Old is new again; POCSAG pagers
Ham Radio sees a resurgence in one-way emergency communication

By Wayne Spivak, KC2NJV

It's a time warp…in another dimension…It's just a jump to the left…

"We may not be watching Rocky Horror, but that ubiquitous pager is back in fashion. Its resurgence started in Germany and has spread worldwide.

Paging and POCSAG

Pagers are based on the Post Office Code Standardization Advisory Group (POCSAG), a methodology using 2FSK as its basis to send asynchronous data to paging receivers. Initially only numeric, in the later 80's it became alphanumeric. The British Post Office developed the protocol.

The technology of 2FSK is outside the purview of this article, but it's been working for over 50 years, with the only change in the size of the receivers and their construction, as well as the speed of transmission.

Originally 512bps was used, with the newest protocol using 2400bps. Ham Pagers use 1200bps, and the agreed upon frequency is 439.9875mhz.

The concept of POCSAG was to send messages to emergency services, healthcare providers, and others to call a phone number or a predetermined code that started a predetermined protocol. Later, alphanumeric paging, as stated, became possible and information could be sent with a maximum of 80 characters.

DAPNET

Fast forward to 2025. In the amateur community a group called DAPNET (Decentralized Amateur Paging Network) based in Germany runs a system of servers that coordinate paging world-wide.

Every user obtains a personal Radio Identification Code (RIC) number, like a telephone number. Pages can be sent directly to one's RIC number.Rubrics are group identifiers used to broadcast messages to multiple users with shared interests

Rubrics and pagers can be programmed to be operational at different transmitter group levels (more on this later), so many organizations can share the same rubric.

Think APRS (Automated Position Reporting System) bulletins and messaging. And just as in APRS, all communication is public and can be read by anyone.

Setting up an Emergency Paging Network.

To receive a page, one must obtain the transmission from a transmitter. There are two types of transmitters, personal and wide area.

Personal transmitters are low powered (think 2mW). One can use a Pi-Star, WPSD, OpenSpot 4 to name a few pre-packaged POCSAG transmitters. AllStar did contain a POCSAG transmitter, but they turned it off a few years back. I am told it is on the project list to rework and then re-introduce to the product.

Wide area transmitters can use legal limit radio's, attached to a Pi-Star, WPSD or a Linux program called UniPager. The only true difference between personal and wide area is the power of the transmitter.

As with most software and hardware, the trick is connecting all the pieces, so they work in concert. Sometimes it can be tricky.

Paging Transmitter Groups

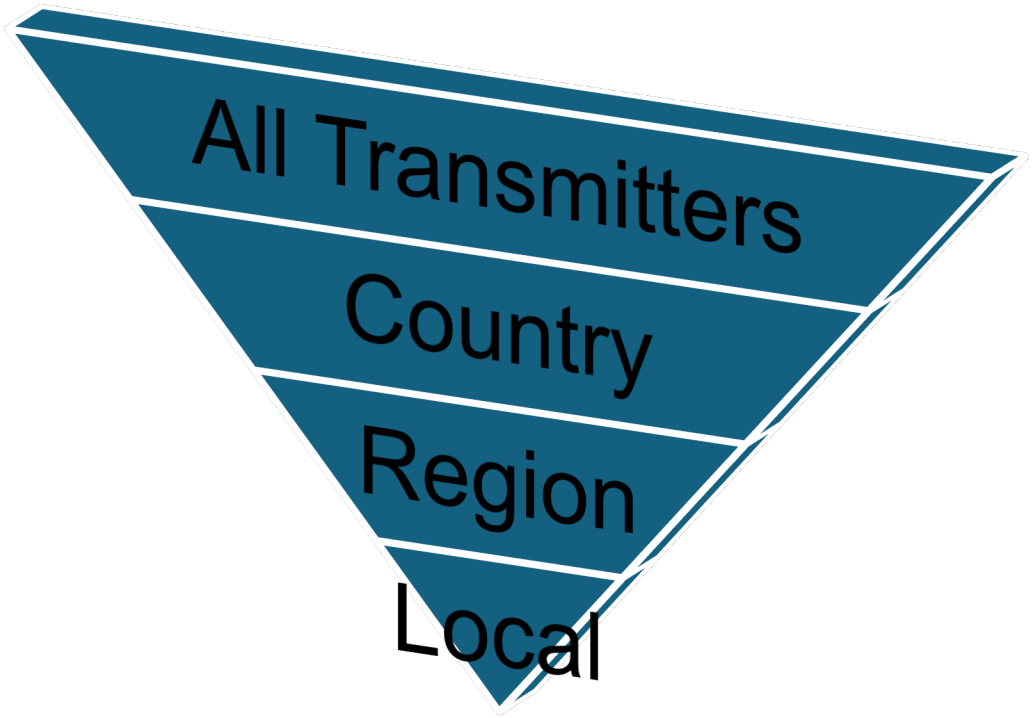
DAPNET has a multi-level transmission methodology [see figure] to allow for limited bandwidth and maximum geography.

The top level will allow the message to travel to every transmitter worldwide. Should one configure their pager to receive a specific rubric, then any page sent to that rubric would be heard.

An example would be weather broadcasts, which are sent on rubric 1080. A notification of a thunderstorm approaching New York City sent to the group ALL, would be sent to NYC, but also Tokyo, Moscow, Brisbane, Bogota, and wherever a transmitter is live.

Those folk really don't care or need to know. The appropriate group would be regional (NY State) or local (NYC if there were such a group).

Which group you send your messages to is based on a “gentleman’s” agreement. Unfortunately, some people insist on sending messages to everyone, regardless of the focus or language of the message.



Emergency Radio Long Island POCSAG System

I am a member of a REACT group as well as the Enigma Amateur Radio Club. Together we’ve put up multiple AllStar nodes built on a Hub spoke system (think 10-Base-T for computers).

The Central Hub multi-modal (permitting traffic on TGIF, YSF, P25, NXDN and M17) as well as being linked to several analog repeaters stretching from Long Island to Pennsylvania.

We will have two POCSAG transmitters live soon, one co-located with the Queens repeater, the other in Plainview, Long Island. A Bronx transmitter is also on the drawing board.

Why POCSAG? If you were caught in a major disaster, natural of otherwise, you’ve discovered cell service is interrupted, as well as internet’s public Wi-Fi system. Not everyone walks around with a HT, but a pager is small. While information is limited on single pages, it may be enough (depending on protocols developed by individual organizations) to initiate callouts of certain actions.

POCSAG is just another cog in Ham Radio's emergency communication toolbox. We've also created an APRS Bot to enable not only Nets via APRS texting sub-system, but emergency notifications. Again, not a perfect solution, but a viable solution for communicating.

Automated Alert Systems

We will get alerts daily from changes in (most are filtered for geo-area and severity) in certain public databases/alerting systems:

DHS Terrorist Alerts
IPAWS Alerts
511 traffic/incident Alerts
Nassau County PD
METARS from different 5 airports spread out during the day
NOAA Weather Alerts (sent via another system operated by a POCSAG user)

In addition, we created a password protected website so leadership could send out an alert to the Rubric by entering up to 80 characters and hitting submit.

If you have questions, please contact me.

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