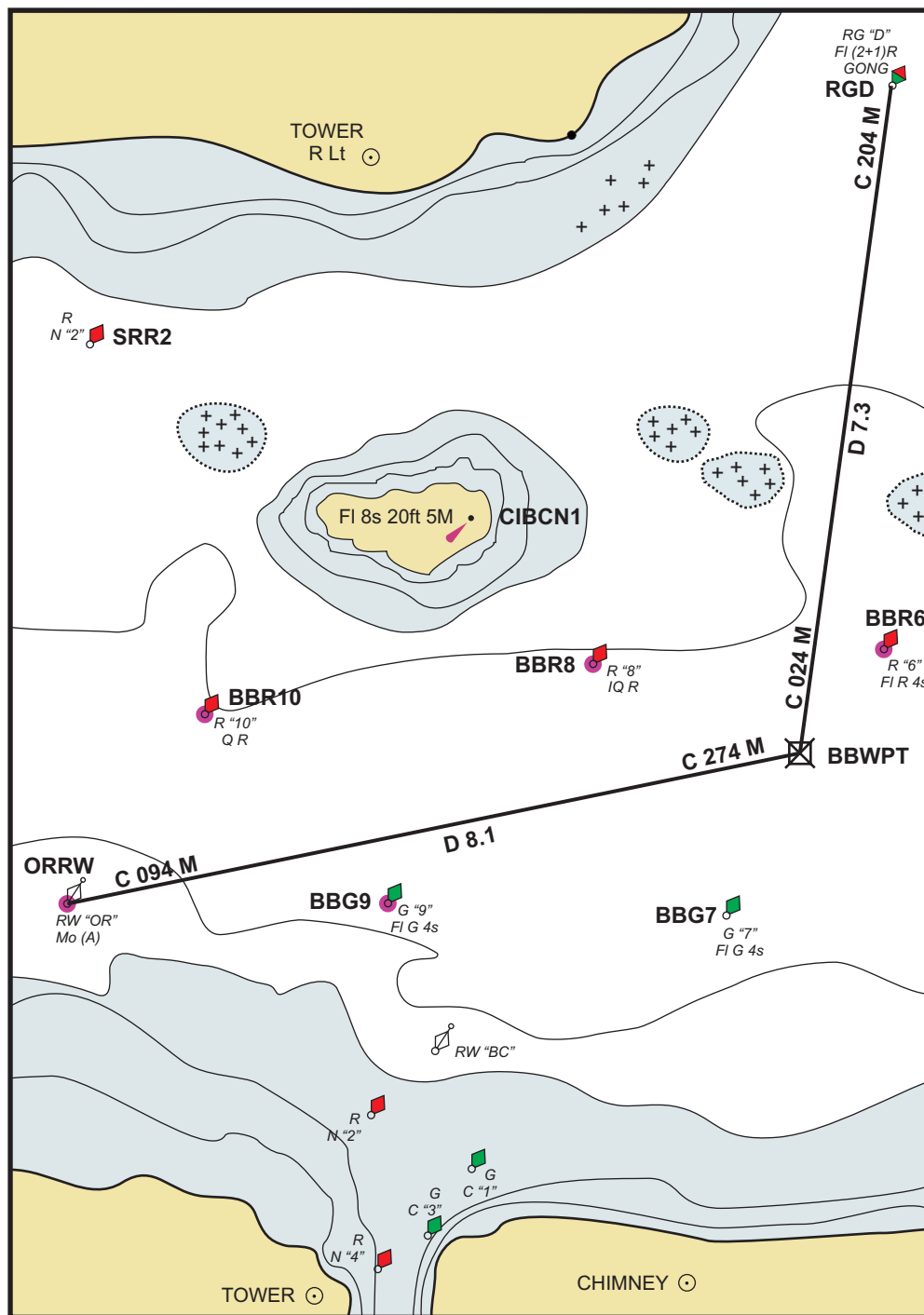
