

INTRODUCTORY ADDRESS¹

Data on the geomagnetic field in the Balkan region and state borders were regarded as confidential information for a long time. Unfortunately this meant that geomagnetic field information was confidential information. The Republic of Macedonia was in a complicated situation because geomagnetic investigations were carried out by experts from Belgrade, Serbia and Montenegro. When Macedonia became an independent country, a team of experts from the Faculty of Mining and Geology, Department for Geology and Geophysics in Stip and Faculty of Natural Sciences and Mathematics, Institute of Physics in Skopje, started activities to establish a Geomagnetic Observatory in Macedonia. In the last four years, with the help of Dr. Jean Rasson from Institut Royal Météorologique, Centre du Physique du Globe in Dourbes, Belgium, a network of 15 repeat stations for measurement of the geomagnetic field in the Republic of Macedonia was created. For the first time since independence, all elements of geomagnetic field were determined.

Detailed measurement of the geomagnetic field is especially important at airports. Without information about the geomagnetic field there is real danger that aircraft compasses can not be calibrated at the airport. The magnetic compass is still the primary navigation device on aircraft. In case of failure of other electronic navigation devices (GPS, VOR) the magnetic compass will play an important backup role. The failure to correctly calibrate magnetic compasses represents a big threat to airport navigation systems.

Knowing the geomagnetic field elements is of interest in navigating airplanes. The most important geomagnetic element is declination. Precise values of declination make it possible to calculate mathematically exact geographic directions critical to navigation. Geographic north and magnetic north do not coincide. The difference between the two is the angle of declination. This is why there should be a correction made to the angle of the compass on the airplane.

Precise declination measurements must be made to increase airplane safety. There are special locations (compass certification pads) where airplanes can test the accuracy of their compass. These locations are free from magnetic contamination and have a minimal field gradient. In these locations precise directions of the geomagnetic field and geographic north are plotted so that when an airplane is at the site, its compass can be calibrated.

¹ Speech given at the inauguration ceremony of the NATO Advanced Research Workshop

Currently, this kind of certification is not done at Macedonian airports. This workshop will be useful to evaluate different solutions based on the experiences of participating countries. Also we will organise a round table for improving procedures of geomagnetic field measurements at airports.

Knowledge of the magnetic field distribution over the Republic of Macedonia also provides the means to produce magnetic charts of declination. Such maps are necessary for completing aeronautical charts and to compute the magnetic headings to be followed in order to navigate from one airport to another. The international collaboration proposed by this ARW is especially useful for this purpose.

Bearing in mind the central geographical position of the Republic of Macedonia, it is of special interest to use geomagnetic field data of neighboring countries (Bulgaria, Greece, Albania and Serbia and Montenegro).

Collaboration is important because the geomagnetic field depends on geological conditions and does not recognize state borders. Through an exchange of information at the workshop, these goals may be obtainable.

We must improve airplane safety and adopt procedures for measuring the geomagnetic field elements at airports. It is of special interest for airports in Macedonia and for all airports in the Balkan region.

The workshop will result in the transfer of knowledge, data and exchange of recent experiences, as well as the possibility to define new methods and procedures in observations of the geomagnetic field at airports for better safety of flying.

This workshop is motivated by recent geomagnetic measurements made in the Republic of Macedonia and the need to connect our data with data from neighboring countries and the presentation of this data to the public. On the other hand, a workshop like this, in the Balkan region with colleagues from EU countries and NATO members will be a contribution for better collaboration and understanding, which, unfortunately, in this region is not yet at the proper level.

The conclusions from the workshop will help to determine procedures for geomagnetic field measurements at the Macedonian airports. This should happen as soon as possible, to improve airport safety.

Basic scientific motive is the connection of the geomagnetic field in the territory of the Republic of Macedonia with neighbouring countries. This may help solve some border problems with interconnection and interpretation of the geomagnetic field. Very often measurements in border zones were impossible and extrapolations had to be made. Now that we can compare our data from both sides of the border, we have an opportunity to define the exact values for the geomagnetic field, and in some cases, possible common measurements to improve the data.

The basic motive in the presentation of experiences and discussions about procedures for geomagnetic measurements at the airports is the introduction of these procedures to the airports in the Republic of Macedonia and dissemination of this type of experiences from EU countries to countries in the Balkan region.

Another motive is that countries from the region may cooperate in advanced techniques, such as geomagnetic field measurements among themselves as well as with other developed countries, although in the Balkan region different destructive processes have taken place for a long time.

In general, the workshop should initiate collaboration between countries from the Balkan region and EU countries in the field of exploring and observing the geomagnetic field. The Workshop should contribute to implementation of the highest standards for measurements of geomagnetic field elements at the airports in Republic of Macedonia and make them safer.

The Workshop will also promote recent measurements in the Republic of Macedonia (carried out during 2002 – 2004).

**President of the Parliament of the Republic of Macedonia,
Dr Ljupco Jordanovski.**