Terrestrial - Deviation Tables

Overview

A “Deviation Table” sometimes called a “Deviation Card”, is a quick reference tool posted on the vessel’s bridge to show the amount of deviation for any heading. Over reliance on electronic navigation aids, gyro compasses, radar, GPS, DP, etc. has become a problematic issue today. Many navigator’s neglect to pay close attention to the importance of the Magnetic Compass. Proper maintenance and routine checks for accuracy are required of this navigation tool. Should the vessel’s Gyro Compass fail all navigators MUST be able to use the Magnetic Compass properly. Knowing how to correct for deviation and variation at any moment while underway is a mandatory skill for all navigators. (Power failures in key navigation equipment can happen unexpectedly, be prepared)

The “Deviation Table” is originally constructed during initial sea trials when the vessel is built or when new magnetic compass is installed. A professional compass adjuster embarks the vessel to assist. The Master and navigation team position the vessel in an open area with a know fixed object on the chart is in sight. When all are in position, the Master will slowly turn the vessel in a circle. The compass adjuster will coordinate with the navigation team as the vessel is swung. A lead navigator using a bearing circle and a gyro compass repeater will call out “mark” on various headings as per compass adjusters needs. It maybe 20°, 30°, or he may ask to hold position. The team is marking the difference between Gyro and Magnetic heading through a 360° turn. During this the compass adjuster is dampening the effects of the ship’s metal and electronic units nearby using magnets, flinders bars, and sets the quadrantal spheres correct position. The objective is to minimize the effect of ships magnetic field acting on the magnetic compass through all 360° hence less overall “Compass Error” when converting a “PSC” heading/bearing to a “True” heading/bearing”. This task is done for each magnetic compass onboard if more than one. Once this is completed the “Deviation Table” is constructed.

At least annually this important task is completed by a professional or a trained Master/Mate to keep it current. It may also need to be completed if major steel work was done or if new electronic equipment was install as they will have an effect on deviation.

USCG Navigation Problem (Near Coastal) Question 611

You swung ship and compared the magnetic compass against the gyro compass to find deviation. Gyro error is 2°E. The variation is 8°W. Find the deviation on a true heading of 258°.

●1 Locate the proper diagram. Since the reference is 258° T, use the PGC column and find the two PGC numbers it falls between.
(Gyro compass reference because it seeks true North)

Deviation Table: 611

611. *(5.2.3-11)*

HEADING
PSC-PGC
030.5°-020°
061.5°-050°
092.0°-080°
122.5°-110°
152.0°-140°
181.0°-170°
210.0°-200°
239.5°-230°
269.0°-260°
298.0°-290°
327.5°-320°
358.5°-350°

●2 Setup **CDMVTGEG** table and insert known items from question.

C	D	M	V	T	GE	GYRO
239.5°			8°W		2°E	230°
				258°		
269°			8°W		2°E	260°

●3 Using the given information in the table, solve for deviation in both rows working from Gyro to Deviation. See Mariner Advancement "Marine Compass General" explanation from drop down menu in upper left hand corner of this window on how to solve compass correction tables. C D M V T GE G

C	D	M	V	T	GE	GYRO
239.5°	.5°E	240°	8°W	232°	2°E	230°
				258°		
269°	1.0°E	270°	8°W	262°	2°E	260°

Using the solved deviations which 258°T falls between, interpolate to find deviation for heading 258°T. Generally, round to the nearest .5°. In this case 258°T is so close to 262°T use 1.0°E. There may be questions which require more accuracy. See question 761 on the next page on how to find the exact deviation between the two solved deviations. Also, be very careful to choose East or West error correctly!!!

C	D	M	V	T	GE	GYRO
239.5°	.5°E	240°	8°W	232°	2°E	230°
	1.0°E			258°		
269°	1.0°E	270°	8°W	262°	2°E	260°

Answer: 1.0°E