet when it is really about 200 feet to the left or right of the coordinates shown. That might be a good time to re-assess your location and see if you calculated your location accurately. We would not want an airplane using precision approach, a method of navigation, trying to find the end of the runway in a winter storm or instrument meteorological conditions to make the same mistake or have that margin of error resulting in a crash. While ham radio does not need to be as precise, accuracy does count!

### What are NAD 27 and NAD 83?

The North American Datum of 1927 (NAD 27) is "The *horizontal control datum* for the United States that (was) defined by (a) location and azimuth on the Clarke spheroid of 1866, with origin at (the survey station) Meades Ranch." ... The geoidal height at Meades Ranch (was) assumed to be zero. "Geodetic positions on the North American Datum of 1927 were derived from the (coordinates of and an azimuth at Meades Ranch) through a readjustment of the triangulation of the entire network in which Laplace azimuths were introduced, and the Bowie method was used." ([Geodetic Glossary](#), pp. 57)

### How do the horizontal datums differ?

The NAD 27 was based on the Clarke Ellipsoid of 1866 and the NAD 83 is based on the Geodetic Reference System of 1980. Every map that shows a geographic coordinate system such as UTM or Latitude and Longitude with any precision will also list the datum used on the map.





The NAD 27 was computed with a **single survey point, MEADES RANCH in Kansas**, as the datum point. More than 30 years ago, satellites began acquiring remote imagery. As GPS, a satellite-based location system, matured and became accessible to the public, the need to extend and better define the earth's spheroid and associated datums became more pressing. In 1980, a new spheroid, the Geodetic Reference System (GRS80), was developed from satellite measurements. Instead of defining the earth from surface measurements linked horizontally and related vertically to mean sea level, this new mathematical approximation was derived from a point located out in space. The NAD 83 was computed as a geocentric reference system with no datum point, based on a geocentric origin and the *Geodetic Reference System in 1980*; i.e. the center of the earth as calculated by the celestial mass of earth at that time. This spheroid and its associated datums define the earth's shape by measuring and triangulating from an outside perspective and use the mass center of the earth as an absolute origin. Using the GRS80 spheroid, new datums were developed both regionally and worldwide.

NAD 83 has been officially adopted as the legal horizontal datum for the United States by the Federal government, and has been recognized as such in legislation in 44 of the 50 states including ALASKA. The computation of the NAD 83 removed significant local distortions from the network which had accumulated over the years because of magnetic deviation using the original observations, and made the NAD 83 much more compatible with modern survey techniques. "This datum, designated as NAD 83, is the new geodetic reference system. ... NAD 83 is based on the adjustment of 250,000 points including 600 satellite Doppler stations which constrain the system to a geocentric origin."

### **What is WGS 84? Does it change?**

Worldwide, all GPS measurements are now based on the WGS84 datum. WGS 84 is the World Geodetic System of 1984. It is the reference frame used by the U.S. Department of Defense (DoD) and is defined by the National Geospatial-Intelligence Agency ([NGA](#)) (formerly the National Imagery and Mapping Agency) (formerly the Defense Mapping Agency). WGS 84 is used by the DoD for all its mapping, charting, surveying, and navigation needs, including its GPS "broadcast" and "precise" orbits. WGS 84 was defined in January 1987 using Doppler satellite surveying techniques. It was used as the reference frame for broadcast GPS Ephemerides (orbits) beginning January 23, 1987. At

0000 GMT January 2, 1994, WGS 84 was upgraded in accuracy using GPS measurements. The formal name then became WGS 84 (G730) since the upgrade date coincided with the start of GPS Week 730. It became the reference frame for broadcast orbits on June 28, 1994. At 0000 GMT September 30, 1996 (the start of GPS Week 873), WGS 84 was redefined again and was more closely aligned with International Earth Rotation Service (IERS) Terrestrial Reference Frame (ITRF) 94. It is now formally called WGS 84 (G873). WGS 84 (G873) was adopted as the reference frame for broadcast orbits on January 29, 1997. In the Continental United States the difference between WGS 84 and NAD 27 can be as much as 200 meters.

### **So what DATUM do I use?**

#### **How to select a Geographic Coordinate System.**

Most GPS receivers come out of the box set to use latitude/longitude coordinates. And many GPS users never consider that there may be other coordinate system that would better meet their needs. I would urge you to investigate the UTM / MGRS (Universal Transverse Mercator / Military Grid Reference System - I'll refer to it as UTM) coordinate system. Many land based users will find it to be easy to use and well suited to their needs. As much as I like using UTM, there are some circumstances where lat/long is a better choice.

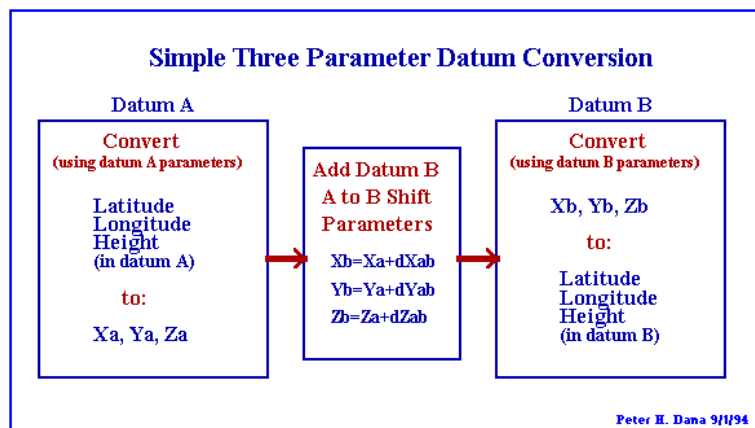
Hundreds of geodetic datums are in use around the world. The Global Positioning system is based on the World Geodetic System 1984 (WGS-84). Parameters for simple XYZ conversion between many datums and WGS-84 are published by the Defense mapping Agency. Many amateur radio software programs have incorporated these conversions into their programs so you the ham operator only need to insert your current coordinates. To do this, you need to know what datum your GPS default settings used to acquired the coordinates. Most modern GPS units are using the modern federal NAD83 however some older units or units that have been used may be set in NAD 27 or WGS 84 or State plane coordinate systems. So be sure to go into the setup menu of your GPS unit and set the datum to be consistent with whatever map you may be using for your operations whether ham radio, satellite communications or flight operations. On a USGS topographic map the datum information is in the fine print at the bottom left of the map. The datum will always be NAD 27. There may be information on how many meters to shift a position to convert it to NAD 83. Think of this as the error that will be introduced if you leave your GPS unit set to WGS 84.

A dashed cross in the SW and NE corners of the map gives a visual indication of the difference between the two datums. If you have somehow set your GPS to use the Borneo Datum of 1818, it's hard to say how far off you position may be. If you are coordinating with aircraft, they will likely have their datum set to WGS 84, as most aviation charts now use WGS 84. You should always set your GPS unit's datum to match the datum of the map you are using. Should you worry about the difference in datums? Typically a pilot will not have any difficulty locating you on the ground if you can get them within several hundred meters of your location. If you are engaged in a mission that requires more precision, then your datums should match. Let's just say that this "datum thing" is something you need to pay attention to.

### Datum Conversions

Datum conversions are accomplished by various methods. Complete datum conversion is based on seven parameter transformations that include three translation parameters, three rotation parameters and a scale parameter.

Simple three parameter conversion between latitude, longitude, and height in different datums can be accomplished by conversion through Earth-Centered, Earth Fixed XYZ Cartesian coordinates in one reference datum and three origin offsets that approximate differences in rotation, translation and scale.



### I have heard rumors of a new reference system/datum. What are NGS's plans?

Between 1987 and 1997, the National Geodetic Survey, in cooperation with other Federal, State and local surveying agencies has conducted a resurvey of the United States using Global Positioning System (GPS) observations often referred to as the High Accuracy Reference Networks (HARNs). All 50 states, American Samoa, Guam, Puerto Rico and the Virgin Islands have now been connected with a network of A-order and B-order horizontal control points. Continued improvements in

GPS technology and requirements from users of spatial data will eventually require a transition to an improved global reference frame based on the International Terrestrial Reference Frame (ITRF). Positions relative to ITRF differ from the existing North American Datum of 1983 (NAD 83) by approximately 1 meter in horizontal position and 1 meter in ellipsoidal height. NGS already publishes ITRF coordinates for all Continuously Operating Reference Stations (CORS)<sup>1</sup>, and will over the next 3-5 years implement an adjustment to include the HARNs and other GPS data that have been submitted to NGS for adjustment and publication. NGS will continue to maintain and improve NAD 83 as the official datum of the United States, until such time as it will no longer support requirements for surveying, mapping and navigation. NGS is currently conducting workshops and seminars around the country to educate data users concerning these and other improvements to the National Spatial Reference System.

