# New Faults from the Geodynamics of South Katanga in D.R.Congo

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## ABSTRACT

**The main subject of this study is "New faults from the geodynamics of South Katanga in D.R.Congo "**

**We suggested investigating in D.R.Congo, if it is possible to discover new or other intraplate faults which can have relationship with the Rift Valley. This request is very important because many discovered faults in the Great Lakes Region are interplates and ranged along of the Rift.**

**Therefore, a systematic analysis of the seismicity of DR Congo is made using data from local and international observatories as IRSAC or CRNS, ISC, ISS and USGS.**
**The seismic map of D.R.Congo was built for a period of 105 years from 1910 to 2015.**
**So, the focal mechanism of last the earthquake in this region was reassessed to determine the direction of tension axis, type of faults and correlation which exist between seismicity and the geodynamic of this region. The result of focal mechanism shows that the associated type of fault is normal fault.**

**However, 1 zone was selected as ROI in Katanga, in order to discover if possible, the intraplate faults which could have tectonic implication from Rift Valley. After analysis of satellite images (Landsat 8), and aeromagnetic data from GECOMIN, 12 intraplate new faults were found in the chosen zone ($Z_1$). But the results show that the intraplate faults of $Z_1$ are not directly connected to the Rift but it is possible they come from special geologic processes of this region.**

# CHAPTER ONE
# INTRODUCTION

From the early 19th century, when the seismic stations have begun to be installed in some parts of the World, it was noted that the region of Rift valley was the headquarter of earthquakes and volcanic eruptions. These phenomena don't contribute to the well-being of humanity and the conservation of nature.
The geodynamic study of the Rift Valley Region will generally lead to the knowledge of earth's crust movements, the seismicity of the region and the structural change taking place across the globe.

As the Earth's surface is constantly deformed because of the stresses acting on the surface crust of the earth, it is possible to accurately assess these forces through the tectonics that studies the deformations and folds within the globe. The deformations can be directly linked to the sudden release of energy accumulated in the underground rocks or on boundaries of tectonic plates, which are manifested in the form of earthquakes.

It is obvious that most earthquakes occur in subduction zones, border converging plates at mid-ocean ridges, in rift zones where plates diverge and in regions that have experienced deformation over time. A large number of earthquakes is generally observed at sea, in the oceans, even in remote locations. This makes it difficult watching faults on the ground and preventing analysis of rock breaking.

Seismology has provided effective methods for the study of tectonic plates, the internal structure of the Earth and the projected attempt earthquakes.
The seismicity is also a hot topic in the Great Lakes Region where several major earthquakes are recorded. This phenomenon has caused many fractures in various parts of the East African Rift and its surroundings.

The Democratic Republic of Congo, being one of the seismic African countries located near the Rift Valley, has full of active faults in Kivu Lake, Tanganyika Lake and in the surrounding areas.

The faults associated with major earthquakes, can be observed with the naked eye, as in the case of an earthquake that occurred in San Francisco in 1906, the Ruwenzori event in 1966; the Kabalo event in 1992; the ones which took place in Kalemie in 2005 and in Bukavu in 2008. The major faults like the ones that occurred in San Andreas in the USA, on the border of two adjacent plates of the Earth's crust, are activated by the forces that cause continental drift.

However, by observing the topography of an area, we can also see whether observed epicenters, for example, on the seismic map of D.R.Congo, have led to deformations of the earth's crust in this area. This will meet the hypothesis of Jacques Mercier (2011), in his book entitled "Tectonics", saying : « by a simple observation of rocks highly deformed, such as mountain ranges, you can see, obviously the main types of deformations, the folds and the other breakage ».

The seismotectonics shows that there is obviously a recurrence between fault activity and the general behavior of faults on the seismogenic zone. This discipline is based on historical and instrumental seismology.

## 1.1. Problem and data

The occurrence of earthquakes usually results from breakage of the rock. However, we know that, even for large earthquakes, surface faults are not always observable either because of the remoteness of the focal zone, or it is inaccessible, as in the case of submarine earthquakes or in the case of earthquakes that take place in the lake or buried in thick sediment.

In some other cases, the measures of focal parameters are biased, because of the action of weather agents; or that, the actual focal zone is simply inaccessible, since located at several kilometers deep under the ground.

Thus, the analysis of structural geology movements of Rift will help to deduce the physical parameters of faults associated with the rupture of the rock mechanism and identify the kinematics of these faults. This can be made by focal mechanism study.
The focal mechanism will also allow us to acquire information not only about the process of the formation of the fault, but also the whole dynamic of the area surrounding the seismic source or the nature of tectonic tensions that prevail at source before the earthquake occurs ( Ngindu, 2017). These tectonic tensions are largely involved in the deformations and folds which are observed on the surface of the Earth's crust.

Therefore, on the map of D.R.Congo, many epicenters and faults are observed at the East part of the country. This part is located in the region of African Rift Valley and covers almost a 1/3 of the country. So, the problem is expressed in the following question:

- **Is it possible to discover other intraplate faults on the seismic map D.R.Congo, which would have relationship with tectonic movement of Rift valley?**

### 1.2. Discussion

Therefore, the raison why we would answer this question is explained in simple way:
¤ Firstly, several works made by scientists to discover faults and deformations were concentrated in the African Rift Valley zone, especially in Tanganyika Lake zone, in Kivu , Edouard and Albert Lake zones. We think that researchers worked principally in this part of D.R.Congo because the East part of the country is seismically active. The activity that takes place at the plate's boundaries or in rift zone is called interplate activity.

On the other hand, few works were made in the plate of D.R.Congo, particularly in Congo Basin, at the North and in the Southern zones (Buiter et al., 2011). However, at the western part, there are two provinces especially, Kinshasa and Kongo Central Congo where any epicenter was registered. It is the same for some other parts of Katanga.

The events which take place in the plates far from the rift are called intraplate activities. These kinds of activities can be characterized by the occurrence of earthquakes or break of rock in the same plate. Thus, it can be possible to find other faults on the plate of D.R.Congo map.
¤ Secondly, the Great Lakes Region, in D.R.Congo part, is potentially rich in mineralization. That depends on geological formations. In addition, we know that fault is, in Geology, a planar or gently curved fracture in the rocks of the Earth's crust, where compressional or tensional forces cause relative displacement of the rocks on the opposite sides of the fracture. Faults range in length from a few centimeters to many hundreds of kilometers, and displacement likewise may range from less than a centimeter to several hundred kilometers along the fracture surface (the fault plane). In some instances, the movement is distributed over a fault zone composed of many individual faults that occupy a belt hundreds of meters wide. The geographic distribution of faults varies; some large areas have almost none, others are cut by innumerable faults.( See more : https://www.britannica.com/science/fault-geology).

So, it is important to make analysis on some zones of the region to see if the tectonic evolution has generated new faults in the Plates or there are some unknown faults somewhere in the plate.

### 1.3. Research objectives

This study should help to correlate deformation and rock breakage mechanism in order to better understand the movement from geodynamic and tectonic activities of D.R.Congo. Seismicity which generates tectonic movements is the engine of some risks in the region. The D.R.Congo is a concrete example of these kinds of risks because, in its eastern part, there are many lakes in the depressions delineated by rift faults. Mention from North to South, respectively, we have 4 great lakes which are located in the Rift Valley such as: Albert Lake, Edward Lake, Kivu Lake and Tanganyika.

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Earthquakes that occurred in the region of Great Lakes, first created a fracture field resulting in the modification of the geometry of this region ( Brahic A.,2004). It can be possible that the tectonic activities provoke some deformations in the plate apart from Rift valley. These deformations can appear under the form of faults or folds at the limit of plates or in the very plate.

The main objective of this study is to highlight the impact of seismicity in the distortions that affect the surface layers.

**1.4. Research environment conditions.**
In this study, we will investigate only the cases of tectonic earthquakes that are most prevalent across the globe, covering around 95% of the known earthquakes. The period of studying is from 1910 to 2015.

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# CHAPTER TWO
# TECTONICS AND SEISMICITY OF D.R.CONGO

## 2.1. Tectonics: Definition and Concepts

Tectonics is the discipline of Earth Sciences that studies deformations of the earth's crust. [Mercier (2011, p 1)].

The term "tectonic" derives from the Greek "Tektonikos" meaning specific to the architect or the structure.

This definition was the basis of the confusion among many authors, from whom considered tectonics as a synonym of structural geology. Currently, tectonics is a separate discipline which deals with land structures associated with the Kinematics and Dynamics of movement at the surface of our planet. These movements are mainly due to elastic waves or seismic waves generated during the release of accumulated energy in the ground.

## 2.2. Causes of tectonics

The causes of tectonic have been identified through the development of knowledge in terrestrial and marine geophysics which demonstrated the mobility of the surface of our planet leading to the concept of continental drift or tectonic plates. Several researchers have contributed to the study of continental drift and sea floor spreading particularly Wegener (1915), Hess (1962), Vine and Matthews (1963). It is expressed by movements of plates whose boundaries surfaces are marked by the epicenters distribution of major earthquakes. This mobility results in a buildup of stresses that create movements which produce faults and affect the upper part of the mantle.

Other causes of tectonics are due to a much depth of plates because of the phenomenon of subduction.

## 2.3. Tectonics of Plates

Tectonics, as said earlier, is that the part of geology that studies the nature and rock deformation causes, more specifically, the deformations at large-scale in land lithosphere. A tectonic plate is a rigid rock volume, thin in relation to its surface.

Plate tectonics is a global scientific theory which interpret unifying deformation of the lithosphere as the result of internal forces to land and that deformations result in the cutting of the lithosphere in a number of rigid plates that move with each compared to the other by sliding on the asthenosphere.(Bourque, 2004).

From the deepest ocean trench to the tallest mountain, plate tectonics explains the features and movement of Earth's surface in the present and the past.

Plate tectonics is the theory that Earth's outer shell is divided into several plates that glide over the mantle, the rocky inner layer above the core. The plates act like a hard and rigid shell compared to Earth's mantle. This strong outer layer is called the lithosphere.

Developed from the 1950s through the 1970s, plate tectonics is the modern version of continental drift, a theory first proposed by scientist Alfred Wegener in 1912. Wegener didn't have an explanation for how continents could move around the planet, but researchers do now. Plate tectonics is the unifying theory of geology, said Nicholas van der Elst, a seismologist at Columbia University's Lamont-Doherty Earth Observatory in Palisades, New York. (See more at: http://www.livescience.com/37706-what-is-plate-tectonics.html#). The Fig.(2.1) shows limits and movements of plates.

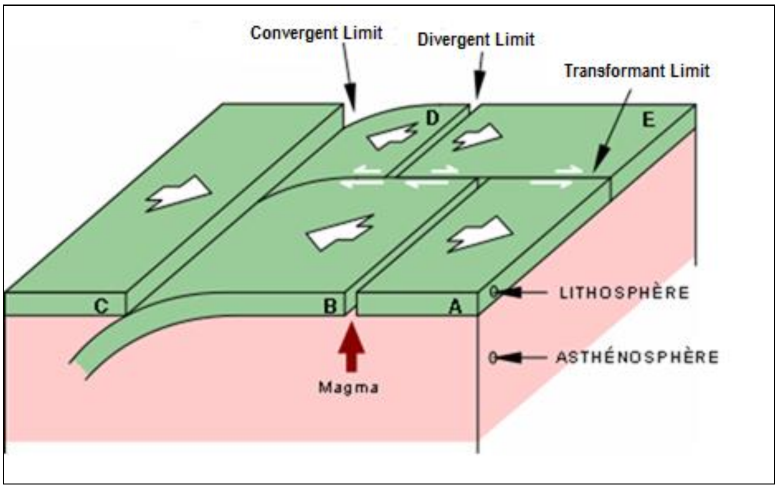


Fig. (2.1). Limits and movements of lithospheric plates

The movements of the plates determine three types of boundaries between plates:

1) the divergent boundaries, where plates move away from each other and where there is production of new oceanic crust; as shown in Fig.(2.1), between the plates A and B, D and E;
2) Convergent boundaries, where plates collide, the result of divergence; between the plates B and C, D and C;
3) Transforming boundaries, when the plates laterally slide against each other along faults; such limitations allows accommodating differences in speeds the movement of one plate relative to the other. That is clearly shown in Fig.(2.1) between A and E, and between B and D, or even reverses of displacement direction, as between B and E plates.

The hypothesis of plate tectonics is based on rheological distinction of the lithosphere and the asthenosphere (Pomerol, 2000).

To understand the general mechanisms that direct tectonic seismicity, it is true that the earth's surface is composed with the oceanic crust and continental crust from their geological and seismological characteristics. Both crusts are separated from the mantle by a discontinuity of speed of seismic waves, called Mohorovicic, commonly known as the "Moho". With the outer part of the mantle, they form the lithosphere, which is rigid and which rests on the asthenosphere, top coat which is deformed in ductile manner, thus allowing the displacement of the lithospheric plates. Within the upper mantle boundary between the lithosphere and asthenosphere is temperature dependent so that the thickness of the lithosphere varies.

**2.4. Seismicity of DRC**

2.4.1. Tectonic earthquakes and Geo**d**ynamics

In this part, we are making a look on relationship between tectonic earthquakes and the Geodynamic of the African rift region.

Tectonic earthquakes are the shocks produced by the sudden rupture of rocks imposed by the stresses due to tectonic plate movements (Brahic A., 2006).

At their outbreak, seismic waves generated by the sudden release of energy accumulated in the crust, spread across the globe. However, to better interpret the propagation of these waves, it is necessary to have a precise description of the nature of sources that generate them.

Detailed knowledge of these sources is important because the generation of seismic waves is a complex dynamic process. Most seismic sources involve process of faulting within the globe. Each type of fault is associated to a focal mechanism (TORNE & TERRY, 1995).

However, the focal mechanism of the earthquake gives information about the process of the fault formation, its direction and dip.
To establish the relationship between the focal mechanism and dynamics of faults, it is necessary to understand first, the concept of geodynamics.

Generally, the geodynamics, as part of the Earth Sciences, has for objective, the study of the fragile surface structure of the plate boundary, the internal structure of the earth and internal manifestations of the Earth (Bourque, 2004). There are two types of geodynamics: Internal and external geodynamics.

The seismic regions cover the globe more or less with narrow belts, defining the large plates where earthquakes are rare.

Most outbreaks occur less than 20 km deep, but can go up to 700 km in depth. Seismologists rank them in 3 categories: shallow earthquakes (less than 60 km), intermediate earthquakes (60 - 300 km) and deep earthquakes (over 300 km). [Lliboutry L, 1982]

For tectonic earthquakes which are most frequent, there have been at the source, breaking of rock with the formation of a fault, or more often, by an ancient fault reactivation game. In the latter case the old fault can be hundreds of kilometers, but during an earthquake, it plays only on a limited portion: to be specific, when a large earthquake occur, the fault can be activated from a few meters to some kilometers. The best example is the case of Ruwenzori earthquake which took place in 1966 whose fault was activated on a distance of 150 km with a depth of 28 Km. The fault game can gradually decrease until it becomes zero at the periphery of the zone that was activated, unless the fault reaches the surface. The major faults intersect reaching the topographical surface and the different geological layers of quasi-linear manner. Unfortunately, the different geological layers will not be developed in this work because our target doesn't go deeper in applied geology. It concerns directly the tectonics and the geodynamics activities.

**2.4.2 Faults of Rift valley and seismic active events**

The geological and geophysical context of the area including the lakes Tanganyika, Kivu, Edouard, Albert and Muero in the Democratic Republic of Congo, have been described by several authors during the last decades, e.g. Cahen(1954), Lepersonne (1973), Sutton and Berg (1958), Debremaecker (1959), Zana(1978), Zana and Tanaka (1980) among others. The seismic station run by IRSAC, presently CRSN during the period from 1954 through 1990 provided pertinent figure of the seismic activity of this African part of the continent. The decline of this seismic network due to social unrest has been mitigated by the recent use of greater sensitive seismometers all over the world that allow to the detection of moderate and greater magnitude events occurring in this region. The seismic activity of this zone includes mainly moderate magnitude events, but several greater magnitude of earthquakes have been experienced during the last decades such as the Uvira (1960), the Ruwenzori (1966), the Kabalo (1992), the Kalehe (2002), the Kalemie (2005) and the Bukavu (2008) events whose magnitudes ranged between 6.5 to 7 . All these events were accompanied with surface faults, landslides and significant damage to human infrastructures, lifelines and loss of human lives (Ngindu D., 2017).

The region is supposed to be in the nascent stage of drifting as recorded by the arc alignment of deep lakes whose water depth is as deep as 1500 m,e.g., Tanganyika lake. The fault lines observed in many parts of this area are mainly of normal faulting ones.(Atalay A., 2002). The Fig.(3.3) shows the faults created by D.R.C seismic active events in the Est African Rift.

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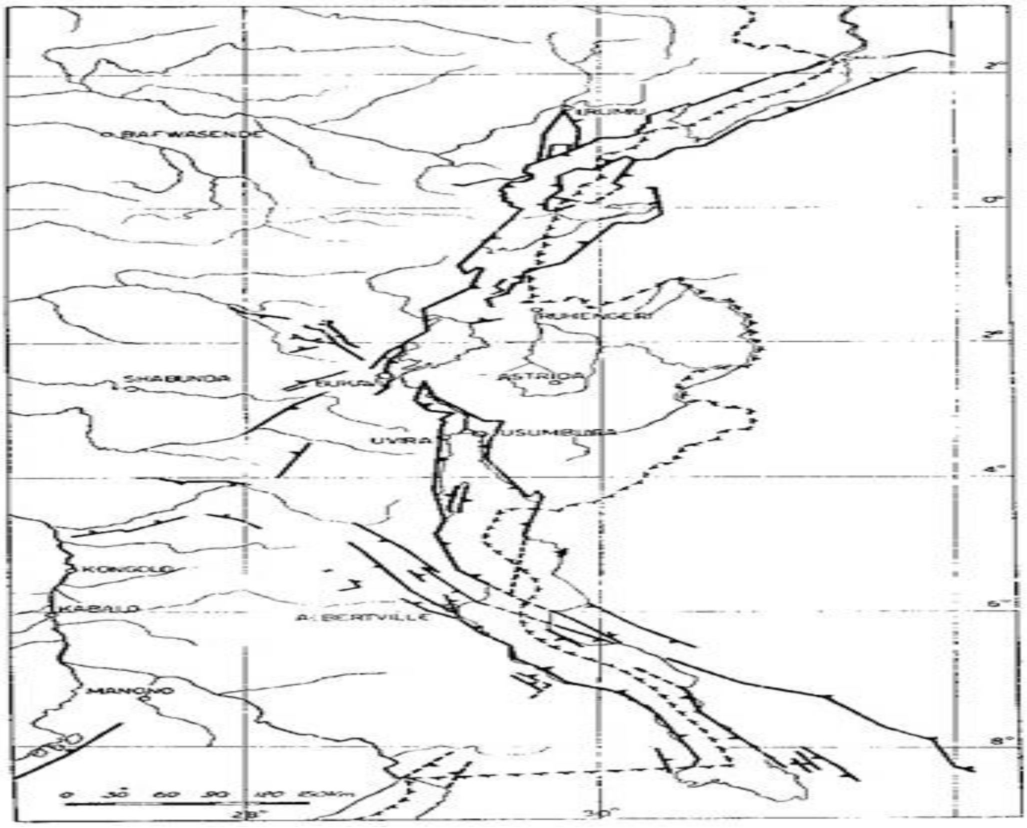


*Fig.(2.2). Faults in Rift Valley in D.R.Congo*

In the third phase we will also make seismicity analysis of Katanga province and make comparison to the field of fractures in the same zone.

Finally, we will use samples of satellite images in order to identify other faults in a part of Katanga province and conclude from what geological event they are coming. This study will also use aeromagnetic available data from airborne of South Katanga as it will be shown in the part 5 of this work.

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# CHAPTER THREE
# METHODOLOGY OF STUDY

To carry out this research, we will first, take the list of earthquakes recorded in the DRC area, by reviewing catalogs and selection of major earthquakes having magnitude 3 or more, on the Richter scale, for the period from 1910 to 2015.

– The first phase is the investigation of all existing earthquake data on paper publications, on catalogs of USGC, ISC and other international sources which can be available;

– the second phase is to collect all data from DRC observatories and surrounding seismic local stations such as Lwiro (LWI) in Bukavu, Butare (BTR) in Rwanda, Uvira (UVI) , Rumangabo (RMG), Observatoire Volcanique de Goma(OVG), Bobandana(Bob) at Kalehe in South Kivu and Butembo (BTC) in North Kivu. Much of the data was drawn from publications of the Institute for Scientific Research in Central Africa (IRSAC), currently Center of Research in Natural Sciences (CRNS), which used the above stations from 1953 to 2007;

– The third phase consist of using the software ArcGIS 10.3.1, to build the seismic new map of DRC based on collected data from national and international observatories. ArcGIS often represented by ArcMap icône, is made up of three software product levels: Basic, Standard, and Advanced. These products share a common architecture but provide increasing levels of functionality. Basic provides the base mapping and analysis tools. Standard provides all Basic capability and includes additional processing and advanced editing, the Advanced provides all standard capability plus advanced analysis and processing.

After this step, we will use also the software Matlab to study the evolution of earthquake frequency from 2010 to 2015 in Katanga province which is our zone of interest.

The MATLAB software is in automobile active safety systems, interplanetary spacecraft, health monitoring devices, smart power grids and LTE cellular networks. It is used for machine learning, signal processing, image processing, computer vision, communications, computational finance, control design, robotics, and much more. In this work, it will be used for image processing and graphics.

– The fourth phase is the comparison between the seismicity map and deformations that affect the chosen area;
– The fifth phase is the research of new or other faults which are not drawn on the tectonic map, using some samples of satellites images (Landsat 8) in a part of DR Congo principally in Kolwezi. By Remote Sensing, we will make analysis on these images to discover lineaments, Faults or probable faults and folds if possible. The software which will be used here for analysis is Quantum GIS (QGIS).
– The sixth phase is to use aeromagnetic data from GECOMINES which was a mining company, to generate the magnetic map in order to have or not the confirmation of presence of new faults on the chosen area. The magnetic map will be built from the software surfer 10. Surfer is a grid-based mapping program that interpolates irregularly spaced XYZ data into a regularly spaced grid. Grids may also be imported from other sources, such as the United States Geological Survey (USGS).

The grid is used to produce different types of maps including contour, vectors, images, shaded relief, 3D surface, and 3D wireframe maps. Maps can be displayed and enhanced in Surfer, allowing producing the map that best represents the data. Adding multiple map layers, customizing the map display, and annotating maps with text which can allow creating publication quality maps.

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# CHAPTER FOUR
# DATA ANALYSIS

In this part, we shall present strategies and techniques used in data analysis. The Appendix of used data will be annexed at the end of this work.

We started our study by making the list of earthquakes recorded in the Great Lakes Region with emphasing on the data recorded in D.R.Congo and investigating the ISC and USGS catalogs to extract data from 1910 to 2015.

After that step, we took all data in the same period from local observatories which are described in the table (4.1).

## 4.1. Seismic Observatories in DR Congo

In this country, the Seismic data were recorded by the following observatories:

| N° | STATION | LATITUDE(°) | LONGITUDE(°) | PROVINCE | Company |
|---|---|---|---|---|---|
| 1 | Lwiro (LWI) | -2,239 | 28,802E | Sud-Kivu | CRSN |
| 2 | Rumangabo (RUM) | -1,340 | 29,360E | Nord Kivu | OVG |
| 3 | Butembo (BTC) | - 0,133 | 29,266E | Nord Kivu | CRSN |
| 4 | Uvira (UVI) | - 3,400 | 29,116E | Sud-Kivu | CRSN |
| 5 | Mulungwishi (MLN) | - 10,783 | 25,400E | Katanga | IRSAC |
| 6 | Lubudi (LBC) | - 9,900 | 25,983E | Katanga | IRSAC |
| 7 | Lubumbashi (ELI) | - 11,650 | 27,466E | Katanga | CRSN |
| 8 | Binza (BIN) | -4,366 | 15,250 | Kinshasa | METTELSAT |
| 9 | Luboga (LBG) | -1,275 | 29,117E | Nord Kivu | OVG |
| 10 | Katale (KTL) | -1,344 | 29,350E | Nord Kivu | OVG |
| 11 | Bulengo (BLG) | -1,633 | 29,141E | Nord Kivu | OVG |
| 12 | Kibumba (KBB) | 1,520 | 29,343E | Nord Kivu | OVG |
| 13 | Nyiragongo (NYI) | -1,522 | 29,083E | Nord Kivu | OVG |
| 14 | Rusayu (RSY) | -1,583 | 29,188E | Nord Kivu | OVG |
| 15 | Nyamulagira (NYA) | -1,416 | 29,200E | Nord Kivu | OVG |
| 16 | Kibati (KBT) | -1,570 | 29,283E | Nord Kivu | OVG |
| 17 | Kunene (KNN) | -1,488 | 29,074E | Nord Kivu | OVG |
| 18 | Goma(GOM) | -1,688 | 29,241E | Nord Kivu | OVG |
| 19 | Bobandana(BOB) | -1,706 | 29,013 E | Sud Kivu | OVG |

*Table (4.1). Seismological Observatories in D.R.C.*

The first 8 stations shown in the table (4.1) were installed as part of the first geophysical network of Belgian Congo (1954-1957) and supported by the program of the International Geophysical Year (1957) under the patronage of UNESCO. Other stations were recently installed in order to set up for Nyirangongo and

Nyamulagira a monitoring network such as the Volcanological Observatory of Goma (OVG). Unfortunately, actually some other stations as Butembo (BTC), Uvira (UVI), Mulungushi (ELI), Binza (BIN), Lubudi (LBC), with the disrepair of equipment, stopped working needing new equipment.

As a short history, the OVG station installed at Mount Goma was born with the presence of scientists from Lwiro who were invited at Goma for a short period to make a seismic motoring to the volcanic area in Virunga Park. After their observations, they found that the volcanic area is very active and decided to install a new station there for continual observations.

Today, the Kivu seismic network has already the best material including 3 seismometers with the following characteristics:

¬ 1 Broadband Güralp: own period of 60s
¬ 1 Lennartz intermediate: period of 5s
¬ 1 compact Trillium Broadband: period of 120s,

The reading of data is taken from a program PQL 2010 on a computer that immediately presents the spectra or seismograms not only with three components, but also the day, date and time specifying the minutes and seconds when the earthquake takes place. Thus, all data listed are compiled in the D.R.Congo seismic map as epicenter in Fig.(4.2).

**4.2. DRC seismic map**

The Fig.(4.2) represents the seismic map of Congo, developed from detailed seismic data (Annex I), for a 105-year period from 1910 to 2015. This map is built using the software ArcGIS 10.3.1, in GCS_WGS_1984.

This map shows a high concentration of epicenters in its eastern part and especially in areas of depressions in the East African Rift, where Albert, Edouard, Kivu and Tanganyika lakes are located.

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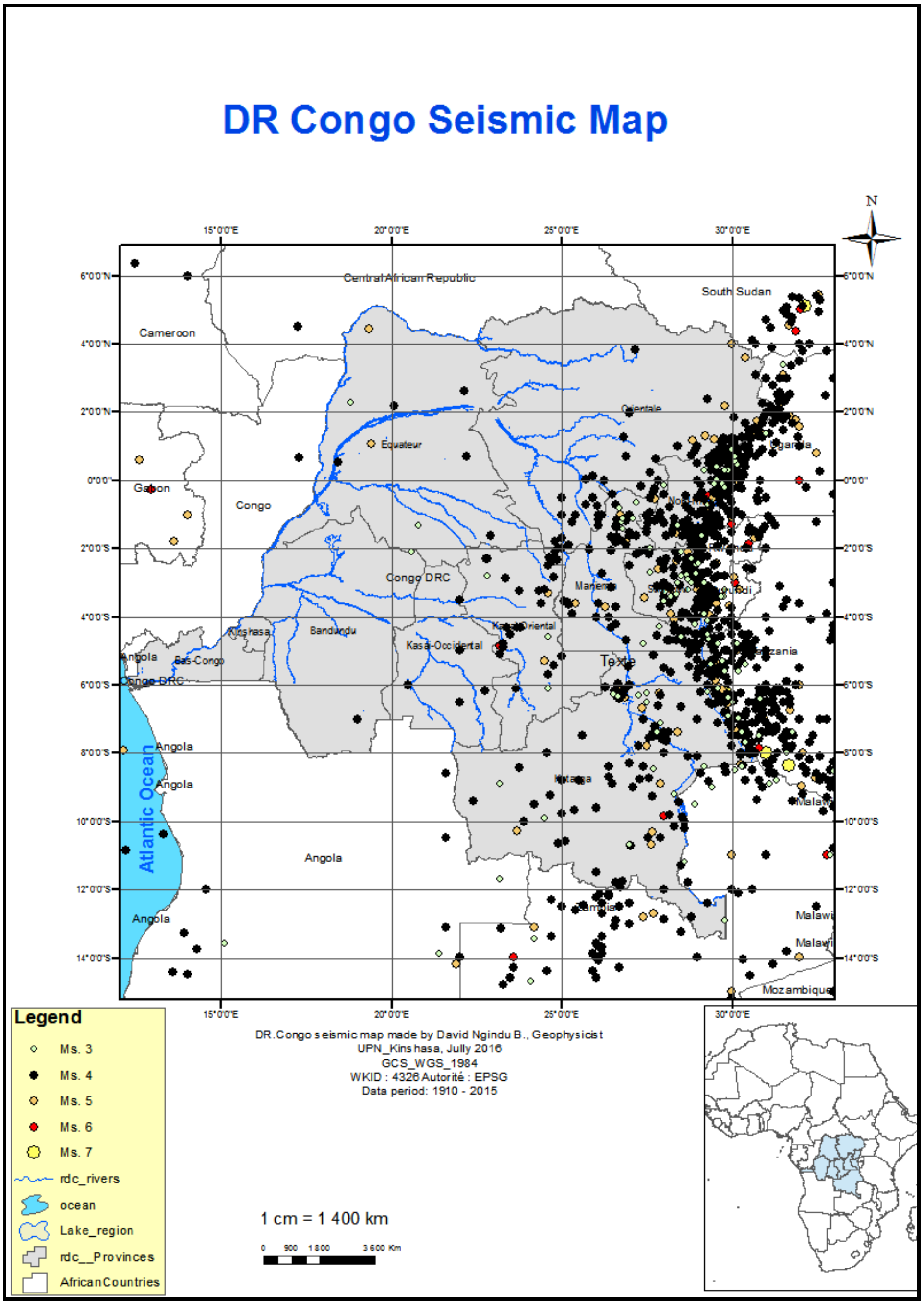


*Fig.(4.1): Spatial distribution of epicenters in DR Congo from 1910 to 2015* **(***Ngindu,2016)*

The D.R.Congo and its surroundings recorded 1756 earthquakes during one hundred and five years from 1910 to 2015. This map shows clearly different epicenters colored according to magnitudes (Ms.) as indicated in the table (4.2).

| Magnitude | Ms 3 | Ms 4 | Ms 5 | Ms 6 | Ms 7 | Ms 8 |
|---|---|---|---|---|---|---|
| Frequency | 110 | 1453 | 162 | 27 | 4 | 1756 |

*Table (4.2). Frequency of earthquakes in Ms. magnitude.*

According to frequency of earthquakes, the Kivu region is one of the most seismic African areas because there are epicenters having magnitude (Ms.) varying between 3 and 7. The spatial distribution of earthquakes is shown in Fig. (4.1).

