



CLARK COUNTY
Amateur Radio Emergency Service / Radio Amateur Civil Emergency Service

ARES / RACES

"Providing Emergency Communications as a Public Service to Public and Private Agencies in Clark County"

Clark County ARES/RACES Packet Network

The present packet network in Clark County, supporting ARES/RACES operations as well as individual users, is the result of several years of evolving from a single Kantronics KA-Node™ (KPC-3) on Mt. Livingston to seven K-Net™ or KA-Nodes at various locations, and ports on two wide area network nodes (HCKNSN and JENNE). The diagram on page 2 shows the current network configuration.

Soon after these nodes were added, two high-school students and their mentor tried their design skills at implementing a paging system over amateur radio. The Kantronics KPC-9612 TNC supports the POSOC paging protocol. The group wrote and received a grant to buy equipment. An attempt was made to convert a couple of surplus pagers, but the effort proved to be too expensive and the results were not satisfactory. The pager base station worked well, however. The project was discontinued after suitable pagers could not be found.

For a period of time, several nodes were equipped with the new K-Net ROM that implemented a NET/ROM™ compatible network at 1200 baud. After about three years' experience with this configuration, it was decided to convert back to the KA-Nodes. All K-Net nodes have been returned to KA-Nodes. It was found that the automatic routing features of the K-Net configuration did not outweigh the desirability of keeping traffic on the channel at a minimum (the nodes transmitted their routing information to each other periodically). This was especially true when, beginning in 1998, several members of the ARES/RACES organization designed and implemented a River Monitor Program using packet radio to report river and stream levels during emergency weather conditions. See the ARES/RACES document entitled "River Level Monitoring via Packet Radio", by KB7FND. The three river monitor stations transmit telemetry data every one-half hour, adding to the channel traffic. In 1999 these members received a special Volunteer award from Clark Regional Communications Agency, CRCA (now Clark Regional Emergency Services Agency, CRESA) for their work on the project.

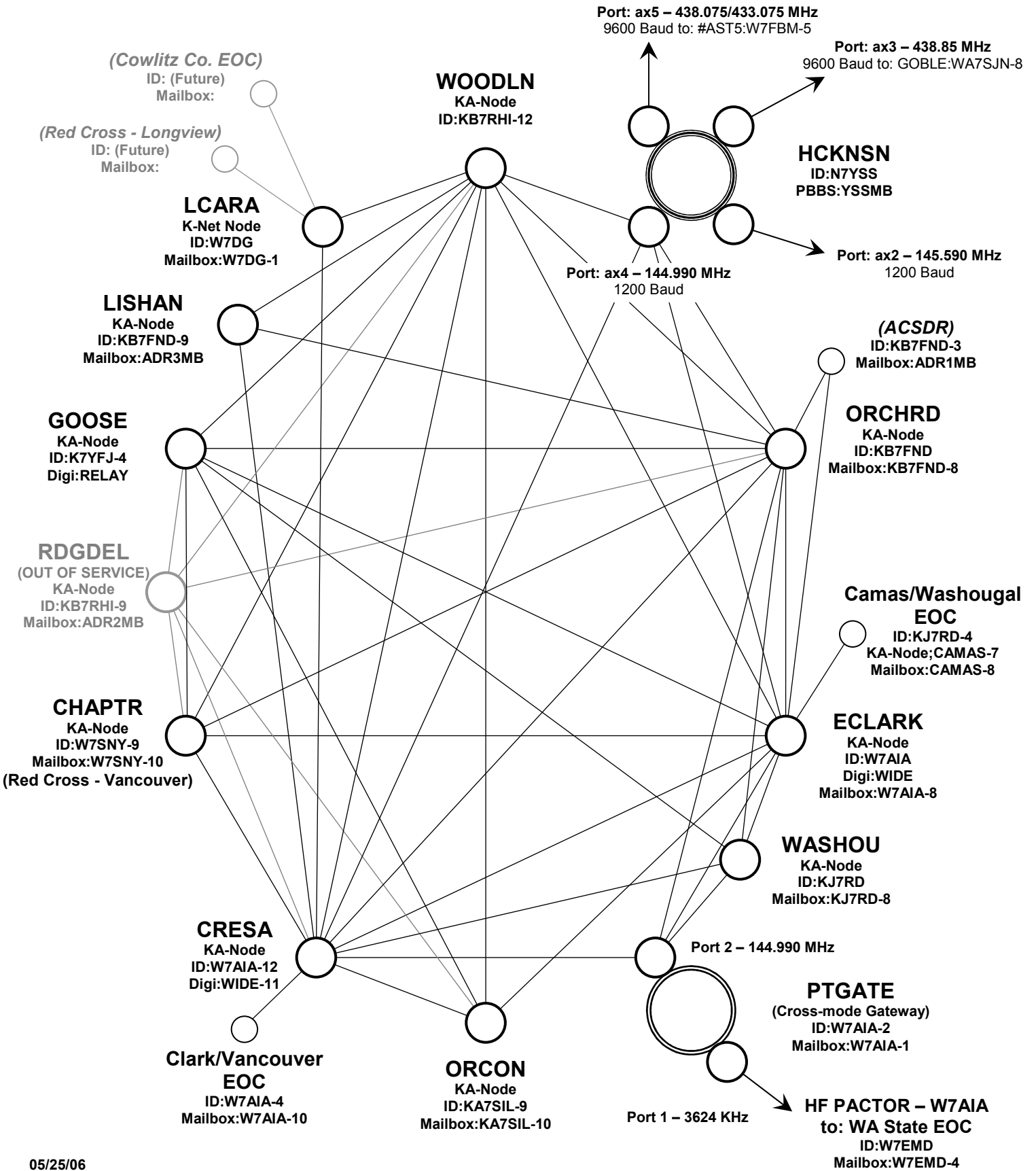
In 1999, a gateway to HF PACTOR has been implemented. The State of Washington, through RACES, provided the equipment so Clark County Emergency Coordination Center (ECC) can communicate with the state Emergency Operations Center (EOC) at Camp Murray near Olympia. They encourage packet users (especially ARES/RACES members) here in Clark County to make use of the gateway and gain experience in its use. This gateway was operational as of April 8, 1999. An addendum to this document describes how to connect and use this gateway.