### Why does the reference frame change for GPS orbits?

GPS orbits are computed from data collected by a global network of receivers coordinated by the International GPS Service for Geodynamics (IGS). The accuracy of the GPS orbits depends on many factors, including the accuracy of the coordinates of the data collection sites. The earth's surface is not fixed and rigid like an egg shell. It consists of many sections, or plates, which move slowly over time in various directions and rates in a process called crustal motion. Scientists have been studying this movement for several reasons. This includes wanting to know where land masses are with respect to one another and where they will be in the future. Since IGS sites are located on these crustal plates, we must be able to estimate where the sites are when the data are collected.

The International Earth Rotation Service (IERS) periodically computes the positions of the sites for a given date. The sites define the IERS, International Terrestrial Reference Frame (ITRF) and the date defines the epoch. IERS also computes the movements (or velocities) of the sites to estimate where the sites will be in the "near" future with some degree of accuracy. The ITRF is an internationally accepted standard, and is the most accurate geocentric reference system currently available. The longer the sites operate, the better the positions and velocities can be determined and the more accurate the orbits will be. Hopefully this explanation will help you in determining your true position and station location. □

1. Anchorage International installed a CORS station in 2004

The older I get, the more I enjoy Saturday mornings. Perhaps it's the quiet solitude that comes with being the first to rise, or maybe it's the unbounded joy of not having to be at work. Either way, the first few hours of a Saturday morning are most enjoyable.

A few weeks ago, I was shuffling toward the garage with a steaming cup of coffee in one hand and the morning paper in the other. What began as a typical Saturday morning turned into one of those lessons that life seems to hand you from time to time. Let me tell you about it:

I turned the dial up into the phone portion of the band on my ham radio in order to listen to a Saturday morning swap net. Along the way, I came across an older sounding chap, with a tremendous signal and a golden voice. You know the kind; he sounded like he should be in the broadcasting business. He was telling whom-ever he was talking with something about "a thousand marbles." I was intrigued and stopped to listen to what he had to say.

"Well, Tom, it sure sounds like you're busy with your job. I'm sure they pay you well but it's a shame you have to be away from home and your family so much. Hard to believe a young fellow should have to work sixty or seventy hours a week to make ends meet. It's too bad you missed your daughter's "dance recital" he continued. "Let me tell you something that has helped me keep my own priorities." And that's when he began to explain his theory of a "thousand marbles."

"You see, I sat down one day and did a little arithmetic. The average person lives about seventy-five years. I know, some live more and some live less, but on average, folks live about seventy-five years.

"Now then, I multiplied 75 times 52 and I came up with 3900, which is the number of Saturdays that the average person has in their entire lifetime. Now, stick with me, Tom, I'm getting to the important part.

It took me until I was fifty-five years old to think about all this in any detail", he went on, "and by that time I had lived through over twenty-eight hundred Saturdays." "I got to thinking that if I lived to be seventy-five, I only had about a thousand of them left to enjoy. So I went to a toy store and bought every single marble they had. I ended up having to visit three toy stores to round up 1000 marbles. I took them home and put them

inside a large, clear plastic container right here in the shack next to my gear."

"Every Saturday since then, I have taken one marble out and thrown it away. I found that by watching the marbles diminish, I focused more on the really important things in life.

There is nothing like watching your time here on this earth run out to help get your priorities straight."

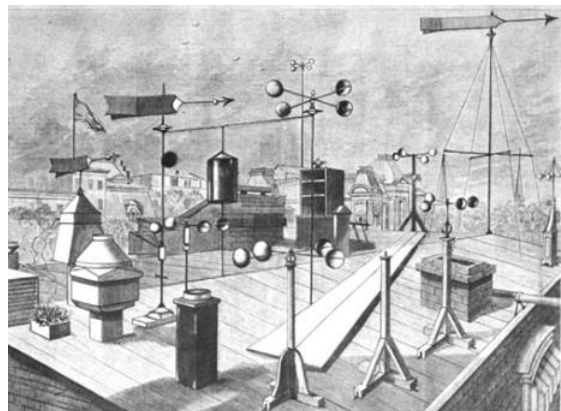
"Now let me tell you one last thing before I sign-off with you and take my lovely wife out for breakfast. This morning, I took the very last marble out of the container. I figure that if I make it until next Saturday then I have been given a little extra time. And the one thing we can all use is a little more time."

"It was nice to meet you Tom, I hope you spend more time with your family, and I hope to meet you again here on the band. This is a 75 Year old Man, K9NZQ, clear and going QRT, good morning!"

You could have heard a pin drop on the band when this fellow signed off. I guess he gave us all a lot to think about. I had planned to work on the antenna that morning, and then I was going to meet up with a few hams to work on the next club newsletter.

Instead, I went upstairs and woke my husband up with a kiss. "C'mon honey, I'm taking you and the kids to breakfast." "What brought this on?" he asked with a smile. "Oh, nothing special, it's just been a long time since we spent a Saturday together with the kids. And hey, can we stop at a toy store while we're out? I need to buy some marbles.

And so, as one smart bear once said..."If you live to be a hundred, I want to live to be a hundred minus one day, so I never have to live without you." - Winnie the Pooh.





# KL7AA Club Business

## Board Meeting Minutes

ANCHORAGE AMATEUR RADIO CLUB

BOARD MEETING

**April 17, 2007**

540 WEST INTERNATIONAL ROAD

Anchorage, AK

(**UNAPPROVED** at Printing)

The meeting was called to order at 7:02 PM by Vice President Jim Larsen

A quorum was established: (2 Officers, 7 Board members needed)

### **BOARD MEMBERS PRESENT:**

Vice President Jim Larsen AL7FS, Secretary Richard Tweet KL2AZ, Activities Director Richard Kotsch WL7CPX, Paul Spatzek WL7BF, TJ Sheffield KL7TS, Jim Wiley KL7CC, Piet van Weel KL2CR, Diane Olson KL1MY, Frank Pratt KL7RX, Michael O'Keefe KL7MD, Susan Woods NL7NN, John Orella KL7LL

### **NON-VOTING MEMBERS PRESENT**

Trustee Keith Clark KL7MM

### **EXCUSED**

Richard Block KL7RLB, Kathleen O'Keefe KL7KO, Heather Hasper KL7SP

### **UNEXCUSED**

Edward Moses KL1KL

### **GUESTS**

None

### **SECRETARY REPORT**

Previous Board meeting minutes for March were presented. Motion made Paul Spatzek WL7BF, seconded Diane Olson KL1MY to accept the minutes as printed. Motion carried unanimously.

### **TREASURER'S REPORT**

Printed Treasurer's report was presented for review. Motion made Diane Olson KL1MY, seconded Piet van Weel KL2CR to accept the Treasurers report as printed. Motion carried unanimously.

### **VE REPORT**

Jim Wiley reported that we have growing numbers of Ham operators thanks to the no code requirement. A special exam session was held for an individual who had participated in the remote testing process to obtain his Technician license and who successfully upgraded to General class locally. Jim reported on an upcoming VEC convention in July. No date has been set yet.

Jim explained the history of the online testing process. This was started 5 years ago when the idea was explored to allow for testing over the internet due to the remoteness of areas and the shortage of Volunteer Examiners in these areas. Discussions followed with the National Commission of the Volunteer Examiner Coordinators and the FCC. Examinations were redefined to include teleconference type examination sessions. The VE's worked with Alaska Pacific University to put a software testing package together, as well as develop an examination process. This includes using a trusted proctor (e.g. Chief of Police, State Trooper, Military Officer, and Educator) at the remote end and 3 VE's at the local Anchorage site.

Software and Communication issues have been challenges this process has faced and are ongoing, however issues have not compromised the testing process. The Technician Class questions have been uploaded and the General Class questions are to follow.

Jim has requested assistance with this project from one or two volunteers to assist with this project and to help with issues such as error trapping, upgrading, etc. If this becomes a smooth process, there is a chance we could provide testing for other areas of the country with shortages of VE's.

### **OLD BUSINESS**

#### **NWS MOU:**

Jim Larsen indicated that he would begin working on the draft next week. He has printed out the MOU for the National Office, but wishes to tailor it to the local office. Michael O'Keefe noted the online training is still available and he will ask on status of certifications for members who participated in the March ARES National Weather Service training. Piet noted that at the recent science fair, a NWS judge indicated that amateur radio equipment was being installed and their goal was to have as many people as possible obtain their Technician Class license.

#### **MOU Municipality of Anchorage – EOC:**

Michael O'Keefe noted that the MOA ARES/RACES MOU is signed and complete. Michael will be meeting this week to discuss an operation parallel to the CERT program how to liaison with the community and in turn be representative to the EOC.

### **Flea Market 2007 September 15-16<sup>th</sup>, 2007**

Diane Olson is waiting on a response from the senior center for availability of space. Original contact was made last week. Tentative date is September 15<sup>th</sup>-16<sup>th</sup>.

### **HAMFEST 2008:**

Michael O'Keefe reported that Heather has been working with people in the lower 48 to promote our club and convention. Mike indicated that discussions indicate that a decision needs to be made as soon as possible for vendor planning purposes. August and September dates were discussed and noted that organizations in the lower 48 have concerns of doing cross continental ham fests. AES and HRO have indicated that they need maximum advance notice to plan. They indicated they would need to know this April to plan for 2008.