The Fig.(4.2) gives the histogram of D.R.C seismic frequencies for 105 years.

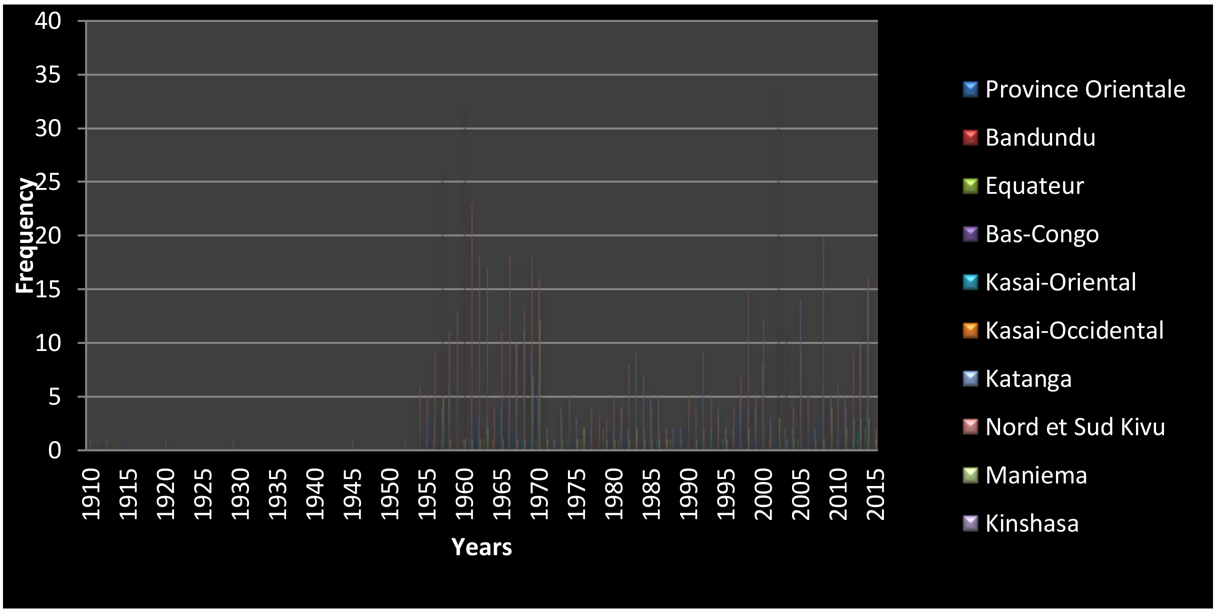


*Fig.(4.2). The histogram of .D.R.C seismic frequencies from 1910 to 2015.*

The frequency of seismic activity of D.R.Congo Fig.(4.2) varies significantly from 1954, when seismic stations were installed in Congo and in some other African countries.

The table (4.3) gives the frequency of seismic activity in D.R Congo from 1910 to 2015 for 11 provinces and the average magnitude of each year.

| **Y/P** | PO | **BDD** | **EQ** | **BC** | **KOC** | **KOR** | **KT** | **NSK** | **MN** | **Kin** | **DRC FR** | **A.M** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1910 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.3 |
| 1911 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1912 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 6.2 |
| 1913 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1914 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1915 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6.6 |
| 1916 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1917 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1918 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1919 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1920 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 5.6 |
| 1921 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1922 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1923 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1924 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1925 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1926 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1927 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1928 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1929 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 5.9 |
| 1930 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1931 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1932 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1933 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1934 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1935 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1936 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1937 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1938 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1939 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1940 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1941 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1942 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1943 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1944 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1945 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 6 |
| 1946 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1947 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1948 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1949 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1951 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.8 |
| 1952 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 6.15 |
| 1953 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1954 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 4.6 |
| 1955 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 8 | 4 |
| 1956 | 3 | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 0 | 0 | 16 | 4 |
| 1957 | 1 | 0 | 0 | 0 | 0 | 1 | 4 | 26 | 5 | 0 | 37 | 4.1 |
| 1958 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 11 | 1 | 0 | 20 | 4.4 |
| 1959 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 13 | 4 |
| 1960 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 32 | 1 | 0 | 35 | 4.1 |
| 1961 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 23 | 1 | 0 | 30 | 4.2 |
| 1962 | 3 | 0 | 0 | 0 | 2 | 0 | 3 | 18 | 1 | 0 | 27 | 4.1 |
| 1963 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 17 | 2 | 0 | 23 | 4.1 |
| 1964 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 0 | 0 | 6 | 4 |
| 1965 | 2 | 0 | 0 | 0 | 4 | 0 | 4 | 11 | 1 | 0 | 22 | 4 |
| 1966 | 5 | 0 | 0 | 0 | 2 | 0 | 5 | 18 | 0 | 0 | 30 | 4 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1967 | 2 | 0 | 0 | 0 | 0 | 0 | 10 | 10 | 1 | 0 | 23 | 4 |
| 1968 | 1 | 0 | 0 | 0 | 1 | 0 | 11 | 13 | 1 | 0 | 27 | 4.1 |
| 1969 | 1 | 0 | 0 | 0 | 1 | 0 | 9 | 18 | 7 | 0 | 36 | 4 |
| 1970 | 8 | 0 | 1 | 0 | 5 | 0 | 6 | 16 | 12 | 0 | 48 | 4 |
| 1971 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 | 4 |
| 1972 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 4.3 |
| 1973 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 1 | 0 | 9 | 4.7 |
| 1974 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 6 | 4.6 |
| 1975 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 1 | 0 | 6 | 4.7 |
| 1976 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 2 | 2 | 0 | 7 | 6 |
| 1977 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 6 | 5.5 |
| 1978 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 4 | 5 |
| 1979 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 9 | 4.2 |
| 1980 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 1 | 0 | 10 | 4.2 |
| 1981 | 0 | 0 | 1 | 0 | 2 | 0 | 4 | 4 | 0 | 0 | 11 | 4.8 |
| 1982 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 1 | 0 | 12 | 4.5 |
| 1983 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 2 | 0 | 13 | 4.8 |
| 1984 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 1 | 0 | 10 | 4.5 |
| 1985 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 4 | 1 | 0 | 11 | 4.5 |
| 1986 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 2 | 1 | 0 | 9 | 4.5 |
| 1987 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 4 | 4.5 |
| 1988 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 4.3 |
| 1989 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 4.1 |
| 1990 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 7 | 4.4 |
| 1991 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 8 | 4.4 |
| 1992 | 1 | 0 | 0 | 0 | 0 | 0 | 9 | 2 | 0 | 0 | 12 | 4.6 |
| 1993 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 0 | 7 | 4.9 |
| 1994 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 9 | 4.6 |
| 1995 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 7 | 4.6 |
| 1996 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 7 | 4.4 |
| 1997 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 7 | 0 | 0 | 15 | 4.6 |
| 1998 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 15 | 2 | 0 | 25 | 4.5 |
| 1999 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 10 | 4.7 |
| 2000 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 12 | 2 | 0 | 23 | 4.5 |
| 2001 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 0 | 0 | 6 | 4.5 |
| 2002 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 3 | 0 | 38 | 4.7 |
| 2003 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 12 | 1 | 0 | 15 | 4.6 |
| 2004 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 1 | 0 | 8 | 4.2 |
| 2005 | 1 | 0 | 1 | 0 | 0 | 0 | 14 | 9 | 0 | 0 | 25 | 4.3 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2006 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 5 | 0 | 0 | 11 | 4.7 |
| 2007 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 5 | 4 |
| 2008 | 3 | 0 | 0 | 0 | 0 | 0 | 6 | 20 | 1 | 0 | 30 | 4.5 |
| 2009 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 4 | 0 | 14 | 4.5 |
| 2010 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 9 | 4.4 |
| 2011 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 2 | 0 | 13 | 4.1 |
| 2012 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 3 | 0 | 13 | 4.3 |
| 2013 | 3 | 0 | 1 | 0 | 2 | 0 | 10 | 10 | 3 | 0 | 29 | 4 |
| 2014 | 0 | 0 | 2 | 0 | 4 | 0 | 15 | 16 | 3 | 0 | 40 | 4.2 |
| 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 4 | 3.7 |

*Table(4.3). Frequency and Average magnitude of earthquakes in the R.D.C from 1910 to 2015.*
*Notice : Y = year ; P= province ; PO= Province Orientale ; BDD= Bandundu ; EQ= Equateur ; BC= Bas-Congo ; KOC= Kasai Occidental ; KOR= Kasai Oriental ; KT= Katanga ; NSK= Nord and Sud Kivu ; MN= Maniema ; Kin= Kinshasa ; DRC FR= Frequency in Congo ; A.M= Average Magnitude.*

The table above is summarized by the clouds of points representing the trend of frequency of D.R.Congo seismic activity for a period of 105 years.

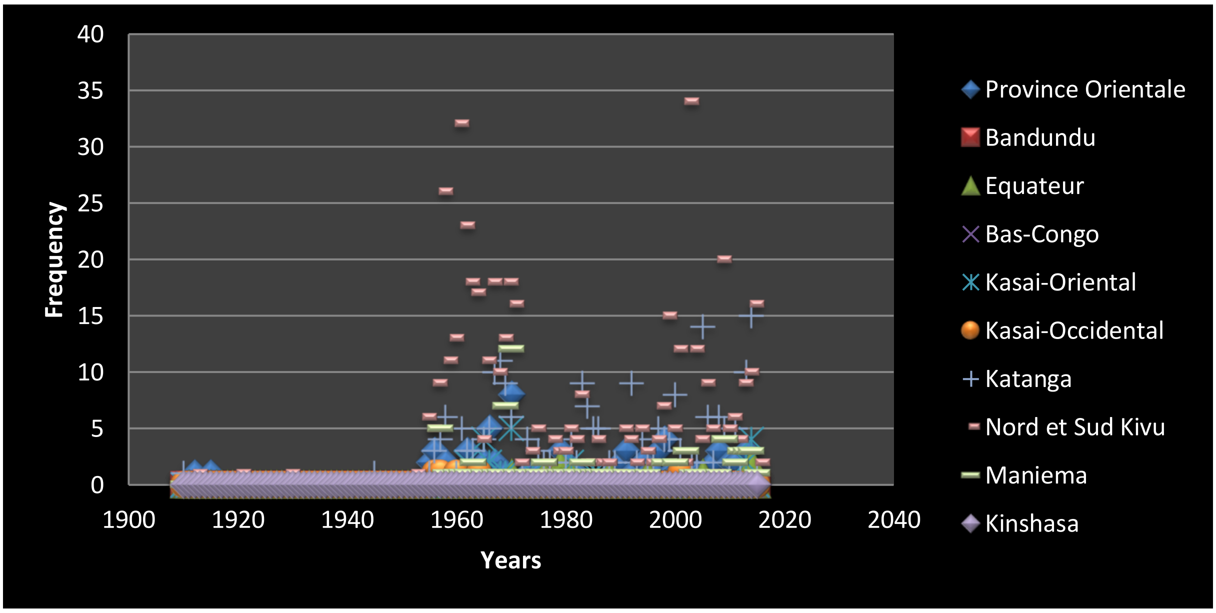


Fig.(4.3). Cumulative frequency plot of seismic activity in 11 provinces of R.D.C from 1910 to 2015.

If you put the cursor of your computer on one of the clouds which appear in the diagram of Fig.(4.3), you can have the information on the concerned earthquake and its spatial distribution within the DR Congo.

We notice that Kivu region is the most affected by seismic activity because it is not very far from the axis of the East African Rift.

The average magnitude curve of seismic activity in DR Congo, until these days, varies in the range of 3 to 7.4, on the Richter scale. The annual average magnitude varies from year to year because the seismicity of each area has no constancy of frequency character.

It is true that the number of earthquakes is increasing when years are going on. That is expressed by the tendency line in the following diagram.

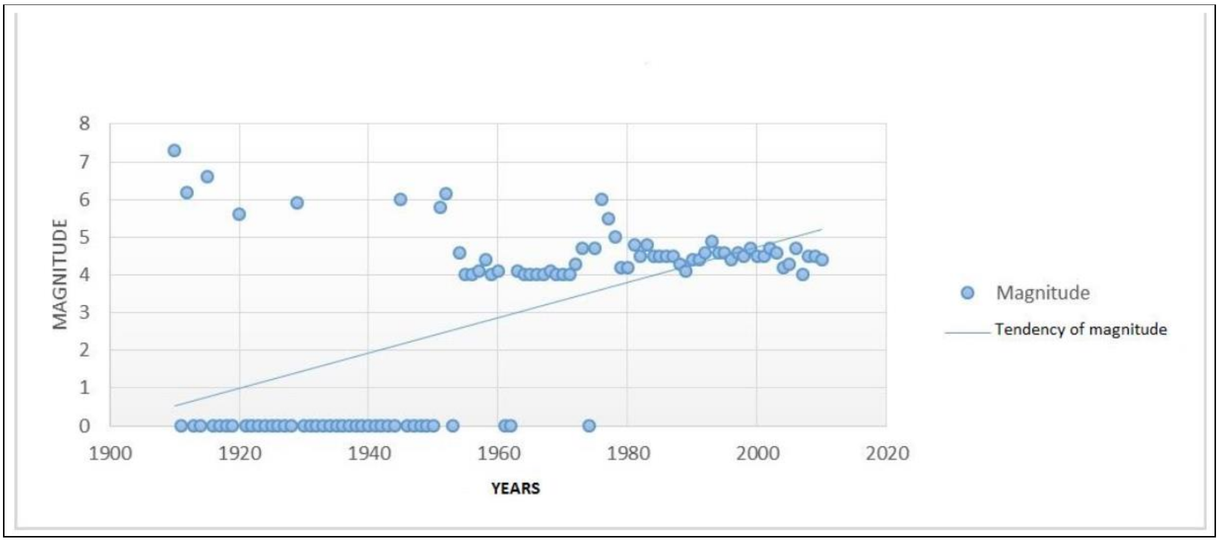


*Fig (4.4). Seismic clouds with tendency of Magnitude (1910-2015)(Ngindu D., 2017)*

The Fig.(4.4) shows the trend of the frequency curve. Gradually, year after year, the number of earthquakes tends to increase. This trend can be justified by the increase in instrumental detection.

We noticed that since 1910 through 1950, very few earthquakes were registered in this part of Africa because the seismic network was not developed as today. Moreover, the registered earthquakes would have magnitude more than 6. After this time, e.g. from 1951 to 2015, the number of events increases.

The Fig.(4.5) shows the relationship between the seismic average magnitude(A.M) curve and curve of frequency in DRC for 105 years.

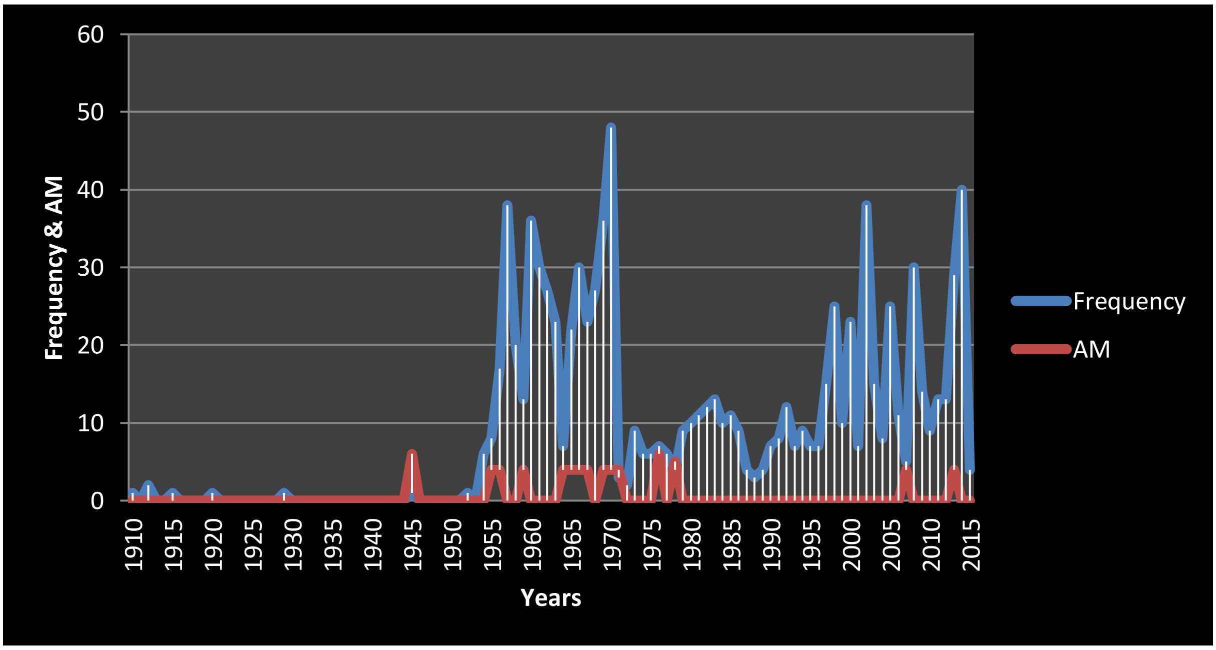


*Fig (4.5). Correlation ratio between Frequency and Magnitudecurves*

The curve in blue color gives the earthquakes frequency of the D.R.Congo earthquakes for hundred and five years. It is practically away more and more from the average magnitude curve from 1957 and reaches the maximum amplitude in 1967 and substantially decreases in 1970. Small variations were noted in 1973 and the curve remained almost constant until 1993. Some other variations were observed from 1994 to 2015, because there were only very small differences in the number of earthquakes recorded per year. In fact, this curve marks the difference between the period of great tectonic activities and the one where these activities are low.

However, let us make analyse of seismic activities of Katanga province because our region of Interest is chosen there.

### 4.3 Seismicity of Katanga.

Katanga province, which includes southern Tanganyika Lake, is also one of the areas which have intense seismicity. We note several epicenters of magnitude ranging from 4 to 4.9 by approximately 73.5% of all earthquakes recorded in this part of the country. Earthquakes of Ms. ranging between 3 and 3.9 represent 9%; between 5 and 5.9 are 14.2%, those of Ms.6-6,9 account for 2.1%, those of Ms. 7-7.4 are 0.86% as shown in table (4.4).

| **Magnitude** | **$M_s$. 3 – 3,9** | **$M_s$. 4 – 4,9** | **$M_s$. 5 – 5,9** | **$M_s$. 6 – 6,9** | **$M_s$. 7 – 7,4** | **Total** |
|---|---|---|---|---|---|---|
| **Frequency** | 21 | 170 | 33 | 5 | 2 | **231** |

*Table (4.4). Frequency of earthquakes recorded in Katanga from 1910 to 2015*

All epicenters recorded in the table (4.4) are plotted on the Katanga seismic map in Fig. (4.6).

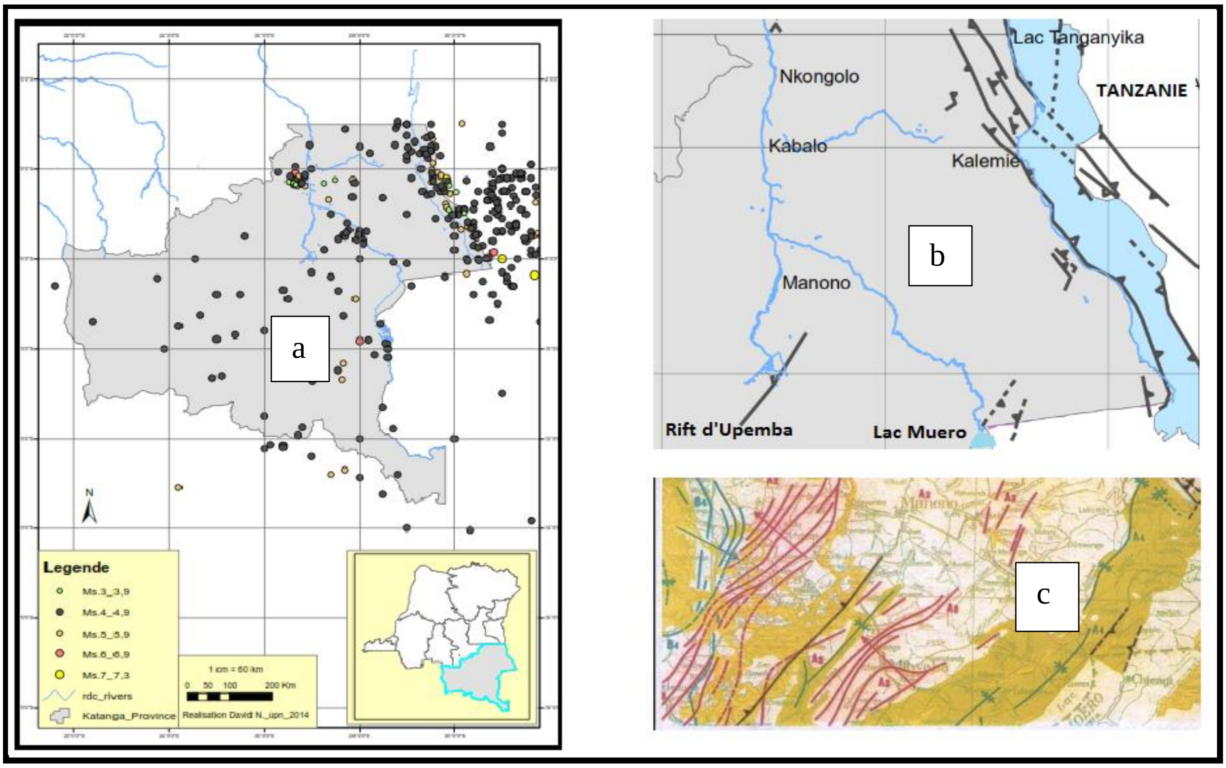


*Fig.(4.6). Seismicity of Katanga from 1910 to 2015*
*a) Map of epicenters location*
*b) Map of identified faults*
*c) Upemba Rift zone and Muero Lake basin*

We note that the epicenters are grouped in the southern part of Tanganyika Lake, in Kabalo and Manono. On the other hand, they are aligned in different directions, particularly in the depression of Muero Lake and, in Upemba Rift and along Lualaba River. Therefore, comparing the epicenters lineament of Fig.(4.6a) to the fault structure in Fig. (4.6b-c), fractures are oriented NE- SW in the area of Muero Lake and in Upemba Rift. In Tanganyika zone, the orientation is NW- SE and epicenters are very concentrated in the lake.

The seismic frequency curve of this province is given by the Fig. (4.7) as follow:

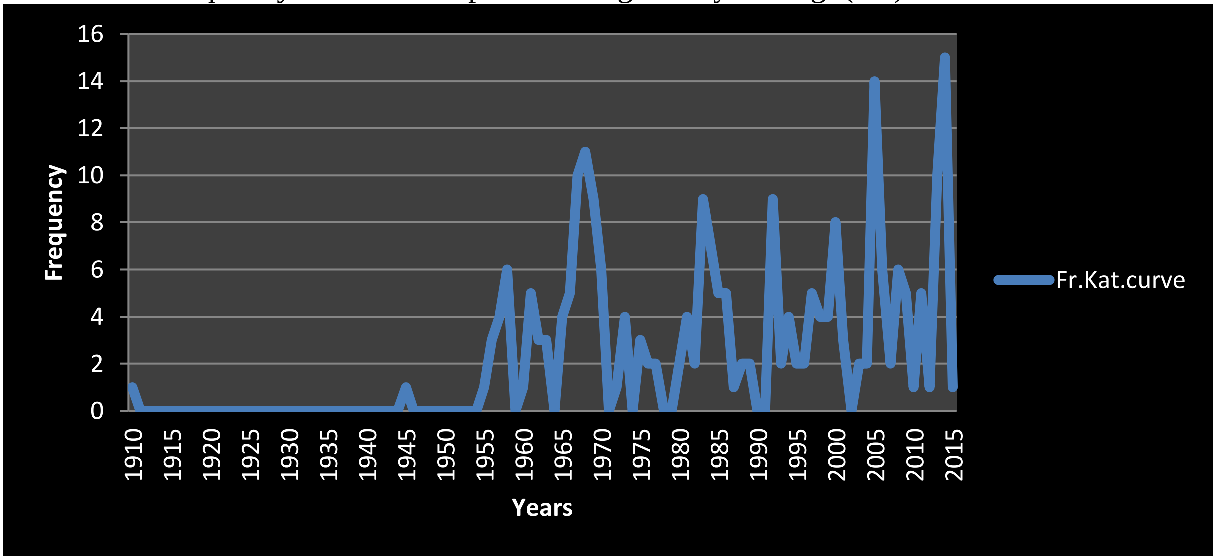


*Fig.(4.7) Katanga curve of seismic frequency from 1910 to 2015.*

The seismic curve of frequency in Katanga province (Fig.4.7) varies from 0 to 15. The significant change began in 1958 and the highest frequency is that reached in 2014 with 15 earthquakes during the same year.

We notice that seismic activity of the DRC is greater when approaching the axis of the East African Rift. This is clearly marked by high percentages of Rift neighboring provinces, as North Kivu, South Kivu and Katanga that already account for 80% of all recorded earthquakes in the country. Other provinces share only 20% of the seismic activity. The seismic activity on the East part of D.R.Congo involves the establishment of faults in the crust.

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# CHAPTER FIVE
# RESEARCH OF NEW FAULTS

## 5.1. Region of interest (ROI)

In this part we will make analysis on zone ($Z_1$) in Katanga province. The choice is based on an important number of existing data of this area. The ROI $Z_1$ is considered as sample of Congo geodynamic study and it will be better to intensify these kinds of research through the whole country in order to improve the DRC Database.

The Fig.(5.1) shows the ROI on the DR Congo new geological map.

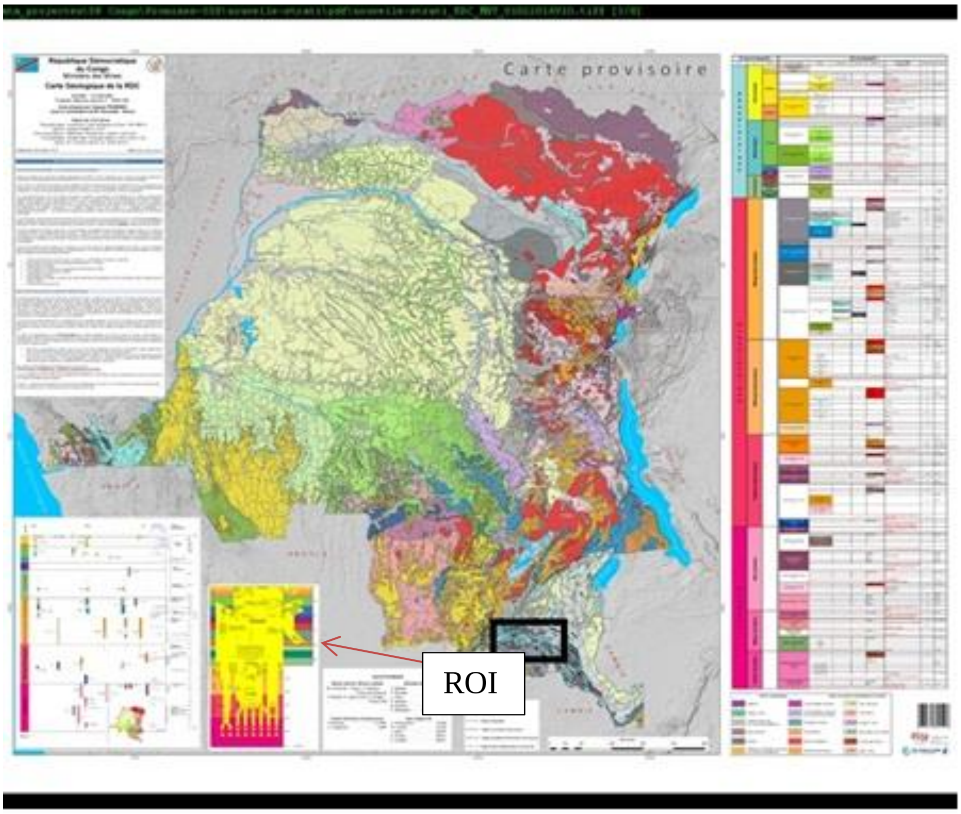


*Fig.(5.1) New geological map (Ministère des Mines., 2015)*

The ROI as shown on Fig.(5.1) is called Kolwezi-Likasi_Tumbwe in this work because the considered area begin from Kolwezi and extend to Tumbwe via Likasi.

The research in this region will be made first by satellite images using remote sensing to discover some information on this Zone. In second phase, it will be analyzed by inedited magnetic data from geophysics airborne of GECOMIN which took place in 1969-1970.

## 5.2 Satellite data Methods

We use Landsat 8 to make analysis after downloading 2 images of scenes from NAZA/ USGS earth Explore as shown in Fig.(5.2) and Fig.(5.3).