The table on page 3 is a listing of nodes, agency users, special stations and individual users involved with ARES/RACES.

Although this document focuses on the use of packet to support ARES/RACES in Clark County, this is an **open** network for all packet enthusiasts to use. Users are encouraged to think about joining ARES/RACES and participating in training for emergencies. A Digital/Packet Interest Group meets the second Monday of each month at a location announced in a bulletin on the W7AIA-8 PBBS. The meeting starts at 7:30 PM.

- KPC-3, KPC-3 Plus, KPC-9612, KPC-9612 Plus, KAM, K-Net & KA-Node are trademarks of Kantronics Co., Inc.
- NET/ROM is a trademark of Software 2000, Inc.

Clark County ARES/RACES Packet Network – 144.990 MHz



Clark County *ARES/RACES* Packet Network – 144.990 MHz Node and Station List as of 05/25/06

| K-Net / KA-Node Alias:Net call or Station | "Mycall" | Mailbox Call/Alias | MB Size | KA-Node Call or Alias | Location | |
|---|-----------|-----------------------|------------|-----------------------------|--|---------------------|
| Installed Nodes: | | | | | | |
| CRESA :W7AIA-12 (KA) | W7AIA-12 | - | - | CRESA | CRESA Base Sta. / 9-1-1 Comm Center | |
| ECLARK:W7AIA (KA) | W7AIA | W7AIA-8 | 100K | ECLARK | CCARC Repeater Site / Camas | |
| GOOSE:K7YFJ-4 (KA) | K7YFJ-4 | - | - | GOOSE | Goose Hill Site / Woodland | |
| HCKNSN:N7YSS-1 | N7YSS | YSSMB | BBS | - | N7YSS Port ax4 to O.P.E.N./Hockinson | |
| ORCHRD:KB7FND (KA) | KB7FND | KB7FND-8 | 100K | ORCHRD | KB7FND Home Sta. / Orchards | |
| WASHOU:KJ7RD-7 (KA) | KJ7RD | KJ7RD-8 | 100K | WASHOU | KJ7RD Home Sta. / Washougal | |
| WOODLN:KB7RHI-12(KA) | KB7RHI-12 | - | - | WOODLN | Cowlitz Fire Dist. 1 Sta. 3 / Woodland | |
| User Stations #-on 24 hours | | | | | | |
| | | | | | <u>Location</u> | <u>Nearest Node</u> |
| K7ABL Home Sta. – Al# | K7ABL | K7ABL-8 | 100K | K7ABL-7 | Battle Ground | (GOOSE) |
| K7ATA Home Sta. - Amos# | K7ATA | K7ATA-8 | 100K | K7ATA-7 | Lakeshore | (CRESA) |
| KD7BBJ Home Sta. – Matt# | KD7BBJ | KD7BBJ-8 | 100K | KD7BBJ-7 | Longview | (GOOSE) |
| K7BEE Home Sta. - Craig | K7BEE | K7BEE-8 | 100K | K7BEE-7 | Felida | (CRESA) |
| KA7DCQ Home Sta. – Vern# | KA7DCQ | KA7DCQ-8 | 100K | KA7DCQ-7 | Fruit Valley | (CRESA) |
| KC7HKP Home Sta. - George | KC7HKP | KC7HKP-8 | | KC7HKP-7 | Cascade Park | (ECLARK) |
| NX7J Home Sta. – Don# | NX7J | NX7J-8 | 100K | NX7J-7 | Felida | (ECLARK) |