General discussion noted that to approve a convention without an estimated cost would be a mistake. Facilities, lodging, security etc. costs are all unknowns that need to be known prior to committing.

Jim Wiley noted that selecting a date for a convention does not commit us to having the convention. Vendors need time to plan for attendance and conventions and events DO get cancelled. Jim noted that a conflict exists where the AARC is looking to purchase property/building for a club facility, the AARC may not have the finances available to support a large scale convention.

Diane Olson suggested a September date to reduce the cost of the event.

Richard Kotsch noted that he supports the 2008 convention, but suggested that maybe it could be held in 2009 in conjunction with the 50<sup>th</sup> anniversary of Alaska's Statehood as it may provide a bigger draw

T.J. Sheffield asked what we are characterizing the event as, ham fest or convention? The vendors may have concerns as to the type of event.

Piet van Weel questioned whether the AARC should be the umbrella organization for this or seek other clubs participation. Jim Wiley noted that the AARC is the only club with the resources to put an event such as this on, but can request labor and assistance from other groups. Piet suggested that the convention could be run as a non-profit convention with funds being solicited from the AARC.

August and September dates were discussed.

Jim Larsen noted that he does not support a big/expensive convention. Jim noted that Heather has worked very hard on this. Jim noted that the previous AARC board turned down the idea of a big convention and this basically revisits the previous board's decision. Jim would support approving a date but need costs, venue and external established.

Michael O'Keefe noted that we were too late for 2007 and that Heather proposes providing info and dates to vendors to insure a good Hamfest with vendor participation from National vendors.

Jim Wiley noted that if we are considering a large scale convention, we should seriously investigate attracting as many lower 48 people as possible. The thought is to combine an Alaskan Vacation with a Hamfest. We should get a feel for the possible number of attendees and get the Alaska Travel Industry involved.

Motion made Piet van Weel KL2CR, seconded Jim Wiley KL7CC to recommend that the preferred date for the ham convention for 2008 be August 16<sup>th</sup> and 17<sup>th</sup>. Motion carried with zero no votes and 1 member abstaining.

### **Packet Stations / APRS Kits / Digipeaters / 2 Voice Repeater Kits**

Paul Spatzek is moving ahead slowly with this project. A brief discussion was held as to the possibility of working other than Thursday evenings. Paul is flexible on days and times.

### **Real Estate Purchase**

Jim Larsen and Dick Block will be getting together this week to finalize the Rowan lease. Jim is hoping to work with Dick on potential properties and noted that nothing can be purchased without membership approval and the AARC has money to spend this year and is still researching what is available.

A general discussion was held reviewing Article XIV of the AARC bylaws.

Keith Clark asked what our relationship was with Alaska Pacific University and suggested that we suggest to APU that maybe they could donate land to the AARC and the AARC could build a club building on that property.

Jim Larsen requested that if anyone has suggestions, that they be forwarded to Kathleen O'Keefe or himself.



## **NEW BUSINESS**

### **Program for May Meeting**

Richard Kotsch announced a presentation by Dr. Peter Olson, State of Alaska climatologist, on Global Warming and the potential effects on Alaska is scheduled for the May 2007 meeting, however Richard has not been successful in delivering the letter of invitation and Dr. Olson has indicated there may be a scheduling issue. Mead Treadwell is scheduled to speak at the June meeting on the International Polar Research Project. Jim Wiley suggested a representative from HAARP for a meeting presentation and Piet van Weel suggested a recap of the Weather Spotting Program by the National Weather Service at a membership meeting.

### **Approvals, KL7AA in the next month**

Michael O'Keefe requested approval to use KL7AA, CCV and tower trailer for a demonstration at the Girl Scout Jamboree to be held at the Palmer Fairgrounds next month. Confirmation of the dates is coming and it was noted that MARA will also be participating in the Jamboree and will be setting up a Packet station. Motion made Jim Wiley KL7CC, second by Diane Olson KL1MY, to participate in this jamboree

T.J. Sheffield noted that a log must be kept while operating.

### **Grants**

None Presented

### **State Fair**

We still need to find a new champion to lead volunteers and coordinate our State Fair activities. We need to have someone to recruit volunteers, help co-ordinate set up and tear down of facilities. Jim Larsen will provide all information required to coordinate this effort. A review of the 2007 calendar indicates the State Fair to be held from August 23<sup>rd</sup> to September 3<sup>rd</sup> with setup to be done on August 16<sup>th</sup>.

### **General Discussion**

Michael O'Keefe informed the board on cleanup progress and status of the CCV garage. The admin area is ready for the installation of radio gear, the landlord has asked when the installation of the tower will occur, and he and Bruce McCormick are working on the alarm and electrical systems as well as relocating a door. Michael is looking for volunteers to pack up the AARC trailer on Saturday at 1pm.

General discussion on the need for a computer to keep

backup copies of financials. Jim Larsen noted this isn't required as the Treasurer has a copy; a copy is stored locally and another remotely on the AARC server.

Jim Wiley announced he still has antennas and towers available for sale.

General discussion on tow weight of AARC trailers. Michael O'Keefe noted the SCRC trailer has a 2500lb max load and the AARC trailer has a 3500+ max load rating.

Motion made Diane Olson KL1MY, seconded Piet van Weel KL2CR, that the meeting be adjourned. Motion passed unanimously. Meeting adjourned at 8:20PM.

Respectfully submitted as recorded on 4/17/07 by:  
Richard Tweet, KL2AZ, Secretary

## **GENERAL HAM RADIO CLASS**

We are going to start a General Course May 9<sup>th</sup> at the MTA building. If anyone is interested, have them check the KL7JFU web page for details.

The text for the General Course is "ARRL General Class License Manual", ISBN 0-87259-920-5, ARRL Book Number 9205, cost \$19.95.

The instructors will be Richard Olsen and Michael Heusser and (hopefully) with guest presenters on special topics.

The class is scheduled to start on May 9<sup>th</sup> at 7:00 PM, MTA building in Palmer. We ask that people pre register for the course.

If you have questions, feel free to contact Mike Heusser, KL7SG at 357-3041 for more information.

**WHAT:** GENERAL AMATEUR RADIO Course

**WHERE:** MTA Building  
PALMER, AK 99503

**CONTACT:** Mike Heusser, KL7SG

**EMAIL:** [www.kl7jfu.com](http://www.kl7jfu.com)



## General Meeting Minutes

### **Anchorage Amateur Radio Club**

Membership Meeting Minutes

April 4, 2007

Alaska Pacific University

*Unapproved at the Time of Printing*

The General meeting was called to order by President Kathleen O'Keefe (KL7KO) at 7:18 p.m. (late starting because of computer problems for presentation).

John Phelps (KL4FD) gave us a very interesting High Speed Multi Media Presentation consisting of an 54 slide show. WiFi and D-Star are currently being used the most. Networks 802.11 and D-Star pros and cons were discussed. 802.11 Not for mobile but base to base. D-Star can be mobile. Idea from John in January 2004 to provide the 'services' needed for TCP/IP. The Solution to the Internet Paradox version 0.1 (beta) release to be in April 2007. For more information go to [www.HSMMnet.org](http://www.HSMMnet.org).

7:52 pm. Keith Clark reminded us all about Field Day and urged people to sign up. Mike and Tom from the Valley gave us an update on the recent outside visit to Milwaukee, Wisconsin Hamfest. Armed with information from the Anchorage Visitors Bureau they (and Gordon West) asked people and vendors whether they would be interested in an Alaska Hamfest 2008. 6 or 7 vendors have shown very strong interest. Pictures from their trip will be in the next newsletter. Please take the survey on our website if you haven't already. The survey will close the end of April.

Please look at the sign up sheets up front and volunteer for what you can. We need help for Walk for Hope, Women's triathlon, State Fair, Hamfest and Mayors' Marathon.

Treasurers' Report Heather Hasper: Gave us an overview and reminded us that 1% of our total December 31<sup>st</sup> goes to IRS.

State climatologist Dr. Olson will be the May speaker for our meeting.

Raffle winners for April were Jim Wiley, a printed circuit tool kit; Thalia, a light up magnifying glass; Susan Woods, solder and electrical tape; T.J., plastic case; Sheila VanWeel, wind up flashlight and Fielder, a small Pelican Box.

Meeting adjourned at 8:32 pm.

Respectfully Submitted, Diane Olson, Board Member

## Help Make Field Day a Success!

You may have noticed a call-sign or two associated with some of the Bonus Point categories. It means that operator has agreed to become a "Station Captain" for that activity. Those are the individuals who will make sure that aspect of Field Day happens!

As Station Captain you will learn a specific aspect of our emergency communications response capability and will soon be able to teach others.

Station Captains are fully supported by experienced personnel assigned to your team – we won't let you fail! Please consider volunteering for Field Day and becoming a Station Captain.

Field Day Co-Chairmen

Keith Clark, KL7MM

TJ Sheffield, KL7TS

**It's up to us to make it happen!**





# FIELD DAY 2007

**WHEN:** JUNE 23rd & 24th, 2007

**WHERE:** Romig Jr. High School  
(in conjunction with Mayor's Marathon)

## FIELD DAY 2007

What is so rare as a day in June?