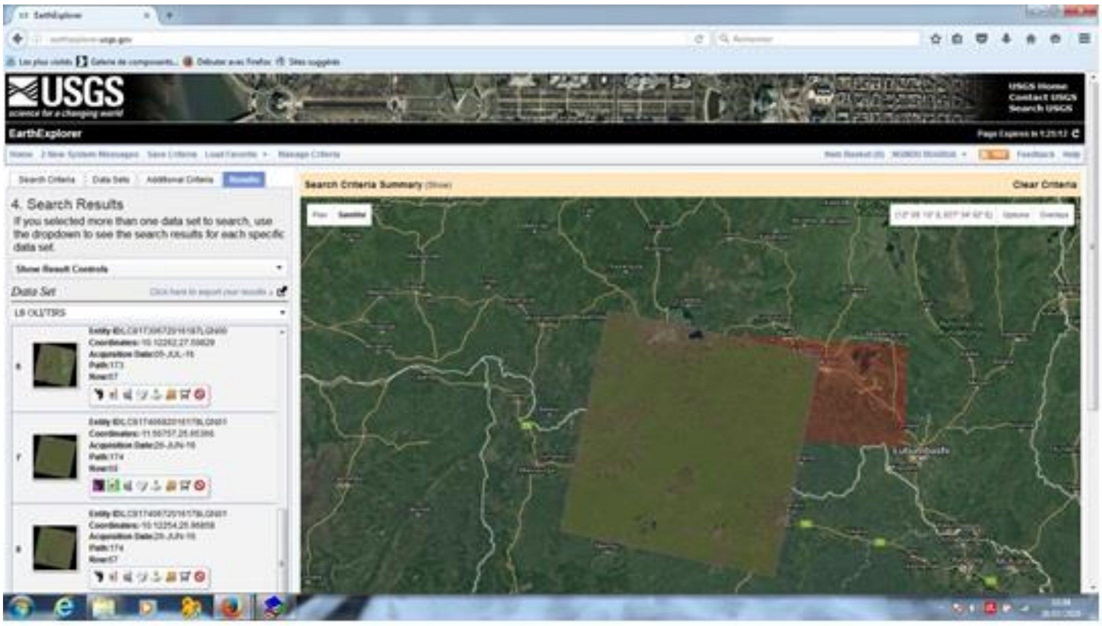

Fig.(5.2) Scene of Landsat 8 extracted on July 26, 2016(Left)

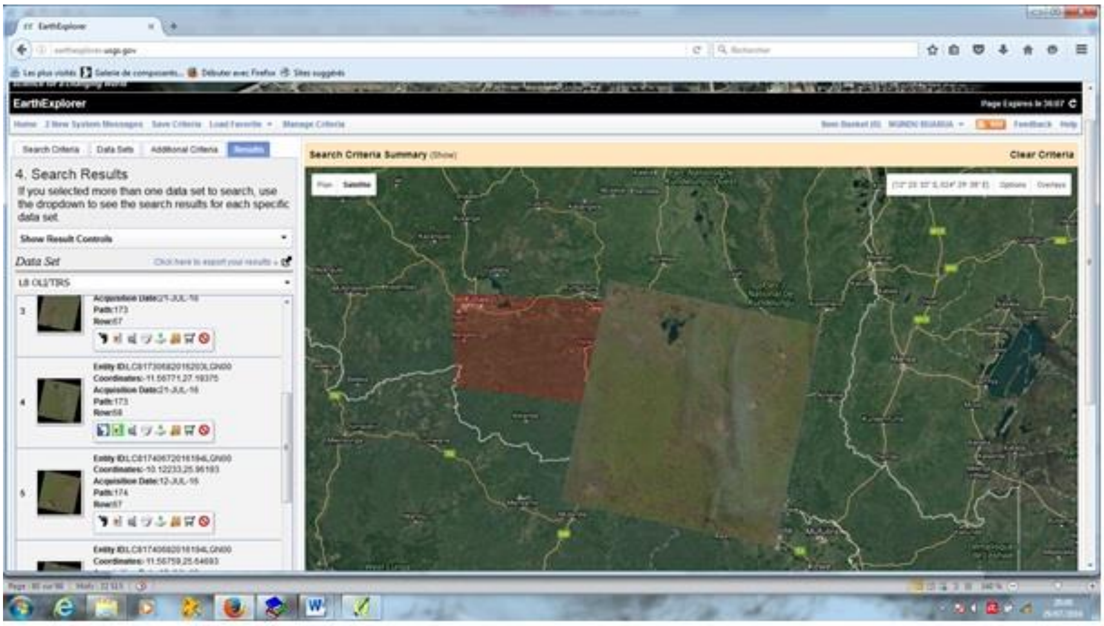

Fig.(5.3) Scene of Landsat 8 extracted on July 21, 2016(Right)

In Fig.(5.2), the identified Landsat scene is**:** LC81730682016203LGN00 having the following characteristics : WRS Path: 173, WRS Row**:** 068, **N**adir Full Scene. The identified sensor is OLI_TIRS and the scene was generated on 2016/07/21 with Sun Elevation: 47.43758957, Sun Azimuth: 44.73381386 and Geometric RMSE Model X: 5.998.

In Fig.(5.12), the identified Landsat scene is**:** LC81740682016210LGN00 having the following characteristics : WRS Path: 174, WRS Row**:** 068, **N**adir Full Scene. The identified sensor is OLI_TIRS and the scene was generated on 2016/07/26 with the same Sun Elevation, Sun Azimuth and Geometric RMSE Model like the first.

Before going on, it is important to know the advantages of Landsat images.

The Landsat program offers the longest continuous record of the general surface of the earth. Landsat-1 was launched by NASA in 1972 and Landsat-8 in 2013. The Landsat 8 product images of the whole earth every 16 days, and collecting every day, almost 400 scenes from the surface of the earth. Each of these scenes covers a surface approximately 170 x 185 km. In this study, we downloaded the Landsat 8 using 2 scenes covering our region $Z_1$ which is identified in Fig (5.1).

As regards the composite colors, Landsat 8 measure different classes of frequencies in the electromagnetic spectrum. Each class is called a band, and Landsat 8 has 11 bands. The energy measured by the Landsat sensor was emitted or reflected from the surface of the earth. Only a small portion of the spectrum of visible light can be perceived by the human eye. Landsat 8 numbers its red tape, green and blue as 4.3 and 2, so when we combine, we get true-color images. The resolution of these bands is 30 m. Different false-color composites can be generated using the bands 2 to 7, emphasizing changes in the types of rock or regolith cover that are not directly apparent when only the bands of visible light. Despite the 2 scenes used, we see a lot of cloud cover in Fig. (5.3). To minimize this problem in the current study, it is necessary to merge the scene with another in order to obtain good results. Thus, some very interesting details rocks can be observed including folding and faulting.

Then, after analysis of these scenes, results are given by the Fig.(5.4) and Fig.(5.5) in scenes b, c and d as follow:

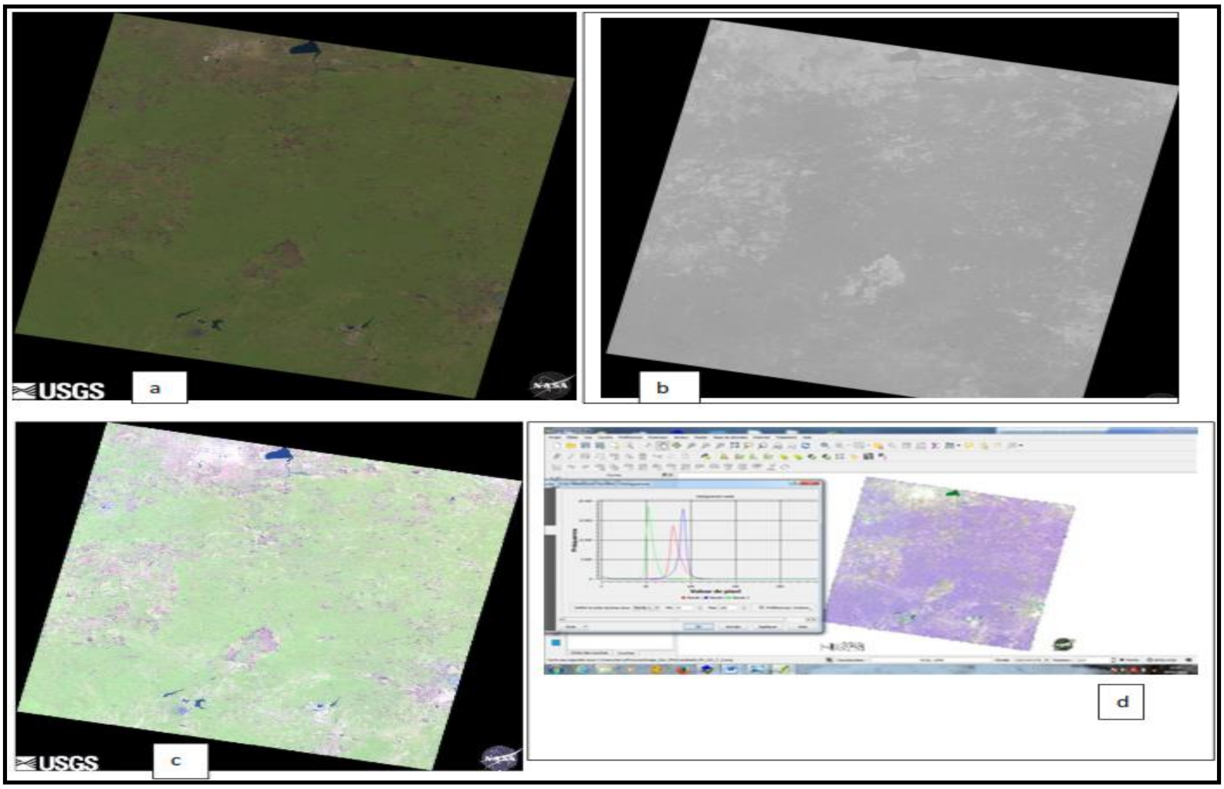


Fig.(5.4) Analyzed image using Remote sensing(Left scene)

a) *The naturel image of LC81740682016210LGN00*

b) *Extracted image of LC81740682016210LGN00 with 11 bands Merge*

c) *Composite colors image RGB :753*

d) *Composite colors image RGB : 531 and high reflectancy shown in his histogram*

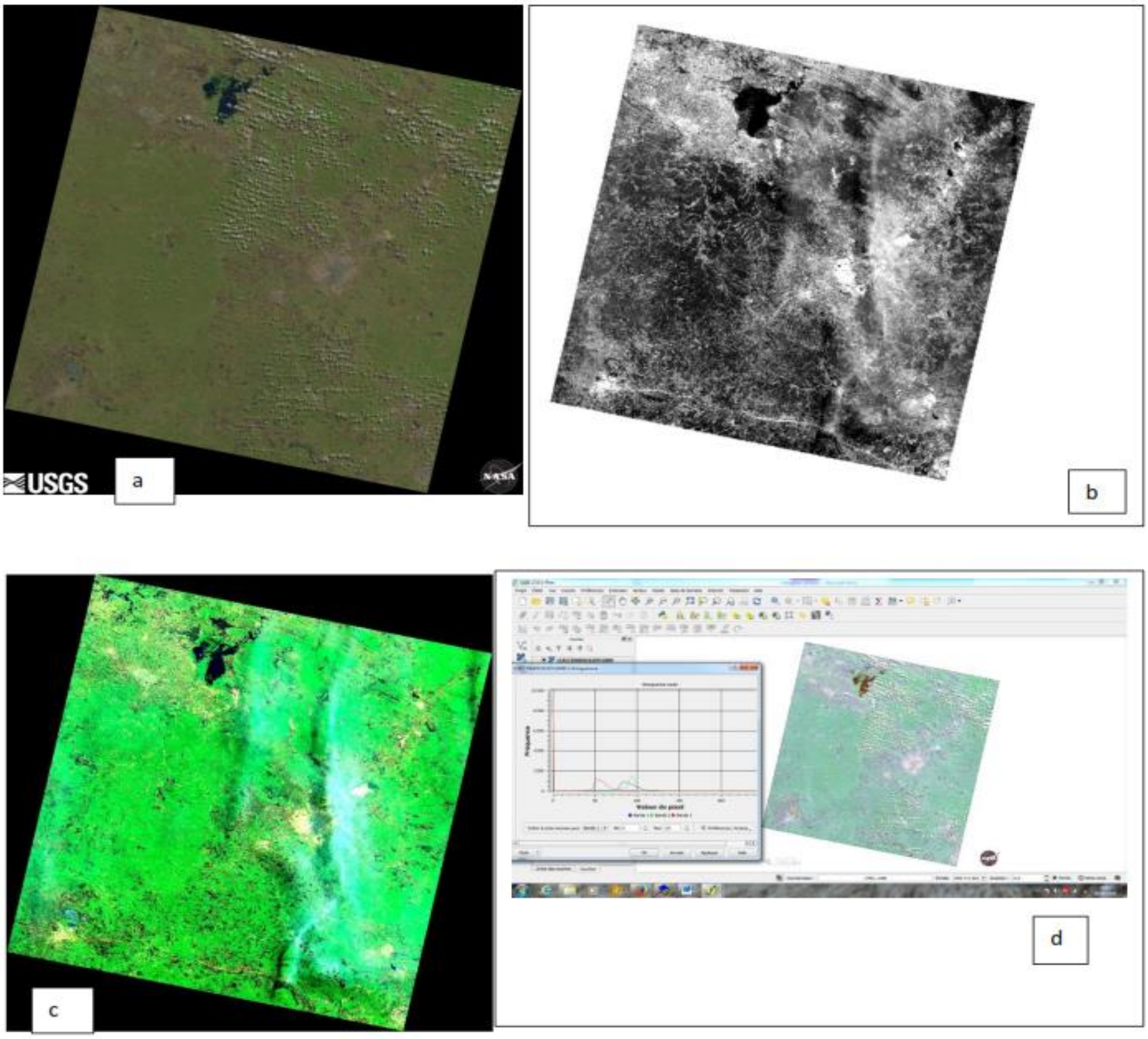


Fig.(5.5) Analyzed image using Remote Sensing(Right scene)

*e) The naturel image of LC81730682016210LGN00*

*f) Extracted image of LC81730682016210LGN00 having 11 bands Merge*

*g) Composite colors image RGB :753*

*h) Composite colors image RGB : 531 and low reflectancy shown in his histogram*

The obtained result shows that it is difficult to discover faults in analyzed Landsat images with precision for the present case. That is why we are combining these results with those found using aeromagnetic data.

**5.3 Aeromagnetic data Methods**

According to the method using aeromagnetic data, we are going to use data extracted from the airborne geophysical study in Kolwezi/South Katanga, by GECOMIN which was a Mining company. Unfortunately, the company didn't continue to investigate these data. All maps and data were recovered by the Royal Museum for Central Africa (RMCA) /Tervuren in Belgium.

Therefore, we worked on the sheet 1 which is indicated on the (Fig.5.4) making analysis of Aeromagnetic data map including flight lines and contours.

Geophysics campaign began in May and ended in July 1969 and the map was established in March 1970. The data compilation was executed by the company MUTING GEOLOGY AND GEOPHYSICS (LTD 6. Elstree Way, Bore Man Herts. England wood).

This map set on the scale 1/50 000 contains the following parameters:

| Nº | Parameters | Value |
|---|---|---|
| 1 | Number of flight lines | 91 |
| 2 | Number of sleepers | 9 |
| 3 | Average elevation above the ground | 150 m |
| 4 | Average spacing of flight lines | 500 m |
| 5 | sleepers spacing | 5 Km |
| 6 | Minimum intervals of isogames | 10 gammes |
| 7 | Identified point on Film | 35 mm |
| 8 | Magnetic contour | 10, 50, 500 |
| 9 | Number of curves | 20 |
| 10 | Execution year | 1969 |

*Table (5.1). Airborne data parameters of Kolwezi zone*

By digitizing, we made 2010 points that are the intersections of flight lines and contours from the QGIS software as shown in Fig.(5.4).

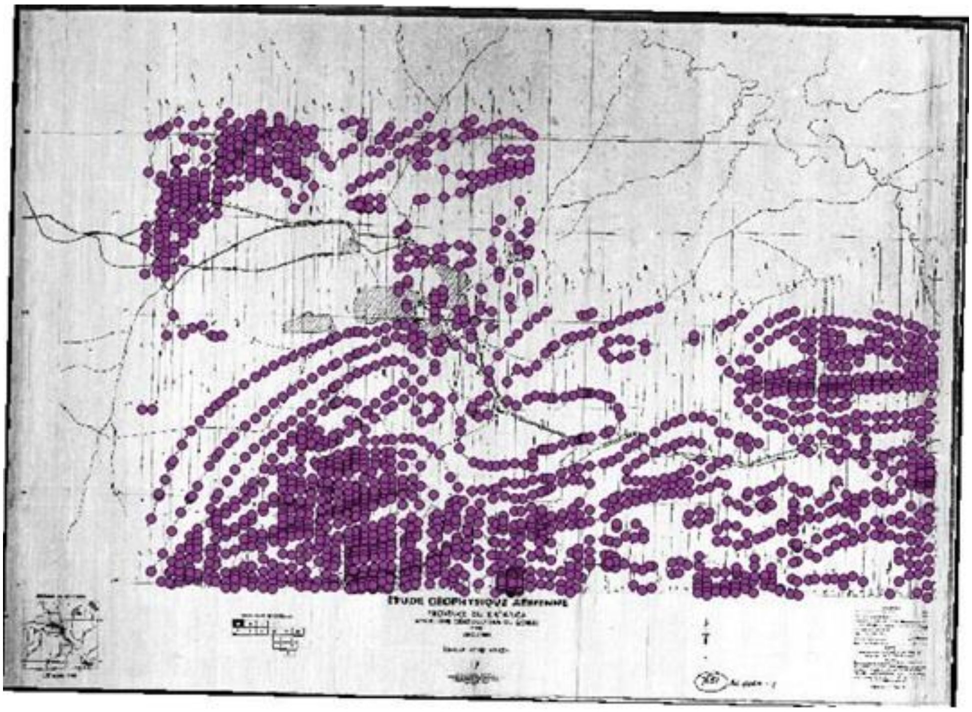

*Fig.(5.6). Digital contour map from airborne study of South Katanga*

We used the surfer software for managing, processing and design of data grids. The new data obtained from Fig.(5.6), are expressed in UTM and all coordinates were put in the attribute table in ASCI format. By applying surfer software, these data have been corrected and processed to generate the aeromagnetic grid given by Fig.(5.7). The list of generated numerical data is given in Annex 2 at the end of this work.

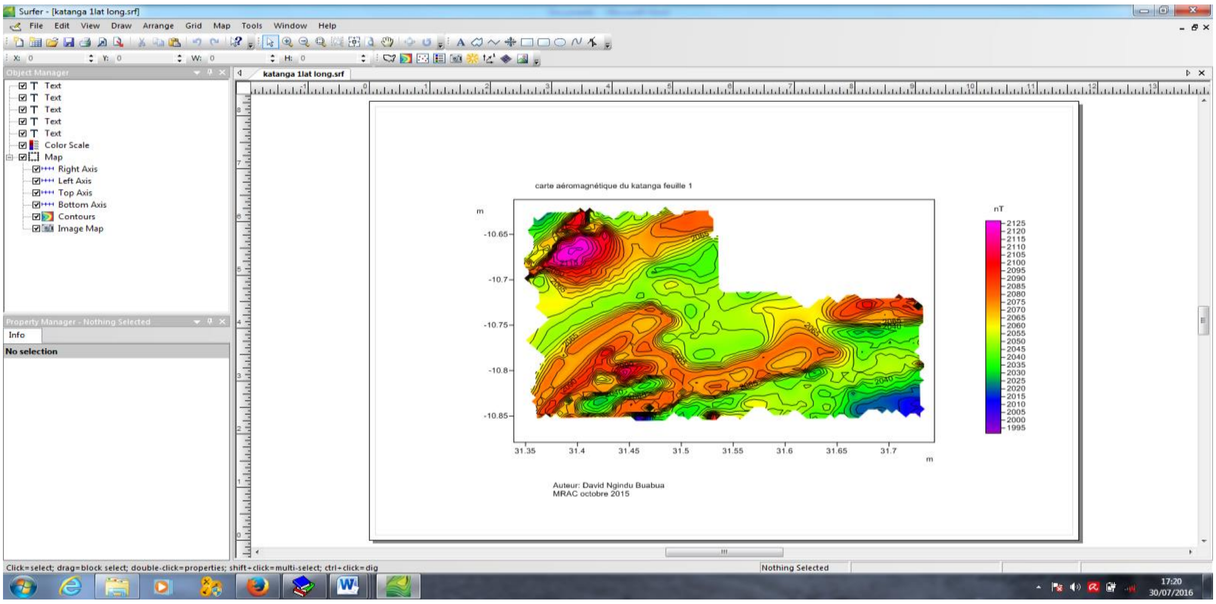


*Fig.(5.7) Screen capture of generated aeromagnetic grid from surfer data analysis*

The Fig.(5.7) represents the aeromagnetic map of Kolwezi which shows remarkable anomalies and some faults that appear. This important result can already give a first approximation of potential areas that may be subject to a specific study to the Ministry of Mines of DR Congo which is looking to discover the new potential mineralized areas in the country.

The Fig (5.8) shows different phases of magnetic data analysis for Kolwezi zone.

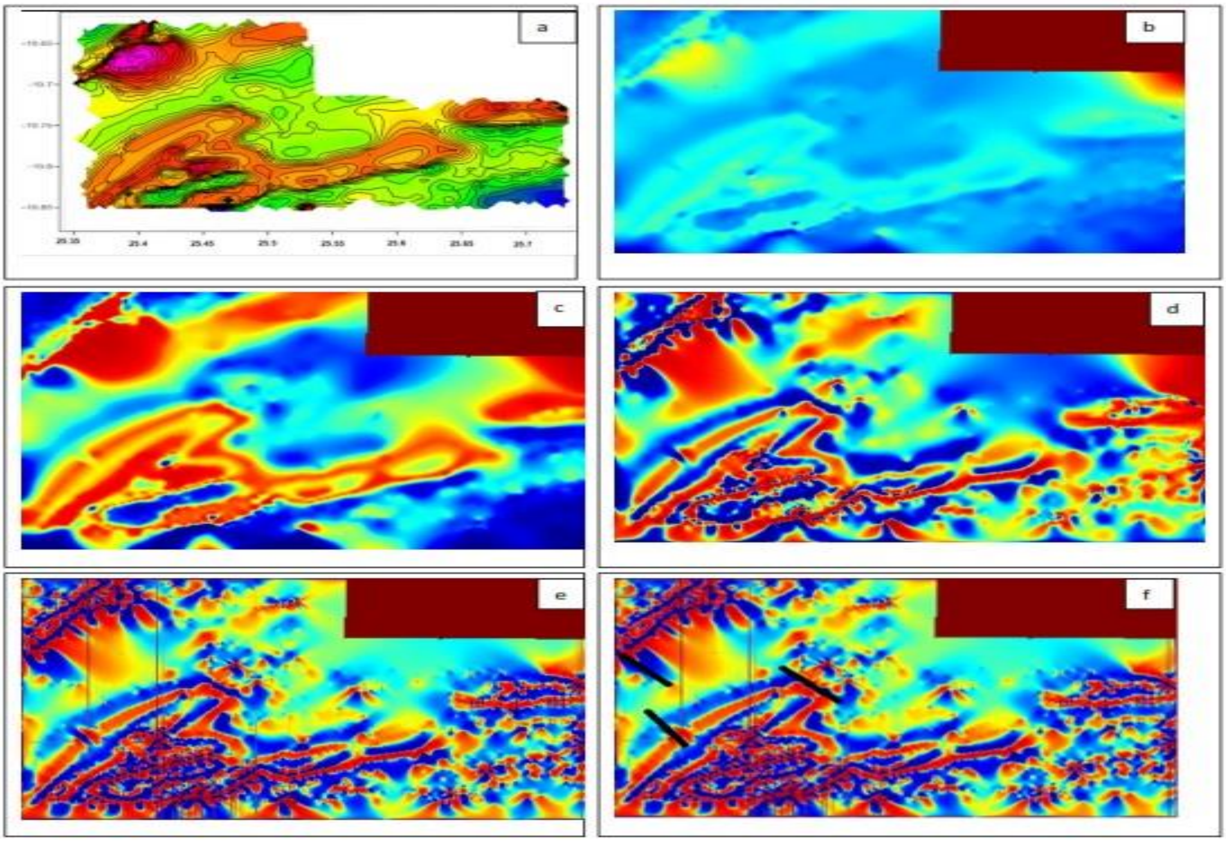


*Fig.(5.8). New Faults in Kolwezi Zone after TMI analysis*

The total magnetic intensity (MTI) anomaly field is the resultant field after correcting TF, the total magnetic (observed) field for a regional gradient field, such as an IGRF.

In Fig.(5.8), (a) is the generated rough magnetic grid map under made by surfer software ; (b) is TMI first processing ; (c) is TMI gradient with vertical derivative ; (d) is TMI gradient with reduction to the poles, (e) is TMI second vertical derivative and (f) is TMI second vertical derivative showing news faults.

The important observation in the above images is the presence of anomalies. That is to say there are some magnetic bodies underground as rocks or Mineral deposits because mapping of variation over an area is valuable in detecting structures obscured by overlying material. Ore minerals tend to be concentrated in the rock masses that form as a result of special geologic processes.

To go on with this study, we used, in second phase every sheets else representing our Region of Interest and which contain tectonic result scenes from aerogravimetric data analysis as shown by Fig.(5.9) which is gotten after georeferencing of these scenes e, b and c in QGIS.

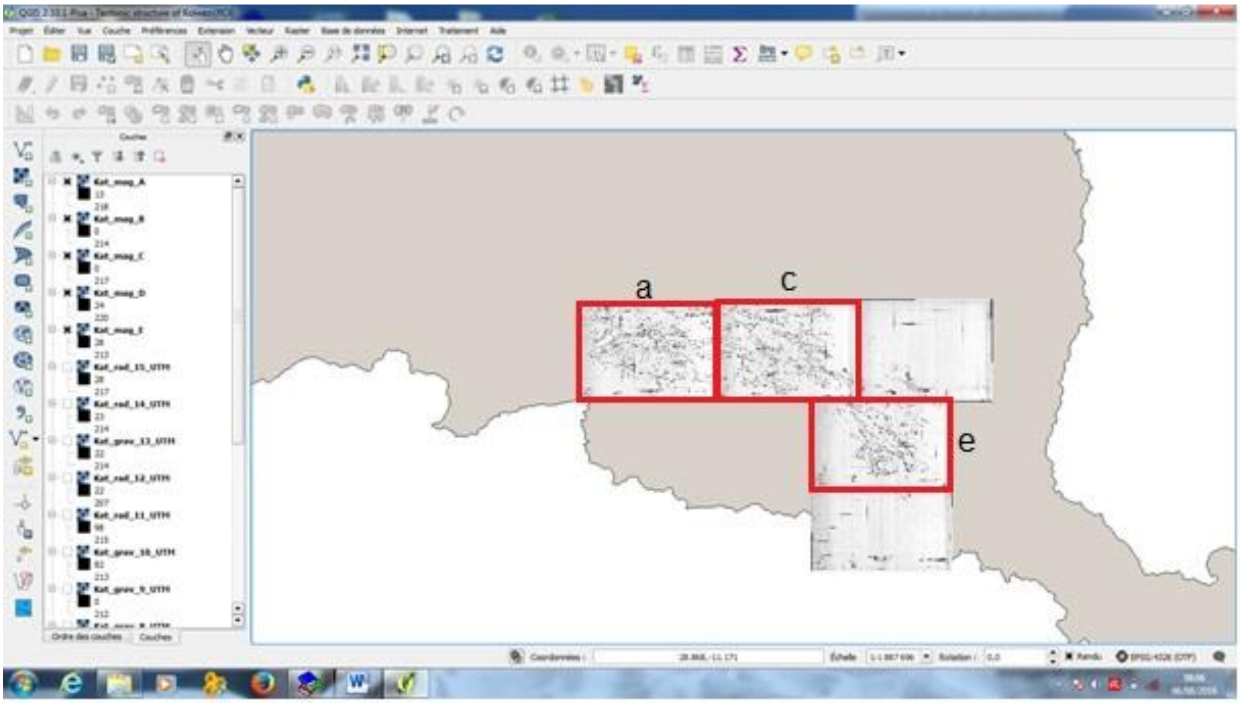


*Fig.(5.9). Katanga map with 3 scenes from aerogravimetric data in $Z_1$*

The Fig.(5.9) represents 3 tectonic maps (a, c and e) showing some deformations and folds on Kolwezi-Likasi-Tumbwe zone.

In Fig.(5.10), we find at the left hand, the zoom of 3 analyzed scenes given by the Fig.(5.9) and at the right hand, we drew up the identified faults in red color on the maps b, d and f as given by Fig.(5.10).

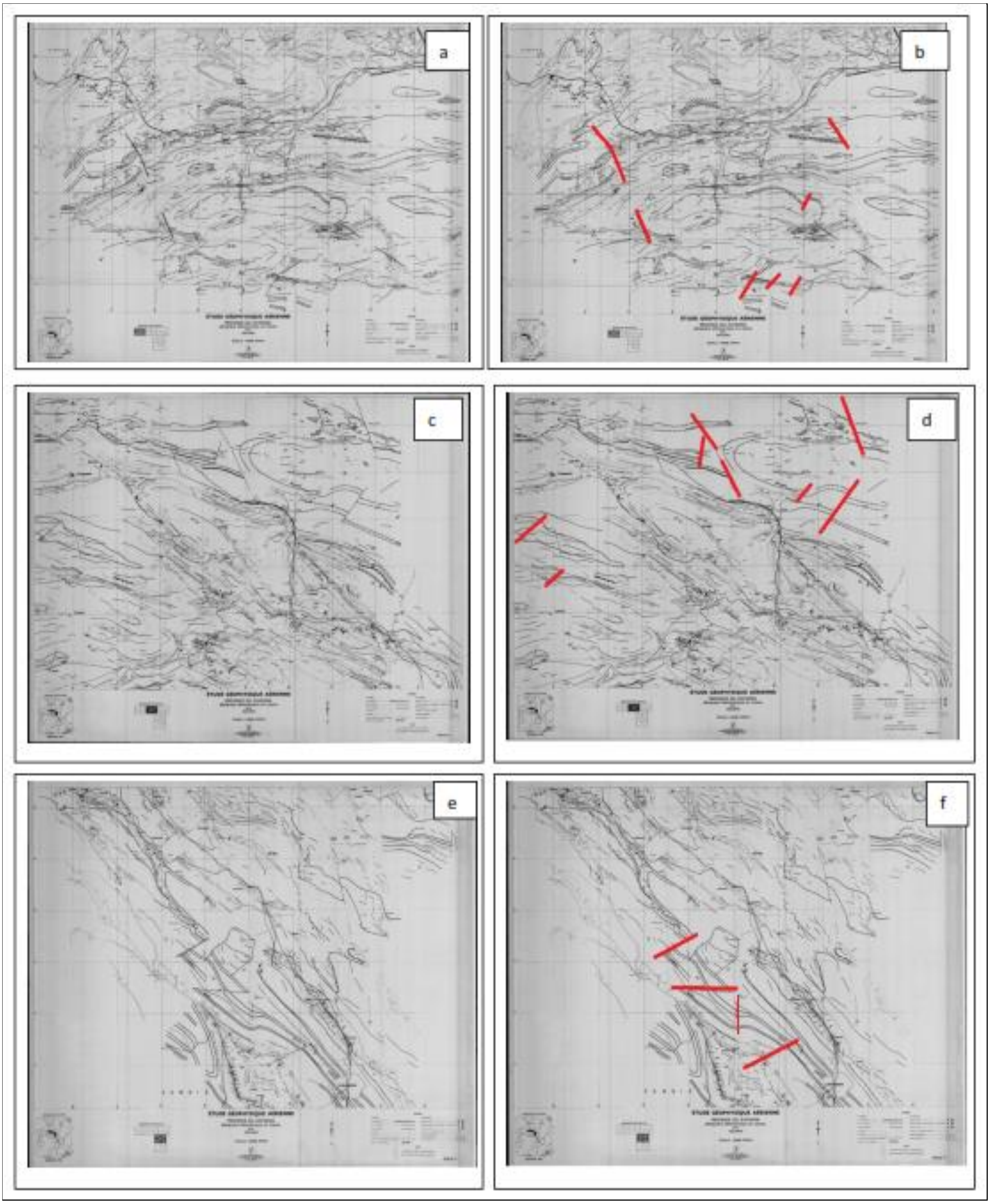

*Fig.(5.10). Tectonic maps of Kolwezi-Likasi_Tumbwe zone and identified faults*

However, all faults expressed in Fig.(5.10), can be put on DR Congo map as shown in the Fig.(5.11).