| K7JAO Home Sta. - Rob# | K7JAO | K7JAO-8 | 100K | K7JAO-7 | Walnut Grove | (ECLARK) |
| KD7JXY Home Sta. -Bill | KD7JXY | KD7JXY-8 | | | Battle Ground | (GOOSE) |
| KC6NOZ Home Sta. - Dale | KC6NOZ | KC6NOZ-8 | 8K | KC6NOZ-7 | Heights | (ECLARK) |
| KB7NWZ Home Sta. - John | KB7NWZ | KB7NWZ-8 | 100K | - | Gresham | (ECLARK) |
| ND7P Home Sta. - Don# | ND7P | ND7P | Buffer | - | N. Orchards | (ECLARK) |
| AG7Q Home Sta. - Rick | AG7Q | AG7Q-8 | 100K | AG7Q-7 | Washougal | (WASHOU) |
| KB7RHI Home Sta. – Mark | KB7RHI | KB7RHI-8 | 100K | KB7RHI-7 | Woodland | (GOOSE) |
| W7SNY Home Sta. - Bill | W7SNY | W7SNY-8 | 100K | W7SNY-7 | Hazel Dell | (CRESA) |
| K7SUQ Home Sta. - Jack# | K7SUQ | K7SUQ-8 | 100K | K7SUQ-7 | Vancouver | (ECLARK) |
| WB7TFD Home Sta. – Chip# | WB7TFD | WB7TFD-8 | 100K | WB7TFD-7 | Salmon Creek | (ECLARK) |
| K7YFJ Home Sta. - Bob# | K7YFJ | K7YFJ-8 | 100K | K7YFJ-7 | Washougal | (WASHOU) |
| Agency User Stations: | | | | | | |
| Clark/Vancouver EOC | W7AIA-4 | W7AIA-10 | 100K | - | EOC / Vancouver | (CRESA) |
| Camas/Washougal EOC | KJ7RD-4 | CAMAS-8 | 100K | CAMAS-7 | EOC / Camas | (ECLARK) |
| Red Cross - Vancouver | W7SNY-9 | W7SNY-10 | 100K | CHAPTR | Red Cross - Vancouver | (CRESA) |
| Fire Dist. #1 - Sta. 2 | KJ7RD-9 | FIRE01 | 100K | - | Fire Dist. 1 Sta. 2 | (WASHOU) |
| ACS DR - Orchards | KB7FND-3 | ADR1MB | 100K | - | Orchards SDA | (ORCHRD) |
| ACS DR – Ridgedell | KB7RHI-9 | ADR2MB | 100K | RDGDEL | Ridgedell SDA | (ECLARK) |
| ACS DR - Woodland | KB7FND-9 | ADR3MB | 100K | LISHAN | Lishan Rd. Woodland | (GOOSE) |
| ACS DR - Oregon | KA7SIL-9 | KA7SIL-10 | 100K | ORCON | Clackamas OR | (ECLARK) |
| Special Stations: | | | | | | |
| PACTOR Gateway (Port 2) | W7AIA-2 | W7AIA-1 | 17K | PTGATE | Gateway to PACTOR | (WASHOU) |
| HF PACTOR Sta. (Port 1) | W7AIA | W7AIA-1 | 17K | - | PACTOR Station – 3624 KHz | |
| ARES Portable – Sta. A | K7JAO-4 | ARESMB-1 | 100K | ARESNO-1 | Portable Packet Sta. A | |
| ARES Portable – Sta. B | K7YFJ-4 | ARESMB-2 | 100K | ARESNO-2 | Portable Packet Sta. B | |
| Team 5 Portable | | | | | Portable Packet for Team 5 | |
| River Telemetry – 0 to 10' | KC7IZH-12 | - | - | - | River Gauge @ Fifth Plain Creek | |
| River Telemetry – 0 to 30' | KB7FND-12 | - | - | - | River Gauge @ Brdg 80 @ Lewis R. | |
| River Telemetry – 0 to 30' | KJ7RD-12 | - | - | - | River Gauge @ Brdg 196 @ Wash. R. | |

