

MAGNETIC FIELD MEASUREMENT

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There have been recent reports of a magnetic field orientation change of up to five degrees. A digital logging magnetometer is often running at this location, and attention is focused on unusual magnetic field activity. Anomalies have occurred in the past and they have been recorded and discussed on this research site. Any relatively sudden directional change in the orientation of the magnetic field of up to five degrees would be a phenomenal event.

A measurement has been taken at this location on this date. There is no unusual or unexpected value of magnetic declination occurring on this date, and at this time and location. A surveyor's transit (30 sec. horizontal resolution) has been used to measure the angle from magnetic north (estimated accuracy : 15 minutes of arc) to a known

azimuth of true north. The true azimuth is known to approximately one or two minutes of arc. The angular measurement at this time and date is 10 degrees and 15 minutes, counterclockwise from magnetic north to the known azimuth. The accuracy of this entire procedure is estimated at approximately +/- 15 minutes of arc.

This leads to an expected magnetic declination value of approximately 10 and 1/4 degrees East at this location (+/- 1/4 deg).

From numerous sources and methods, this is well within any expected value for this location.

From the World Magnetic Model 2000, the declination for Santa Fe, NM is currently estimated at 10.0 degrees East. From a 1983 United States Geological Survey quadrangle, the declination is stated at 11.5 degrees. The annual change is currently estimated at approximately 5 minutes of arc (negative). This leads to an expected change of approximately 100 minutes of arc, or 9.8 degrees East.

Again, both values agree quite well with the observed declination value, as the daily variation of the magnetic field alone can reach up to approximately $1/4$ degree¹. A change of approximately 1.5 degrees over a 20 year interval also does not exceed any expected change in the orientation of the magnetic field.

In short, observation **at this location at this time and date** does not support any claim of any relatively sudden change in the orientation of the magnetic field of up to 5 degrees. This conclusion is made for this location, this date and this time only. It is understood that alignment with the magnetic field lines is not the equivalent of alignment to the pole location. If any such claims of change of this magnitude are made, they will need to be substantiated with observations of sufficient accuracy. If such data becomes available, it will be of immediate and tremendous interest. The possibility of local variations, however extreme, must also be allowed for. The suggestions for testing over a larger area are fully

over a larger area are fully supported and hopefully they will occur.

This finding does not deny the presence of and recording of anomalous magnetic field activity, especially as related to pulse type data. There also may be a significant increase in ferromagnetism levels, as determined from measurements that have been made several months ago. The result of that research has not yet been presented on this site. There is the possibility of ferromagnetic resonance being a factor in these studies². The reception of ELF-VLF energy in coincidence with the magnetic field lines has also been previously discussed. Change in geomagnetic activity at any level does exist as an important research topic.

My appreciation is extended to those who are actively monitoring geophysical field changes, and let us hope that this network extends broadly and quickly at the citizen level.

1. Charles B. Breed, *The Principles and Practice of Surveying, Volume I.*, (John

Wiley and Sons, 1931). 27.
2. Max Born, Atomic Physics,
(Dover reprint, 1989), 163-164.

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