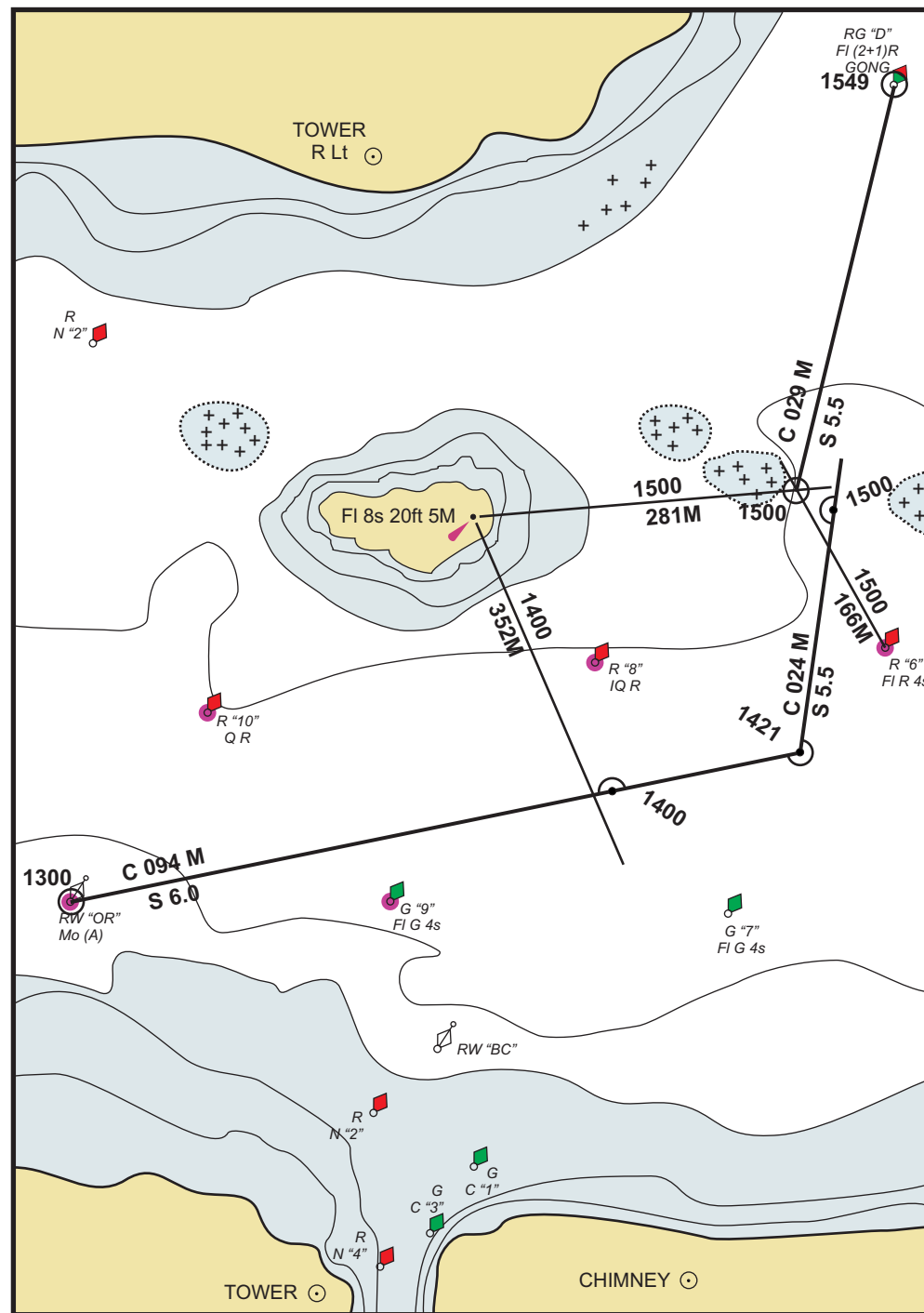