How about an entire weekend filled with amateur radio activity?

The last full weekend in June provides an opportunity for us to showcase the capabilities of the Amateur Radio Service.

At Field Day we'll have a chance to demonstrate these resources to the public, elected officials, served agencies and other amateur radio operators world-wide.

### When and Where?

This year Field Day takes place in conjunction with the Mayor's Midnight Sun Marathon.

Just like the last time these two events took place on the same weekend, we'll be setting up behind West High School (adjacent to Romig Junior High).

Set-up begins Friday evening, 22 June 2007, at approximately 1600 hrs.

The event officially kicks-off at 10:00AM Saturday with continuous operation for the next 24 hours.

Talk-in on Friday and Sunday (while we're driving) will be on the Grubstake repeater, 147.330, plus shift (+) and a 103.5 Hz tone.

After set-up we'll move to the KL7G portable repeater on 449.650, minus (-) with no tone, for the remainder of the weekend.

Although Kincaid Park is "electrically quiet" and

we've been there for the past several years, the Park is OUT this year because of road construction. The contractor is working mostly nightshifts and they don't want anybody moving around during construction.



### Our Approach

What is the real purpose behind Field Day? For the past four years, Field Day Co-Chairmen Keith Clark, KL7MM and TJ Sheffield, KL7TS have taken a hard look at this question.

We believe that in addition to food, fun and camaraderie, there is a serious side to Field Day.

This event provides an opportunity to design and test enhancements to our communications systems, develop operator skills, continue relationships with served agencies and showcase our capabilities to elected officials and the general public.

Our national association for Amateur Radio, the ARRL, sponsors Field Day and encourages us along



# FIELD DAY 2007 cont.

This makes sense to us, because in a real emergency, extending our operating time by conserving batteries and fuel would be a critical factor in our success.

However, to be heard by Lower 48 stations we choose to run the full legal limit of 1,500 watts, powered by diesel generators.

Other clubs choose to run lower power levels (150 watts or less) and pick up the power multipliers.

CW (Morse code) and Digital QSO's are worth twice as much as SSB (voice) contacts because of their efficient use of bandwidth. These signals simply get through better. The ARRL encourages us to operate these modes by assigning higher point values to the contacts.

## **Bonus Points**

Another way the ARRL encourages us to expand our capabilities and showcase our operating skill is by offering Bonus Points. Many Bonus Point categories have a solid basis in emergency communications preparedness.

## **What's the Point?**

Going after Bonus Points can help improve or expand our communications capability, develop operator skills and showcase amateur radio's unique ability to provide a specialized communications service:

## **Young Operators**

20 points per valid contact initiated by an operator 18 years or younger, for a maximum of 100 points.

The ARRL encourages youth participation and this category offers a method for youngsters to experience the "magic" of radio.

## **Emergency Power**

100 points (each) for putting our SSB and CW stations on the air, using generator power.

This may sound like a "no-brainer" but we get credit for operating off the commercial grid.

# AMATEUR RADIO

## **W1AW Bulletin**

100 bonus points for copying the special Field Day bulletin transmitted by W1AW (ARRL Headquarters) during its operating schedule.

In an emergency, we may need to gather information from a variety of sources, including the ARRL Headquarters station. The ARRL encourages us to correctly copy CW, SSB or Digital signals from an "official" source.

## **Satellite QSO**

100 bonus points for successfully completing at least one QSO via an amateur radio satellite during the Field Day period.

In Alaska, we're lucky to have (mostly) unfettered access to many of the low earth orbit (LEO) satellites. This capability could be utilized to support remote "backcountry" communications.

## **Alternative Power – KL7TS**

100 bonus points for Field Day groups making a minimum of five QSO's without using power from commercial mains or petroleum driven generators.

This means an "alternate" energy source of power, such as solar, wind, methane or hydro, and includes batteries charged by natural means (not dry cells).

The ability to operate for an extended period without commercial power or fuel source is a worthy goal for any amateur radio operator.

## **Non-Traditional Mode Demonstration No. 1**

100 points for each demonstration (up to three) for setting up a demonstration of a non-traditional mode of amateur radio communications.

Here is an opportunity to show-and-tell the public and elected officials what unique communications services we can provide.

We'll demonstrate an Automatic Position Reporting System (APRS) tracker on a bicycle mobile, transmitting course, speed and position information to a topographical (topo) map display.

# FIELD DAY 2007 cont.

## **Non-Traditional Mode Demonstration No. 2**

Here we will demonstrate fast-scan (real-time) television. Amateur television (ATV) is the most requested service by governmental and served agencies.

## **Non-Traditional Mode Demonstration No. 3**

Radio direction finding (RDF) demonstrations will highlight our ability to triangulate on a radio signal.

## **Message Origination to Section Manager**

100 bonus points for origination of a National Traffic System (NTS) style formal message (similar to the ones discussed earlier in this month's newsletter) to the ARRL Section Manager or Section Emergency Coordinator by your group from its site.

Traffic handling is a basic skill that every amateur radio operator should possess, but many operators have had no exposure to this time-honored system.

Even seasoned operators are no doubt rusty with these techniques. Up to now the radio club has **NEVER** earned bonus points in this category!

## **Message Handling**

10 points for each formal NTS style message originated, relayed or received and delivered during the Field Day period, up to a maximum of 100 points (ten messages).

Properly serviced copies of each message must be included with the Field Day report.

Traffic handling (see above) is encouraged by the ARRL. Up to now the radio club has **NEVER** earned bonus points in this category!

## **Site Visit by an Elected Official – KL2CR**

A 100-point bonus may be claimed if an elected government official visits your Field Day site as the result of an invitation issued by your group.

Close ties with elected officials will be invaluable in a communications emergency and may even help us with more mundane issues such as antenna tower regulations!

## **Site Visit by a Served Agency**

A 100-point bonus may be claimed if your Field Day site is visited by a representative of an agency served by ARES in your local community (Red Cross, Sal-

vation Army, local Emergency Management, law enforcement, etc) as the result of an invitation issued by your group.

Here the ARRL is encouraging us to develop a close working relationship with served agencies to facilitate communications in a real emergency.

## **Media Publicity**

100 bonus points may be earned for attempting to obtain publicity from the local media.

The media can “make-or-break” public opinion with respect to amateur radio. In our community, a good relationship with the media may become very important as zoning and laws change over time.

## **Public Information Table - KL7SP**

100 bonus points for a Public Information Table at the Field Day site. The purpose is to make appropriate handouts and information available to the visiting public at the site.

## **Public Location**

100 bonus points for physically locating the Field Day operation in a public place (shopping center, community park, school campus, etc). The intent is for amateur radio to be on display to the public.

As you see, the Bonus Point categories could challenge any group to improve or expand their radio communications capabilities!

## **Get-On-The-Air (GOTA) Station**

The ARRL encourages us to provide an opportunity for new (or generally inactive) operators to Get On The Air.

Each year the ARRL raises the ante for this aspect of Field Day and each year the club struggles.

We have yet to come up with a viable plan to give a GOTA station a fighting chance but we haven't given up on anything, so stand by for news!



