



TS900 TRANSPORTABLE DIFFERENTIAL GPS REFERENCE STATION

Thales Canada, Systems Division's TS900 Transportable Differential GPS Reference Station is a completely self-contained system which calculates GPS position corrections and transmits RTCM-104 formatted messages over an HF radio link. The TS900's *proven* performance enables GPS positions to be determined with accuracy of better than five metres (2d rms) over distances out to at least 200 nautical miles from the station site.

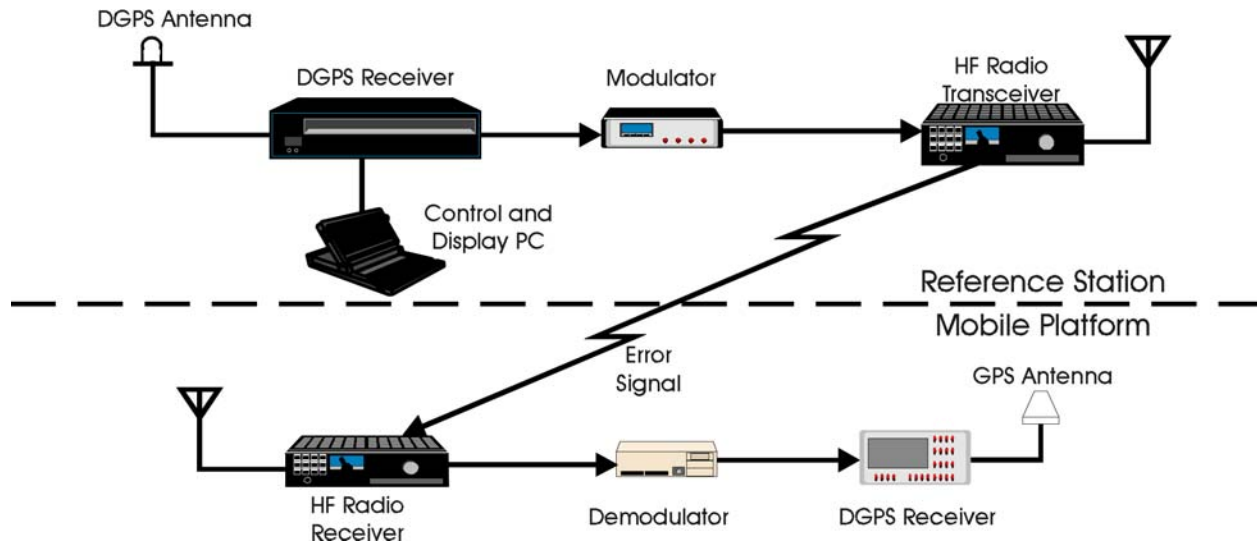
OPERATIONAL CONCEPT

In the non-differential mode of operation, current GPS receivers in mobile platforms provide position accuracy generally within 30 metres under most conditions due in large part to "selective availability" applied by the US DoD. While this may be sufficient for some purposes, other operations require much greater positioning accuracy over wide areas. In the differential mode, the differential GPS receiver receives not only the GPS satellite signal but, as well, an error correction signal from a shore-based reference site which is valid over any area in which the navigator sees essentially the same satellites as the reference station, and over which the correction can be received in a timely manner. It is automatically factored into

the position as determined by the receiver and results in a real-time, kinematic position within a few metres.

The Reference Station, which is transportable by helicopter or trailer, includes equipment which has been selected for its mature, commercial "off-the-shelf" design and proven operational performance:

- 12 channel Differential GPS Reference Receiver;
- Serial Tone (PSK) HF Modem;
- HF Transmitter (125 Watt, SSB);
- HF Transmit Antenna and GPS Antenna;
- Control and Display Terminal;
- Compartmented Aluminum Shelter (6' x 6' x 9') with:-
 - standard electrical power connector;
 - gasoline-powered electrical generator;
 - automatic transfer switch;
 - uninterruptible power supply;
 - heat, light, and cooling fans; and
 - lifting slings.



TYPICAL SHORE/REFERENCE STATION EQUIPMENT CONFIGURATION

Once properly located and set in operation, and provided that electrical power is available, the Reference Station is intended for un-manned operation for indefinite periods. If electrical power is not readily available, or in the event of loss of utility power, the gasoline-driven electrical generator provides sufficient power to operate the Reference Station for up to two days, depending upon the load. A UPS automatically provides a minimum of 20 minutes of reserve power which is useful to sustain operation while the generator takes over following the loss of utility power, or during short generator shutdown periods for re-fuelling or minor maintenance.

Optional features which can be provided include frequency diversity stations which broadcast the error correction signals on two separate frequencies, a graphical display of the signal-to-noise ratio (SNR) in each channel, and an integrity monitoring station which provides a comparison between the true position and the position determined from GPS satellites and the received reference station corrections.

Equipment in the mobile platform which receives the correction signal from the Reference Station must be selected for compatibility with the Reference Station and must include:

- DGPS Receiver;
- Serial Tone (PSK) Demodulator;
- HF Receiver with appropriate sensitivity, selectivity, and frequency stability; and
- GPS and HF Receive Antennas.

The frequency diversity option also requires the use of additional equipment in the ship, namely a second receiver and a “voter” which is used to determine which receiver has the better SNR. The voter automatically routes the better signal to the serial tone demodulator and then to the DGPS receiver.

For further information, please contact:

*Thales Canada, Systems Division
1 Chrysalis Way
Ottawa, Ontario, Canada K2G 6P9
Tel: (613) 723-7000 • Fax: (613) 723-5600
e-mail: inquiries@ca.thalesgroup.com
web site: www.thalesgroup.com/canada*