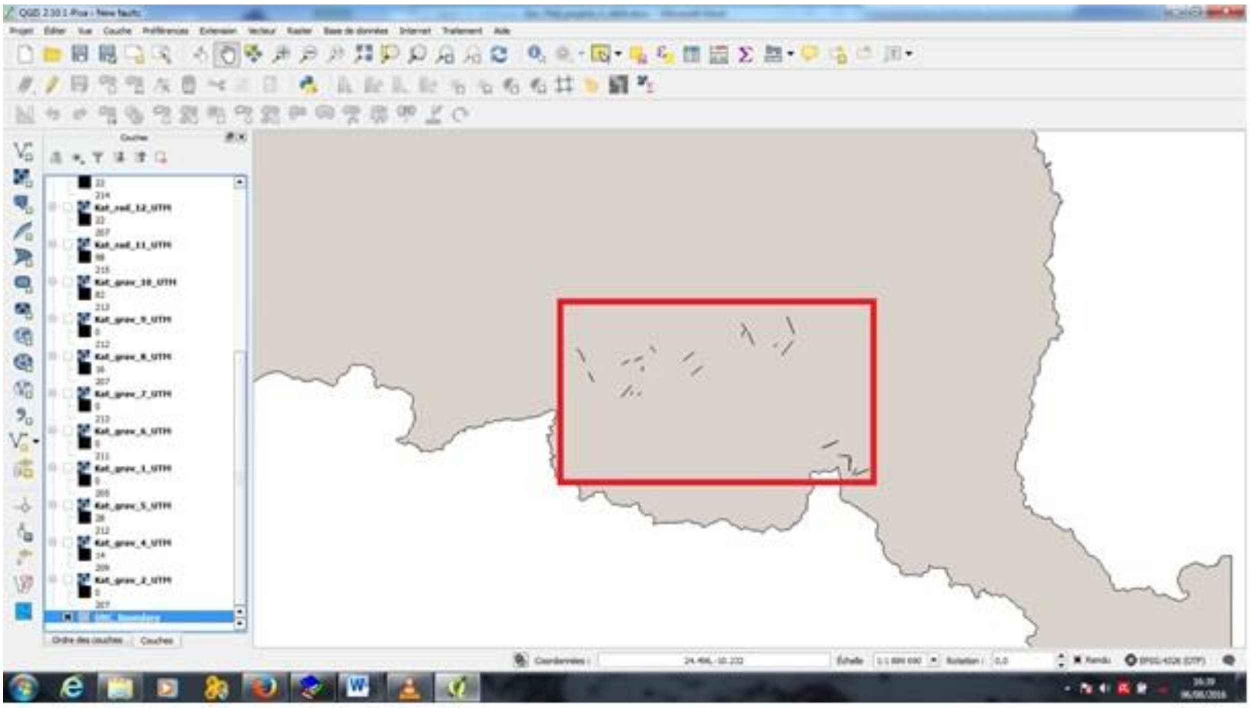

*Fig.(5.11). Tectonic map of Kolwezi-Likasi_Tumbwe zone with new faults*

The major part of the identified faults in Fig.(5.10) don't exist on the Africa tectonic map given by the Fig.(5.12) which is managing by Royal Museum of Central Africa/Belgium.


Fig.(5.12). Africa tectonic map (Source: MRAC/Tervuren) with ROI

The ROI given in Fig.(5.12) is shown in zoom by the Fig.(5.13) in order to well watch the tectonic events contained in the chosen area.

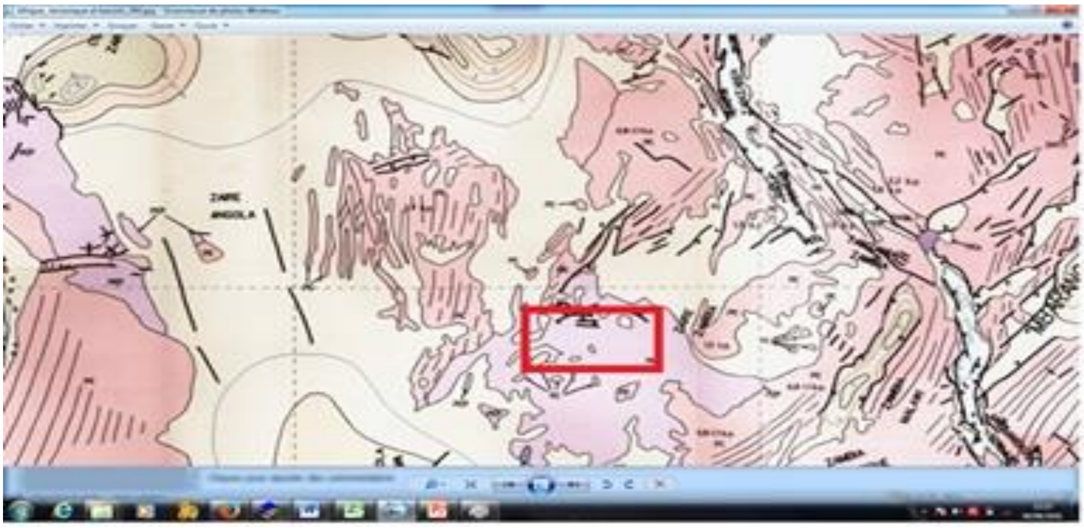

Fig.(5.13). Zoom of ROI on Africa tectonic map

We also check our results to the last tectonic map made by Milesi J.P et al in 2010, 3 or 4 faults exist at the North of this region but most of them don't exit on the map. Finally, we check these results to the new geological map (Fig 5.10), any of all these faults didn't be found in this zone.

With all these comparisons, we notice that there are some existing faults in the North of ROI but not all. The South part of ROI is still virgin on the Africa tectonic map.

However, the seismicity of this part of Katanga province is less than what is in Kivu zone because, for the available data, we count 3 epicenters whose 2 being of Ms.4 and one with Ms.3. That is why we didn't calculate the focal mechanisms of these weak earthquakes in order to qualify the identified faults (Normal or trust faults).

On the other hand, the Kolwezi-Likasi_Tumbwe zone which includes ruwe area covers the western boundary of the arc copper Lufilian border with Angola and Zambia, mapped the southern terminus of the Kibaran chain and the SE part of the Kasai Craton. It occupies a key position for the understanding of the regional geological evolution and its impact on the mining potential.

The Kolwezi-Likasi-Tumbwe area is located at the west end and outside of the major mining areas of the arc Lufilian. Nevertheless, the relatively recent discovery of the Kamoa copper deposit, about 25 km in the west of Kolwezi, has changed all existing data. The indicated resources of Kamoa are quantified about 740 Mt of copper and 227 Mt of inferred minerals, respectively containing 19.7 Mt and 4.4 Mt of copper at an average grade of 2.67% and 1.96%. The Kamoa site is ranked as the highest deposit which content untapped copper in the world. The copper potential of the region is further emphasized by two probings all recent intercepted that a thicker zone with very high copper content (24 m to 3.48 m 18% Cu and 4.64% Cu to a cut-off grade of 1% Cu) on the prospect of Kakula, about 5 km SW of Kamoa. Furthermore, the direct economic importance of the two discoveries can also have a geological significance prevailing in the copper arc, opening up new exploration opportunities, not only in the western end of the arc, but throughout its length. However, it was noticed that significant reserve of copper has been identified in the past in the termination of the arc Lufilian in Angola (Promines, 2016).

Thus, these faults found in this region can be a good guide of research in the geodynamics of mining field.

As a partial conclusion, the faults found in $Z_1$ are not directly connected to the normal faults of Rift Valley but they can come from mineralization structure of this region (Fig.5.8).

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# CHAPTER SIX
# GENERAL CONCLUSION

The theme of our work is "New faults involved by the geodynamics of South Katanga in D.R.Congo ".

We suggested investigating in DR Congo, if it is possible to discover new or other intraplate faults which can have relationship with the Rift Valley.

Then, systematic analysis of the seismicity of DR Congo is made on the basis of data obtained from publications of the Institute for Scientific Research in Central Africa (IRSAC), now called Center for Research in Natural Sciences (CRNS) and others from catalogs published by the International seismological stations such as International seismological Center (ISC), International seismological Summary (ISS) and United States for Geological Survey (USGS).

According to the results of this investigation, the Great Lakes Region recorded from 1910 to 2015, several earthquakes including a significant number of 1756 epicenters (D.R.Congo and surroundings), whose magnitude ranging from 3 to 7.4, on Richter scale.

The seismic map of the DRC developed in this work is obtained through data collected from various sources (local stations and catalogs of international stations) in the Common Reference System (CRS). The coordinate system used is the geographic coordinates transformed into Cartesian coordinates using the Datum_WGS_1984. This map represents the compilation of various epicenters of 11 provinces of D.R.Congo and surroundings.

By observing the seismic map of the DRC, it shows that the distribution of epicenters is concentrated on the eastern part of the country, particularly in Kivu and Katanga. Some few epicenters are also found in Maniema, in the Eastern Kasai Province and in Orientale Province.

In the Tanganyika Lake region, the graben is the lake side. Besides, this is why Tanganyika Lake has a remarkable depth (1433 m) and is classified as the second largest lake in the world after Baikal Lake, thanks to its volume and depth.

Around Upemba and Muero Lakes, the graben is considered as the vast depression SSW - NNE in which flows the Lualaba River and the horst is in the western statement block of Katanga.

Besides the tectonic results, we chose a Region of Interest to make research if it is possible to discover other intraplate faults which could have relationship with the geodynamics of the Rift. This zone is Kolwezi-Likasi-Tumbwe (Z1) in Katanga.

In the $Z_1$, we have used Landsat images and by Remote Sensing, we made analysis of data to see some alignments but it was difficult to determine exactly where there are faults. Therefore, using the aeromagnetic data from Airborne geophysics conducted by Gecomin in this region, we identified 12 intraplate faults that didn't have main correlation with the tectonic activities of Rift Valley because we didn't find any epicenter of major earthquakes in this zone except only 3 epicenters having Ms. varying from 3 to 4 on Richter scale. Thus, we conclude that these faults are due to the mineralization deposit of this area because in 2015, a big deposit of copper and other mineral substances were discovered in Kamoa, Ruwe and in Kasai Craton. Hence, as known in geology, the faults are from time to time, the way for mineral substances to move in the ground. That is why, it is important to make new investment on these faults in order to discover news potentialities of the country to promote the mining sector.

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**Annex 1 : Seismic Data used.**