# KL7AA PAST FIELD DAY SCORES

| KL7AA Class 2F                    | Station Captain | Multiplier                                       | 2004 QSO's | 2005 QSO's | 2006 QSO's | 2007 QSO's | 2004 Points  | 2005 Points  | 2006 Points  | 2007 Points  | Prior Delta |
|-----------------------------------|-----------------|--|------------|------------|------------|------------|--------------|--------------|--------------|--------------|-------------|
| SSB Station                       | ---             | 1  | 420        | 201        | 280        |            | 420          | 201          | 280          |              | 79          |
| CW Station                        | ---             | 2  | 260        | 210        | 521        |            | 520          | 420          | 1,042        |              | 622         |
| Digital Station                   | ---             | 2  | ---        | ---        | ---        |            | ---          | ---          | ---          |              | ---         |
| G-O-T-A Station                   | ---             | " 3 "  | 81         | 4          | 50         |            | 81           | 4            | 50           |              | 46          |
| Satellite / ISS                   | KL4YFD          |  | 6          | 2          | 3          |            | 6            | 2            | 3            |              | 1           |
| Alternative Power                 | KL7TS           |  | 5          | 26         | 9          |            | 5            | 26           | 9            |              | (17)        |
| VHF / UHF                         | ---             |  | 2          | ---        | ---        |            | 2            | ---          | ---          |              | ---         |
| Infrared Station                  | KL1MY           |  | ---        | ---        | ---        |            | ---          | ---          | ---          |              | ---         |
| Weatherport Tent                  | ---             |  | ---        | ---        | ---        |            | ---          | ---          | ---          |              | ---         |
| Computer Updates                  | ---             |  | ---        | ---        | ---        |            | ---          | ---          | ---          |              | ---         |
| Subtotal                          |                 |  | 774        | 443        | 863        |            | 1,034        | 653          | 1,384        |              | 731         |
| KL7AA Bonus Points                | Station Captain | Description                                      |            |            |            |            | Bonus Points | Bonus Points | Bonus Points | Bonus Points | Prior Delta |
| Youth Operators (18 & under)      | ---             | Five youth operators (make one QSO each)         |            |            |            |            | ---          | 100          | 20           |              | (80)        |
| G-O-T-A Station Bonus             | ---             | 20 QSO's per operator + dedicated GOTA coach     |            |            |            |            | ---          | ---          | 100          |              | 100         |
| Visit by Elected Official         | KL2CR           | Invitation (with follow-on site visit)           |            |            |            |            | ---          | 100          | ---          |              | (100)       |
| NTS Message to SM / SEC           | ---             | Send one formal message (via NTS)                |            |            |            |            | ---          | ---          | ---          |              |             |
| NTS Message Traffic               | ---             | Send 10 formal messages (via NTS)                |            |            |            |            | ---          | ---          | ---          |              |             |
| W1AW Field Day Bulletin           | ---             | Copy HQ bulletin using CW, SSB or digital        |            |            |            |            | ---          | 100          | 100          |              |             |
| Demonstration - APRS              | ---             | Setup / operate (club owned equipment)           |            |            |            |            | 100          | 100          | ---          |              | (100)       |
| Demonstration - RDF               | ---             | Setup / operate (club owned equipment)           |            |            |            |            | ---          | 100          | 100          |              |             |
| Demonstration - ATV               | ---             | Setup / operate (club owned equipment)           |            |            |            |            | 100          | 100          | 100          |              |             |
| Media Publicity                   | ---             | Secure media publicity (bonafide attempt)        |            |            |            |            | 100          | 100          | 100          |              |             |
| Visit by Served Agency            | ---             | Invitation (with follow-on site visit)           |            |            |            |            | 100          | 100          | 100          |              |             |
| Set-up in a Public Place          | ---             | Expand effort to "draw in" visitors?             |            |            |            |            | 100          | 100          | 100          |              |             |
| Information Table / Visitor's Log | KL7SP           | Set-up information table / manage sign-in sheets |            |            |            |            | 100          | 100          | 100          |              |             |
| Satellite QSO's                   | KL4YFD          | Make at least one satellite QSO                  |            |            |            |            | 100          | 100          | 100          |              |             |
| Alternative Power QSO's           | KL7TS           | Make at least 5 QSO's using alternative power    |            |            |            |            | 100          | 100          | 100          |              |             |
| 100% Emergency Power              | ---             | Service generators, route cable to spider boxes  |            |            |            |            | 200          | 200          | 200          |              |             |
| Submitted via the Web             | ---             | Prepare / submit Field Day package               |            |            |            |            | 50           | 50           | 50           |              |             |
| Subtotal                          |                 |  |            |            |            |            | 1,050        | 1,450        | 1,270        |              | (180)       |
| Claimed Total                     |                 |  |            |            |            |            | 2,084        | 2,103        | 2,654        |              | 551         |
| Prior Year Delta                  |                 |  |            |            |            |            | ---          | + 1%         | + 26%        |              |             |





## Editor's Corner

If you have a topic that you would like to see in the newsletter please feel free to email us the article or idea and we will research the topic.

Thank you to those who submit ideas and topics,  
editor@kl7aa.net

+ = + = + = + = + = + = + = + = +

### News Letter Submissions,

**Information or corrections:** Submissions must be received 2 weeks before meeting

Email: [editor@kl7aa.net](mailto:editor@kl7aa.net)

Mail: PO BOX 101987, Anchorage, AK 99510

+ = + = + = + = + = + = + = + = +

**NEWSLETTER ARTICLES:** All articles from members and interested persons are very welcome. If you wish to submit any articles, jokes, cartoons, please have it typed or neatly handwritten. It can be submitted by mail, computer disk or E-mail to the newsletter editor at the address listed above. Submissions must be in the hands of the editor



## KL7AA Mail Reflector

If you like to **stay in touch on KL7AA news** and other posts of local interest.

Step #1: First point your browser to:

<http://mailman.qth.net/mailman/listinfo/kl7aa>

Step #2: On the web page you will see a section titled "Subscribing to KL7AA". Enter your e-mail address in the "Your email address" entry box.

Step #3: Pick a password for your account and enter it in the box marked "Pick a password" and then enter the same password in the box marked "Reenter password to confirm". This password will be used to change your settings on the list such as digest mode, etc.

Step #4: If you would like the e-mails in daily digest form click yes on the line marked "Would you like to receive list mail batched in a daily digest?"

Step #5: Click on the "Subscribe" button below the information that you just entered.

# FOR SALE

I have a Rohn 45 fold over in a 45 foot configuration it can be expanded to 55 or 65 ft. I wish to sell or trade the fold over components only retain the 10ft sections and go up another 40-50 feet. I would like to talk to anyone interested or that has good 10'Rohn 45 sections to sell or trade.

Tom Hardwick

907-279-1067

907-301-6588

**FOR SALE:** 55 foot crank up tower, MFG US Tower along with 5 element 20 M Telrex beam, 11 element 6M Telrex beam, Comet vertical 2/ 70CM antenna, and Alfaspid worm drive rotor, \$2000.

15 M 5 element and a 10 M 5 element Telrex beams, \$250 for both

Tail twister with control box, \$125.00.

HamM rotor with control box \$100.00

Old test equipment too numerous to mention

Folding display tables, folding chairs

Old manuals

And all kinds of tools and parts

Jim Tvrdy, KL7CDG

3601 121st Avion Ave

Call 907-345-3063 for direction and appointment

## Cool First Contact Award

What better way to commemorate a ham's first QSO than with a First Contact Certificate? If you make a contact with a ham and he/she tells you that you are his or her first contact, then send them a certificate. Send a certificate for a first contact on HF. ARRL always has First Contact Certificates available to anyone requesting them.

See <http://www.arrl.org/FandES/ead/award/certificate/>.



**AMATEUR RADIO**

# ARES - Section 7, District 7 (Anchorage, ALASKA)



**25th Annual  
Gold Nugget Triathlon**  
May 20, 2007 at 9:00AM

## Mission statement:

Dedicated to amateur radio as it pertains to disaster services. The history of amateur radio operators' involvement in sending life-saving information in and out of disaster areas [and] providing help during and after earthquakes, floods, hurricanes and tornadoes. "HAM's have been there to assist local, state, and federal agencies and relief organizations such as the American Red Cross and Salvation Army." When All Else Fails, Amateur Radio.

## Public Service Events

We will be looking for volunteers for these events coming up in **MAY 2007**:



## WALK for HOPE:

May 5, 2007

Contact: John Lynn, KL7CY;  
johnlynn@gci.net

Note that the MARA Hamfest falls on the same day so thanks in advance for volunteering!

Be prepared for both rain and shine and to stay for the whole day. You may want to bring a folding chair and umbrella. You should also have your own water and snacks, although some food may be provided. Not only are you providing a public service, but also developing your skills and equipment in case you have to respond to a real emergency.

**AMATEUR RADIO**



This will be one of the largest Gold Nugget Races on record. The GNT is an all women's event and a qualifyiWith 1200 participants in age groups from six years of age to 76, we will need several volunteers to help with the communications of the event. There are currently 453 first time runners. That is more than one third of the participants.

The event begins at 9:00 AM on Sunday, May 20th. Volunteers are needed to relay race positions of the leaders, participants having any medical or injuries, and provide priority or emergency communications as needed.

We will be using the YL sponsored PARKA repeater located on Mt. Gordon Lyon as the primary communications, on 147.30+ (PL: 100 Hz) We will be also using simplex for communication and hope to incorporate some volunteers willing to utilize APRS on bicycle mobile stations to provide live feedback to the race directors and race headquarters at Bartlett High School.

If you would like to volunteer and do not have the radio equipment needed, a radio can be provided to you for this event however coordination for this should take place prior to the day of the race.

If you are interested in volunteering for this event please **Contact:** Heather Hasper, KL7SP; kl7sp@arrl.net or 907-275-7474.

## ARES TRAINING: May 19, 2007

Our training this month will be at the Carr-Gottstein Building at Alaska Pacific University at 9:30. In preparation for the summer field work season and Field Day, we will be learning and discussing Ropes, Knots, guys and anchors used in securing antennas and towers in both portable, temporary and permanent foundations.

