Radio In a Box

Well, several boxes and gig bags really...
• RIB is essentially a self-contained scaled-down radio station
• Modular, small form factor flight ready cases
• Can fit in a small aircraft, SUV, minivan, or small watercraft
• Each piece is under 50 lbs, the heavier boxes/bags are have wheels
• Can be used to replace an entire station, or just the studio or transmitter facilities as the situation warrants.
• Once on site it can be set up in a matter of hours
• Designed primarily for use by stations in remote communities following a disaster or other events which make their own systems unusable
  • Earthquake
  • Flood
  • Tsunami
  • Storm
  • Fire

• Frequency agile for use on the channel it replaces to quickly re-establish lines of emergency communications with local residents on a radio channel with which they are already familiar
• Nearly all Alaskans live with the constant threat of multiple disaster scenarios informed by our own active history of such events
• Half of Alaska’s 26 public radio stations are the primary LP-1 EAS station for their regions and communities, and many of the rest are the LP-2.
• Alaska’s geography is unique among the American states;
  • 700K residents among 300 distinct communities
  • 204 remote villages, lowest population density (1.3 per square mile)
  • More than twice the size of Texas and more coastline than the rest of US combined
  • The most northern, western and eastern state
• Recognizing the vulnerability of their broadcast facilities in a disaster, and the essential role they play in providing communications services to remote communities, CoastAlaska engineers and managers conceived of and started building their first RIB iteration in 2009.

• World events including devastating earthquakes and subsequent tsunamis in the Indian Ocean (2004) and Japan (2011) fueled their aspirations.

• By 2014 three such custom-made sets had been designed, funded, integrated and placed in Sitka, Juneau and Ketchikan.
• Fast Forward to 2017

Hurricane Maria was a deadly Category 5 hurricane that devastated the northeastern Caribbean in September 2017, particularly Dominica, Saint Croix, and Puerto Rico. It is regarded as the worst natural disaster in recorded history to affect those islands.

(Wikipedia)
Puerto Rico, 2017

Following the devastation of Hurricane Maria in 2017, much of the infrastructure in Puerto Rico lay in ruins, including it’s public radio stations.
• CPB contacted CoastAlaska to inquire of our RIB kits, hoping to acquire their own, only to discover they were custom made
• CoastAlaska ultimately volunteered to send first one and then the second set of RIB (aka, “Radio to Go”) equipment
• Cross country shipping via Alaska Airlines to JFK, the other to Orlando.
• CoastAlaska worked with WNYC and WMFE as they coordinated getting the equipment to the island and set up with their technical personnel depending on CoastAlaska engineers guidance and remote troubleshooting
• Although in theory a loan of the equipment we knew it was unlikely the PR stations would have the capacity to send it back.
In the following years, another round of funding, design, acquisition and integration of the second generation “Radio In a Box” came into being.

During that time, CoastAlaska expanded its portfolio in a merger with one of its major partners, the statewide public station service bureau Alaska Public Broadcasting Incorporated, located in Anchorage.

Three new sets of fully integrated RIB equipment are to be placed in

- Sitka at KCAW
- Juneau at KTOO
- Anchorage at the CoastAlaska
• So what does this new version look like?
Gator flight case #1

Contains AC power strip w/ suppression, monitor speakers and additional gig bag.
Gator flight case #1

- Furman 8 port AC power w/ protection and lights
- Fostex RM-3 Stereo Rack Monitor
Gig Bag
Studio gear
Gator flight case: Box #2

Contains the FM Transmitter and a multi-function audio center, rack mounted in a flight case with front and rear access for easy controls and connections.
Gator flight case: Box #2
BW TX600 V3 transmitter: on grid power to 500W; on inverter power to 100W. Type N connection to transmission line.
Denon DN300Z Media Player: CD / USB / SD / AUX / BT / FM / AM

Flexibility: offers multiple uses for playing back produced or gathered content, with cabling also set up to operate station as a translator of existing station
Bag #3: Adapters+

• An assortment of additional cables and adapters are included to accommodate a variety of needs and existing audio devices
• Both consumer and professional type adapters
• Rechargable AA and AAA batteries
• Compact digital recorder for gathering local content
AC Power Inverter

If grid power is available at the site, it can be connected to the Furman surge suppressor to supply power to the system. If not available, a DC power inverter can be run off the battery of a running vehicle, or other DC source.
Antenna Bag

The antenna is a Label Italy AKS/1M, broadband VHF dipole. The bag includes a mounting clamp, two sections of transmission line and an adapter to 1 5/8” line.
The antenna should be laid out somewhere clean and dry to ensure proper assembly.
The tower bag

The heaviest and largest bag contains a BlueSky Mast 15 meter tower. This gives the antenna some elevation in a compact sturdy mil-spec system. Recommend two people work to assemble this component.

Site selection must take into account potential overhead hazards and/or obstructions.
Tower sections and tripod base
Once the tripod is set up and level, tower sections are added one at a time from below until the desired height is reached. The final section has a foot and acts as a fourth leg of the base.
Securing the tower

Safely placing and securing the tower requires an open area without overhead obstruction with a diameter of roughly twice the height of the mast; in this case a diameter of 30 meters.

The tower is designed to be placed onto firm ground that will facilitate spikes and stakes.

However, it is more likely in Alaska to encounter frozen or snow covered ground in winter, and soft muskeg or tundra in summer.

Accommodating adverse conditions requires creative thinking for securing both the tower feet and guy points.

Two sets of anchors: stainless spikes go into the tripod feet, galvanized stakes are for the guy points. However, a rooftop location would require dunnage for the feet and tying off the guys.
Instructions and safety information are included; this component warrants extra help and care as it presents possible hazards if not properly erected.
At this point the guy wires and transmission line can be connected to the top section before adding sections one at a time from below and raising the tower to full height. The final leg is then added to give the base its fourth leg. The guy anchors can be set and the legs secured to the ground. Transmission line can be connected to the transmitter and the station is on the air.
In summary...

Prior to and during a disaster, there are major warning systems in place to get the word out to area residents. However, following a disaster vulnerable communications infrastructure is likely to be damaged and due to a number of factors may remain off the air for weeks or even months.

As soon as basic transportation into an affected community is reestablished RIB can be shipped in to resume broadcasting and restore the flow of critical emergency, life, health and safety information.

RIB can interface with local reporters and broadcasters existing tools such as recorders, laptops, and other sound gear. Equipped with multiple inputs including analog, digital, wireless, Bluetooth, and internal AM/FM receivers, the RIB is ready to take advantage of whatever remaining communications components may still be available, while at the same time providing enough of its own tools to operate independently of them.
Additional info:


- https://www.krbd.org/2014/05/15/emergency-radio-in-a-box-ready-to-deploy/