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1910 | 12 | 13 | 0 | 0 | 0 | -8 | 31 | 0 | 7,3 | ISS |
| 1912 | 3 | 8 | 14 | 45 | 0 | -2 | 29 | 0 | 6,1 | ISS |
| 1912 | 7 | 9 | 8 | 18 | 0 | 2 | 31 | 0 | 6,3 | ISS |
| 1915 | 5 | 21 | 4 | 18 | 0 | 4,4 | 31,9 | 0 | 6,6 | ISS |
| 1920 | 2 | 10 | 2 | 30 | 0 | 0,5 | 30 | 0 | 5,6 | ISS |
| 1929 | 2 | 10 | 3 | 14 | 0 | 0,4 | 30 | 0 | 5,9 | ISS |
| 1945 | 3 | 3 | 0 | 0 | 0 | -6 | 31 | 0 | 6 | ISS |
| 1945 | 3 | 18 | 8 | 1 | 0 | 0 | 32 | 0 | 6 | ISS |
| 1951 | 8 | 20 | 12 | 25 | 0 | -3,8 | 33,6 | 0 | 5,8 | ISS |
| 1952 | 1 | 31 | 0 | 0 | 0 | -4 | 29 | 0 | 6,3 | ISS |
| 1952 | 6 | 30 | 0 | 0 | 0 | -3 | 30,1 | 0 | 6 | ISS |
| 1954 | 5 | 29 | 12 | 0 | 5 | 0,5 | 30 | 0 | 4,2 | LQ |
| 1954 | 6 | 8 | 9 | 28 | 25 | -1,5 | 30 | 0 | 4,2 | LQ |
| 1954 | 6 | 13 | 15 | 41 | 55 | -1 | 29 | 0 | 4,7 | LQ |
| 1954 | 6 | 19 | 22 | 59 | 43,3 | -1,5 | 30 | 0 | 4,2 | LQ |
| 1954 | 7 | 3 | 0 | 32 | 57 | -3.24 | 29.07 | 0 | 5.5 | LQ |
| 1954 | 11 | 18 | 8 | 22 | 37,5 | -4 | 29 | 0 | 4 | LQ |
| 1955 | 5 | 9 | 4 | 13 | 27 | -0,5 | 25 | 0 | 4 | LQ |
| 1955 | 7 | 22 | 4 | 0 | 2 | 2 | 31 | 0 | 4,5 | LQ |
| 1955 | 8 | 3 | 4 | 44 | 24,1 | -3,5 | 29 | 0 | 4,3 | LQ |
| 1955 | 8 | 4 | 22 | 43 | 12,1 | -4 | 30 | 0 | 4,1 | LQ |
| 1955 | 9 | 4 | 22 | 12 | 52 | 1,7 | 30,9 | 0 | 4,9 | LQ |
| 1955 | 9 | 30 | 12 | 17 | 23 | -1 | 30 | 0 | 4,3 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1955 | 10 | 15 | 22 | 52 | 49,6 | -5 | 29,5 | 0 | 4,6 | LQ |
| 1955 | 11 | 16 | 11 | 15 | 57 | -5,5 | 32 | 0 | 4,6 | LQ |
| 1955 | 12 | 15 | 10 | 19 | 56,9 | -5 | 31 | 0 | 4,3 | LQ |
| 1955 | 12 | 25 | 11 | 18 | 30 | -1,4 | 27,5 | 0 | 4,1 | LQ |
| 1956 | 1 | 28 | 17 | 7 | 49 | 1,25 | 29,75 | 0 | 4,1 | LQ |
| 1956 | 2 | 3 | 21 | 38 | 2 | -3,75 | 30 | 0 | 4,6 | LQ |
| 1956 | 2 | 11 | 10 | 58 | 34 | -5,25 | 29,5 | 0 | 4,2 | LQ |
| 1956 | 2 | 23 | 2 | 0 | 53 | 3 | 31 | 0 | 4,2 | LQ |
| 1956 | 3 | 13 | 17 | 48 | 12 | -0,25 | 27,75 | 0 | 4 | LQ |
| 1956 | 4 | 4 | 21 | 21 | 17 | -5 | 35,4 | 0 | 5,1 | LQ |
| 1956 | 6 | 17 | 2 | 27 | 40 | -5 | 29 | 0 | 4 | LQ |
| 1956 | 6 | 28 | 14 | 44 | 13 | -4,5 | 30,5 | 0 | 4 | LQ |
| 1956 | 6 | 29 | 10 | 57 | 6 | -5 | 22 | 0 | 4,7 | LQ |
| 1956 | 7 | 16 | 20 | 9 | 32 | -4,25 | 30 | 0 | 4 | LQ |
| 1956 | 8 | 10 | 5 | 49 | 58 | -3,4 | 28 | 17 | 4,4 | LQ |
| 1956 | 8 | 24 | 10 | 23 | 51 | 1,5 | 31,5 | 0 | 4,5 | LQ |
| 1956 | 9 | 6 | 14 | 37 | 39 | -5,5 | 28 | 0 | 4,1 | LQ |
| 1956 | 10 | 12 | 21 | 3 | 27 | -3,5 | 29,25 | 0 | 4,5 | LQ |
| 1956 | 11 | 14 | 12 | 3 | 25 | -0,5 | 29 | 0 | 4 | LQ |
| 1956 | 11 | 21 | 16 | 9 | 2 | 0,5 | 29,5 | 0 | 4,2 | LQ |
| 1956 | 12 | 1 | 22 | 3 | 17 | -4 | 31 | 0 | 4,5 | LQ |
| 1956 | 12 | 16 | 21 | 24 | 17 | -3,5 | 29,25 | 0 | 4 | LQ |
| 1957 | 1 | 15 | 22 | 54 | 51 | -1,5 | 27 | 0 | 4,1 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1957 | 1 | 22 | 11 | 18 | 27 | -4,5 | 28,5 | 0 | 5 | LQ |
| 1957 | 2 | 24 | 5 | 30 | 0 | -3,3 | 29,1 | 0 | 4,3 | LQ |
| 1957 | 3 | 18 | 21 | 58 | 30 | -6 | 27 | 0 | 4,2 | LQ |
| 1957 | 3 | 20 | 19 | 19 | 54 | -1,5 | 30 | 0 | 4,2 | LQ |
| 1957 | 3 | 26 | 16 | 59 | 51 | -4,5 | 28,5 | 0 | 4 | LQ |
| 1957 | 3 | 29 | 21 | 33 | 26 | -2 | 25 | 0 | 4,1 | LQ |
| 1957 | 4 | 3 | 9 | 19 | 6 | -2 | 31 | 0 | 4 | LQ |
| 1957 | 5 | 16 | 4 | 46 | 46 | -7 | 30 | 0 | 4,4 | LQ |
| 1957 | 5 | 22 | 9 | 47 | 22,6 | -4,53 | 29 | 25 | 4,1 | LQ |
| 1957 | 5 | 25 | 18 | 33 | 2 | -7,25 | 30 | 0 | 4,7 | LQ |
| 1957 | 7 | 3 | 9 | 29 | 32 | -1,5 | 29,5 | 0 | 4,1 | LQ |
| 1957 | 7 | 3 | 15 | 51 | 46 | -2,5 | 27 | 0 | 4,3 | LQ |
| 1957 | 7 | 5 | 15 | 32 | 5,1 | -1,66 | 26,46 | 0 | 4,7 | LQ |
| 1957 | 7 | 9 | 22 | 24 | 47 | -0,33 | 29,5 | 0 | 4,6 | LQ |
| 1957 | 7 | 10 | 0 | 5 | 58 | 0 | 29,5 | 0 | 4 | LQ |
| 1957 | 7 | 16 | 13 | 24 | 19 | -5 | 29 | 0 | 4,1 | LQ |
| 1957 | 7 | 19 | 17 | 8 | 46,6 | -1,51 | 29,5 | 10 | 4,1 | LQ |
| 1957 | 7 | 27 | 20 | 14 | 30 | -1,34 | 29,49 | 20 | 4,2 | LQ |
| 1957 | 8 | 6 | 5 | 2 | 45 | 0 | 29,5 | 0 | 4,3 | LQ |
| 1957 | 8 | 11 | 0 | 39 | 13 | -1 | 29 | 0 | 4,1 | LQ |
| 1957 | 8 | 13 | 11 | 15 | 19 | -1,5 | 27,5 | 0 | 4,1 | LQ |
| 1957 | 8 | 19 | 4 | 33 | 49,3 | -4,31 | 29,64 | 11 | 4,1 | LQ |
| 1957 | 9 | 7 | 14 | 5 | 49 | -1,5 | 29,5 | 0 | 4 | LQ |
| 19 | 9 | 14 | 0 | 40 | 48 | - | 29, | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 57 | | | | | | 1,16 | 66 | | 3 | |
| 1957 | 9 | 27 | 5 | 57 | 25 | -1,5 | 27,5 | 0 | 4 | LQ |
| 1957 | 9 | 27 | 17 | 56 | 56 | -3,33 | 29,5 | 0 | 4,1 | LQ |
| 1957 | 9 | 28 | 11 | 30 | 30,3 | -0,92 | 29,16 | 10 | 4 | LQ |
| 1957 | 9 | 28 | 21 | 37 | 55 | -1,16 | 29,5 | 0 | 4,3 | LQ |
| 1957 | 10 | 13 | 14 | 49 | 42 | -3,5 | 22 | 0 | 4,2 | LQ |
| 1957 | 10 | 18 | 0 | 28 | 3 | -1,33 | 29,66 | 0 | 4,2 | LQ |
| 1957 | 10 | 19 | 12 | 9 | 1,2 | -1,24 | 29,57 | 18 | 4,1 | LQ |
| 1957 | 11 | 23 | 20 | 17 | 30 | 1 | 32 | 0 | 4 | LQ |
| 1957 | 12 | 1 | 19 | 1 | 21 | -1,25 | 28 | 0 | 4,3 | LQ |
| 1957 | 12 | 8 | 4 | 28 | 26 | -2 | 29,16 | 0 | 4 | LQ |
| 1958 | 1 | 14 | 1 | 57 | 39 | -3,5 | 28 | 0 | 4 | LQ |
| 1958 | 2 | 6 | 1 | 47 | 25 | -3,2 | 29,16 | 0 | 4,2 | LQ |
| 1958 | 2 | 10 | 15 | 17 | 21 | -0,5 | 31 | 0 | 4,3 | LQ |
| 1958 | 2 | 22 | 19 | 50 | 49 | -1 | 27,5 | 0 | 4,1 | LQ |
| 1958 | 4 | 6 | 1 | 30 | 23 | -3 | 29,16 | 0 | 4,3 | LQ |
| 1958 | 4 | 6 | 1 | 39 | 29 | -3 | 29,16 | 0 | 4,1 | LQ |
| 1958 | 4 | 15 | 22 | 20 | 35 | 0 | 30,83 | 0 | 4,5 | LQ |
| 1958 | 4 | 25 | 21 | 45 | 41 | -2,33 | 28,66 | 0 | 4 | LQ |
| 1958 | 5 | 5 | 6 | 31 | 38 | -9,83 | 28 | 0 | 6.9 | LQ |
| 1958 | 6 | 3 | 22 | 6 | 53 | -1 | 25 | 0 | 4 | LQ |
| 1958 | 7 | 16 | 21 | 58 | 20 | -12 | 30 | 0 | 4,9 | LQ |
| 1958 | 9 | 2 | 16 | 0 | 42,8 | -3,52 | 29 | 25 | 4 | LQ |
| 1958 | 9 | 9 | 11 | 6 | 13 | -7 | 32 | 0 | 4,2 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1958 | 9 | 9 | 16 | 40 | 43 | -5,25 | 29,5 | 0 | 4 | LQ |
| 1958 | 9 | 28 | 4 | 34 | 25,1 | -1,5 | 27,5 | 0 | 4,1 | LQ |
| 1958 | 10 | 11 | 19 | 25 | 41 | -5,25 | 29 | 0 | 4,4 | LQ |
| 1958 | 10 | 27 | 15 | 52 | 31,1 | -1,97 | 28,96 | 33 | 4,1 | LQ |
| 1958 | 11 | 5 | 14 | 5 | 52 | -2,016 | 25,83 | 0 | 4,2 | LQ |
| 1958 | 11 | 7 | 13 | 49 | 7 | 0 | 26,25 | 0 | 4,3 | LQ |
| 1958 | 11 | 17 | 8 | 22 | 23,7 | -1,34 | 29,33 | 15 | 4 | LQ |
| 1958 | 11 | 24 | 19 | 12 | 57 | -4,75 | 28,75 | 0 | 4,3 | LQ |
| 1958 | 11 | 25 | 5 | 11 | 58 | -6,5 | 30,5 | 0 | 4,2 | LQ |
| 1958 | 11 | 29 | 4 | 23 | 15 | -7,25 | 31,25 | 0 | 4,7 | LQ |
| 1958 | 12 | 22 | 4 | 3 | 17 | -6,25 | 30,25 | 0 | 4 | LQ |
| 1959 | 1 | 9 | 14 | 56 | 44 | -0,5 | 30,75 | 0 | 4 | LQ |
| 1959 | 1 | 15 | 23 | 2 | 32 | 0 | 30 | 0 | 4,2 | LQ |
| 1959 | 1 | 23 | 9 | 47 | 28 | 0,7 | 30,4 | 0 | 4,4 | LQ |
| 1959 | 2 | 13 | 10 | 59 | 13,1 | -2,15 | 29 | 21 | 4 | LQ |
| 1959 | 2 | 19 | 3 | 15 | 33 | -0,75 | 29,75 | 0 | 4,1 | LQ |
| 1959 | 3 | 19 | 21 | 52 | 2 | -4,5 | 30 | 0 | 4,2 | LQ |
| 1959 | 5 | 4 | 16 | 26 | 10 | -7 | 32 | 0 | 4,3 | LQ |
| 1959 | 5 | 17 | 19 | 3 | 37 | -1,5 | 30,5 | 0 | 4 | LQ |
| 1959 | 5 | 18 | 14 | 8 | 23,2 | -3,44 | 29,08 | 16 | 4 | LQ |
| 1959 | 6 | 19 | 11 | 58 | 52 | -0,25 | 30 | 0 | 4,6 | LQ |
| 1959 | 6 | 25 | 0 | 55 | 55 | -0,75 | 28,66 | 0 | 4 | LQ |
| 1959 | 7 | 5 | 9 | 46 | 41,5 | -1,41 | 28,66 | 0 | 4,1 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1959 | 7 | 30 | 0 | 26 | 52 | 4 | 32 | 0 | 4,1 | LQ |
| 1959 | 8 | 5 | 2 | 26 | 48 | -4,5 | 28,5 | 0 | 4,2 | LQ |
| 1959 | 8 | 9 | 11 | 17 | 0 | 0,5 | 29 | 0 | 4,5 | LQ |
| 1959 | 8 | 12 | 1 | 32 | 0 | 0 | 30 | 0 | 4 | LQ |
| 1959 | 8 | 19 | 5 | 16 | 56,1 | -1,33 | 28,75 | 0 | 4,2 | LQ |
| 1959 | 8 | 19 | 5 | 16 | 58,2 | -1,46 | 28,89 | 0 | 4,2 | LQ |
| 1959 | 9 | 9 | 16 | 53 | 55 | -6 | 31 | 0 | 4,3 | LQ |
| 1959 | 9 | 26 | 18 | 58 | 44 | -5,1 | 30,5 | 0 | 4,3 | LQ |
| 1960 | 1 | 2 | 23 | 43 | 3 | -5,75 | 34,5 | 0 | 4,6 | LQ |
| 1960 | 1 | 9 | 23 | 3 | 4 | -1 | 35,75 | 0 | 4,6 | LQ |
| 1960 | 1 | 10 | 21 | 52 | 6,3 | -6,5 | 33,5 | 0 | 4,3 | LQ |
| 1960 | 2 | 5 | 20 | 13 | 56,3 | -3,48 | 29,24 | 21 | 4 | LQ |
| 1960 | 2 | 23 | 10 | 34 | 1,2 | -2,68 | 29,33 | 23 | 4,2 | LQ |
| 1960 | 2 | 26 | 22 | 52 | 29,5 | -3 | 35,5 | 0 | 4,2 | LQ |
| 1960 | 2 | 27 | 12 | 20 | 0 | -7,5 | 32,4 | 0 | 4 | LQ |
| 1960 | 3 | 5 | 3 | 58 | 1 | -4,25 | 33 | 0 | 4,2 | LQ |
| 1960 | 3 | 7 | 7 | 30 | 15 | -8,25 | 36,75 | 0 | 4,2 | LQ |
| 1960 | 3 | 8 | 3 | 22 | 5 | -4 | 35,5 | 0 | 4,2 | LQ |
| 1960 | 3 | 10 | 9 | 40 | 33,5 | 1 | 30,5 | 0 | 4,6 | LQ |
| 1960 | 3 | 11 | 10 | 1 | 53 | -3 | 37 | 0 | 4,3 | LQ |
| 1960 | 3 | 12 | 16 | 24 | 21,8 | -5,5 | 30,75 | 0 | 4,1 | LQ |
| 1960 | 3 | 15 | 19 | 52 | 48,7 | -8 | 31,33 | 0 | 4 | LQ |
| 1960 | 3 | 24 | 7 | 5 | 52,3 | -3,5 | 34,5 | 0 | 4,2 | LQ |
| 19 | 3 | 24 | 16 | 37 | 46, | -3 | 35 | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 60 | | | | | 5 | | | | 3 | |
| 1960 | 4 | 1 | 23 | 59 | 41 | -3 | 35 | 0 | 4,2 | LQ |
| 1960 | 4 | 16 | 9 | 5 | 40,9 | -3,5 | 29,12 | 0 | 4,3 | LQ |
| 1960 | 4 | 16 | 9 | 9 | 43,5 | -3,52 | 29,12 | 15 | 4,3 | LQ |
| 1960 | 5 | 4 | 2 | 17 | 33,4 | -1,2 | 32,5 | 0 | 4,8 | LQ |
| 1960 | 5 | 11 | 21 | 57 | 14 | -4,5 | 33 | 0 | 4 | LQ |
| 1960 | 5 | 14 | 23 | 51 | 42 | -4,25 | 33,25 | 0 | 4 | LQ |
| 1960 | 5 | 31 | 1 | 14 | 3,2 | -3 | 34,75 | 0 | 4,2 | LQ |
| 1960 | 6 | 1 | 10 | 55 | 19 | -3,75 | 33,75 | 0 | 4,3 | LQ |
| 1960 | 6 | 5 | 10 | 35 | 1 | -1,64 | 26,62 | 23 | 4 | LQ |
| 1960 | 6 | 7 | 19 | 51 | 38,8 | -3,6 | 29,1 | 28 | 4 | LQ |
| 1960 | 6 | 17 | 10 | 49 | 3 | 5,5 | 36,5 | 0 | 4,6 | LQ |
| 1960 | 7 | 8 | 18 | 34 | 50,5 | -3,5 | 35,66 | 0 | 5,1 | LQ |
| 1960 | 7 | 9 | 13 | 31 | 11 | -3,66 | 35,66 | 0 | 4,4 | LQ |
| 1960 | 7 | 14 | 18 | 39 | 34 | 7 | 38,5 | 0 | 5,1 | LQ |
| 1960 | 7 | 15 | 1 | 7 | 26 | -14 | 22 | 0 | 4,9 | LQ |
| 1960 | 7 | 27 | 9 | 29 | 18 | -3,5 | 35,66 | 0 | 4,2 | LQ |
| 1960 | 7 | 30 | 22 | 48 | 41,5 | -4 | 35,66 | 0 | 4,2 | LQ |
| 1960 | 7 | 31 | 3 | 6 | 23 | -4 | 35,66 | 0 | 4,1 | LQ |
| 1960 | 8 | 4 | 18 | 18 | 43 | -2,75 | 35,5 | 0 | 4,5 | LQ |
| 1960 | 8 | 16 | 7 | 52 | 58 | -3,16 | 28,2 | 0 | 4 | LQ |
| 1960 | 9 | 8 | 12 | 5 | 13,5 | 4,25 | 37 | 0 | 4,2 | LQ |
| 1960 | 9 | 16 | 17 | 15 | 48 | -5 | 35 | 0 | 4 | LQ |
| 1960 | 9 | 17 | 7 | 36 | 33 | -14,5 | 40 | 0 | 4,5 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1960 | 9 | 22 | 5 | 38 | 12,3 | -3,5 | 29,08 | 11 | 6,5 | LQ |
| 1960 | 9 | 22 | 9 | 14 | 55 | -3.19 | 28.98 | 0 | 5.5 | LQ |
| 1960 | 10 | 6 | 20 | 22 | 36 | -8,25 | 33 | 0 | 4,7 | LQ |
| 1960 | 10 | 9 | 18 | 12 | 45 | -6 | 31 | 0 | 4,1 | LQ |
| 1960 | 10 | 22 | 5 | 19 | 52 | -4,66 | 29,33 | 0 | 4 | LQ |
| 1960 | 10 | 24 | 3 | 58 | 21,2 | -3,45 | 29,2 | 9 | 4,5 | LQ |
| 1960 | 10 | 28 | 0 | 57 | 14,5 | -3,65 | 29,05 | 5 | 4,2 | LQ |
| 1960 | 10 | 31 | 12 | 27 | 43,9 | -3,53 | 29,16 | 9 | 4,2 | LQ |
| 1960 | 11 | 4 | 14 | 23 | 27 | -3,66 | 29,33 | 0 | 4 | LQ |
| 1960 | 11 | 6 | 23 | 54 | 45,8 | -3,2 | 29,2 | 0 | 4 | LQ |
| 1960 | 11 | 10 | 19 | 47 | 47,9 | -3,47 | 29,23 | 30 | 4,1 | LQ |
| 1960 | 11 | 11 | 6 | 20 | 58 | -3,5 | 29,1 | 0 | 4 | LQ |
| 1960 | 11 | 19 | 10 | 20 | 15,5 | -7,5 | 30 | 0 | 4,3 | LQ |
| 1960 | 11 | 22 | 5 | 38 | 14,6 | -3,5 | 29,17 | 11 | 4,7 | LQ |
| 1960 | 11 | 22 | 9 | 5 | 36,8 | -3 | 29 | 28 | 5,1 | LQ |
| 1960 | 11 | 22 | 9 | 14 | 58 | -2,8 | 29,8 | 20 | 4,7 | LQ |
| 1960 | 11 | 22 | 9 | 47 | 23,4 | -3,63 | 29,32 | 25 | 4,2 | LQ |
| 1960 | 11 | 22 | 13 | 14 | 33,1 | -3,63 | 29,23 | 32 | 4,3 | LQ |
| 1960 | 11 | 22 | 15 | 14 | 3,3 | -3,52 | 29,15 | 27 | 4,3 | LQ |
| 1960 | 11 | 22 | 15 | 58 | 48,6 | -3,55 | 29,29 | 27 | 4,1 | LQ |
| 1960 | 11 | 22 | 22 | 19 | 59,9 | -3,61 | 29,28 | 22 | 4,4 | LQ |
| 1960 | 11 | 24 | 17 | 24 | 7,4 | -3,02 | 29 | 25 | 4 | LQ |
| 1960 | 11 | 26 | 13 | 29 | 56,7 | -3,33 | 29,17 | 6 | 4 | LQ |
| 19 | 11 | 27 | 20 | 37 | 23, | - | 29, | 8 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 60 | | | | | 3 | 3,52 | 31 | | 4 | |
| 1960 | 11 | 27 | 21 | 19 | 51,1 | -3,55 | 29,26 | 6 | 4,1 | LQ |
| 1960 | 12 | 2 | 13 | 43 | 25 | -3,48 | 29,34 | 22 | 4,5 | LQ |
| 1960 | 12 | 17 | 18 | 41 | 5,5 | -3,47 | 29,28 | 14 | 4,3 | LQ |
| 1960 | 12 | 17 | 18 | 57 | 48 | 0 | 29,66 | 0 | 4,2 | LQ |
| 1960 | 12 | 26 | 3 | 10 | 0 | -6,33 | 35 | 0 | 4,1 | LQ |
| 1960 | 12 | 26 | 5 | 27 | 55,6 | -3,32 | 29,17 | 11 | 4 | LQ |
| 1960 | 12 | 26 | 20 | 37 | 48 | -6,5 | 22 | 0 | 4,2 | LQ |
| 1961 | 1 | 13 | 16 | 27 | 29,5 | -3,62 | 29,19 | 10 | 4,2 | LQ |
| 1961 | 1 | 20 | 5 | 42 | 26 | 3,5 | 32 | 0 | 4,1 | LQ |
| 1961 | 1 | 21 | 14 | 15 | 34 | -3,58 | 29,25 | 0 | 4 | LQ |
| 1961 | 1 | 26 | 14 | 58 | 46,7 | -8 | 30,25 | 0 | 4,2 | LQ |
| 1961 | 1 | 27 | 18 | 33 | 15,4 | -6,5 | 30,75 | 0 | 4,5 | LQ |
| 1961 | 1 | 27 | 19 | 40 | 0,5 | -6,41 | 31,21 | 15 | 4,6 | LQ |
| 1961 | 2 | 2 | 6 | 28 | 10 | -1,5 | 37,66 | 0 | 4,6 | LQ |
| 1961 | 2 | 3 | 7 | 38 | 11 | -3,3 | 29,2 | 0 | 4,2 | LQ |
| 1961 | 2 | 5 | 23 | 6 | 20 | 0 | 30,25 | 0 | 4,2 | LQ |
| 1961 | 2 | 16 | 2 | 33 | 7,3 | -2,33 | 29,1 | 0 | 4 | LQ |
| 1961 | 4 | 17 | 15 | 11 | 48,5 | -1,6 | 27 | 0 | 4 | LQ |
| 1961 | 4 | 28 | 19 | 38 | 46 | -1,33 | 35,33 | 0 | 4,2 | LQ |
| 1961 | 5 | 4 | 4 | 7 | 48 | 2,5 | 32,75 | 0 | 4,3 | LQ |
| 1961 | 5 | 10 | 3 | 24 | 38,6 | -3,5 | 29,18 | 10 | 4 | LQ |
| 1961 | 5 | 11 | 14 | 17 | 2,8 | -3,41 | 29,4 | 0 | 4,4 | LQ |
| 1961 | 5 | 12 | 13 | 31 | 25 | -11,5 | 26 | 0 | 4,3 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1961 | 5 | 17 | 14 | 19 | 38 | -9,25 | 24,66 | 0 | 4,7 | LQ |
| 1961 | 5 | 20 | 17 | 51 | 49 | -6,75 | 31,7 | 0 | 5,1 | LQ |
| 1961 | 6 | 5 | 8 | 5 | 43,2 | -3,54 | 29,13 | 7 | 4 | LQ |
| 1961 | 6 | 9 | 3 | 15 | 51 | -0,66 | 29,66 | 0 | 4,1 | LQ |
| 1961 | 6 | 11 | 11 | 29 | 0 | -4,5 | 35,75 | 0 | 4,1 | LQ |
| 1961 | 6 | 22 | 16 | 29 | 35,2 | -3,63 | 29,02 | 8 | 4 | LQ |
| 1961 | 6 | 23 | 0 | 4 | 28 | 0,16 | 29,75 | 0 | 4 | LQ |
| 1961 | 6 | 23 | 8 | 35 | 18 | -5,75 | 35,13 | 0 | 4,8 | LQ |
| 1961 | 6 | 23 | 23 | 10 | 11 | -2,66 | 37,75 | 0 | 4,1 | LQ |
| 1961 | 6 | 24 | 7 | 27 | 50 | -12,14 | 26,13 | 0 | 4,5 | LQ |
| 1961 | 6 | 25 | 3 | 52 | 13,9 | -3,66 | 29,13 | 9 | 4,1 | LQ |
| 1961 | 6 | 27 | 16 | 19 | 10 | -3,59 | 29,16 | 11 | 4,1 | LQ |
| 1961 | 6 | 27 | 17 | 19 | 10 | -3,5 | 29,08 | 0 | 4,1 | LQ |
| 1961 | 7 | 7 | 10 | 39 | 25,5 | -4,83 | 34,83 | 0 | 4 | LQ |
| 1961 | 7 | 8 | 23 | 59 | 26,6 | -7,5 | 31,83 | 0 | 4 | LQ |
| 1961 | 7 | 13 | 5 | 37 | 10,5 | -6,5 | 29,33 | 0 | 4,2 | LQ |
| 1961 | 7 | 21 | 4 | 45 | 35 | -6,5 | 31,5 | 0 | 4 | LQ |
| 1961 | 7 | 22 | 12 | 42 | 47,2 | 0,7 | 29,7 | 0 | 4,1 | LQ |
| 1961 | 7 | 30 | 2 | 41 | 24,5 | -7 | 31,5 | 0 | 4 | LQ |
| 1961 | 8 | 2 | 13 | 19 | 21 | -7,3 | 37 | 0 | 4,7 | LQ |
| 1961 | 8 | 5 | 11 | 42 | 29,2 | 0,3 | 30 | 0 | 4,1 | LQ |
| 1961 | 8 | 16 | 1 | 8 | 5 | -12,5 | 32,5 | 0 | 4,8 | LQ |
| 1961 | 8 | 16 | 14 | 6 | 49,4 | -4,3 | 23,8 | 0 | 4,2 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1961 | 8 | 17 | 16 | 2 | 13 | -4,2 | 35,2 | 0 | 4,5 | LQ |
| 1961 | 8 | 20 | 10 | 34 | 32 | -4,5 | 28,9 | 0 | 4 | LQ |
| 1961 | 8 | 20 | 10 | 34 | 33,7 | -4,53 | 28,9 | 25 | 4 | LQ |
| 1961 | 8 | 25 | 1 | 47 | 42,5 | -8 | 33,6 | 0 | 4,5 | LQ |
| 1961 | 8 | 27 | 14 | 57 | 35,5 | -5 | 30,5 | 0 | 4,1 | LQ |
| 1961 | 8 | 28 | 9 | 52 | 12,7 | -5 | 35,5 | 0 | 4 | LQ |
| 1961 | 8 | 29 | 6 | 31 | 34,3 | -8,5 | 32,9 | 0 | 4,5 | LQ |
| 1961 | 9 | 13 | 19 | 20 | 0 | -16,75 | 28,75 | 0 | 4,6 | LQ |
| 1961 | 10 | 20 | 13 | 19 | 36,5 | -3,2 | 29,3 | 0 | 4 | LQ |
| 1961 | 10 | 26 | 16 | 36 | 57 | -3,5 | 29 | 0 | 4,7 | LQ |
| 1961 | 10 | 31 | 11 | 47 | 14 | -5,4 | 35,4 | 0 | 4,1 | LQ |
| 1961 | 11 | 12 | 2 | 15 | 12 | -0.44 | 29.32 | 0 | 6.9 | LQ |
| 1961 | 11 | 12 | 2 | 15 | 16,7 | 0,8 | 29,5 | 0 | 4,7 | LQ |
| 1961 | 11 | 13 | 4 | 30 | 7 | -12 | 33,5 | 0 | 4,6 | LQ |
| 1961 | 11 | 24 | 5 | 23 | 33,3 | -2,9 | 29 | 0 | 4 | LQ |
| 1961 | 11 | 28 | 2 | 42 | 31 | -6,2 | 31,4 | 0 | 4,2 | LQ |
| 1961 | 11 | 30 | 13 | 30 | 29,5 | -7,4 | 33,8 | 0 | 4,9 | LQ |
| 1961 | 12 | 20 | 12 | 1 | 0 | -10,25 | 33,5 | 0 | 4,9 | LQ |
| 1961 | 12 | 29 | 11 | 25 | 35 | 5 | 35,5 | 0 | 4,4 | LQ |
| 1962 | 1 | 3 | 0 | 57 | 26,5 | -1 | 25,4 | 0 | 4,2 | LQ |
| 1962 | 1 | 4 | 6 | 14 | 1 | 0,2 | 29,6 | 0 | 4 | LQ |
| 1962 | 1 | 8 | 22 | 19 | 37,8 | -8,1 | 32,6 | 0 | 4,2 | LQ |
| 19 | 1 | 18 | 8 | 42 | 21, | - | 36 | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 62 | | | | | 8 | 1,25 | | | 2 | |
| 1962 | 1 | 19 | 22 | 19 | 38 | -1,6 | 35,75 | 0 | 4,2 | LQ |
| 1962 | 1 | 25 | 5 | 21 | 29,2 | -1 | 30,3 | 0 | 4,2 | LQ |
| 1962 | 1 | 26 | 21 | 1 | 13 | -1,6 | 29,5 | 0 | 4 | LQ |
| 1962 | 2 | 7 | 3 | 58 | 31,8 | 0 | 29,4 | 0 | 4,2 | LQ |
| 1962 | 2 | 12 | 2 | 40 | 28,5 | -9,5 | 35,8 | 0 | 4,1 | LQ |
| 1962 | 2 | 13 | 22 | 37 | 44,5 | -4,1 | 29,4 | 0 | 4 | LQ |
| 1962 | 3 | 4 | 1 | 51 | 45 | -5,6 | 34,6 | 0 | 4,2 | LQ |
| 1962 | 3 | 8 | 21 | 38 | 34,2 | -3,7 | 29,16 | 12 | 4,8 | LQ |
| 1962 | 3 | 9 | 15 | 9 | 35,1 | -3,57 | 29,16 | 13 | 4,2 | LQ |
| 1962 | 3 | 11 | 5 | 27 | 29,6 | -3,6 | 29,19 | 9 | 4,2 | LQ |
| 1962 | 3 | 22 | 4 | 39 | 40 | -2 | 36,5 | 0 | 4,2 | LQ |
| 1962 | 3 | 22 | 19 | 14 | 14,3 | -4,3 | 23,7 | 0 | 4,2 | LQ |
| 1962 | 3 | 30 | 11 | 11 | 22 | -2,7 | 37,5 | 0 | 4,5 | LQ |
| 1962 | 4 | 5 | 10 | 54 | 41 | -3,6 | 24,4 | 0 | 4,2 | LQ |
| 1962 | 4 | 11 | 13 | 17 | 30 | -0,4 | 33 | 0 | 4,2 | LQ |
| 1962 | 4 | 22 | 11 | 4 | 14 | -2 | 34 | 0 | 4,4 | LQ |
| 1962 | 4 | 29 | 11 | 32 | 8 | -8,2 | 31,2 | 0 | 4 | LQ |
| 1962 | 5 | 12 | 0 | 9 | 26,3 | -9,8 | 34,3 | 0 | 4,3 | LQ |
| 1962 | 5 | 12 | 5 | 2 | 59,5 | -3,39 | 29,24 | 13 | 4 | LQ |
| 1962 | 5 | 20 | 3 | 50 | 42,6 | -4 | 34,8 | 0 | 4 | LQ |
| 1962 | 5 | 22 | 6 | 28 | 9,5 | -3,9 | 29,2 | 0 | 4,1 | LQ |
| 1962 | 5 | 22 | 14 | 24 | 22 | -3,6 | 29,05 | 7 | 4 | LQ |
| 1962 | 5 | 27 | 19 | 26 | 29,3 | -6,5 | 31 | 0 | 4,1 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1962 | 6 | 3 | 23 | 52 | 7,9 | -14,6 | 26 | 0 | 4,5 | LQ |
| 1962 | 6 | 7 | 5 | 39 | 37 | -8,3 | 31 | 0 | 4,1 | LQ |
| 1962 | 6 | 9 | 20 | 3 | 56 | -6,2 | 31,2 | 0 | 4,2 | LQ |
| 1962 | 6 | 26 | 7 | 44 | 21 | -2,9 | 36 | 0 | 4,5 | LQ |
| 1962 | 7 | 5 | 4 | 13 | 38,5 | -0,75 | 29,4 | 0 | 4,1 | LQ |
| 1962 | 7 | 14 | 13 | 9 | 13,5 | -6,2 | 31,6 | 0 | 4 | LQ |
| 1962 | 7 | 17 | 23 | 28 | 9 | -3,8 | 35,8 | 0 | 4 | LQ |
| 1962 | 7 | 22 | 20 | 55 | 23 | -14 | 29 | 0 | 4,7 | LQ |
| 1962 | 7 | 26 | 8 | 2 | 34,3 | -3,9 | 35,1 | 0 | 4,4 | LQ |