Note: If you keep your packet station (radio, TNC & PBBS/mailbox) operational 24-hours on 144.990 MHz (your computer/terminal **does not** need to be on) and would like to be included in the above list as a user, just send the information to KB7FND at the W7AIA-8 PBBS/mailbox. Also, send any changes or corrections to KB7FND.

- Section 4B of the *ARES/RACES* Training Manual describes the operation of this network during emergencies and exercises.

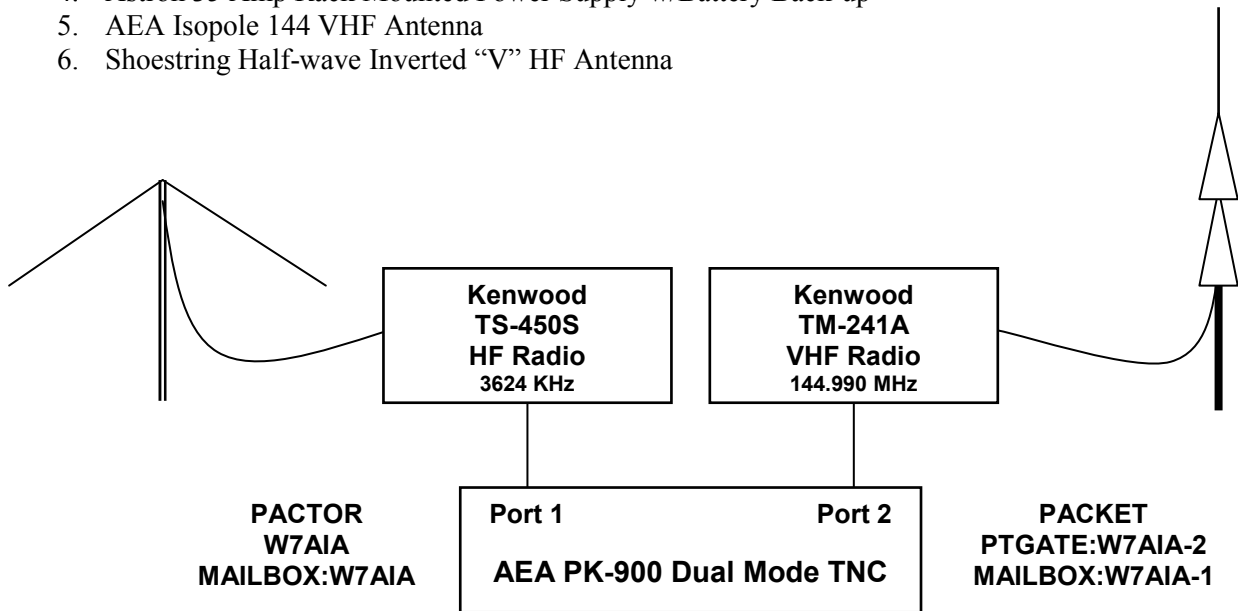
File this handout under APPENDIX D – Packet Information in your *ARES/RACES* Training Manual

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PACTOR Gateway Node Operation

The PACTOR station used by Clark County ARES/RACES consists of the following equipment supplied by Washington State RACES:

1. AEA PK-900 Dual Mode TNC
2. Kenwood TS-450S HF Transceiver
3. Kenwood TM-241A VHF Transceiver
4. Astron 35 Amp Rack Mounted Power Supply w/Battery Back-up
5. AEA Isopole 144 VHF Antenna
6. Shoestring Half-wave Inverted "V" HF Antenna



Steps to connect to PACTOR:

1. First connect to PTGATE: **c ptgate** (if you cannot make a direct connect, then go through one or more of the nodes)
2. Next, switch to Port 1: **p1** (this is the HF PACTOR port)
3. The next step is to monitor the channel for "busy", using the "**L**" (Listen) command. If not busy, use "**L**" again to toggle back to command mode. Connect to the desired PACTOR station, for example: **c w7emd stay** (W7EMD is the PACTOR station in Olympia; the "stay" command keeps you connected to PTGATE when you disconnect from the PACTOR station).
4. After connecting to W7EMD, you will be cross-connected to the VHF port of their TNC.
5. In order to connect to the mailbox at the State EOC, located at Camp Murray, connect to **W7EMD-4**.
6. After communication with the PACTOR station, disconnect from PACTOR by using **<Ctrl-D>** (if you used the "**stay**" command as above, you may use the "**b**" (for bye) command to disconnect).
7. After a PACTOR disconnect, you may immediately make a connect to the same or another PACTOR station.
8. After your final disconnect from PACTOR, the final step is to disconnect from PTGATE: **b**

Follows is the log of a typical connect through PTGATE:

LOG ### Connected to PTGATE - Fri Jun 20 00:32:19 2003

cmd: c ptgate

*** CONNECTED to PTGATE [06/20/03 00:32:02 PT]

++ W7AIA AEA Cross-mode Gateway. Other port (1) is PACTOR.
Type ? for help.

++ You are on Port 2, 1200 bps Packet. Your ID is KB7FND-15.
de PTGATE (B,C,D,J,L,N,P,S,?) >

p1

++ Cross access to Port 1, PACTOR. Your ID is KB7FND.
de PTGATE (B,C,D,J,L,N,P,S,?) >

1

++ Listening ON

de PTGATE (B,C,D,J,L,N,P,S,?) >

1

++ Listening OFF

de PTGATE (B,C,D,J,L,N,P,S,?) >

c w7emd stay

++ CONNECTED to W7EMD at PTGATE

++ Note: Over = <CTRL-Z>, End = <CTRL-D>. You're sending.

++ W7EMD AEA Cross-mode Gateway. Type ? for help.

++ Cross access to Port 2, 1200 bps Packet. Your ID is KB7FND-15.
KB7FND de W7EMD (B,C,D,J,L,N,S,?) >

c w7emd-4

++ CONNECTED to W7EMD-4 at W7EMD-1

[KPC3P-8.2-HM\$]

98988 BYTES AVAILABLE

THERE ARE 2 MESSAGES NUMBERED 146-147

ON THE WASHINGTON STATE EMD/EOC MBX 98431-CAMP MURRAY WA.

ENTER COMMAND: B,J,K,L,R,S, or Help >

1

KC7KEY JUN 19 2000 06:19:40 pt

N7QAN-15 JUN 19 2000 08:51:00 pt

SEA JUN 19 2000 08:51:36 pt

AA7ZV JUN 19 2000 11:30:43 pt

SEABBS JUN 19 2000 11:30:43 pt

K6GSC-15 JUN 19 2000 16:00:35 pt

KD6ILO-1 JUN 19 2000 16:26:01 pt

KC7QIC-4 JUN 19 2000 16:26:57 pt

KD6ILO JUN 19 2000 16:26:58 pt

N7ZW-15 JUN 19 2000 20:45:16 pt

KC7QIC-1 JUN 19 2000 20:49:06 pt

KC7TDG JUN 19 2000 22:55:01 pt

KD6ILO-5 JUN 19 2000 22:59:33 pt

KC7QIC JUN 19 2000 23:07:39 pt

N7FSP-10 JUN 19 2000 23:32:15 pt

W7EMD JUN 19 2000 23:32:52 pt

KD7SMG JUN 19 2000 23:37:02 pt

N7FSP-15 JUN 19 2000 23:37:23 pt

KB7FND-15 JUN 19 2000 23:38:05 pt

ENTER COMMAND: B,J,K,L,R,S, or Help >

1

ENTER COMMAND: B,J,K,L,R,S, or Help >

b

++ DISCONNECTED: W7EMD-4 at W7EMD-1

KB7FND de W7EMD SK

++ DISCONNECTED: W7EMD at PTGATE

de PTGATE (B,C,D,J,L,N,P,S,?) >

b

*** DISCONNECTED [06/20/03 00:39:07 PT]

LOG ### DISconnected from PTGATE - Fri Jun 20 00:39:21 2003

Follows is the log of a typical connect to the W7AIA-1 PACTOR Mailbox:

c w7aia-1

LOG ### Connected to W7AIA-1 - Fri Jun 20 00:39:35 2003

LOG: W7AIA-1:

cmd:*** CONNECTED to W7AIA-1 [06/20/03 00:39:18 PT]