**ARES District 7 Contact Information**  
Michael O'Keefe, KL7MD  
[DEC7 at alaskaares.org](http://DEC7.at.alaskaares.org)



















# May 2007



**Anchorage Amateur Radio Club**  
**PO BOX 101987**  
**Anchorage, AK 99510-1987**  
[www.KL7AA.net](http://www.KL7AA.net)

**ANCHORAGE ARES**  
**DISTRICT 7 & 5**  
**KL7AA & KL7JFU**

| Sun   | Mon                    | Tue                             | Wed                             | Thu   | Fri   | Sat   |
|---|------------------------|---------------------------------|---------------------------------|---|---|---|
| SCRC: South Central Radio Club<br>& QRP club meetings held at the<br>Denny's at Bragaw and DeBarr                     |                        | 1                               | 2<br>HAM<br>CLASS 6:30          | 3<br><br>       | 4<br><br>AARC<br>Meeting 7PM                                     | 5<br><br>Walk for<br>Hope                        |
| 6   | 7<br>HAM<br>CLASS 6:30 | 8                               | 9<br>HAM<br>CLASS 6:30          | 10<br><br>     | 11<br><br>SCRC<br>Meeting 7PM                                    | 12<br><br>PARKA<br>meeting<br>11 AM<br>EARS: 3PM |
| 13  | 14                     | 15<br>AARC Board<br>Meeting 7PM | 16<br>MARA Board<br>Meeting 7PM | 17<br><br>    | 18<br>QRP<br>Meeting 7PM  | 19<br><br>ARES Training<br>930 - 1200 PM        |
| 20<br><br>Gold Nugget<br>Triathlon | 21                     | 22                              | 23                              | 24<br><br> | 25<br><br>MARA<br>Meeting 7PM                                  | 26  |
| 27  | 28                     | 29                              | 30                              | 31<br><br>EOC  | EARS: R1 North, Contact: Ron<br>Keesch: KL7YK@arrl.net<br>Parka, meets at Peggy's restaurant,<br>11AM Contact: Kathleen O'Keefe,<br>KL7KO, 243-4675 |   |

**ARES NET: Thursday Nights 8:00 PM 147.27+ PL: 103.5 or 443.30+ PL 103.5**

## Schedule of Events:



## ARES NETS:

**1st Thursday:** HT / Portable  
**2nd Thursday:** Mobile Madness  
**3rd Thursday:** RED CROSS  
**4th Thursday:** Emergency Power  
**5th Thursday:** EOC (Emergency Operations Center)

To add to the Calendar please contact: John Lynn at Johnlynn@gci.net

### 5/5 Walk for HOPE

Contact: John Lynn at Johnlynn@gci.net

### 5/5 MARA HAMFEST

PALMER Rail Depot; Contact: Tim Comfort, NL7SK

### 5/9 GENERAL HAM CLASS

Contact: Mike Heusser, KL7SG@arrl.net

### 5/20 Gold Nugget Triathlon

Contact: Heather Hasper, KL7SP@arrl.net







## Data You Can Use:



### 2007 Board of Directors

**President:** Kathleen O'Keefe, KL7KO [president at kl7aa.net](mailto:president@kl7aa.net)

**Vice Pres:** Jim Larsen, AL7FS [vicepresident at kl7aa.net](mailto:vicepresident@kl7aa.net)

**Secretary:** Richard Tweet, KL2AZ [secretary at kl7aa.net](mailto:secretary@kl7aa.net)

**Treasurer:** Heather Hasper, KL7SP [treasurer at kl7aa.net](mailto:treasurer@kl7aa.net)

#### **Activities Chairman:**

Richard Kotsch, WL7CPX [activities at kl7aa.net](mailto:activities@kl7aa.net)

**Trustee:** Keith Clark, KL7MM [trustee at kl7aa.net](mailto:trustee@kl7aa.net)

#### **Membership Chairman:**

Fred Erickson, KL7FE [membership at kl7aa.net](mailto:membership@kl7aa.net)

#### **News Letter Editor:**

Heather Hasper, KL7SP [editor at kl7aa.net](mailto:editor@kl7aa.net)

### Three Year Board Members

Frank Pratt, KL7RX kl7rx at arrl.net (3rd year)

Paul Spatzek, WL7BF Paul.Spatzek at acsalaska.net (2nd Year)

Michael OKeefe, KL7MD mok at gci.net (1st Year)

### One Year Board Members

Diane Olson, KL1MY, oldwoman\_69 at hotmail.com

TJ Sheffield - KL7TS, kl7ts at arrl.net

Edward Moses - KL1KL, kl1kl at ak.net

Jim Wiley - KL7CC jwiley at alaska.net

Piet van Weel - KL2CR pmvw at outwardfocus.net

John Orella: KL7LL, kl7ll at arrl.net

Susan Woods: NL7NN, NL7NN4606 at yahoo.com

Richard Block: KL7RLB, kl7rlb at clearwire.net

### AARC web page & Email contact addresses:

**Homepage:** <http://www.KL7AA.net/>

**Webmaster:** [webmaster at kl7aa.net](mailto:webmaster@kl7aa.net)

**Membership:** [membership at kl7aa.net](mailto:membership@kl7aa.net)

**Newsletter:** [editor at kl7aa.net](mailto:editor@kl7aa.net)

### News Letter Submissions, Information or corrections:

Submissions must be received 2 weeks before meeting

Email: [editor at kl7aa.net](mailto:editor@kl7aa.net)

Any AARC sponsored repeater, with or without an auto-patch, will always be open to all licensed amateur radio operators in the area who are authorized to operate on those frequencies.

### Anchorage & Mat Valley Area Repeaters-a/o Feb 28, 2007

#### KL7AA: Flattop Mountain 2,200 ft

146.94/34 MHz, 80 watts, auto-patch, 141.3 Hz PL

224.94/223.34, 25 watts, no patch, no PL

444.70/449.70, 25 watts, auto-patch, 103.5 PL

#### WL7CVG: Mount Susitna 4,396 ft

VHF: WL7CVG/R1 147.270/147.870 PL 103.5, no auto-patch

UHF: WL7CVG/R3 443.300/448.300 PL 103.5, no auto-patch

#### WL7CVF: Grubstake: Hatcher Pass 4,536 ft

VHF: WL7CVF/R1 147.330 / 147.930 PL 103.5 Hz (no patch)

UHF: WL7CVF/R3 443.900 / 448.900 PL 103.5 Hz (no patch)

#### KL7ION at Mt. Gordon Lyon: PARKA 3,940 ft

147.30 / 147.90, MHz - 80 watts, no patch, 141.3 Hz PL

KL7AIR Elmendorf AFB: EARS: 146.67/146.07, 107.2 Hz PL

#### KL7CC, Anchorage Hillside. SCRC & QCWA

146.97/.37 MHz, 30 watts, auto-patch, 103.5 Hz PL

#### KL7M Anchorage Hillside

147.21 / 147.81 MHz, on IRLP, 97.4 Hz PL

KL5E Chugiak: 147.15/147.75, 123.0 Hz PL, auto-patch

KL7JFU, KGB road, MARA: 146.85/146.25, auto-patch, no PL

Palmer IRLP: 146.64/.04, simplex patch, no PL

Mile 58.3 Parks Highway IRLP: 147.09/.69 MHz, 97.4 Hz PL

#### KL3K, Girdwood - IRLP

146.76 / 146.16 MHz, 25 watts, no patch, 97.4 Hz PL

KL7AX: South Anchorage IRLP - 146.79/ 146.19 MHz, 100 Hz PL

#### WL7CWE Anchorage IRLP

2 Meter: 146.82/146.22MHz PL 103.5

6 Meter: 51.65 output / 51.15 input, PL 103.5Hz

70 cm: 444.85/449.850 MHz PL: 103.5 Hz (Node 3400)

#### South Central Area Simplex Frequencies

146.52 MHz Calling and Emergency frequency

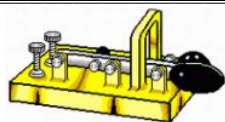
147.57 MHz National DX Calling / Coordinating frequency

146.49 MHz Anchorage area simplex chat

146.43 MHz Mat-Su Valley simplex chat

147.42 MHz Peninsula simplex chat

146.58 MHz Simplex IRLP - Wasilla Lake



### HF

**Alaska Sniper's Net** 3.920 MHz 6:00 PM daily

**Alaska Bush Net:** 7.093 MHz 8:00 PM daily

**Alaska Motley Net:** 3.933 MHz 9:00 PM daily

**ACWN (Alaska CW Net)** 3534, 7042 Daily @ 0700 -1000,

Net Purpose: Formal NTS traffic via CW.

**Alaska Pacific Net:** 14.292 MHz 8:00 AM M-F

**ERC HF Net:** 3.880 MHz - Sunday 8:30PM local

## Nets in Alaska:

The following nets are active in South-central Alaska:

### VHF

**ARES Net:** 147.27/87 103.5Hz - Thursdays at 8:00 PM local

**PARKA Net** 147.30/90, 141.3 HZ Thursdays at 7:00 PM local

**No Name Net:** 146.85/.25 repeater Sundays 8:00 PM  
and 1900 - 2400 Alaska Time - AL7N or KL5T monitoring.

**Big City Simplex Net:** 146.520, 446.0, & 52.525 FM

**Grandson of SSB Net:** 144.20 USB Mondays 8:00 PM local

**Statewide LINK ARES Net:**

147.27/87 103.5Hz Sunday 8:00 PM local



## Internet Links, the favorites from our readers:

AARC <http://www.KL7AA.net/>

SCRC <http://www.KL7G.org>

EARS <http://www.qsl.net/kl7air>

MARA <http://www.kl7jfu.com>

Moose Horn ARC <http://www.alaksa.net/~kl7fg>

ARES <http://www.qsl.net/aresalaska>

Practice Exams : <http://www.AA9PW.com>

Fairbanks AARC: <http://www.kl7kc.com/>

Yukon Amateur Radio Association:

<http://www.klondike.com/yara/index.html>

### Links for Propagation

<http://www.haarp.alaska.edu/>

<http://www.amqrp.org/misc/links.html>

QRP and Homebrew Links <http://www.AL7FS.us>

Solar Terrestrial Activity <http://209.130.27.95/solar/>

ARRL <http://www.arrl.org/>

Propagation Report Recording 566-1819

Please let us know if there are other clubs pages or good starting points that should appear here. **Report dead links or bad info to [editor@kl7aa.net](mailto:editor@kl7aa.net)**

### Regular HAM Gatherings:

**Tuesday Lunch, 11:30 AM:** Denny's on Denali behind Sears. Several old timers show for this and have lots of stories to share.