| 1962 | 7 | 26 | 10 | 42 | 32,4 | -9,2 | 32,1 | 0 | 4,2 | LQ |
| 1962 | 8 | 13 | 10 | 41 | 27,4 | -7,2 | 31,3 | 0 | 4,1 | LQ |
| 1962 | 8 | 14 | 10 | 1 | 55 | -4 | 34 | 0 | 4,2 | LQ |
| 1962 | 8 | 17 | 10 | 23 | 15 | -1,1 | 27,8 | 0 | 4,1 | LQ |
| 1962 | 8 | 17 | 13 | 59 | 39 | -0,2 | 30,2 | 0 | 4,1 | LQ |
| 1962 | 8 | 28 | 10 | 47 | 41,7 | -1,5 | 27 | 0 | 4 | LQ |
| 1962 | 8 | 29 | 2 | 34 | 53 | -1,8 | 35,3 | 0 | 4,2 | LQ |
| 1962 | 8 | 30 | 15 | 42 | 46 | -5 | 29,8 | 0 | 4 | LQ |
| 1962 | 9 | 21 | 8 | 22 | 55,5 | -5,7 | 29,7 | 0 | 4,1 | LQ |
| 1962 | 9 | 21 | 20 | 57 | 55 | -7 | 32,6 | 0 | 4,2 | LQ |
| 1962 | 9 | 25 | 4 | 48 | 40,9 | -7,4 | 34,7 | 0 | 5 | LQ |
| 1962 | 9 | 28 | 10 | 47 | 41,7 | -1,5 | 27 | 0 | 4 | LQ |
| 1962 | 10 | 4 | 7 | 10 | 23,4 | -3,7 | 35 | 0 | 4,2 | LQ |
| 1962 | 10 | 14 | 10 | 54 | 23 | 4,8 | 33,6 | 0 | 4,6 | LQ |
| 19 | 10 | 21 | 10 | 6 | 13, | 0,4 | 30, | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 62 | | | | | 3 | | 05 | | 1 | |
| 1962 | 10 | 22 | 7 | 45 | 39,2 | -1,7 | 35,1 | 0 | 4,1 | LQ |
| 1962 | 10 | 26 | 11 | 34 | 0 | -5,2 | 39,3 | 0 | 4,2 | LQ |
| 1962 | 10 | 26 | 18 | 56 | 18 | -2,2 | 34,5 | 0 | 4,2 | LQ |
| 1962 | 10 | 29 | 22 | 16 | 32,4 | -1,08 | 29,39 | 25 | 4 | LQ |
| 1962 | 11 | 4 | 3 | 46 | 27 | -1,9 | 35,1 | 0 | 4,3 | LQ |
| 1962 | 11 | 10 | 11 | 52 | 45,5 | 4 | 30,7 | 0 | 4,2 | LQ |
| 1962 | 11 | 20 | 10 | 5 | 20,5 | -0,5 | 25,9 | 0 | 4,4 | LQ |
| 1962 | 12 | 3 | 20 | 18 | 27,9 | -2,82 | 29,1 | 25 | 4 | LQ |
| 1962 | 12 | 14 | 11 | 36 | 1,7 | -2,8 | 29,1 | 0 | 4 | LQ |
| 1962 | 12 | 14 | 12 | 18 | 29 | -5,5 | 29,6 | 0 | 4,2 | LQ |
| 1962 | 12 | 16 | 16 | 38 | 25 | 1 | 30,4 | 0 | 4 | LQ |
| 1962 | 12 | 17 | 15 | 30 | 18 | -16,3 | 35 | 0 | 4,4 | LQ |
| 1962 | 12 | 26 | 9 | 43 | 50 | 4 | 38,6 | 0 | 4,3 | LQ |
| 1962 | 12 | 27 | 1 | 54 | 10,4 | -2 | 34,9 | 0 | 4 | LQ |
| 1963 | 1 | 2 | 18 | 55 | 52 | -3,3 | 35,8 | 0 | 4,2 | LQ |
| 1963 | 1 | 4 | 22 | 48 | 45,3 | -6,2 | 29,1 | 0 | 4,1 | LQ |
| 1963 | 1 | 9 | 18 | 22 | 27,7 | -3,62 | 29,2 | 16 | 4,6 | LQ |
| 1963 | 1 | 10 | 7 | 7 | 46,4 | -3,16 | 28,03 | 22 | 4 | LQ |
| 1963 | 1 | 17 | 14 | 37 | 49 | -4,2 | 37,4 | 0 | 4,3 | LQ |
| 1963 | 1 | 25 | 3 | 16 | 11,8 | -6,2 | 31,1 | 0 | 4 | LQ |
| 1963 | 1 | 26 | 22 | 29 | 20 | -16,3 | 29,6 | 0 | 4,4 | LQ |
| 1963 | 1 | 27 | 17 | 47 | 17,8 | -0,9 | 33,1 | 0 | 4 | LQ |
| 1963 | 1 | 29 | 4 | 11 | 59,9 | -3,5 | 29,15 | 9 | 4,1 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1963 | 2 | 5 | 0 | 6 | 24 | -2,7 | 35,4 | 0 | 4 | LQ |
| 1963 | 2 | 10 | 12 | 36 | 10 | -3 | 35,7 | 0 | 4 | LQ |
| 1963 | 2 | 10 | 15 | 50 | 11,9 | -1,01 | 29,57 | 13 | 4 | LQ |
| 1963 | 2 | 16 | 8 | 40 | 25 | -0,4 | 29,7 | 0 | 4,4 | LQ |
| 1963 | 3 | 6 | 23 | 32 | 39,7 | -1,85 | 28,87 | 22 | 4,2 | LQ |
| 1963 | 4 | 13 | 19 | 54 | 17,7 | -2,4 | 35,5 | 0 | 4,4 | LQ |
| 1963 | 4 | 16 | 17 | 46 | 39,3 | -2,01 | 29,1 | 30 | 4,1 | LQ |
| 1963 | 4 | 20 | 6 | 41 | 25 | -8,7 | 32,7 | 0 | 4,7 | LQ |
| 1963 | 4 | 21 | 11 | 34 | 23 | -1,9 | 26,9 | 0 | 4,1 | LQ |
| 1963 | 5 | 2 | 19 | 20 | 31 | -2 | 34,8 | 0 | 4,2 | LQ |
| 1963 | 5 | 7 | 11 | 17 | 45,7 | -5 | 35,2 | 0 | 4,6 | LQ |
| 1963 | 5 | 12 | 19 | 55 | 10,1 | -0,3 | 29,9 | 0 | 4,2 | LQ |
| 1963 | 5 | 13 | 22 | 26 | 8,1 | -2,2 | 29,1 | 0 | 4,1 | LQ |
| 1963 | 5 | 16 | 1 | 17 | 14 | -5,7 | 29,6 | 0 | 4,1 | LQ |
| 1963 | 5 | 23 | 16 | 44 | 38 | -3,6 | 32 | 0 | 4,2 | LQ |
| 1963 | 5 | 26 | 19 | 24 | 43,5 | -14,8 | 34,7 | 0 | 4,8 | LQ |
| 1963 | 5 | 29 | 8 | 40 | 3,5 | -2,8 | 37,7 | 0 | 4,7 | LQ |
| 1963 | 6 | 1 | 1 | 0 | 43,8 | -8,8 | 25 | 0 | 4,3 | LQ |
| 1963 | 6 | 1 | 16 | 4 | 43,3 | 0,9 | 30,2 | 0 | 4 | LQ |
| 1963 | 6 | 2 | 13 | 29 | 57 | -1,4 | 33,7 | 0 | 4 | LQ |
| 1963 | 6 | 10 | 9 | 59 | 45 | 0,7 | 30,1 | 0 | 4,2 | LQ |
| 1963 | 6 | 10 | 21 | 27 | 35 | -1,4 | 35,7 | 0 | 4,2 | LQ |
| 1963 | 6 | 10 | 23 | 47 | 43,4 | -9,5 | 24,2 | 0 | 4,1 | LQ |
| 1963 | 6 | 13 | 4 | 4 | 8,7 | -4,8 | 29,1 | 0 | 4,5 | LQ |
| 1963 | 6 | 13 | 18 | 37 | 41,4 | -4,7 | 30,7 | 0 | 4,6 | LQ |
| 1963 | 6 | 21 | 6 | 49 | 23 | -4,8 | 30,6 | 0 | 4,1 | LQ |
| 1963 | 6 | 27 | 21 | 18 | 41 | -6,4 | 30,8 | 0 | 4 | LQ |
| 1963 | 7 | 6 | 20 | 39 | 37,6 | -6,2 | 31 | 0 | 4 | LQ |
| 1963 | 7 | 6 | 22 | 32 | 31,7 | -16,3 | 39,7 | 0 | 5 | LQ |
| 1963 | 7 | 7 | 12 | 7 | 19,5 | -2,9 | 36,8 | 0 | 4,5 | LQ |
| 1963 | 7 | 13 | 10 | 11 | 24,7 | -0,5 | 27,6 | 0 | 4 | LQ |
| 1963 | 7 | 26 | 15 | 38 | 50 | -16,3 | 35,3 | 0 | 4,7 | LQ |
| 1963 | 8 | 14 | 0 | 15 | 7,1 | -16,7 | 28,7 | 0 | 4,8 | LQ |
| 1963 | 8 | 17 | 6 | 53 | 44,5 | 0,8 | 29,7 | 0 | 4 | LQ |
| 1963 | 8 | 29 | 20 | 57 | 57,8 | 0,6 | 30,1 | 0 | 4,2 | LQ |
| 1963 | 9 | 14 | 3 | 8 | 24 | -4,4 | 34,2 | 0 | 4 | LQ |
| 1963 | 9 | 21 | 4 | 19 | 0 | -17 | 29 | 0 | 4,5 | LQ |
| 1963 | 9 | 23 | 6 | 40 | 36,5 | -16,6 | 28,6 | 0 | 5,1 | LQ |
| 1963 | 9 | 23 | 8 | 10 | 35,4 | -16,7 | 28,7 | 0 | 4,7 | LQ |
| 1963 | 9 | 23 | 9 | 5 | 13 | -16,6 | 28,8 | 0 | 5,4 | LQ |
| 1963 | 9 | 23 | 9 | 46 | 5 | -16,3 | 28,75 | 0 | 4,5 | LQ |
| 1963 | 9 | 23 | 12 | 32 | 7 | -16,75 | 28,75 | 0 | 4,4 | LQ |
| 1963 | 9 | 23 | 15 | 2 | 23,3 | -16,7 | 28,4 | 0 | 4,8 | LQ |
| 1963 | 9 | 23 | 16 | 7 | 36 | -16,75 | 28,5 | 0 | 4,7 | LQ |
| 1963 | 9 | 23 | 16 | 41 | 6 | -16,75 | 28,5 | 0 | 4,6 | LQ |
| 19 | 9 | 23 | 22 | 23 | 37, | - | 28, | 0 | 5, | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 63 | | | | | 7 | 16,6 | 7 | | 1 | |
| 1963 | 9 | 23 | 22 | 36 | 2 | -16,6 | 28,7 | 0 | 4,7 | LQ |
| 1963 | 9 | 24 | 9 | 13 | 38 | -16,6 | 28,7 | 0 | 5,1 | LQ |
| 1963 | 9 | 24 | 10 | 18 | 0 | -16,6 | 28,7 | 0 | 4,4 | LQ |
| 1963 | 9 | 24 | 21 | 37 | 8 | -16,6 | 28,7 | 0 | 4,5 | LQ |
| 1963 | 9 | 25 | 7 | 3 | 54,6 | -16,7 | 28,7 | 0 | 5,2 | LQ |
| 1963 | 9 | 27 | 9 | 46 | 34 | -4 | 35,2 | 0 | 4,7 | LQ |
| 1963 | 9 | 28 | 15 | 50 | 20,5 | -3,6 | 33,7 | 0 | 4 | LQ |
| 1963 | 9 | 30 | 14 | 8 | 31 | 1,1 | 31,3 | 0 | 4,2 | LQ |
| 1963 | 10 | 2 | 23 | 54 | 24 | 0,7 | 22,2 | 0 | 4 | LQ |
| 1963 | 10 | 5 | 16 | 54 | 57,7 | -16,9 | 28,6 | 0 | 4,9 | LQ |
| 1963 | 10 | 12 | 21 | 35 | 32 | -5,2 | 34,7 | 0 | 4 | LQ |
| 1963 | 10 | 15 | 1 | 19 | 56,5 | -4 | 35,2 | 0 | 4,1 | LQ |
| 1963 | 10 | 27 | 17 | 6 | 34 | -1,5 | 33,2 | 0 | 4 | LQ |
| 1963 | 10 | 30 | 18 | 28 | 19,4 | -4,9 | 29,5 | 0 | 4,2 | LQ |
| 1963 | 11 | 3 | 3 | 49 | 1,2 | -2,9 | 36 | 0 | 4,5 | LQ |
| 1963 | 11 | 4 | 8 | 30 | 30,6 | -6,1 | 31,4 | 0 | 4,2 | LQ |
| 1963 | 11 | 8 | 9 | 59 | 24,3 | -16,5 | 28,6 | 0 | 4,9 | LQ |
| 1963 | 11 | 13 | 2 | 40 | 40,7 | -4,8 | 30,1 | 0 | 4,2 | LQ |
| 1963 | 11 | 13 | 6 | 47 | 14,2 | -4,43 | 28,7 | 25 | 4 | LQ |
| 1963 | 11 | 15 | 17 | 55 | 0 | -3,7 | 35,8 | 0 | 4,4 | LQ |
| 1963 | 11 | 18 | 1 | 9 | 36,1 | -7,6 | 31,5 | 0 | 4,6 | LQ |
| 1963 | 11 | 23 | 6 | 10 | 45 | -3,9 | 34,9 | 0 | 4,1 | LQ |
| 1963 | 11 | 26 | 12 | 7 | 50,8 | 0 | 29,7 | 0 | 4,2 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1963 | 11 | 27 | 14 | 20 | 37 | -2,9 | 35,6 | 0 | 4,5 | LQ |
| 1963 | 11 | 28 | 6 | 28 | 10 | 0,8 | 31,2 | 0 | 4,3 | LQ |
| 1963 | 12 | 13 | 21 | 11 | 23,3 | -3,48 | 29,21 | 12 | 4,1 | LQ |
| 1964 | 1 | 3 | 3 | 50 | 30 | -3,1 | 35,1 | 0 | 4,6 | LQ |
| 1964 | 1 | 8 | 20 | 54 | 25 | -7,4 | 31,2 | 0 | 4,1 | LQ |
| 1964 | 1 | 9 | 2 | 25 | 16,7 | -3,3 | 35 | 0 | 4,7 | LQ |
| 1964 | 1 | 10 | 2 | 25 | 36,3 | -4,3 | 34,5 | 0 | 4,2 | LQ |
| 1964 | 1 | 12 | 18 | 26 | 50 | -4,3 | 23,4 | 0 | 4,5 | LQ |
| 1964 | 1 | 13 | 21 | 28 | 39,2 | -3,1 | 35,6 | 0 | 4,5 | LQ |
| 1964 | 1 | 17 | 5 | 0 | 36,5 | -3,5 | 34,7 | 0 | 4 | LQ |
| 1964 | 2 | 11 | 16 | 3 | 26 | -13 | 34 | 0 | 4,2 | LQ |
| 1964 | 2 | 12 | 13 | 8 | 4,4 | -6,5 | 30,7 | 0 | 4 | LQ |
| 1964 | 2 | 22 | 14 | 36 | 35 | -7,1 | 30,6 | 0 | 4,1 | LQ |
| 1964 | 2 | 26 | 9 | 39 | 31,3 | -7,5 | 31,6 | 0 | 4,3 | LQ |
| 1964 | 2 | 27 | 2 | 32 | 26 | -9 | 38,2 | 0 | 4,9 | LQ |
| 1964 | 3 | 5 | 10 | 56 | 52 | -3,4 | 35,5 | 0 | 4,6 | LQ |
| 1964 | 3 | 11 | 14 | 7 | 40,7 | -6,5 | 31,1 | 0 | 4,3 | LQ |
| 1964 | 3 | 12 | 16 | 8 | 1,6 | -6,9 | 31,4 | 0 | 4 | LQ |
| 1964 | 3 | 16 | 3 | 1 | 35 | -6,7 | 30,9 | 0 | 4,1 | LQ |
| 1964 | 3 | 20 | 5 | 58 | 23,2 | -3,35 | 29,2 | 0 | 4,6 | LQ |
| 1964 | 3 | 27 | 5 | 3 | 26 | -7,3 | 37,6 | 0 | 4,5 | LQ |
| 1964 | 3 | 31 | 0 | 26 | 44,4 | 0,1 | 29,7 | 0 | 4,2 | LQ |
| 1964 | 3 | 31 | 15 | 22 | 40,5 | -6,2 | 31,1 | 0 | 4,4 | LQ |
| 19 | 4 | 11 | 6 | 19 | 58 | - | 30, | 11 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 64 | | | | | | 4,27 | 15 | | 4 | |
| 1964 | 4 | 11 | 12 | 32 | 33,4 | -6,3 | 30,8 | 0 | 4 | LQ |
| 1964 | 4 | 21 | 19 | 31 | 18,7 | -9 | 33 | 0 | 4,2 | LQ |
| 1964 | 4 | 23 | 4 | 38 | 1 | -3,3 | 29,1 | 0 | 4,1 | LQ |
| 1964 | 5 | 2 | 17 | 3 | 9,1 | -0,7 | 25,7 | 0 | 4 | LQ |
| 1964 | 5 | 7 | 5 | 45 | 31,2 | -4,3 | 34,5 | 0 | 5,4 | LQ |
| 1964 | 5 | 7 | 7 | 48 | 0,2 | -4,5 | 34,4 | 0 | 4 | LQ |
| 1964 | 5 | 7 | 12 | 51 | 43,9 | -3,8 | 34,7 | 0 | 4,2 | LQ |
| 1964 | 5 | 7 | 12 | 57 | 35,6 | -4 | 34,5 | 0 | 4,6 | LQ |
| 1964 | 5 | 7 | 21 | 49 | 16,9 | -3,1 | 34,7 | 0 | 4,3 | LQ |
| 1964 | 5 | 7 | 22 | 16 | 6,8 | -3,1 | 34,9 | 0 | 4,2 | LQ |
| 1964 | 5 | 11 | 12 | 34 | 24,1 | -7,4 | 31,6 | 0 | 4,5 | LQ |
| 1964 | 5 | 11 | 18 | 54 | 55 | -1 | 33,6 | 0 | 4,2 | LQ |
| 1964 | 5 | 12 | 19 | 12 | 17,8 | -6 | 20,5 | 0 | 4,2 | LQ |
| 1964 | 5 | 24 | 15 | 19 | 23 | -8,2 | 33,2 | 0 | 4,5 | LQ |
| 1964 | 7 | 1 | 15 | 39 | 18,5 | -7 | 32,8 | 0 | 4,3 | LQ |
| 1964 | 7 | 3 | 19 | 18 | 34 | 11,2 | 39,3 | 0 | 4,5 | LQ |
| 1964 | 8 | 6 | 2 | 47 | 20 | -8 | 36 | 0 | 4,6 | LQ |
| 1964 | 8 | 19 | 21 | 37 | 8 | -17 | 13 | 0 | 4,8 | LQ |
| 1964 | 11 | 19 | 16 | 34 | 33 | -6,7 | 30,7 | 0 | 4,2 | LQ |
| 1964 | 12 | 1 | 23 | 38 | 30,7 | -19 | 14 | 0 | 4,7 | LQ |
| 1964 | 12 | 21 | 14 | 3 | 0 | -3,67 | 29,93 | 0 | 5,7 | LQ |
| 1965 | 1 | 19 | 17 | 0 | 16,5 | 2,25 | 37,75 | 0 | 4,2 | LQ |
| 1965 | 1 | 26 | 17 | 31 | 27,6 | -2,4 | 28,8 | 0 | 4 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1965 | 2 | 1 | 18 | 42 | 5 | 1,25 | 30 | 0 | 4,3 | LQ |
| 1965 | 2 | 23 | 7 | 0 | 7 | -3,23 | 24,32 | 0 | 4,2 | LQ |
| 1965 | 3 | 6 | 11 | 17 | 50,5 | -0,8 | 28,7 | 0 | 4,2 | LQ |
| 1965 | 3 | 6 | 11 | 24 | 47,8 | -1,26 | 28,53 | 36 | 4,2 | LQ |
| 1965 | 3 | 9 | 1 | 25 | 0 | -4,5 | 23,5 | 0 | 4,5 | LQ |
| 1965 | 3 | 13 | 23 | 40 | 31,3 | 2 | 27 | 0 | 4 | LQ |
| 1965 | 4 | 8 | 21 | 26 | 41 | -7 | 33,5 | 0 | 4,4 | LQ |
| 1965 | 4 | 25 | 10 | 1 | 9,7 | -2,2 | 29,1 | 13 | 4,8 | LQ |
| 1965 | 4 | 25 | 10 | 9 | 30,5 | -2,45 | 29,5 | 0 | 4,1 | LQ |
| 1965 | 4 | 28 | 12 | 39 | 13 | 4 | 36,5 | 0 | 4,7 | LQ |
| 1965 | 5 | 3 | 15 | 13 | 18 | -4,8 | 34,9 | 0 | 4,4 | LQ |
| 1965 | 5 | 12 | 8 | 50 | 56,9 | -4,7 | 34,8 | 0 | 4,9 | LQ |
| 1965 | 6 | 16 | 11 | 13 | 28,5 | -3,5 | 29,2 | 0 | 4 | LQ |
| 1965 | 6 | 19 | 9 | 51 | 19 | 0,2 | 29,8 | 0 | 4 | LQ |
| 1965 | 6 | 21 | 11 | 12 | 3,6 | -9,9 | 35,1 | 0 | 5,1 | LQ |
| 1965 | 7 | 2 | 12 | 29 | 36 | -2,8 | 29,6 | 0 | 4 | LQ |
| 1965 | 7 | 2 | 16 | 12 | 21 | -4 | 35 | 0 | 4,2 | LQ |
| 1965 | 7 | 12 | 12 | 11 | 0 | -6,8 | 34 | 0 | 4,5 | LQ |
| 1965 | 7 | 13 | 8 | 12 | 22 | -11,6 | 36 | 0 | 4,6 | LQ |
| 1965 | 7 | 23 | 13 | 47 | 58 | -3,5 | 31,6 | 0 | 4,4 | LQ |
| 1965 | 7 | 23 | 20 | 10 | 29,3 | -10,5 | 40,5 | 0 | 4,5 | LQ |
| 1965 | 7 | 27 | 13 | 6 | 44 | -7,7 | 30,6 | 0 | 4,1 | LQ |
| 1965 | 7 | 28 | 19 | 6 | 30,2 | 0,01 | 30,01 | 17 | 4,2 | LQ |
| 19 | 8 | 6 | 6 | 56 | 17 | -4,8 | 35, | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 65 | | | | | | | 5 | | 7 | |
| 1965 | 8 | 11 | 3 | 35 | 56 | -7,1 | 31 | 0 | 4,1 | LQ |
| 1965 | 8 | 18 | 0 | 0 | 37 | -5,3 | 29,4 | 0 | 4,5 | LQ |
| 1965 | 9 | 13 | 6 | 56 | 51 | 0,7 | 26,9 | 0 | 4,2 | LQ |
| 1965 | 9 | 17 | 23 | 0 | 57 | 0 | 29,5 | 0 | 4,2 | LQ |
| 1965 | 9 | 18 | 5 | 13 | 18 | -8,6 | 31,2 | 0 | 4,2 | LQ |
| 1965 | 9 | 18 | 7 | 27 | 14 | -9,1 | 33,4 | 0 | 4,5 | LQ |
| 1965 | 9 | 20 | 10 | 52 | 47,9 | -5,09 | 28,76 | 15 | 4,2 | LQ |
| 1965 | 9 | 21 | 21 | 42 | 5,5 | -5,6 | 29,5 | 0 | 4,1 | LQ |
| 1965 | 9 | 26 | 8 | 37 | 40,7 | -5,27 | 35,57 | 0 | 5,1 | LQ |
| 1965 | 10 | 5 | 23 | 8 | 49,5 | -4,7 | 34,9 | 0 | 4,8 | LQ |
| 1965 | 10 | 18 | 23 | 16 | 14,5 | -4,9 | 35,2 | 0 | 4,6 | LQ |
| 1965 | 10 | 24 | 17 | 45 | 29 | 5 | 39 | 0 | 4,6 | LQ |
| 1965 | 10 | 25 | 13 | 41 | 55 | -3,2 | 24,5 | 0 | 4,4 | LQ |
| 1965 | 11 | 5 | 19 | 23 | 5,2 | 0,17 | 30,36 | 0 | 4,1 | LQ |
| 1965 | 11 | 13 | 6 | 56 | 51 | 0,7 | 26,9 | 0 | 4,2 | LQ |
| 1965 | 12 | 9 | 18 | 22 | 35,7 | -0,4 | 26,49 | 15 | 4 | LQ |
| 1965 | 12 | 21 | 14 | 26 | 50 | -4,4 | 33 | 0 | 4,7 | LQ |
| 1965 | 12 | 27 | 3 | 23 | 57 | -4,8 | 23,3 | 0 | 4,1 | LQ |
| 1966 | 1 | 1 | 13 | 13 | 42 | -4,5 | 35,3 | 0 | 4,5 | LQ |
| 1966 | 1 | 12 | 19 | 30 | 6,8 | -7,9 | 31,6 | 0 | 4,2 | LQ |
| 1966 | 1 | 17 | 7 | 33 | 44,9 | -13 | 40,5 | 0 | 4,8 | LQ |
| 1966 | 2 | 6 | 0 | 45 | 26 | -9,45 | 28,45 | 0 | 4,2 | LQ |
| 1966 | 2 | 10 | 9 | 54 | 46,5 | -4,4 | 35,4 | 0 | 4,7 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1966 | 2 | 12 | 15 | 49 | 1,5 | -6,6 | 31,25 | 41 | 4 | LQ |
| 1966 | 3 | 9 | 3 | 12 | 0 | 2,27 | 31,42 | 0 | 5,3 | LQ |
| 1966 | 3 | 14 | 4 | 40 | 45 | -11,7 | 33,2 | 0 | 4,4 | LQ |
| 1966 | 3 | 20 | 1 | 42 | 48,9 | 0,72 | 29,95 | 27 | 6,8 | LQ |
| 1966 | 3 | 26 | 9 | 42 | 23 | -18,5 | 26,5 | 0 | 5,1 | LQ |
| 1966 | 4 | 5 | 6 | 8 | 9,4 | -16,4 | 28,5 | 0 | 5,1 | LQ |
| 1966 | 4 | 10 | 9 | 57 | 4,6 | -7,8 | 30 | 0 | 4,6 | LQ |
| 1966 | 4 | 16 | 18 | 9 | 25,1 | -12,5 | 26,7 | 0 | 4,8 | LQ |
| 1966 | 4 | 22 | 7 | 19 | 55,6 | -2,06 | 29,95 | 36 | 4,3 | LQ |
| 1966 | 4 | 25 | 20 | 25 | 54,4 | -0,92 | 30,12 | 37 | 4,1 | LQ |
| 1966 | 4 | 26 | 8 | 40 | 25 | -5,1 | 41,2 | 0 | 4,5 | LQ |
| 1966 | 5 | 5 | 22 | 57 | 8,8 | -20,9 | 33,2 | 0 | 4,4 | LQ |
| 1966 | 5 | 6 | 2 | 36 | 56,8 | -15,7 | 34,4 | 0 | 4,7 | LQ |
| 1966 | 5 | 19 | 17 | 12 | 45,3 | -0,42 | 29,83 | 38 | 4,2 | LQ |
| 1966 | 5 | 26 | 12 | 28 | 6,9 | -3,74 | 29,16 | 38 | 4,2 | LQ |
| 1966 | 5 | 27 | 4 | 44 | 23,5 | -0,65 | 30 | 25 | 4,2 | LQ |
| 1966 | 5 | 30 | 6 | 33 | 40,7 | -6 | 35,3 | 0 | 4,7 | LQ |
| 1966 | 5 | 30 | 7 | 12 | 40 | -6 | 35,4 | 0 | 4,7 | LQ |
| 1966 | 6 | 3 | 7 | 14 | 41,9 | 0,6 | 29,9 | 0 | 4,5 | LQ |
| 1966 | 6 | 3 | 7 | 14 | 46,9 | -0,54 | 29,96 | 0 | 4,4 | LQ |
| 1966 | 6 | 4 | 19 | 2 | 2,6 | 0,9 | 29,9 | 0 | 4,4 | LQ |
| 1966 | 6 | 4 | 19 | 32 | 32,6 | 0,9 | 29,9 | 0 | 4,4 | LQ |
| 1966 | 6 | 5 | 11 | 43 | 50 | -0,91 | 30,02 | 30 | 4,2 | LQ |
| 19 | 6 | 14 | 23 | 50 | 41, | 1,1 | 30 | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 66 | | | | | 9 | | | | 4 | |
| 1966 | 6 | 20 | 4 | 37 | 38 | -3,23 | 23,75 | 17 | 4,5 | LQ |
| 1966 | 6 | 23 | 9 | 37 | 3,4 | -14,2 | 21,9 | 0 | 5,1 | LQ |
| 1966 | 6 | 23 | 21 | 37 | 31,7 | -3,88 | 28,53 | 7 | 4,1 | LQ |
| 1966 | 7 | 8 | 23 | 16 | 22,5 | -6,8 | 35,8 | 0 | 4,7 | LQ |
| 1966 | 7 | 10 | 23 | 54 | 30,8 | -4,2 | 35,8 | 0 | 4,3 | LQ |
| 1966 | 7 | 13 | 0 | 31 | 27 | -10,3 | 37,2 | 0 | 4,5 | LQ |
| 1966 | 7 | 14 | 11 | 45 | 24 | -3,3 | 35,3 | 0 | 4,3 | LQ |
| 1966 | 7 | 15 | 21 | 17 | 39 | -3,9 | 35,5 | 0 | 4,2 | LQ |
| 1966 | 7 | 15 | 22 | 13 | 58,8 | -4,3 | 35,5 | 0 | 4,4 | LQ |
| 1966 | 7 | 17 | 2 | 26 | 33,5 | -12,15 | 26,4 | 0 | 4,5 | LQ |
| 1966 | 7 | 20 | 22 | 27 | 11 | -8 | 40 | 0 | 4 | LQ |
| 1966 | 7 | 21 | 8 | 31 | 50,7 | -4 | 35,8 | 0 | 4,6 | LQ |
| 1966 | 7 | 23 | 18 | 55 | 47 | -4,5 | 35,5 | 0 | 4 | LQ |
| 1966 | 7 | 23 | 20 | 21 | 8,1 | -4,2 | 35,6 | 0 | 4,3 | LQ |
| 1966 | 7 | 24 | 10 | 25 | 3,3 | -0,15 | 35,8 | 0 | 4,4 | LQ |
| 1966 | 7 | 31 | 15 | 17 | 15 | 0,7 | 30 | 6 | 4,4 | LQ |
| 1966 | 7 | 31 | 17 | 44 | 27,5 | -5,7 | 35,9 | 0 | 4,8 | LQ |
| 1966 | 8 | 2 | 15 | 34 | 1,5 | -7,8 | 31,8 | 0 | 4,2 | LQ |
| 1966 | 8 | 7 | 23 | 34 | 21,5 | -6,6 | 35,6 | 0 | 4,4 | LQ |
| 1966 | 8 | 15 | 7 | 19 | 39 | -4,2 | 34 | 0 | 4,5 | LQ |
| 1966 | 8 | 15 | 19 | 37 | 5,6 | -22,6 | 24,4 | 0 | 4,1 | LQ |
| 1966 | 8 | 17 | 2 | 19 | 7 | -9,7 | 34,2 | 0 | 4 | LQ |
| 19 | 8 | 17 | 18 | 20 | 59 | -9,7 | 34, | 0 | 4 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 66 | | | | | | | 2 | | | |
| 1966 | 8 | 18 | 2 | 26 | 0 | -3,4 | 36 | 0 | 4,4 | LQ |
| 1966 | 9 | 2 | 7 | 38 | 5 | -8,8 | 30,8 | 0 | 4,1 | LQ |
| 1966 | 9 | 2 | 11 | 49 | 12 | -19,4 | 17,7 | 0 | 4,4 | LQ |
| 1966 | 9 | 5 | 9 | 8 | 2,7 | -13,9 | 26,2 | 0 | 4,3 | LQ |
| 1966 | 9 | 8 | 10 | 29 | 46,4 | -8,2 | 38,3 | 0 | 4,7 | LQ |
| 1966 | 9 | 11 | 1 | 47 | 35 | -5,7 | 24,6 | 0 | 4 | LQ |
| 1966 | 9 | 12 | 15 | 48 | 30 | -4,6 | 29,2 | 0 | 4 | LQ |
| 1966 | 9 | 17 | 0 | 48 | 33 | -26,2 | 27,9 | 0 | 4,1 | LQ |
| 1966 | 9 | 18 | 4 | 27 | 44,1 | -4,2 | 33,8 | 0 | 4,7 | LQ |
| 1966 | 9 | 21 | 8 | 28 | 1,5 | -5,3 | 35,6 | 0 | 4,2 | LQ |
| 1966 | 9 | 21 | 18 | 35 | 58,5 | -5,3 | 35,6 | 0 | 4 | LQ |
| 1966 | 9 | 23 | 14 | 53 | 29,5 | -5 | 35,3 | 0 | 4,3 | LQ |
| 1966 | 9 | 24 | 13 | 29 | 27,2 | 0,6 | 36,3 | 0 | 4,7 | LQ |
| 1966 | 9 | 26 | 2 | 33 | 31,8 | -7,4 | 31 | 0 | 4,2 | LQ |
| 1966 | 10 | 1 | 17 | 41 | 13,5 | -3,72 | 29,09 | 34 | 4 | LQ |
| 1966 | 10 | 2 | 20 | 10 | 37,5 | 2,1 | 37,1 | 0 | 4,6 | LQ |
| 1966 | 10 | 5 | 8 | 34 | 37,5 | 0,2 | 29,8 | 8 | 4,8 | LQ |
| 1966 | 10 | 6 | 11 | 9 | 18,3 | -26,05 | 27,8 | 0 | 4 | LQ |
| 1966 | 10 | 6 | 22 | 25 | 3,5 | -12,25 | 33,9 | 0 | 4,3 | LQ |
| 1966 | 10 | 7 | 1 | 45 | 14 | -1 | 34 | 0 | 4 | LQ |
| 1966 | 10 | 7 | 13 | 36 | 56,5 | -0,35 | 27,7 | 0 | 4,2 | LQ |
| 1966 | 10 | 8 | 13 | 5 | 8 | -9,3 | 42,2 | 0 | 4,3 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1966 | 10 | 9 | 1 | 16 | 55,2 | -3,6 | 29,1 | 0 | 4,1 | LQ |
| 1966 | 10 | 9 | 5 | 24 | 50 | -10 | 28,6 | 0 | 4,4 | LQ |
| 1966 | 10 | 9 | 6 | 48 | 42,1 | 12,6 | 30,8 | 0 | 4,5 | LQ |
| 1966 | 10 | 9 | 10 | 28 | 26,8 | 12,7 | 31 | 0 | 4,1 | LQ |
| 1966 | 10 | 11 | 9 | 8 | 43,6 | -13,9 | 25,9 | 0 | 4,2 | LQ |
| 1966 | 10 | 14 | 6 | 5 | 18,4 | -14 | 26,1 | 0 | 4,2 | LQ |
| 1966 | 10 | 22 | 13 | 14 | 11,4 | -26,3 | 27,4 | 0 | 4,2 | LQ |
| 1966 | 10 | 29 | 6 | 8 | 6,5 | -1,6 | 29,6 | 0 | 4,2 | LQ |
| 1966 | 10 | 29 | 20 | 16 | 25 | -14,1 | 26,1 | 0 | 4,3 | LQ |
| 1966 | 11 | 4 | 7 | 27 | 33 | -4,4 | 35 | 0 | 4,2 | LQ |
| 1966 | 11 | 4 | 20 | 34 | 7,8 | -7,4 | 30,9 | 0 | 4 | LQ |
| 1966 | 11 | 14 | 16 | 10 | 52,3 | -5,4 | 35,1 | 0 | 4,6 | LQ |
| 1966 | 11 | 17 | 18 | 28 | 53,5 | -7,3 | 31,3 | 0 | 4,2 | LQ |
| 1966 | 11 | 20 | 10 | 44 | 32,3 | -5 | 35,8 | 0 | 4,4 | LQ |
| 1966 | 11 | 23 | 4 | 17 | 46,8 | 3,1 | 30,7 | 0 | 4,4 | LQ |
