BMG ENGINEERING, INC.
RADIO DIRECTION FINDING

Tutorial About SuperDF:

Balloon Tracking and Recovery Using SuperDF

SuperDF offers several advantages over Dopplers and beams.

1. The SuperDF is very much more sensitive than the Doppler. This is important when the balloon falls below line of sight. It can land in an area that will not allow the unit to be picked up by a Doppler until you are rather close (due to terrain shielding). SuperDF will be functional much father away.
2. SuperDF will give you very accurate and high resolution bearings on a balloon. These bearing are very much easier and faster to obtain with high accuracy than a small beam. They will be more accurate too! With careful installation and use, you should be able to obtain bearings accurate to about 1 degree (for a balloon at altitude). Two or more SuperDFs can be used to triangulate to accurately plot the ground path.
3. SuperDF also can be used to accurately measure the angle of elevation of the balloon. If you also have real-time telemetry providing altitude, then only one SuperDF is needed to plot the flight path in three dimensions! Knowing where you are, the payload altitude, and the azimuth direction and the angle of elevation to the payload tells you exactly where the payload is in 3-D space. (If you have two SuperDFs tracking, you can get the same information without using telemetry. Obviously, the measurements taken by the two SuperDFs will have to be coordinated to be taken at the same times.) Taking this data during the decent will help in defining the touch-down point. A smaller area to search will help your teams still using Dopplers to get into range. To make good use of this potential would require building an AZ-EL rotating system, along with the ability to rotate the SuperDF antenna 45 degrees around one of its "front" axis. (I will provide more details, if you need it.)
4. If you have to go out on foot to locate the payload, SuperDF can be taken on foot, and do a good job. This is more of a problem with a Doppler or a small beam, especially in rugged terrain. Thus you do not need a separate RDF for on foot, or for close-in sniffing. SuperDF does it ALL, and does EACH very well!

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