**Thursdays Brunch, 9:30 AM:** Brunch NW corner of Debarr and Bragaw at Birch Tree Dining. A great bunch of folks attend this one.

**Saturdays Breakfast, 7:30 AM:** Here is a good way to get started on the weekend. Come and meet with some of the locals and have a great breakfast at American Diner, at the SE corner of Arctic and International. Great Fun.

### Who Do I Contact to Join AARC

Fred Erickson KL7FE

12531 Alpine Dr

Anchorage, AK 99516-3121

E-mail: [membership \(at\) kl7aa.net](mailto:membership(at)kl7aa.net)

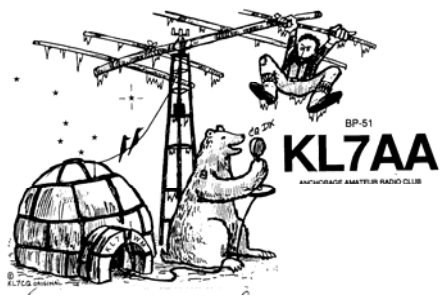
Phone number: 345-2181

Annual Dues are \$12 (prorated as appropriate)

Additional Member in same household is \$6.

Full Time Student is no charge.

Ask about Life Memberships



## MONTHLY EVENTS

**1<sup>st</sup> Friday each month: AARC general meeting - 7:00 PM** in the Carr-Gottstein Building, on the APU Campus. Talk in will be on 147.27+ repeater.

**1<sup>st</sup> Tuesday each month (except for holidays):**

**VE License Exam 6:30 PM**, at the Hope Cottage offices, 540 W International. Bring photo ID, copy of license (if any) and any certificates of completion. Contact: Jim Wiley, KL7CC 338-0662.

**2<sup>nd</sup> Friday each month: SCRC general meeting at 7:00 PM** at Denny's on Denali Street. Talk in on 147.27+.

**2<sup>nd</sup> Saturday each month: PARKA Meeting at 11:00 AM.** Polar Amateur Radio Klub is the only YL club in Alaska. All amateurs welcome. Peggy's, across from Merrill Field. Talk in on 147.30+.

**2<sup>nd</sup> Saturday each month (except for holidays):**

**VE License Exams at 2:00 PM.** at Hope Cottage 540 W. International. Be sure to bring photo ID, copy of license (if any) and any certificates of completion. Contact: Jim Wiley, KL7CC 338-0662.

**2<sup>nd</sup> Saturday of each month: EARS general meeting at 3:00 PM.** Meetings are held at R1 North. Contact info - PO Box 6079, Elmendorf AFB 99506 or email Ron Keech, KL7YK for information. EARS: 552-2664 (recording); Talk in on 146.67-. Email: [kl7air@qth.net](mailto:kl7air@qth.net) or [kl7yk@arrl.net](mailto:kl7yk@arrl.net)

**3<sup>rd</sup> Tuesday each month: AARC Board meeting at 7:00 PM** at Hope Cottage 540 W. International. All hams are invited and encouraged to attend.

**3<sup>rd</sup> Friday each month: Alaska QRP Club meeting 7:00 PM:** Hams with QRP (low power under 5 watts) and Homebrewing interests meet for a social meeting monthly. Meet at Denny's on DeBarr & Bragaw in the back room. Bring projects to share with the group. Hungry QRPers start showing up about 6PM. Info contact Jim Larsen, AL7FS, [JimLarsen2002 at alaska.net](mailto:JimLarsen2002@alaska.net) or 345-3190.

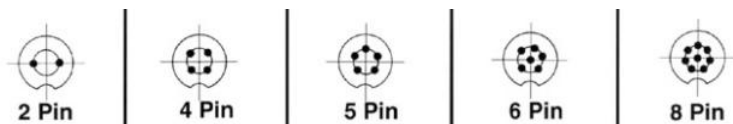
**3<sup>rd</sup> Saturday each month: ARES General meeting 9:30AM to 12:00 PM.** Call Michael O'Keefe, ANC DEC: [dec@kl7aa.net](mailto:dec@kl7aa.net) HM: 243-4675 for additional information. Also check for ARES Info at: <http://www.qsl.net/aresalaska/>

**4<sup>th</sup> Saturday of each month: Valley VE Testing at 7PM.** sessions will be held at the Wasilla Red Cross at 7 pm on the fourth Saturday of each month unless it is a major holiday weekend. Wasilla Red Cross is in the Westside Mall, next to Speedy Glass...it's just a click up from AIH hardware.

**The last Friday each month: MARA meeting at 7PM** Fire Station 61, located two blocks up Lucille Drive, from the Parks hwy. Talk-in help for the meeting can be acquired on either the 146.640 or 146.850 repeaters. Further details can be found by contacting Tim Comfort, NL7SK, [NL7SK at arrl.net](mailto:NL7SK@arrl.net).

# Connector of the Month

**Microphone connectors** are used in amateur and CB radios. The microphone is a transducer -- in other words, an energy converter. It senses acoustic energy (sound) and translates it into equivalent electrical energy.



Microphones require power to operate, as a general rule these types are described as condenser microphones. The power is used for internal pre-amplifiers and polarizing microphone capsules. If internal batteries are to be avoided then the only solution is to supply the power via the microphone signal cable.

The **8 PIN MIC PLUG** is typically used on amateur radio base station microphones. It plugs *into* the transceiver, but is considered "female" since the plug design has 8 holes in it. The chassis mounted jacks and inline jacks are useful for various projects such as Packet/PSK31 hook-ups. The goal is to have a microphone drive the radio with an appropriate signal level.

In wiring the connector, Pin #8 (center pin) is always the most difficult to solder, so we would recommend that you wire the connector pins in sequence starting with Pin #8 (reverse order). Be very careful not to fray any wires as they can cause pins to short when the cable is flexed. It would be best to use "heat shrink" or insulating tubing on the pins, if it is available.

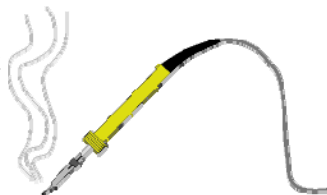
The electret is a modified version of the classic capacitor (or condensor) microphone, which exploits changes in capacitance due to mechanical vibrations to produce voltage variations proportional to sound waves. Whereas the condensor MIC needs an applied (phantom) voltage, the electret has a built in charge, and the few volts needed are to power the built-in FET buffer, not to create an electric field.

Microphone phasing is most important when two (or more) microphones are to be used close together, then mixed into a single channel, or when recording in stereo. If they are wired out-of-phase to each other, signal levels and tonal balance will be adversely affected, and can change abruptly with small movements of the sound source or the microphones. The term "out-of-phase" is used to describe a microphone that is wired with its polarity reversed with respect to another. While "out-of-phase" is not a technically correct expression when speaking of what is really polarity reversal, it is in such

common usage that we include it here to help you understand the idioms of audio.

Positive acoustic pressure on the diaphragm generates a positive voltage on Pin 2 of the 3-pin output connector or on the tip of a 1/4" plug. Of course, consistent phasing (polarity) must be preserved in all of the cables between the microphone and the electronics.

If you examine the male plug at the end of most electret condenser microphones, you will find a 1/8 inch (3.5 mm) stereo plug. It's very easy to jump to the conclusion that



the three terminals must be ground, signal, and power, most likely on the sleeve, tip, and ring, respectively. For the several microphones the plug is stereo, but the cable is mono. The tip and ring terminals are connected together within the molded plastic plug.

Typical electret condenser microphone capsule is a 2 terminal device (there are also 3 pin capsules) which approximates to a current source when biased with around 1-9 volt and routinely consumes less than half a milliamp. This power is consumed by a very small pre-amplifier built into the microphone capsule which makes the conversion of very high impedance source of the electret element itself and the cable which needs to be driven. Be aware that this impedance is swamped at signal frequencies by cable capacitance so that at 1kHz the assembly will exhibit an impedance of a few 10's of K.

Many older dynamic mics have a center tap of the transformer in the mic grounded to the body of the mic, and to the shield of the cable. This could short the phantom voltage to ground, and could fry the transformer. It is easy to tell if this is the case with your mics. An ohmmeter or continuity checker will tell you if there is a DC circuit between either pin #2 or #3 and the cable shield (pin #1) or the mic housing. If so, don't use that mic with the phantom turned on.