| 1966 | 11 | 24 | 21 | 29 | 1,5 | 0,67 | 29,73 | 18 | 4,2 | LQ |
| 1966 | 11 | 24 | 23 | 49 | 43,5 | -14 | 26,1 | 0 | 4,3 | LQ |
| 1966 | 11 | 30 | 9 | 41 | 52 | -7,6 | 38 | 0 | 4 | LQ |
| 1966 | 11 | 30 | 11 | 30 | 9,4 | -7,6 | 38 | 0 | 4 | LQ |
| 1966 | 12 | 4 | 15 | 55 | 32,5 | -4,6 | 35,6 | 0 | 4,3 | LQ |
| 1966 | 12 | 10 | 22 | 45 | 16 | -5 | 36 | 0 | 4,2 | LQ |
| 1966 | 12 | 13 | 23 | 29 | 22,9 | 0,15 | 25,9 | 0 | 4,5 | LQ |
| 1966 | 12 | 17 | 15 | 18 | 46 | -8 | 24,55 | 0 | 4,7 | LQ |
| 19 | 12 | 18 | 22 | 7 | 23 | - | 33, | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 66 | | | | | | 11,6 | 7 | | 4 | |
| 1967 | 1 | 12 | 8 | 22 | 7 | -5 | 36 | 0 | 4 | LQ |
| 1967 | 1 | 12 | 22 | 22 | 9,9 | 2,1 | 31,2 | 0 | 4,2 | LQ |
| 1967 | 1 | 18 | 21 | 59 | 59 | -8,3 | 27 | 0 | 4,1 | LQ |
| 1967 | 2 | 1 | 9 | 47 | 53,4 | -10,14 | 28,32 | 0 | 4,7 | LQ |
| 1967 | 2 | 4 | 14 | 23 | 29 | 0,7 | 29,8 | 0 | 4,1 | LQ |
| 1967 | 2 | 7 | 6 | 20 | 19 | -0,3 | 30,8 | 0 | 4,3 | LQ |
| 1967 | 2 | 10 | 22 | 53 | 57 | -14 | 26 | 0 | 4,1 | LQ |
| 1967 | 2 | 14 | 2 | 6 | 36 | 0,7 | 30,4 | 0 | 4 | LQ |
| 1967 | 2 | 14 | 17 | 40 | 33 | -16,9 | 35,3 | 0 | 4,3 | LQ |
| 1967 | 2 | 15 | 13 | 0 | 4 | -7,1 | 29,6 | 0 | 4 | LQ |
| 1967 | 2 | 16 | 0 | 25 | 19 | -5 | 36 | 0 | 4,1 | LQ |
| 1967 | 2 | 24 | 14 | 23 | 29 | 0,7 | 29,8 | 0 | 4,1 | LQ |
| 1967 | 3 | 10 | 12 | 41 | 13 | 0,678 | 30,17 | 33 | 5,2 | LQ |
| 1967 | 3 | 12 | 3 | 57 | 13 | -6 | 31,9 | 0 | 4,3 | LQ |
| 1967 | 3 | 27 | 23 | 56 | 21 | -9 | 32,9 | 0 | 4,1 | LQ |
| 1967 | 3 | 28 | 5 | 17 | 40 | 13 | 22 | 0 | 4,6 | LQ |
| 1967 | 3 | 29 | 2 | 5 | 4 | 11 | 18 | 0 | 4,6 | LQ |
| 1967 | 4 | 2 | 22 | 42 | 49 | -11,4 | 34,7 | 0 | 4,1 | LQ |
| 1967 | 4 | 16 | 1 | 30 | 59 | -4,7 | 34,7 | 0 | 4 | LQ |
| 1967 | 4 | 19 | 13 | 25 | 0 | -16,6 | 28,2 | 0 | 4,1 | LQ |
| 1967 | 4 | 20 | 2 | 50 | 56 | -16,7 | 28,2 | 0 | 4,7 | LQ |
| 1967 | 4 | 25 | 15 | 40 | 52 | 14 | 15 | 0 | 4,6 | LQ |
| 19 | 4 | 27 | 10 | 25 | 16 | - | 14 | 0 | 4 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 67 | | | | | | 14,5 | | | | |
| 1967 | 4 | 27 | 23 | 30 | 29 | -12,6 | 41 | 0 | 4,3 | LQ |
| 1967 | 5 | 8 | 13 | 58 | 29 | 5 | 35 | 0 | 4,2 | LQ |
| 1967 | 5 | 19 | 15 | 52 | 39 | 14,62 | 40,17 | 0 | 4,4 | LQ |
| 1967 | 5 | 24 | 17 | 18 | 28 | -11,9 | 34,1 | 0 | 4,5 | LQ |
| 1967 | 5 | 28 | 11 | 55 | 30 | -2,8 | 28,3 | 0 | 4,2 | LQ |
| 1967 | 5 | 28 | 12 | 19 | 31,9 | 1,9 | 31,4 | 40 | 4,7 | LQ |
| 1967 | 6 | 8 | 5 | 7 | 7 | 6 | 14 | 0 | 4,5 | LQ |
| 1967 | 6 | 10 | 19 | 52 | 49 | -7,2 | 30,3 | 0 | 4 | LQ |
| 1967 | 6 | 23 | 7 | 25 | 58 | -8,9 | 39,4 | 0 | 4,2 | LQ |
| 1967 | 6 | 23 | 14 | 54 | 33 | 9 | 15 | 0 | 4,4 | LQ |
| 1967 | 6 | 24 | 14 | 51 | 55 | -8,3 | 40 | 0 | 4,4 | LQ |
| 1967 | 6 | 28 | 22 | 38 | 16 | -3,8 | 36,5 | 0 | 4,3 | LQ |
| 1967 | 7 | 4 | 4 | 35 | 44 | -3 | 37 | 0 | 4,2 | LQ |
| 1967 | 7 | 5 | 16 | 0 | 53 | -2,3 | 28,9 | 0 | 4,1 | LQ |
| 1967 | 7 | 8 | 16 | 39 | 59 | -3 | 36 | 0 | 4,1 | LQ |
| 1967 | 7 | 12 | 16 | 21 | 9 | -5,8 | 29 | 0 | 4,1 | LQ |
| 1967 | 7 | 13 | 0 | 17 | 2 | -5,7 | 29 | 0 | 4,2 | LQ |
| 1967 | 7 | 13 | 2 | 52 | 36 | -5 | 35 | 0 | 4,3 | LQ |
| 1967 | 7 | 22 | 4 | 14 | 3 | 12 | 19 | 0 | 4,6 | LQ |
| 1967 | 7 | 24 | 3 | 13 | 14,5 | -1,39 | 28,44 | 0 | 4,5 | LQ |
| 1967 | 7 | 24 | 16 | 3 | 18 | -3,71 | 27,91 | 0 | 4,5 | LQ |
| 1967 | 8 | 11 | 3 | 15 | 25 | -14,8 | 23,3 | 0 | 4,1 | LQ |
| 1967 | 8 | 12 | 9 | 56 | 16 | 10 | 18 | 0 | 5 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1967 | 8 | 19 | 9 | 47 | 29 | 0,3 | 29,4 | 0 | 4,3 | LQ |
| 1967 | 8 | 24 | 23 | 14 | 46 | -10,72 | 27,02 | 0 | 4,4 | LQ |
| 1967 | 8 | 30 | 12 | 11 | 52 | 11 | 20 | 0 | 4,8 | LQ |
| 1967 | 9 | 6 | 9 | 3 | 30 | -10,1 | 41,4 | 0 | 4,2 | LQ |
| 1967 | 9 | 7 | 8 | 15 | 42 | 12 | 21 | 0 | 4,6 | LQ |
| 1967 | 9 | 7 | 9 | 50 | 42 | 12 | 21 | 0 | 4,7 | LQ |
| 1967 | 9 | 7 | 11 | 23 | 39 | 11 | 20 | 0 | 4,6 | LQ |
| 1967 | 9 | 9 | 22 | 35 | 54 | 4 | 32,3 | 0 | 4,3 | LQ |
| 1967 | 9 | 9 | 22 | 35 | 58,7 | 3,8 | 32,8 | 33 | 4,4 | LQ |
| 1967 | 9 | 15 | 17 | 1 | 31 | -3,3 | 36,1 | 0 | 4,1 | LQ |
| 1967 | 9 | 16 | 7 | 55 | 21 | -15,8 | 35,4 | 0 | 4,1 | LQ |
| 1967 | 9 | 18 | 2 | 3 | 4 | 15,78 | 38,94 | 0 | 4,4 | LQ |
| 1967 | 9 | 22 | 1 | 22 | 44 | -8,1 | 29 | 0 | 4,2 | LQ |
| 1967 | 10 | 19 | 10 | 40 | 13 | -4,9 | 35,1 | 0 | 4,6 | LQ |
| 1967 | 10 | 23 | 11 | 13 | 31 | -11,5 | 34,9 | 0 | 4,3 | LQ |
| 1967 | 10 | 24 | 3 | 29 | 19 | 9 | 16 | 0 | 4,6 | LQ |
| 1967 | 10 | 25 | 9 | 31 | 54 | 11 | 20 | 0 | 4,6 | LQ |
| 1967 | 10 | 27 | 21 | 16 | 19 | -1 | 27 | 0 | 4,2 | LQ |
| 1967 | 10 | 30 | 6 | 39 | 39 | -8,8 | 34,1 | 0 | 4 | LQ |
| 1967 | 10 | 30 | 19 | 55 | 0 | 1,8 | 31,9 | 0 | 5,1 | LQ |
| 1967 | 11 | 2 | 15 | 20 | 42 | 1,7 | 30,4 | 0 | 4,2 | LQ |
| 1967 | 11 | 4 | 11 | 15 | 55 | 11 | 12 | 0 | 4,4 | LQ |
| 1967 | 11 | 5 | 6 | 12 | 6 | -3 | 29 | 0 | 4,2 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1967 | 11 | 11 | 23 | 21 | 51,3 | -7,02 | 30,9 | 0 | 4,9 | LQ |
| 1967 | 11 | 13 | 6 | 43 | 49 | 9 | 17 | 0 | 4,5 | LQ |
| 1967 | 11 | 13 | 20 | 29 | 4,7 | 1,9 | 31,61 | 0 | 4,5 | LQ |
| 1967 | 11 | 13 | 20 | 29 | 5 | 1,9 | 31,7 | 33 | 5 | LQ |
| 1967 | 11 | 16 | 2 | 22 | 5,2 | 15,19 | 39,49 | 0 | 4,5 | LQ |
| 1967 | 11 | 17 | 9 | 35 | 22 | 0 | 5 | 0 | 4,5 | LQ |
| 1967 | 11 | 18 | 3 | 38 | 43 | -11,9 | 34,9 | 0 | 4,1 | LQ |
| 1967 | 11 | 25 | 21 | 26 | 28 | -9 | 40,2 | 0 | 4,1 | LQ |
| 1967 | 11 | 27 | 13 | 41 | 42 | -3 | 28 | 0 | 4,2 | LQ |
| 1967 | 11 | 29 | 5 | 27 | 11 | 2 | 31,4 | 0 | 4,3 | LQ |
| 1967 | 11 | 29 | 5 | 32 | 9 | 3 | 33 | 0 | 4,4 | LQ |
| 1967 | 12 | 14 | 23 | 29 | 31,6 | -3,32 | 38,19 | 0 | 4,5 | LQ |
| 1967 | 12 | 17 | 4 | 4 | 43 | -7,19 | 30,4 | 0 | 4,6 | LQ |
| 1967 | 12 | 17 | 11 | 30 | 26 | -10,9 | 34,2 | 0 | 4,2 | LQ |
| 1967 | 12 | 17 | 18 | 3 | 43,8 | 5,83 | 37,1 | 0 | 4,4 | LQ |
| 1967 | 12 | 22 | 22 | 25 | 38 | 15 | 19 | 0 | 4,5 | LQ |
| 1967 | 12 | 24 | 8 | 12 | 41,7 | -12,2 | 26,4 | 0 | 4,6 | LQ |
| 1967 | 12 | 29 | 13 | 4 | 32 | -0,2 | 32,2 | 0 | 4,1 | LQ |
| 1967 | 12 | 29 | 13 | 46 | 30 | 3 | 31,4 | 0 | 4,2 | LQ |
| 1967 | 12 | 29 | 15 | 43 | 1 | 2,8 | 31,2 | 0 | 4,2 | LQ |
| 1967 | 12 | 29 | 16 | 7 | 3 | 1,3 | 34 | 0 | 4,1 | LQ |
| 1967 | 12 | 29 | 23 | 39 | 13 | 1,3 | 34 | 0 | 4 | LQ |
| 1967 | 12 | 30 | 10 | 27 | 8,3 | -2,1 | 29,95 | 0 | 4,3 | LQ |
| 19 | 1 | 1 | 13 | 44 | 25 | -7,5 | 39, | 0 | 4 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 68 | | | | | | | 5 | | | |
| 1968 | 1 | 2 | 9 | 5 | 25,5 | -5,5 | 29,5 | 0 | 4 | LQ |
| 1968 | 1 | 23 | 19 | 18 | 13 | 8,7 | 37,7 | 0 | 4 | LQ |
| 1968 | 1 | 24 | 21 | 28 | 46,8 | -8,72 | 27,56 | 27 | 4,2 | LQ |
| 1968 | 2 | 17 | 6 | 25 | 38,8 | -5 | 35,9 | 0 | 4,2 | LQ |
| 1968 | 2 | 17 | 7 | 4 | 18,4 | -5,2 | 36 | 0 | 4,1 | LQ |
| 1968 | 2 | 18 | 12 | 40 | 11 | -12,5 | 25 | 0 | 4 | LQ |
| 1968 | 3 | 2 | 7 | 7 | 25 | -6,1 | 31,3 | 0 | 4,2 | LQ |
| 1968 | 3 | 4 | 5 | 8 | 19 | -9,7 | 32,7 | 0 | 4,4 | LQ |
| 1968 | 3 | 5 | 22 | 55 | 17 | -5,1 | 23,2 | 0 | 4 | LQ |
| 1968 | 3 | 14 | 19 | 43 | 55,5 | -0,3 | 34,4 | 0 | 4,1 | LQ |
| 1968 | 3 | 15 | 7 | 51 | 17,4 | -15,9 | 25,9 | 0 | 5 | LQ |
| 1968 | 3 | 16 | 7 | 0 | 30 | -0,8 | 34,5 | 0 | 4,3 | LQ |
| 1968 | 3 | 18 | 23 | 14 | 0,5 | -1,1 | 34,5 | 0 | 4 | LQ |
| 1968 | 3 | 20 | 19 | 2 | 50,3 | -0,6 | 34,4 | 0 | 4,3 | LQ |
| 1968 | 3 | 21 | 2 | 59 | 36 | -0,6 | 34,3 | 0 | 4,1 | LQ |
| 1968 | 3 | 21 | 12 | 49 | 25,3 | -0,8 | 34,5 | 0 | 4,2 | LQ |
| 1968 | 3 | 21 | 23 | 22 | 14 | -0,6 | 34,1 | 0 | 4,1 | LQ |
| 1968 | 3 | 31 | 10 | 51 | 21,5 | -8,9 | 26,5 | 0 | 4 | LQ |
| 1968 | 3 | 31 | 23 | 35 | 56,4 | -4,7 | 35 | 0 | 4,4 | LQ |
| 1968 | 4 | 4 | 16 | 31 | 47,5 | -3,4 | 29,1 | 0 | 4,2 | LQ |
| 1968 | 4 | 14 | 2 | 1 | 46 | -9,6 | 26 | 0 | 4 | LQ |
| 1968 | 4 | 20 | 13 | 55 | 9,5 | -7,7 | 38,8 | 0 | 4,2 | LQ |
| 1968 | 4 | 21 | 10 | 42 | 2,4 | -4,7 | 32,9 | 0 | 4 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1968 | 4 | 29 | 13 | 53 | 47,7 | 0,87 | 29,91 | 10 | 4,2 | LQ |
| 1968 | 5 | 1 | 21 | 19 | 44 | -8,6 | 29,1 | 0 | 4 | LQ |
| 1968 | 5 | 10 | 8 | 4 | 15 | -4 | 34,3 | 0 | 4 | LQ |
| 1968 | 5 | 15 | 7 | 51 | 17,4 | -15,9 | 25,9 | 33 | 6,1 | LQ |
| 1968 | 5 | 15 | 11 | 22 | 26 | -5,3 | 30,3 | 0 | 4,3 | LQ |
| 1968 | 5 | 20 | 13 | 0 | 16,7 | -3,17 | 37,1 | 0 | 4,5 | LQ |
| 1968 | 6 | 1 | 11 | 38 | 18 | -3,3 | 33,5 | 0 | 4 | LQ |
| 1968 | 6 | 6 | 20 | 8 | 5 | -4,4 | 35,5 | 0 | 4 | LQ |
| 1968 | 6 | 7 | 16 | 11 | 49 | -4,2 | 35,5 | 0 | 4,7 | LQ |
| 1968 | 6 | 10 | 20 | 5 | 49 | -4 | 35,5 | 0 | 4,5 | LQ |
| 1968 | 6 | 13 | 16 | 53 | 44 | 2 | 34,5 | 0 | 4,5 | LQ |
| 1968 | 6 | 23 | 4 | 43 | 46 | -4,5 | 30 | 0 | 4,2 | LQ |
| 1968 | 6 | 23 | 21 | 37 | 31,5 | -4 | 28,5 | 0 | 4,1 | LQ |
| 1968 | 6 | 24 | 1 | 6 | 37 | -0,7 | 29,4 | 0 | 4,1 | LQ |
| 1968 | 6 | 24 | 1 | 19 | 14,5 | -0,3 | 29,6 | 0 | 4,1 | LQ |
| 1968 | 6 | 24 | 3 | 2 | 0,2 | -0,3 | 29,8 | 0 | 4,5 | LQ |
| 1968 | 6 | 29 | 11 | 48 | 19,5 | -0,9 | 29,1 | 0 | 4,4 | LQ |
| 1968 | 7 | 2 | 11 | 0 | 20,8 | 0,4 | 30 | 0 | 4,2 | LQ |
| 1968 | 7 | 6 | 7 | 38 | 2,5 | -5,4 | 35,4 | 0 | 4,3 | LQ |
| 1968 | 7 | 6 | 21 | 16 | 49 | 0,7 | 29,9 | 0 | 4 | LQ |
| 1968 | 7 | 11 | 14 | 1 | 26,5 | 1,1 | 29,7 | 0 | 4 | LQ |
| 1968 | 7 | 12 | 23 | 31 | 21 | -10,6 | 25,1 | 0 | 4 | LQ |
| 1968 | 7 | 13 | 14 | 20 | 13 | -5,6 | 29,1 | 0 | 4,2 | LQ |
| 19 | 7 | 21 | 4 | 28 | 17 | -8,5 | 30, | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 68 | | | | | | | 6 | | 1 | |
| 1968 | 7 | 22 | 2 | 49 | 19,5 | -8,5 | 31,1 | 0 | 4,2 | LQ |
| 1968 | 7 | 27 | 3 | 40 | 7,5 | -0,4 | 28 | 0 | 4 | LQ |
| 1968 | 8 | 5 | 14 | 44 | 2,4 | -10,1 | 34 | 0 | 4,1 | LQ |
| 1968 | 8 | 6 | 0 | 32 | 49,9 | -4,6 | 35 | 0 | 4 | LQ |
| 1968 | 8 | 7 | 19 | 41 | 58,5 | -4,5 | 35,4 | 0 | 4,3 | LQ |
| 1968 | 8 | 12 | 9 | 48 | 24,2 | -10,4 | 13,3 | 0 | 4,2 | LQ |
| 1968 | 9 | 2 | 8 | 10 | 41,2 | -7,38 | 31 | 24 | 4,3 | LQ |
| 1968 | 9 | 4 | 3 | 1 | 16 | -7,6 | 37,8 | 0 | 4,2 | LQ |
| 1968 | 9 | 7 | 20 | 44 | 47 | -4,1 | 33,5 | 0 | 4 | LQ |
| 1968 | 9 | 7 | 21 | 5 | 21 | -4,6 | 35,8 | 0 | 4,2 | LQ |
| 1968 | 9 | 21 | 23 | 41 | 58 | 0,4 | 30,4 | 0 | 4,2 | LQ |
| 1968 | 10 | 12 | 18 | 57 | 28 | -7 | 29 | 0 | 4 | LQ |
| 1968 | 10 | 19 | 2 | 16 | 53 | -7,1 | 30,7 | 0 | 4 | LQ |
| 1968 | 10 | 20 | 13 | 21 | 50 | -7,8 | 31,6 | 0 | 4 | LQ |
| 1968 | 10 | 30 | 0 | 40 | 24,7 | 0,5 | 29,9 | 0 | 4,2 | LQ |
| 1968 | 11 | 2 | 4 | 46 | 54 | -6,5 | 29,7 | 0 | 4 | LQ |
| 1968 | 11 | 4 | 1 | 31 | 17 | -7,6 | 37,5 | 0 | 4,2 | LQ |
| 1968 | 11 | 6 | 23 | 26 | 52 | -4,2 | 35,2 | 0 | 4,2 | LQ |
| 1968 | 11 | 8 | 8 | 52 | 4,5 | -8,4 | 35,8 | 0 | 4,2 | LQ |
| 1968 | 11 | 13 | 16 | 44 | 18,9 | 1,8 | 31,5 | 0 | 4,7 | LQ |
| 1968 | 11 | 18 | 16 | 8 | 19 | -7,9 | 31,7 | 0 | 4,2 | LQ |
| 1968 | 11 | 26 | 18 | 49 | 12 | 0,8 | 30 | 0 | 4,3 | LQ |
| 1968 | 12 | 2 | 2 | 33 | 40 | -14 | 23,6 | 33 | 6 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1968 | 12 | 8 | 7 | 37 | 36 | -3,6 | 26,1 | 0 | 4 | LQ |
| 1968 | 12 | 8 | 8 | 35 | 19 | -6,9 | 30,2 | 0 | 4 | LQ |
| 1968 | 12 | 9 | 18 | 32 | 53 | -8,6 | 32,5 | 0 | 4,5 | LQ |
| 1968 | 12 | 11 | 11 | 49 | 57 | -14,3 | 23,6 | 0 | 4,2 | LQ |
| 1968 | 12 | 15 | 21 | 37 | 56,5 | -14,3 | 26,7 | 0 | 4,3 | LQ |
| 1968 | 12 | 23 | 8 | 41 | 45 | -13,7 | 26,1 | 0 | 4 | LQ |
| 1968 | 12 | 30 | 7 | 46 | 25 | -13,7 | 26,2 | 0 | 4 | LQ |
| 1969 | 1 | 4 | 19 | 6 | 47 | -5,4 | 33,9 | 0 | 4,2 | LQ |
| 1969 | 1 | 5 | 10 | 30 | 57 | -7,7 | 30,4 | 0 | 4,2 | LQ |
| 1969 | 1 | 11 | 6 | 27 | 47 | -5 | 35,6 | 0 | 4 | LQ |
| 1969 | 1 | 25 | 7 | 49 | 43,5 | -3,9 | 35,8 | 0 | 4,5 | LQ |
| 1969 | 1 | 30 | 13 | 2 | 45 | -2,7 | 28,7 | 0 | 4 | LQ |
| 1969 | 2 | 1 | 22 | 58 | 44 | -4,2 | 26,6 | 0 | 4 | LQ |
| 1969 | 2 | 2 | 23 | 35 | 25 | -14,4 | 25,9 | 0 | 4 | LQ |
| 1969 | 2 | 7 | 23 | 6 | 25 | -7,3 | 39,4 | 0 | 4,2 | LQ |
| 1969 | 2 | 10 | 2 | 20 | 10,5 | -5,6 | 29,6 | 0 | 4,2 | LQ |
| 1969 | 2 | 14 | 12 | 58 | 50 | -11 | 34,6 | 0 | 4,2 | LQ |
| 1969 | 2 | 25 | 16 | 23 | 29 | -15,2 | 30 | 0 | 4,1 | LQ |
| 1969 | 2 | 26 | 5 | 56 | 5,5 | -5,2 | 34 | 0 | 4,4 | LQ |
| 1969 | 3 | 7 | 20 | 26 | 15,8 | -2,21 | 29,28 | 13 | 4,2 | LQ |
| 1969 | 3 | 13 | 2 | 57 | 0 | -4,7 | 34,6 | 0 | 4,2 | LQ |
| 1969 | 3 | 14 | 23 | 10 | 24 | -0,9 | 29,9 | 0 | 4,2 | LQ |
| 1969 | 3 | 19 | 15 | 37 | 30,8 | -4,67 | 28,57 | 20 | 4,3 | LQ |
| 19 | 3 | 27 | 15 | 9 | 22 | - | 40, | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 69 | | | | | | 15,4 | 9 | | 3 | |
| 1969 | 4 | 5 | 15 | 23 | 41 | 5 | 31,5 | 0 | 4,5 | LQ |
| 1969 | 4 | 8 | 4 | 44 | 24,1 | -0,99 | 29,34 | 29 | 4,2 | LQ |
| 1969 | 4 | 9 | 16 | 48 | 32,9 | -11,1 | 34,6 | 0 | 4,1 | LQ |
| 1969 | 4 | 11 | 17 | 48 | 12 | 2,6 | 31,4 | 0 | 4 | LQ |
| 1969 | 4 | 14 | 16 | 45 | 43,5 | -5,1 | 30,4 | 0 | 4,7 | LQ |
| 1969 | 4 | 14 | 18 | 53 | 40,4 | -4,9 | 30,3 | 0 | 4,3 | LQ |
| 1969 | 4 | 18 | 16 | 12 | 4,5 | -3,2 | 36,5 | 0 | 4,1 | LQ |
| 1969 | 4 | 20 | 23 | 51 | 47 | -21,3 | 33,1 | 0 | 4,2 | LQ |
| 1969 | 4 | 22 | 21 | 59 | 11 | 1,9 | 31,5 | 0 | 4,9 | LQ |
| 1969 | 4 | 23 | 12 | 1 | 8 | -8,8 | 25,5 | 0 | 4 | LQ |
| 1969 | 4 | 30 | 17 | 48 | 35 | -4,4 | 35,3 | 0 | 4 | LQ |
| 1969 | 5 | 22 | 21 | 15 | 57,8 | -3 | 29,03 | 25 | 4,3 | LQ |
| 1969 | 5 | 25 | 1 | 10 | 38,4 | -3,8 | 35,8 | 0 | 4,2 | LQ |
| 1969 | 5 | 25 | 14 | 8 | 4,2 | -3,7 | 31,5 | 0 | 4,1 | LQ |
| 1969 | 5 | 30 | 22 | 48 | 34,5 | -4,9 | 35,6 | 0 | 4,2 | LQ |
| 1969 | 6 | 4 | 9 | 17 | 38 | -7,5 | 30,4 | 0 | 4,1 | LQ |
| 1969 | 6 | 8 | 1 | 2 | 50 | -6,9 | 30,1 | 0 | 4 | LQ |
| 1969 | 6 | 8 | 16 | 52 | 37,5 | -6,1 | 30,8 | 0 | 4,6 | LQ |
| 1969 | 6 | 20 | 13 | 14 | 25,5 | -3,6 | 35,5 | 0 | 4,2 | LQ |
| 1969 | 6 | 21 | 20 | 27 | 21 | -6,5 | 31,5 | 0 | 4 | LQ |
| 1969 | 6 | 26 | 11 | 54 | 28 | -14,2 | 35 | 0 | 4,1 | LQ |
| 1969 | 7 | 11 | 17 | 25 | 15,5 | -3,1 | 35,4 | 0 | 4,2 | LQ |
| 1969 | 7 | 11 | 20 | 14 | 56,8 | -2 | 35,2 | 0 | 4,1 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1969 | 7 | 15 | 12 | 55 | 29,9 | -4 | 34,3 | 0 | 4,2 | LQ |
| 1969 | 7 | 18 | 21 | 37 | 50 | -8,8 | 30,4 | 0 | 4,4 | LQ |
| 1969 | 7 | 28 | 23 | 35 | 18,3 | -6,7 | 30,7 | 0 | 4,1 | LQ |
| 1969 | 8 | 4 | 0 | 25 | 6,8 | -3,4 | 33,8 | 0 | 4 | LQ |
| 1969 | 8 | 10 | 1 | 2 | 52,3 | -7,6 | 30,8 | 0 | 4,4 | LQ |
| 1969 | 8 | 13 | 0 | 42 | 49,1 | -3 | 38,7 | 0 | 4,3 | LQ |
| 1969 | 8 | 17 | 12 | 42 | 33,3 | 1,3 | 30,9 | 0 | 4,2 | LQ |
| 1969 | 8 | 21 | 14 | 12 | 6 | -0,3 | 34,6 | 0 | 4,5 | LQ |
| 1969 | 8 | 23 | 16 | 6 | 39,9 | -0,1 | 29,1 | 0 | 4,2 | LQ |
| 1969 | 8 | 25 | 11 | 38 | 35,6 | 0,42 | 29,88 | 31 | 4,1 | LQ |
| 1969 | 8 | 26 | 13 | 1 | 27,8 | 0,83 | 29,83 | 25 | 4,3 | LQ |
| 1969 | 8 | 31 | 13 | 27 | 47,6 | -6,5 | 29,8 | 0 | 4,1 | LQ |
| 1969 | 9 | 1 | 3 | 34 | 27,5 | -6 | 29,3 | 0 | 4,3 | LQ |
| 1969 | 9 | 1 | 23 | 34 | 39,2 | -6,58 | 31,71 | 26 | 4,3 | LQ |
| 1969 | 9 | 2 | 18 | 55 | 29,5 | -3,3 | 36,4 | 0 | 4,4 | LQ |
| 1969 | 9 | 5 | 15 | 44 | 27,3 | -6,1 | 31,4 | 0 | 4,2 | LQ |
| 1969 | 9 | 5 | 18 | 54 | 35 | -2,1 | 27,3 | 0 | 4,2 | LQ |
| 1969 | 9 | 5 | 23 | 9 | 54,3 | -5 | 36,2 | 0 | 4,3 | LQ |
| 1969 | 9 | 7 | 5 | 59 | 21,6 | 2 | 31,2 | 0 | 4,1 | LQ |
| 1969 | 9 | 7 | 8 | 17 | 35,5 | -3,4 | 36,2 | 0 | 4,2 | LQ |
| 1969 | 9 | 9 | 5 | 14 | 24,9 | 0,9 | 30,5 | 0 | 4 | LQ |
| 1969 | 9 | 9 | 16 | 46 | 42,7 | -2,4 | 24,7 | 0 | 4,6 | LQ |
| 1969 | 9 | 12 | 0 | 7 | 53 | -16,7 | 34,3 | 0 | 4,1 | LQ |
| 19 | 9 | 14 | 7 | 30 | 7,2 | 0,6 | 29, | 16 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 69 | | | | | | | 7 | | 1 | |
| 1969 | 9 | 15 | 23 | 35 | 51,1 | -5,58 | 29,49 | 22 | 4,2 | LQ |
| 1969 | 9 | 26 | 19 | 4 | 40,5 | -4 | 26 | 0 | 4 | LQ |
| 1969 | 9 | 26 | 21 | 51 | 36,3 | -3,9 | 25,3 | 0 | 4,3 | LQ |
| 1969 | 9 | 27 | 23 | 55 | 18,3 | -6,7 | 30,7 | 0 | 4,1 | LQ |
| 1969 | 9 | 30 | 4 | 12 | 26,8 | 0,7 | 29,8 | 0 | 4,2 | LQ |
| 1969 | 9 | 30 | 21 | 51 | 34,6 | -5,2 | 31 | 0 | 4,5 | LQ |
| 1969 | 10 | 4 | 14 | 1 | 8 | 0,92 | 29,64 | 38 | 4 | LQ |
| 1969 | 10 | 5 | 22 | 44 | 13 | -13,5 | 40,5 | 0 | 4,6 | LQ |
| 1969 | 10 | 18 | 19 | 49 | 57 | -1,6 | 33,6 | 0 | 4 | LQ |
| 1969 | 10 | 23 | 13 | 59 | 37 | -10 | 41,2 | 0 | 4,1 | LQ |
| 1969 | 10 | 31 | 22 | 54 | 11 | -2,6 | 28 | 0 | 4,1 | LQ |
| 1969 | 11 | 8 | 19 | 47 | 30,4 | 0,71 | 30 | 25 | 4,2 | LQ |
| 1969 | 11 | 10 | 3 | 21 | 36 | -6,7 | 31,3 | 0 | 4 | LQ |
| 1969 | 11 | 20 | 20 | 38 | 36,3 | 0,4 | 29,9 | 0 | 4,1 | LQ |
| 1969 | 11 | 27 | 17 | 26 | 2 | -8,4 | 31,1 | 0 | 4,3 | LQ |
| 1969 | 12 | 3 | 0 | 23 | 26,8 | -3,9 | 36 | 0 | 4,9 | LQ |
| 1969 | 12 | 6 | 23 | 1 | 52,7 | -4,99 | 29,85 | 41 | 4,2 | LQ |
| 1969 | 12 | 8 | 6 | 9 | 51 | -5,9 | 31,6 | 0 | 4 | LQ |
| 1969 | 12 | 14 | 6 | 55 | 44,4 | -0,6 | 33,8 | 0 | 4,2 | LQ |
| 1969 | 12 | 17 | 1 | 26 | 0 | -1,4 | 36,6 | 0 | 4,1 | LQ |
| 1969 | 12 | 18 | 12 | 55 | 48 | -0,4 | 34,4 | 0 | 4,4 | LQ |
| 1969 | 12 | 21 | 18 | 34 | 34 | -1 | 34,4 | 0 | 4 | LQ |
| 1969 | 12 | 24 | 17 | 13 | 40 | -5 | 28,8 | 0 | 4 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1969 | 12 | 26 | 17 | 23 | 51 | -3,3 | 36,1 | 0 | 4,7 | LQ |
| 1970 | 1 | 2 | 4 | 20 | 5,2 | -13,1 | 33,8 | 0 | 4,1 | LQ |
| 1970 | 1 | 9 | 14 | 43 | 29,3 | -2,26 | 24,64 | 15 | 4,4 | LQ |
| 1970 | 1 | 11 | 2 | 30 | 24 | -11,3 | 41,6 | 0 | 4,4 | LQ |
| 1970 | 1 | 15 | 8 | 50 | 39,3 | -11,2 | 34,1 | 0 | 4,8 | LQ |
| 1970 | 1 | 19 | 20 | 10 | 25,4 | -7,5 | 25,6 | 0 | 4,3 | LQ |
| 1970 | 1 | 20 | 15 | 58 | 18,8 | -6,8 | 30,9 | 0 | 4,1 | LQ |
| 1970 | 1 | 24 | 0 | 14 | 35,8 | -2,32 | 24,88 | 30 | 4 | LQ |
| 1970 | 1 | 24 | 0 | 27 | 17,8 | -1,9 | 25,2 | 0 | 4 | LQ |
| 1970 | 1 | 27 | 20 | 44 | 35,5 | -2,28 | 24,68 | 40 | 4,6 | LQ |
| 1970 | 1 | 30 | 16 | 57 | 51,3 | -10 | 33,1 | 0 | 4,3 | LQ |
| 1970 | 2 | 3 | 13 | 14 | 39,5 | -1,7 | 25 | 0 | 4,3 | LQ |
| 1970 | 2 | 4 | 12 | 9 | 28,2 | -1,2 | 25,3 | 0 | 4 | LQ |
| 1970 | 2 | 12 | 17 | 39 | 58,9 | -1 | 26,2 | 0 | 4,2 | LQ |
| 1970 | 2 | 14 | 15 | 48 | 40,3 | 5,4 | 31,8 | 0 | 4,5 | LQ |
| 1970 | 2 | 17 | 20 | 50 | 3,3 | -2,1 | 24,8 | 0 | 4,5 | LQ |
| 1970 | 2 | 18 | 22 | 6 | 31,3 | -2,1 | 33,6 | 0 | 4,3 | LQ |
| 1970 | 3 | 11 | 6 | 51 | 56,4 | 0,74 | 28,83 | 0 | 4 | LQ |
| 1970 | 3 | 13 | 18 | 30 | 27,4 | -1,5 | 29,3 | 0 | 4,2 | LQ |
| 1970 | 3 | 15 | 4 | 35 | 26,7 | 0,8 | 29,9 | 0 | 4,4 | LQ |
| 1970 | 3 | 16 | 23 | 45 | 44 | -4,5 | 38,5 | 0 | 4,3 | LQ |
| 1970 | 3 | 25 | 16 | 31 | 4,8 | 1,2 | 30,1 | 0 | 4 | LQ |