[AEA-9312-H\$]

Welcome to Clark County ARES/RACES PACTOR Mailbox... Type H for Help

(AEA PK-900) 9968 free (A,B,G,H,J,K,L,R,S,V,?) >

l

| Msg# | Size | To | From | @ BBS | Date | Time | Title |
|------|------|------|------|--------|-----------|-------|--------------------------|
| 71 | BN | 1495 | ALL | W7SFT | 31-Oct-01 | 00:51 | MSGS TO EOC |
| 63 | PN | 573 | ALL | K9RKI | 27-Jun-00 | 21:54 | Mason County Gateway |
| 12 | BN | 1399 | ALL | W7SFT | 25-May-99 | 12:58 | PACTOR GATEWAYS, ETC |
| 10 | BN | 1561 | ALL | KB7FND | 09-Apr-99 | 21:52 | Clark County PACTOR Info |

(AEA PK-900) 9968 free (A,B,G,H,J,K,L,R,S,V,?) >

r 71

| Msg# | Size | To | From | @ BBS | Date | Time | Title |
|------|------|------|------|-------|-----------|-------|-------------|
| 71 | BN | 1495 | ALL | W7SFT | 31-Oct-01 | 00:51 | MSGS TO EOC |

I NOTE THERE WERE SOME PROBLEMS GETTING DIGITAL MSGS TO THE EOC DURING THE LAST SET EXERCISE. FOLLOWING IS OFFERED IN THE HOPE OF PROVIDING SOME USEFUL GUIDANCE.

FIRST, BE AWARE THAT THE EOC AT CP MURRAY WAS NOT MANNED ON THE LATE AFTERNOON OF THE EXERCISE. ALL THE COMMUNICATION FUNCTIONS WERE MOVED TO THE HOME OF W7SFT, WHO ASSUMED THE CALLSIGN OF W7EMD. THIS WAS A VERY SPECIAL SET OF CIRCUMSTANCES, AND MAY NEVER HAPPEN AGAIN.

THAT SAID, THE PACKET STATION WAS UNATTENDED. I (W7SFT) TRIED TO PICK UP THE PACKET MAIL, BUT FAILED. WHEN I ASSUMED THE PACKET CALLSIGN OF W7EMD, THE BBS REFUSED ME!

IN LIGHT OF THAT, I WOULD SUGGEST THE FOLLOWING:

MSGS FOR THE EOC IN AN EMERGENCY EXERCISE SHOULD BE ADDRESSED AS FOLLOWS:

SB ALL

(SUBJECT) WA EOC TFC

THIS WILL PERMIT ANYONE TO READ THEM. WE OFTEN HAVE REMOTE OPERATORS FOR THE STATE EOC, AND BY ADDRESSING THEM THIS WAY, ANYONE CAN READ THEM, BUT ONLY THE EOC SYSOP CAN CANCEL THEM.

ALSO, I HAVE NOTED THAT ON AT LEAST A COUPLE OF OCCASIONS, THE PACTOR GATEWAY STATION W7EMD HAS BEEN "STUCK" ON THE VHF SIDE. IF THE PROMPT LINE IT RETURNS DOES NOT HAVE G AS ONE OF THE OPTIONS, THIS MAY BE THE CASE. IF THIS OCCURS, TRY CONNECTING TO THE EOC BBS BY COMMANDING

C W7EMD-4

IF YOU DESIRE FURTHER HELP OR EXPLANATION, PLEASE CONTACT ME BY E-MAIL....calpat@sosnet.net.....OR W7SFT@KB6LE.#WWA.WA.USA.NOAMAND I WILL TRY TO ANSWER YOUR QUESTIONS.....CAL W7SFT

/E

(AEA PK-900) 9968 free (A,B,G,H,J,K,L,R,S,V,?) >

b

*** DISCONNECTED [06/20/03 00:40:08 PT]

LOG ### DISconnected from W7AIA-1 - Fri Jun 20 00:40:22 2003