Planning - Waypoint Navigation



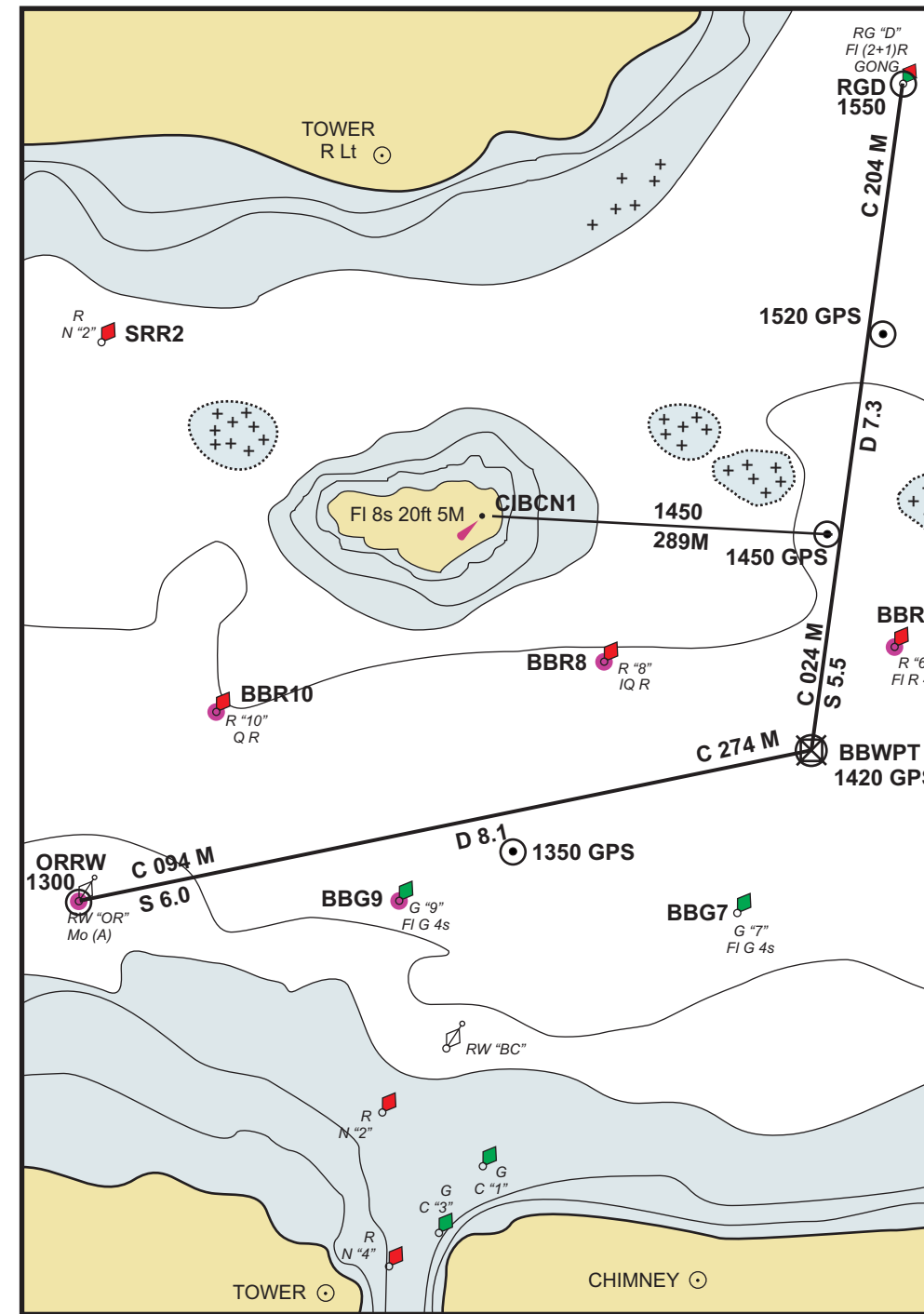
Waypoints are identified, legs are plotted, course directions and distances are labeled with reciprocal courses shown. Where waypoints are navigation aids, only the waypoint name is labeled. Other waypoints are identified by the unique waypoint symbol.

Underway - Dead Reckoning



Ranges are pre-plotted. Underway, Dead Reckoning courses are plotted (DR Track) and labeled with course direction and speed. DR positions are plotted at nominal intervals (approximately each hour) and labeled with time. Bearings are plotted and labeled with bearing and direction. A DR is plotted on at the time of each bearing.

Underway - GPS Waypoint Navigation



Waypoints, and legs are pre-plotted. Underway, Speed is labeled for each leg. Periodically (nominally hourly or when needed) GPS position is plotted. If possible, the GPS is checked with a bearing or other source. If the GPS is suspect, determine current position from bearings or last known good position by reverse dead reckoning (reason for labeling speed and plotting GPS fixes). Proceed using dead reckoning, verify by bearings.

Symbols	Units	Precision	Coordinates	Time
FIX position	DISTANCE = nautical miles (nm)	nautical miles + tenths (e.g., D 12.4)	Latitude: L [degrees, minutes and tenths] N or S (e.g., L 41° 36.2' N)	1030, 1345
DR position	SPEED = knots (kn)	knots: 2 significant digits (e.g., S 5.6, S 11)	Longitude: Lo [degrees, minutes and tenths] E or W (e.g., Lo 72° 23.2' W)	Time: 24-hour clock, four digits
Waypoint position (other than nav aid)	COURSE = degrees (°)	degrees: plot whole numbers ± 1° (three significant digits)	the above is default for USPS without leading zeros	Labeling: Horizontal for fixes, diagonal for DR's Above the line for bearings