Do you have a connector that you would like to contribute? Email us the connector name and we can include it in the newsletter.

[Contact Us](#)



# ALASKA HAMFEST

## 36th ANNUAL ANCHORAGE HAMFEST

### WHEN:

Saturday, September 15th, 2007  
900 AM – 5:00 PM

### WHERE:

Anchorage Senior Center

### EVENTS Include:

- SPEAKERS
- VE TESTING
- RAFFLE PRIZES

### For More Details:

[www.kl7aa.net/hamfest](http://www.kl7aa.net/hamfest)

In an effort to attract National Vendors to Alaska, a date has been selected for a 2008 statewide HAMFEST. This event involves all radio clubs in Alaska and all amateur operators. The feedback we have received from National Vendors and speakers is a request for more than one year in advance notice of the date of our event.

**We will be promoting this event at Dayton 2007 and 2008. If you are planning to go to Dayton, your help promoting this event and Alaska would be appreciated.**

This will allow our vendors, and attendees to enjoy the many benefits of visiting Alaska during the summer months. While this will not meet everyone's schedule due to all the amateur activities and outdoor activities for HAM's during the summer months, it will be the best way to accommodate the National guests we hope to attract. If you are interested in helping plan this event please contact: KL7BK, Mike Romanello, at KL7BK (at) arrl.net for more information.

37th ANNUAL

## ALASKA 2008 HAMFEST

FCC & ARRL  
Guest Speakers



“THE FINAL FRONTIER”

Anchorage, ALASKA 2008

National  
Vendors

August 15th -  
August 18th, 2008

Mark your Calendars.  
Save The Date!

# ALASKA 2007 HAMFEST

With Summer schedules full of amateur radio projects, fishing, flying and all the summer projects that come with living in ALASKA, we are including a list of the 2007 HAM Festival's that we have been able to confirm in ALASKA. This allows all of us to plan on great attendance for these events to support your local amateur radio clubs as well as for anyone wishing to buy or sell used equipment to contact the coordinating club for more information. If you do not see your event listed, please email [editor@kl7aa.net](mailto:editor@kl7aa.net) to be added.

## MOOSEHORN AMATEUR RADIO CLUB

Is honored to announce  
The 3RD Annual  
Kenai Peninsula

## HAMFEST

Saturday, July 14th,  
10 AM to 5 PM.

At The Cook Inlet Academy –  
Private Elementary School  
45827 Kalifornsky Beach Road  
(Milepost 21), Soldotna

\*\*\*NOTE K-beach milepost numbers count  
down from Soldotna\*\*\*

### DIRECTIONS:

Coming from Anchorage on the Sterling Highway you enter into Soldotna down a hill and pass by Fred Meyers on the left and AK USA Credit Union on the right. Stay on the Sterling Hwy straight thru the first couple traffic lights. In a few blocks you will pass by Safeway and McDonald's on your right and go across The Kenai River (road construction at bridge).

Kalifornsky Beach Road is a right turn at the next stop light. Turn right at the light onto Kalifornsky Beach Road and continue for about 3-miles till you reach Cook Inlet Academy on your left - This is the Hamfest location. 500 feet before the Academy look for a sign printed with "HAMFEST" indicating you are near.

Talk-In on the 146.88/28 repeater

\$4 CASH Admission/Door Prizes.

### Grand prize:

**Kenwood TH-K2AT handheld radio.**

### HamFest Swap Meet.

Bring your stuff to sell.

\$10 for selling fee

(which includes \$4 admission for one person).

Table setup 9 to 10 AM.

Cash only for admission and table fee.

### PROGRAM:

- Presentation by Richard Strand KL7RA
- Demo of software defined radio by Ed Cole KL7UW
- Informal Meeting of the Alaska VHF-Up Group

Schedule has not been set up, plus more programs are in the works so check back for updates!

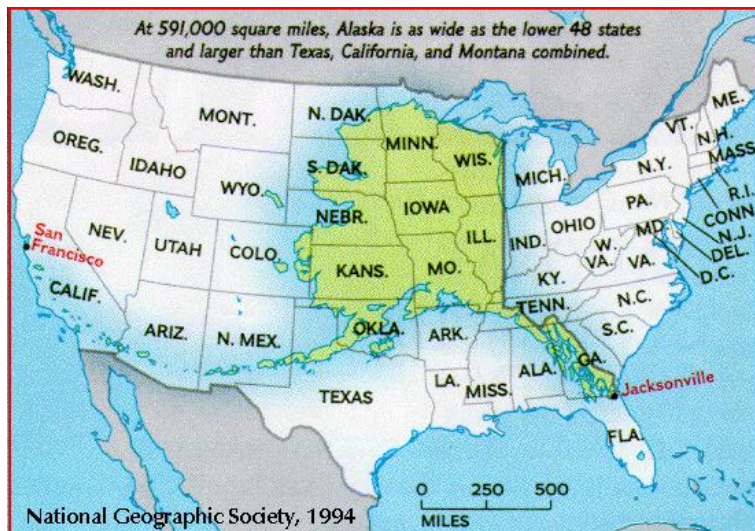
1:00-2:30 PM VE Amateur Radio License Testing.

Contact Hamfest Chairman:

Robert Rowley AL2B at (907) 283-1958 or

[AL2B@alaska.net](mailto:AL2B@alaska.net)

webmaster: Ed Cole KL7UW [KL7UW@ARRL.Net](mailto:KL7UW@ARRL.Net)



# Anchorage Amateur Radio Club

## Membership Application / Renewal

Membership Chairman: Fred Erickson, KL7FE  
Email: [membership@kl7aa.net](mailto:membership@kl7aa.net)  
Phone Number: 345-2181

All annual memberships expired  
on December 31<sup>st</sup>.

Mail - In Membership Application

NAME: \_\_\_\_\_ CALL SIGN: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_

PHONE: \_\_\_\_\_ HOME \_\_\_\_\_

E-MAIL: \_\_\_\_\_

\_\_\_\_\_ WORK \_\_\_\_\_

\_\_\_\_\_ MOBILE \_\_\_\_\_

Are you a member of ARRL?

YES: \_\_\_\_\_ NO: \_\_\_\_\_

### DUES:

Dues for the calendar year are as follows:

- |                         |   |
|-------------------------|---|
| ♦ Individual Membership | \$12.00 (\$6.00 for each additional member at the same address) |
| ♦ Student               | No Charge <sup>1</sup>  |
| ♦ Life Time Membership  | \$250.00 <sup>2</sup>   |

I am enclosing payment for:

Subscription / Renewal for \_\_\_\_\_ year (s).

Total US Dollars Enclosed: \$\_\_\_\_\_.

Please mail your payment and completed application to:

### **Anchorage Amateur Radio Club**

c/o: Fred Erickson, KL7FE

12531 Alpine Drive

Anchorage, AK 99516-3121

1. **STUDENT** is defined as any individual enrolled Full-Time at any educational institution, using the criteria of Full Time enrollment for that institution
2. If Over 65, please contact Membership Chairman for pro-rated rates.



Anchorage Amateur Radio Club, Inc  
Post Office Box 101987  
Anchorage, Alaska 99510-1987  
[www.kl7aa.net](http://www.kl7aa.net)

PRSRT STD  
U.S. Postage  
PAID  
Anchorage, AK  
Permit No. 69



# AMATEUR RADIO



MATANUSKA AMATEUR RADIO ASSOCIATION [WWW.KL7JFU.COM](http://WWW.KL7JFU.COM)

## HAMFEST & ELECTRONICS FLEA MARKET

**5 MAY 2007. OPEN TO THE PUBLIC 10AM / 5 PM.**  
HAM RADIO AND OTHER COMMUNICATIONS GEAR,  
COMPUTER STUFF, GADGETS & GIZMOS GALORE.

\$3 ADMITTANCE MAKES YOU ELIGIBLE TO WIN  
HOURLY DOOR PRIZES. KIDS UNDER 12 GET IN  
FREE WHEN ACCOMPANIED BY A PAYING ADULT.  
HAM LICENSE TEST SESSION AFTER NOON TIME.  
TABLE SPACE RENTALS AVAILABLE AT \$15 FOR  
NON COMMERCIAL FOLKS AND \$20 COMMERCIAL  
TABLES. THE TABLE RENTAL FEE INCLUDES THE  
ADMISSION PRICE FOR ONE PERSON. MARA WILL  
ALSO GIVE SPACE TO EACH COMMERCIAL TABLE  
RENTED FOR ONE YEAR ON OUR CLUB WEB PAGE.  
**YOU HAVE TO BE PRESENT TO WIN DOOR PRIZES!**

**PARKING** **HAMFEST AT DEPOT**

PALMER DEPOT

**PARKING**

SEWING SHOP

**4 WAY STOP LIGHT**

PALMER CITY HALL

HAM TESTING AT FIRE HOUSE

FRED MEYER STORE

**FROM GLENN HIGHWAY**