NAB Radio TechCheck

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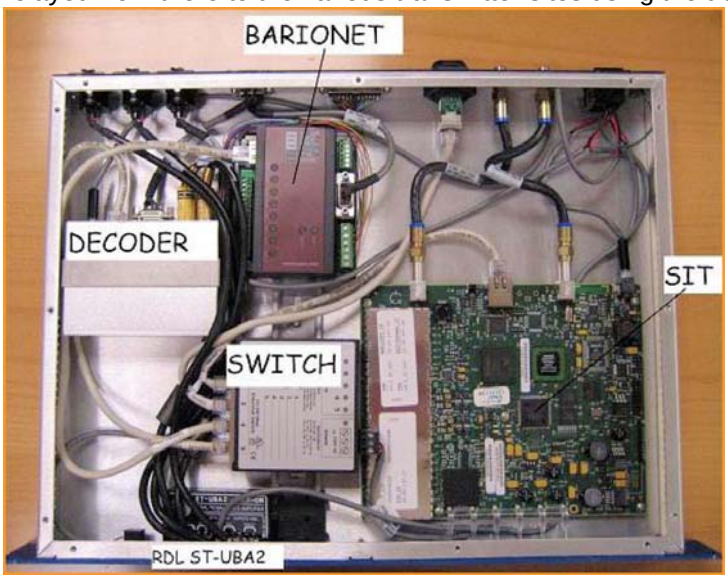
Minimizing Connectivity Loss with a VSAT Safety Net

Disaster preparedness is something that every broadcast engineer must deal with. A session at the upcoming NAB Broadcast Engineering Conference (BEC, April 18-23, 2009, Las Vegas, NV – see below for additional information) entitled "*Disaster Preparedness and Public Alerting*" includes a paper, excerpted here, which focuses on what Clear Channel Broadcasting has learned from preparing for and dealing with the aftermath of various hurricanes and other disasters in recent years.

INTRODUCTION – for many years, our primary connectivity concern as radio engineers has been getting audio from a studio site to a transmitter/tower site without interruption. We have fairly reliable tools to accomplish that, but even those are vulnerable to unexpected outages. In the wake of a season of severe hurricanes, Clear Channel realized our vulnerability to various forms of connectivity loss, and decided it was time to address that. Our response was the installation of very small aperture terminal (VSAT) satellite uplink/downlink systems at every Clear Channel studio, and at key tower sites. Because this can be used in place of the conventional/traditional studio-transmitter link (STL), but relays data via satellite, we affectionately nicknamed this system the "SaTL." But this has evolved into far more than merely a studio-to-transmitter program link.

LESSONS FROM KATRINA – a major disaster can test our backup systems and our ideas about what will work and what will fail. This was definitely the case when Hurricane Katrina hit New Orleans. The governor of Louisiana ordered New Orleans evacuated, and our New Orleans station staff set up shop in Baton Rouge. The now-abandoned New Orleans studio facility was set up as a "mid-point hop," programming would originate in the Baton Rouge studios, be received in the New Orleans studios via satellite, and finally, relayed from there to the various transmitter sites using the traditional RF STL system. We had backup generators at the studios and all transmitter sites. Alas, strong winds knocked STL receive dishes at various tower sites out of alignment.



THE SaTL IN DETAIL – the Clear Channel SaTL system (see photo) consists of a box at Clear Channel studios and tower sites based on the "XtremeSat™" system developed by Clear Channel's satellite division, CCSS. Our SaTL version contains a Satellite Internet Terminal (SIT), a small internal IP switch, and audio encoder (for studios) or decoder (for tower

sites), and a Barionet™ remote control at tower sites only all in a 1RU chassis. Pictured here, inside the enclosure (this one, for a typical tower site unit), you can see the Barionet IP-based remote control, the Decoder™ audio decoder (IP – analog audio converter), a small IP switch, and the SIT which communicates with satellite uplink/downlink hardware. All of this connects to a dish with an integral transmitter (block up-converter, or BUC) and low-noise block downconverter (LNB).

BROADCAST MODE – in widespread disasters such as earthquakes and hurricanes, it is often desirable to broadcast a single program feed to multiple tower sites. This was what we did in the aftermath of Katrina, using the ad-hoc "United Radio of New Orleans" we put together. To support this mode, any studio facility can uplink their programming, to be turned around by the main CCSS Denver uplink and sent back out in "broadcast mode." This mode enables multiple downlink sites to pull down the same programming. So, for example, instead of the hastily constructed hodge-podge network we used in New Orleans and Baton Rouge, we could uplink all programming from Baton Rouge in broadcast mode, and carry that programming at any number of sites, in New Orleans, Baton Rouge, and/or any other markets that would benefit from receiving the programming. We have found that in disasters it is more common to feed a single focused news and information program to all sites, rather than disparate programming to individual sites.

CONCLUSION – the "SaTL" system is but one piece of a larger hardening/disaster and outage readiness and response strategy. It is shown in this photo surrounded by some of the other pieces. Our charge was to develop a secondary connectivity support system which could be installed and maintained at minimal cost. While it is impossible to foresee every possible outage we might experience, we have found that this system has been a valuable addition to our readiness toolkit, and has kept us in business and operational on over 50 occasions when we have had to fall back to it for data connectivity, audio transport, STL replacement, and other similar needs.

This paper is authored by Steve Davis, Senior Vice President, Engineering and Capital Management, Clear Channel Radio, Tulsa, OK. It will be presented on Wednesday, April 22, 2009 starting at 9:40AM in rooms N231/233 of the Las Vegas Convention Center. It will also be included in its entirety in the 2009 NAB Broadcast Engineering Conference Proceedings, on sale at the 2009 NAB Show Store and available on-line from the NAB Store (www.nabstore.com) after the convention. For additional

conference information visit the NAB Show web page at www.nabshow.com; a complete listing of the radio-related BEC conference sessions, papers, and presenters can be found in the February 2, 2009 issue of *Radio TechCheck*.