| 1970 | 3 | 28 | 6 | 24 | 8,6 | -6,4 | 31,7 | 0 | 4,4 | LQ |
| 19 | 3 | 29 | 15 | 13 | 16, | - | 26, | 20 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 70 | | | | | 7 | 1,34 | 6 | | 2 | |
| 1970 | 4 | 11 | 15 | 19 | 12 | -4,67 | 28,38 | 0 | 4,3 | LQ |
| 1970 | 4 | 15 | 4 | 35 | 26,7 | 0,8 | 29,9 | 0 | 4,4 | LQ |
| 1970 | 4 | 18 | 17 | 33 | 54,8 | -2,84 | 24,78 | 0 | 4,5 | LQ |
| 1970 | 4 | 28 | 9 | 43 | 27,7 | -2 | 24,9 | 0 | 4,3 | LQ |
| 1970 | 4 | 28 | 17 | 33 | 50,2 | -2,5 | 24,6 | 0 | 4,5 | LQ |
| 1970 | 5 | 6 | 19 | 38 | 2,4 | 0,9 | 30 | 0 | 4,1 | LQ |
| 1970 | 5 | 9 | 11 | 39 | 47,2 | 0,31 | 30,11 | 23 | 4 | LQ |
| 1970 | 5 | 10 | 23 | 45 | 20,9 | -10,8 | 33 | 0 | 4,6 | LQ |
| 1970 | 5 | 17 | 0 | 32 | 43,4 | -12,3 | 24,7 | 0 | 4,2 | LQ |
| 1970 | 5 | 19 | 8 | 21 | 50 | -10 | 23,9 | 0 | 4,3 | LQ |
| 1970 | 6 | 6 | 18 | 54 | 51,9 | -3,6 | 33,8 | 0 | 4,2 | LQ |
| 1970 | 6 | 7 | 1 | 47 | 56,8 | 4,1 | 30,6 | 0 | 4,3 | LQ |
| 1970 | 6 | 10 | 3 | 15 | 16 | -16,8 | 27,8 | 0 | 4,1 | LQ |
| 1970 | 6 | 10 | 5 | 41 | 7,2 | 0,82 | 29,84 | 33 | 4 | LQ |
| 1970 | 6 | 12 | 0 | 6 | 23 | -10,2 | 28,6 | 0 | 4,2 | LQ |
| 1970 | 6 | 13 | 8 | 1 | 58,4 | 1,5 | 30,6 | 0 | 4,3 | LQ |
| 1970 | 6 | 24 | 14 | 47 | 58 | -9 | 30,9 | 0 | 4,3 | LQ |
| 1970 | 7 | 1 | 13 | 22 | 46,4 | -3,6 | 35,7 | 0 | 4,8 | LQ |
| 1970 | 7 | 5 | 19 | 29 | 17 | -5 | 35 | 0 | 4,3 | LQ |
| 1970 | 7 | 10 | 4 | 36 | 5,3 | -4,4 | 31,1 | 0 | 4,3 | LQ |
| 1970 | 7 | 15 | 7 | 6 | 2 | -6,9 | 30,4 | 0 | 4,1 | LQ |
| 1970 | 7 | 15 | 18 | 23 | 17,1 | -1,61 | 28,09 | 13 | 4,1 | LQ |
| 1970 | 7 | 15 | 19 | 23 | 18,3 | -1,55 | 28,25 | 0 | 4,1 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1970 | 7 | 16 | 4 | 36 | 3,9 | -3,8 | 29,6 | 0 | 4 | LQ |
| 1970 | 7 | 16 | 23 | 33 | 54,5 | -4,1 | 35,9 | 0 | 4 | LQ |
| 1970 | 7 | 19 | 10 | 32 | 0,2 | -3,6 | 35,8 | 0 | 4,2 | LQ |
| 1970 | 7 | 21 | 21 | 34 | 57,3 | -7,25 | 31,15 | 21 | 4,4 | LQ |
| 1970 | 7 | 22 | 22 | 52 | 19,6 | -2,5 | 41 | 0 | 4,7 | LQ |
| 1970 | 7 | 28 | 18 | 17 | 24,6 | -5,64 | 28,22 | 33 | 4,1 | LQ |
| 1970 | 7 | 30 | 20 | 26 | 0 | 0,4 | 29,9 | 0 | 4,2 | LQ |
| 1970 | 8 | 4 | 7 | 4 | 25,8 | -3,9 | 32,8 | 0 | 4,1 | LQ |
| 1970 | 8 | 9 | 0 | 26 | 52,7 | -6,05 | 34,95 | 0 | 4,6 | LQ |
| 1970 | 8 | 9 | 2 | 58 | 48 | -6,89 | 30,91 | 34 | 4 | LQ |
| 1970 | 8 | 9 | 4 | 12 | 37 | 0,8 | 29,9 | 0 | 4,1 | LQ |
| 1970 | 8 | 16 | 1 | 5 | 47,4 | -16,6 | 31,9 | 0 | 4,4 | LQ |
| 1970 | 8 | 18 | 6 | 7 | 12,3 | -6,09 | 23,64 | 31 | 4,3 | LQ |
| 1970 | 8 | 19 | 22 | 45 | 47,5 | -4,9 | 23,3 | 0 | 4,1 | LQ |
| 1970 | 8 | 30 | 2 | 34 | 37,4 | 0,4 | 29,9 | 0 | 4 | LQ |
| 1970 | 9 | 3 | 21 | 22 | 4 | -18,4 | 26,2 | 0 | 4,2 | LQ |
| 1970 | 9 | 19 | 14 | 56 | 8 | -5,9 | 34,4 | 0 | 4,3 | LQ |
| 1970 | 9 | 22 | 3 | 45 | 16 | -14,6 | 23,5 | 0 | 4 | LQ |
| 1970 | 9 | 22 | 4 | 6 | 25 | -1,6 | 22,9 | 0 | 4,2 | LQ |
| 1970 | 9 | 28 | 16 | 57 | 20,2 | -8,43 | 23,75 | 0 | 4 | LQ |
| 1970 | 9 | 28 | 21 | 28 | 36 | -4 | 33,6 | 0 | 4,2 | LQ |
| 1970 | 10 | 1 | 2 | 10 | 8 | 4,9 | 31,6 | 0 | 4,3 | LQ |
| 1970 | 10 | 1 | 4 | 42 | 9,9 | 5,1 | 31,6 | 0 | 4,2 | LQ |
| 1970 | 10 | 10 | 19 | 16 | 18,3 | -3,2 | 35,8 | 0 | 4,2 | LQ |
| 1970 | 10 | 12 | 19 | 8 | 26,9 | 4,5 | 31,15 | 0 | 4,7 | LQ |
| 1970 | 10 | 25 | 22 | 48 | 19,4 | 0,6 | 29,55 | 0 | 4,2 | LQ |
| 1970 | 10 | 27 | 10 | 29 | 2,3 | -5,9 | 31,6 | 0 | 4,2 | LQ |
| 1970 | 10 | 29 | 22 | 16 | 24,9 | -8,97 | 33,7 | 23 | 4,4 | LQ |
| 1970 | 11 | 9 | 23 | 17 | 29 | -9,3 | 32,8 | 0 | 4,3 | LQ |
| 1970 | 11 | 20 | 18 | 19 | 4 | -4,55 | 27,8 | 0 | 4 | LQ |
| 1970 | 11 | 24 | 10 | 7 | 26,9 | -7,7 | 32,3 | 0 | 4,4 | LQ |
| 1970 | 11 | 24 | 18 | 23 | 55 | -3,1 | 31,4 | 0 | 4,2 | LQ |
| 1970 | 11 | 25 | 2 | 42 | 19,6 | -1,8 | 26,65 | 0 | 4 | LQ |
| 1970 | 12 | 2 | 18 | 52 | 20,1 | 0,93 | 29,84 | 20 | 4,1 | LQ |
| 1970 | 12 | 7 | 18 | 34 | 47 | -3,75 | 35,9 | 0 | 4,2 | LQ |
| 1970 | 12 | 9 | 18 | 39 | 33,9 | -3,8 | 35,1 | 0 | 4,2 | LQ |
| 1970 | 12 | 10 | 23 | 57 | 58,7 | 1,4 | 31,1 | 0 | 4,2 | LQ |
| 1971 | 1 | 16 | 9 | 0 | 18 | -1,1 | 28,3 | 0 | 4,8 | LQ |
| 1971 | 1 | 27 | 22 | 26 | 17 | -8,6 | 32,2 | 0 | 4,1 | LQ |
| 1971 | 4 | 18 | 0 | 34 | 34,1 | 0,238 | 30,14 | 33 | 4 | LQ |
| 1971 | 5 | 28 | 21 | 2 | 32 | -6,8 | 35,4 | 0 | 4,1 | LQ |
| 1971 | 11 | 13 | 15 | 47 | 40 | 11 | 39,5 | 0 | 5,7 | LQ |
| 1971 | 11 | 16 | 4 | 27 | 30 | -1,6 | 27,2 | 0 | 4,1 | LQ |
| 1971 | 12 | 31 | 17 | 43 | 10 | -12,9 | 26,6 | 0 | 4,4 | LQ |
| 1972 | 1 | 8 | 17 | 27 | 51 | 0,58 | 30,08 | 0 | 4,5 | LQ |
| 1972 | 2 | 13 | 10 | 2 | 42,4 | -4,5 | 34,14 | 0 | 4,8 | LQ |
| 1972 | 2 | 17 | 6 | 54 | 31 | -4 | 34 | 0 | 4 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1972 | 3 | 5 | 15 | 20 | 38,1 | -16,7 | 28,4 | 0 | 4,5 | LQ |
| 1972 | 3 | 6 | 10 | 49 | 14 | -16,7 | 28,7 | 0 | 5 | LQ |
| 1972 | 4 | 18 | 15 | 8 | 13 | 0.67 | 29.32 | 5 | 4.8 | LQ |
| 1972 | 4 | 25 | 0 | 59 | 48 | -9 | 33,2 | 0 | 4,8 | LQ |
| 1972 | 5 | 4 | 15 | 28 | 52 | -3,7 | 35,6 | 0 | 4,6 | LQ |
| 1972 | 5 | 15 | 1 | 51 | 1,4 | -17,8 | 17,8 | 0 | 4,4 | LQ |
| 1972 | 7 | 3 | 3 | 29 | 0,9 | -17,8 | 27 | 0 | 4,4 | LQ |
| 1972 | 9 | 10 | 8 | 45 | 26 | -0,5 | 34,4 | 0 | 4 | LQ |
| 1972 | 10 | 30 | 13 | 2 | 50 | -3 | 36 | 0 | 4 | LQ |
| 1972 | 10 | 30 | 15 | 1 | 57 | -3 | 36 | 0 | 4,2 | LQ |
| 1972 | 10 | 30 | 15 | 6 | 0 | -3 | 36 | 0 | 4,2 | LQ |
| 1972 | 10 | 30 | 16 | 13 | 44 | -3,4 | 36,5 | 0 | 4 | LQ |
| 1972 | 11 | 12 | 2 | 31 | 47 | -7,3 | 30,4 | 0 | 4,6 | LQ |
| 1972 | 12 | 12 | 3 | 18 | 47 | -16,7 | 28,1 | 0 | 4,8 | LQ |
| 1972 | 12 | 14 | 23 | 41 | 35,3 | -16,7 | 27,9 | 0 | 4,1 | LQ |
| 1972 | 12 | 18 | 1 | 18 | 56 | -16,6 | 28,1 | 0 | 5,3 | LQ |
| 1972 | 12 | 27 | 15 | 29 | 36,2 | -16,7 | 28 | 0 | 4,2 | LQ |
| 1973 | 1 | 7 | 12 | 17 | 12,6 | 5,3 | 36,8 | 0 | 4,7 | LQ |
| 1973 | 1 | 13 | 6 | 5 | 42,4 | -16,8 | 28,4 | 0 | 4,8 | LQ |
| 1973 | 1 | 14 | 13 | 36 | 56 | -6,9 | 30,2 | 0 | 4,5 | mbGS |
| 1973 | 2 | 20 | 15 | 19 | 51,7 | -16,7 | 27,9 | 0 | 4,8 | LQ |
| 1973 | 3 | 11 | 10 | 40 | 6,2 | -16,6 | 28 | 0 | 5 | LQ |
| 1973 | 3 | 28 | 10 | 45 | 30,3 | 11,8 | 42,7 | 0 | 4,2 | LQ |
| 1973 | 3 | 28 | 13 | 35 | 4,5 | 11,7 | 42,8 | 0 | 4,8 | LQ |
| 1973 | 3 | 28 | 13 | 42 | 6,7 | 11,7 | 42,7 | 0 | 5,3 | LQ |
| 1973 | 3 | 28 | 14 | 18 | 52,3 | 11,7 | 42,9 | 0 | 5,4 | LQ |
| 1973 | 3 | 28 | 14 | 58 | 8 | 11,7 | 42,8 | 0 | 5,3 | LQ |
| 1973 | 4 | 1 | 7 | 12 | 37 | 11,7 | 43 | 0 | 5,6 | LQ |
| 1973 | 4 | 1 | 7 | 38 | 40,5 | 11,6 | 42,9 | 0 | 4,7 | LQ |
| 1973 | 4 | 1 | 7 | 41 | 33 | 14 | 44 | 0 | 4,4 | LQ |
| 1973 | 4 | 5 | 2 | 56 | 48 | -16,5 | 28 | 0 | 4,4 | LQ |
| 1973 | 4 | 7 | 17 | 36 | 42,8 | 11,7 | 43 | 0 | 4,4 | LQ |
| 1973 | 4 | 7 | 19 | 17 | 38,7 | 11,8 | 42,8 | 0 | 4,1 | LQ |
| 1973 | 4 | 8 | 0 | 28 | 18,7 | -8,49 | 32,19 | 33 | 4,4 | USG |
| 1973 | 4 | 11 | 2 | 9 | 33,1 | 11,8 | 42,8 | 0 | 4,2 | LQ |
| 1973 | 4 | 11 | 6 | 29 | 23 | 11,6 | 42,9 | 0 | 4,5 | LQ |
| 1973 | 4 | 13 | 14 | 13 | 56,9 | 11,9 | 43,8 | 0 | 4,5 | USG |
| 1973 | 4 | 15 | 13 | 13 | 33,4 | -7,18 | 30,27 | 36 | 4,1 | USG |
| 1973 | 4 | 19 | 2 | 12 | 12,7 | -16,8 | 28,2 | 0 | 4,2 | LQ |
| 1973 | 4 | 22 | 22 | 3 | 43,5 | 3,92 | 31,17 | 33 | 4,4 | USG |
| 1973 | 5 | 14 | 20 | 16 | 26 | -6.3 | 30.05 | 12 | 4.2 | LQ |
| 1973 | 5 | 5 | 5 | 22 | 22,9 | -16,9 | 27,9 | 0 | 5,1 | LQ |
| 1973 | 5 | 22 | 7 | 14 | 59 | -9,7 | 34,3 | 0 | 5 | LQ |
| 1973 | 7 | 7 | 16 | 4 | 5 | -2,9 | 35,9 | 0 | 4,1 | LQ |
| 1973 | 7 | 16 | 18 | 8 | 17 | -10,3 | 34,2 | 0 | 4,7 | LQ |
| 1973 | 7 | 18 | 19 | 39 | 17 | -11,3 | 34,4 | 0 | 4,4 | LQ |
| 1973 | 7 | 25 | 16 | 59 | 39,2 | -13,5 | 35,1 | 0 | 4,7 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1973 | 9 | 1 | 11 | 23 | 52 | -13,1 | 24,2 | 0 | 5,4 | LQ |
| 1973 | 11 | 19 | 6 | 28 | 24 | 4 | 30 | 0 | 5,3 | LQ |
| 1973 | 11 | 21 | 0 | 49 | 55 | -8 | 28 | 0 | 4,7 | HFS |
| 1973 | 11 | 21 | 0 | 50 | 30,2 | -3,61 | 28,19 | 33 | 4,7 | USG |
| 1973 | 12 | 1 | 16 | 51 | 0,1 | 0,65 | 29,52 | 15 | 4,2 | USG |
| 1973 | 12 | 14 | 15 | 4 | 10 | -4.7 | 28.19 | 33 | 4.5 | LQ |
| 1974 | 1 | 10 | 16 | 2 | 49 | 0,2 | 30,3 | 0 | 4,4 | LQ |
| 1974 | 2 | 2 | 10 | 41 | 8 | -3,9 | 35,7 | 0 | 4,5 | LQ |
| 1974 | 2 | 10 | 16 | 29 | 26,4 | -2,85 | 23,34 | 33 | 4,1 | USG |
| 1974 | 2 | 18 | 9 | 59 | 45 | -3.25 | 29.49 | 5 | 4.6 | LQ |
| 1974 | 2 | 25 | 16 | 5 | 15,7 | 9,8 | 40 | 0 | 4,1 | LQ |
| 1974 | 4 | 8 | 6 | 12 | 50 | -5,7 | 36 | 0 | 4,2 | LQ |
| 1974 | 4 | 25 | 0 | 3 | 49,1 | 1 | 30,09 | 33 | 4,5 | USG |
| 1974 | 4 | 25 | 10 | 44 | 34 | 1 | 30 | 0 | 4,1 | LQ |
| 1974 | 4 | 29 | 3 | 29 | 3 | -1,3 | 28,3 | 0 | 4,6 | LQ |
| 1974 | 6 | 3 | 9 | 33 | 37 | -10,1 | 34,4 | 0 | 4,1 | LQ |
| 1974 | 7 | 4 | 0 | 59 | 47 | -12,3 | 40,4 | 0 | 4,2 | LQ |
| 1974 | 7 | 5 | 5 | 13 | 10 | -4,6 | 29,7 | 0 | 4,2 | LQ |
| 1974 | 8 | 1 | 9 | 36 | 29 | -16,7 | 28,1 | 0 | 5,3 | LQ |
| 1974 | 9 | 17 | 14 | 31 | 1 | -8,4 | 32,1 | 0 | 4,2 | LQ |
| 1974 | 9 | 23 | 19 | 28 | 17,2 | -0,28 | 12,92 | 33 | 6,2 | USG |
| 1974 | 10 | 26 | 4 | 28 | 16 | -3,8 | 33,2 | 0 | 4,3 | LQ |
| 1974 | 12 | 6 | 13 | 20 | 55 | -3 | 33 | 0 | 4,1 | LQ |
| 19 | 12 | 7 | 16 | 32 | 43 | - | 13, | 0 | 4, | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 74 | | | | | | 13,3 | 9 | | 2 | |
| 1974 | 12 | 25 | 22 | 37 | 20 | -1,9 | 28,8 | 0 | 4,5 | LQ |
| 1975 | 2 | 10 | 14 | 45 | 53 | -16,7 | 28 | 0 | 4,1 | LQ |
| 1975 | 3 | 5 | 11 | 0 | 17 | 3,6 | 30,4 | 0 | 5,3 | LQ |
| 1975 | 3 | 25 | 8 | 5 | 22 | -5,3 | 30 | 0 | 4,4 | LQ |
| 1975 | 3 | 26 | 3 | 40 | 48 | -4 | 31 | 0 | 4,7 | HFS |
| 1975 | 4 | 6 | 4 | 52 | 7,6 | -5,11 | 27,71 | 34 | 4,1 | USG |
| 1975 | 5 | 5 | 4 | 18 | 43,5 | -10,48 | 27,55 | 33 | 4,1 | USG |
| 1975 | 5 | 23 | 23 | 49 | 15 | -4,8 | 30,6 | 0 | 4,1 | LQ |
| 1975 | 6 | 19 | 9 | 59 | 58 | -8,1 | 32 | 0 | 4,2 | LQ |
| 1975 | 6 | 19 | 10 | 22 | 14 | -8,4 | 27,4 | 0 | 4,1 | LQ |
| 1975 | 7 | 28 | 12 | 58 | 25 | -2,5 | 36,5 | 0 | 4,2 | LQ |
| 1975 | 8 | 2 | 22 | 53 | 40 | -2,8 | 37,4 | 0 | 4,5 | LQ |
| 1975 | 8 | 5 | 20 | 59 | 52 | -3,4 | 38 | 0 | 4,2 | LQ |
| 1975 | 8 | 6 | 7 | 37 | 21 | -3,4 | 35,8 | 0 | 5,4 | LQ |
| 1975 | 8 | 7 | 22 | 43 | 13,7 | 15,36 | 40,44 | 0 | 4,4 | LQ |
| 1975 | 8 | 14 | 18 | 59 | 24 | -4,4 | 28,3 | 0 | 4,3 | LQ |
| 1975 | 8 | 23 | 21 | 35 | 21,2 | 10,53 | 39,75 | 0 | 4,7 | LQ |
| 1975 | 8 | 23 | 22 | 12 | 45,1 | 10,6 | 40 | 0 | 4,1 | LQ |
| 1975 | 9 | 21 | 2 | 28 | 18 | -5,6 | 34,9 | 0 | 4,6 | LQ |
| 1975 | 11 | 29 | 10 | 16 | 3 | -2,7 | 37,6 | 0 | 4,4 | LQ |
| 1975 | 12 | 29 | 17 | 5 | 3 | -3 | 37,5 | 0 | 4,2 | LQ |
| 1976 | 1 | 6 | 0 | 0 | 0 | -2,54 | 28,66 | 10 | 5,1 | LQ |
| 19 | 1 | 16 | 3 | 25 | 19 | 1,7 | 31, | 0 | 4, | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 76 | | | | | | | 8 | | 6 | |
| 1976 | 1 | 19 | 8 | 5 | 47,9 | -5,46 | 28,74 | 33 | 4,8 | USG |
| 1976 | 1 | 19 | 17 | 30 | 25 | -2,9 | 37,3 | 0 | 4,5 | LQ |
| 1976 | 1 | 24 | 12 | 30 | 27 | 14,5 | 10,4 | 0 | 4,8 | LQ |
| 1976 | 2 | 5 | 7 | 46 | 31 | -3,2 | 37,7 | 0 | 4,5 | LQ |
| 1976 | 2 | 22 | 7 | 12 | 10,2 | -10,84 | 12,2 | 33 | 4,2 | USG |
| 1976 | 3 | 1 | 9 | 42 | 49 | -8,4 | 29,8 | 0 | 4,2 | LQ |
| 1976 | 3 | 12 | 15 | 59 | 17 | 0,6 | 12,6 | 0 | 5,1 | LQ |
| 1976 | 5 | 8 | 10 | 35 | 28 | -4,7 | 28,1 | 0 | 4 | LQ |
| 1976 | 5 | 15 | 8 | 9 | 57,2 | 4,46 | 19,35 | 23 | 5,4 | USG |
| 1976 | 7 | 31 | 3 | 7 | 16 | 0,6 | 30,4 | 0 | 4,2 | LQ |
| 1976 | 8 | 29 | 0 | 30 | 10,5 | -7,39 | 30,87 | 33 | 4,8 | USG |
| 1976 | 9 | 11 | 2 | 12 | 17,9 | -4,313 | 26,44 | 33 | 4,4 | NEI |
| 1976 | 9 | 19 | 14 | 59 | 41 | -11 | 32,8 | 0 | 6 | LQ |
| 1976 | 12 | 9 | 0 | 42 | 1 | -6,9 | 38,2 | 0 | 4,1 | LQ |
| 1977 | 1 | 1 | 17 | 56 | 11 | -2,6 | 30,6 | 0 | 4,1 | LQ |
| 1977 | 1 | 4 | 20 | 44 | 28 | -6,7 | 38,7 | 0 | 4,5 | LQ |
| 1977 | 1 | 6 | 18 | 33 | 43,5 | -2,51 | 28,7 | 21 | 5 | USG |
| 1977 | 1 | 14 | 2 | 52 | 34,7 | -1,71 | 28,95 | 33 | 4,2 | NEI |
| 1977 | 4 | 11 | 16 | 12 | 19,4 | -7,45 | 30,5 | 33 | 4,2 | USG |
| 1977 | 4 | 14 | 14 | 36 | 23,4 | -2,46 | 28,94 | 33 | 4,8 | USG |
| 1977 | 7 | 6 | 8 | 48 | 38,2 | -6,18 | 29,54 | 33 | 4,7 | USG |
| 1977 | 7 | 8 | 6 | 23 | 2 | 10,9 | 39,6 | 0 | 4,8 | LQ |
| 1977 | 9 | 10 | 17 | 20 | 37 | -16 | 29,2 | 0 | 4,2 | LQ |
| 1977 | 10 | 7 | 8 | 40 | 45 | 0,9 | 30,9 | 0 | 4,4 | LQ |
| 1977 | 12 | 15 | 23 | 20 | 48 | -4,7 | 35 | 0 | 6 | LQ |
| 1977 | 12 | 16 | 5 | 21 | 35 | -4,7 | 35 | 0 | 4,1 | LQ |
| 1977 | 12 | 28 | 18 | 29 | 46,9 | 2,03 | 31,16 | 33 | 4,8 | LQ |
| 1977 | 12 | 29 | 11 | 50 | 0,4 | 0,01 | 29,68 | 33 | 5,4 | USG |
| 1978 | 1 | 4 | 13 | 0 | 8 | -4,5 | 35 | 0 | 4,1 | LQ |
| 1978 | 1 | 8 | 6 | 31 | 22 | -17 | 31 | 0 | 5 | HFS |
| 1978 | 1 | 29 | 21 | 41 | 36,7 | -3,929 | 29,35 | 10 | 5 | NEI1 |
| 1978 | 2 | 3 | 7 | 18 | 26 | -13,6 | 26 | 0 | 4,5 | LQ |
| 1978 | 2 | 16 | 10 | 51 | 33 | -5 | 34,3 | 0 | 4,1 | LQ |
| 1978 | 2 | 20 | 9 | 18 | 53 | -3,3 | 33,7 | 0 | 4,5 | LQ |
| 1978 | 3 | 15 | 21 | 49 | 50 | -7 | 19 | 0 | 4,4 | LQ |
| 1978 | 4 | 5 | 17 | 46 | 9 | -1,6 | 37,1 | 0 | 5,4 | LQ |
| 1978 | 4 | 10 | 6 | 17 | 9 | -3,4 | 34,7 | 0 | 4,2 | LQ |
| 1978 | 5 | 23 | 9 | 2 | 37 | 3 | 36,1 | 0 | 4,2 | LQ |
| 1978 | 7 | 6 | 19 | 19 | 14 | -9,4 | 31,8 | 0 | 4,1 | LQ |
| 1978 | 7 | 13 | 19 | 35 | 22 | 0,8 | 30,8 | 0 | 4,2 | LQ |
| 1978 | 7 | 26 | 0 | 30 | 17 | -4,9 | 38,1 | 0 | 4,2 | LQ |
| 1978 | 10 | 6 | 4 | 12 | 2,4 | -1,96 | 28,97 | 33 | 4,4 | USG |
| 1978 | 11 | 7 | 17 | 5 | 55 | 11,5 | 42,6 | 0 | 5,3 | LQ |
| 1978 | 11 | 8 | 5 | 8 | 2 | 11,5 | 42,6 | 0 | 4,7 | LQ |
| 1978 | 11 | 8 | 7 | 42 | 22 | 11,7 | 42,4 | 0 | 4,5 | LQ |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | 11 | 26 | 16 | 17 | 56 | -11,9 | 34 | 0 | 4,1 | LQ |
| 1978 | 12 | 18 | 5 | 25 | 26 | -2,7 | 29,3 | 0 | 4,1 | LQ |
| 1979 | 1 | 9 | 0 | 26 | 46,1 | 4,511 | 17,24 | 33 | 4 | NEI3 |
| 1979 | 2 | 26 | 4 | 40 | 35,9 | 1,858 | 30,94 | 10 | 4,4 | NEI |
| 1979 | 3 | 6 | 5 | 20 | 56 | -12,3 | 44,3 | 0 | 4,7 | LQ |
| 1979 | 3 | 9 | 10 | 1 | 18,7 | 1,25 | 30,57 | 35 | 4,5 | USG |
| 1979 | 3 | 16 | 15 | 3 | 2 | -2,5 | 29,5 | 0 | 4,4 | LQ |
| 1979 | 4 | 15 | 2 | 44 | 2 | 0,7 | 30,7 | 0 | 4,4 | LQ |
| 1979 | 5 | 9 | 7 | 29 | 39,9 | -14,44 | 13,56 | 33 | 4,1 | NEI1 |
| 1979 | 6 | 26 | 13 | 43 | 44 | 3,1 | 31,5 | 0 | 5,1 | LQ |
| 1979 | 7 | 2 | 20 | 37 | 33,5 | -3,742 | 29,21 | 33 | 4,4 | NEI5 |
| 1979 | 10 | 25 | 17 | 58 | 31,5 | -3,41 | 29,07 | 33 | 4,8 | USG |
| 1979 | 11 | 1 | 21 | 50 | 46,9 | 2,63 | 22,13 | 10 | 4 | USG |
| 1979 | 11 | 10 | 2 | 41 | 39 | -3.71 | 26.6 | 10 | 4.4 | USG |
| 1979 | 11 | 21 | 4 | 50 | 39,2 | -8,96 | 32,06 | 33 | 5 | USG |
| 1979 | 12 | 4 | 7 | 34 | 44,8 | 1,754 | 31,29 | 33 | 4,5 | NEI5 |
| 1979 | 12 | 4 | 18 | 57 | 52 | 1,4 | 30,6 | 0 | 5,4 | LQ |
| 1979 | 12 | 20 | 18 | 57 | 55,6 | -13,37 | 24,69 | 33 | 4,5 | USG |
| 1980 | 1 | 9 | 14 | 49 | 57 | -4,7 | 26,9 | 33 | 4.5 | NAO |
| 1980 | 1 | 9 | 14 | 49 | 59,1 | -3,44 | 27,44 | 10 | 5 | mbGS |
| 1980 | 1 | 9 | 14 | 50 | 0 | -3,4 | 28,3 | 0 | 5,3 | USG |
| 1980 | 1 | 23 | 9 | 45 | 39 | -22 | 20 | 0 | 4,1 | HFS |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1980 | 2 | 10 | 20 | 22 | 17 | -1.15 | 29.24 | 33 | 4.1 | LQ |
| 1980 | 2 | 29 | 2 | 3 | 29 | -4,8 | 30,4 | 0 | 4,4 | LQ |
| 1980 | 3 | 5 | 22 | 50 | 34,3 | -9,58 | 33,01 | 33 | 4,2 | MOS |
| 1980 | 3 | 10 | 5 | 47 | 55 | -11,3 | 40,4 | 0 | 4,1 | LQ |
| 1980 | 3 | 14 | 21 | 39 | 12 | -11 | 40,3 | 0 | 4,1 | LQ |
| 1980 | 3 | 30 | 5 | 29 | 32 | -5.46 | 26.96 | 33 | 4.4 | mbGS |
| 1980 | 5 | 31 | 5 | 15 | 30 | -11 | 31 | 0 | 4,4 | HFS |
| 1980 | 9 | 22 | 7 | 28 | 0 | -16,6 | 28,2 | 0 | 4,1 | LQ |
| 1980 | 9 | 23 | 9 | 23 | 39 | 1,5 | 30,5 | 0 | 4,2 | LQ |
| 1980 | 9 | 26 | 7 | 45 | 51 | 1.23 | 30.06 | 33 | 4.1 | mbGS |
| 1980 | 11 | 17 | 8 | 29 | 51,6 | -7,793 | 27,25 | 33 | 4,1 | NEI1 |
| 1980 | 12 | 12 | 18 | 16 | 26 | 0,7 | 29,9 | 0 | 4,4 | LQ |
| 1980 | 12 | 22 | 20 | 37 | 45 | -8,8 | 33 | 0 | 4,4 | LQ |
| 1981 | 3 | 3 | 15 | 37 | 5 | -12,6 | 25,4 | 0 | 4,2 | LQ |
| 1981 | 3 | 4 | 1 | 58 | 36 | -2,3 | 28,4 | 33 | 4,5 | mbGS |
| 1981 | 5 | 17 | 13 | 8 | 26,2 | -5,76 | 29,43 | 33 | 4,1 | USG |
| 1981 | 5 | 21 | 8 | 53 | 59,3 | -2,698 | 28,66 | 33 | 4,5 | NEII1 |
| 1981 | 5 | 21 | 9 | 42 | 58,1 | -2,812 | 28,73 | 33 | 4,4 | NEI4 |
| 1981 | 5 | 31 | 13 | 1 | 51,3 | -6,48 | 31,04 | 33 | 4 | USG |
| 1981 | 7 | 23 | 6 | 21 | 52 | 2,183 | 20,08 | 13 | 4,4 | NEI3 |
| 1981 | 7 | 30 | 16 | 46 | 18,8 | -2,709 | 28,95 | 33 | 4,8 | LQ |
| 19 | 8 | 22 | 8 | 31 | 48, | - | 30, | 33 | 4, | NEI |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 81 | | | | | 9 | 14,05 | 33 | | 4 | |
| 1981 | 9 | 3 | 5 | 45 | 2,3 | -14,52 | 30,52 | 33 | 4,2 | USG |
| 1981 | 9 | 24 | 1 | 43 | 45,7 | -11,76 | 26,8 | 33 | 4,2 | USG |
| 1981 | 10 | 9 | 12 | 51 | 59 | -12,87 | 28 | 0 | 4,8 | LQ |
| 1981 | 11 | 18 | 9 | 17 | 30,5 | -2,282 | 22,81 | 7 | 5,6 | NEI14 |
| 1981 | 11 | 18 | 10 | 34 | 17,6 | -2,289 | 22,77 | 10 | 4 | NEI2 |
| 1981 | 12 | 21 | 10 | 2 | 38,2 | -5,77 | 29,84 | 33 | 4,1 | USG |
| 1982 | 1 | 9 | 17 | 30 | 21 | -3,1 | 27,8 | 33 | 4,9 | NAO |
| 1982 | 3 | 4 | 1 | 50 | 55,8 | -1,39 | 30,53 | 0 | 4,5 | NAO |
| 1982 | 3 | 12 | 4 | 33 | 56,8 | -4,058 | 28,83 | 10 | 4,4 | NEI3 |
| 1982 | 6 | 5 | 19 | 36 | 23 | -3,078 | 28,48 | 10 | 4.7 | NEI1 |
| 1982 | 7 | 3 | 23 | 21 | 12,1 | -3,74 | 28,95 | 10 | 4,8 | USG |
| 1982 | 7 | 4 | 2 | 22 | 14 | -3,778 | 28,92 | 10 | 4,8 | mbGS |
| 1982 | 7 | 22 | 9 | 22 | 57 | -0.5 | 29.65 | 10 | 4.2 | LG |
| 1982 | 7 | 24 | 3 | 51 | 41 | 1.22 | 30.11 | 10 | 4.5 | mbGS |
| 1982 | 8 | 3 | 12 | 19 | 9 | -6.91 | 29.89 | 10 | 3.8 | mbGS |
| 1982 | 10 | 15 | 8 | 37 | 53,7 | 4,667 | 31,73 | 10 | 4,7 | NEI |
| 1982 | 11 | 18 | 8 | 43 | 19,1 | -3,41 | 29,27 | 0 | 4,1 | LQ |
| 1982 | 12 | 7 | 9 | 36 | 33 | -6.98 | 30.2 | 10 | 3.8 | LQ |
| 19 | 12 | 22 | 0 | 44 | 50, | - | 27, | 33 | 4, | NEI |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 82 | | | | | 4 | 2,17 | 19 | | 4 | |
| 1983 | 1 | 15 | 16 | 33 | 52 | -3,1 | 28,1 | 33 | 4,8 | NAO |
| 1983 | 1 | 15 | 16 | 34 | 7,9 | 0,51 | 30,2 | 10 | 5.2 | USG |
| 1983 | 1 | 19 | 11 | 39 | 58,5 | -1,805 | 26,6 | 10 | 4,4 | NEI1 |
| 1983 | 5 | 9 | 16 | 15 | 6 | -6,9 | 33,3 | 0 | 5 | HFS |
| 1983 | 7 | 7 | 20 | 35 | 11 | -12,7 | 27,7 | 33 | 5,6 | NAO |
| 1983 | 7 | 7 | 21 | 42 | 51 | -12,8 | 28,8 | 33 | 4,5 | NAO |
| 1983 | 7 | 7 | 21 | 43 | 18,3 | -7,49 | 28,01 | 10 | 4,5 | USG |
| 1983 | 7 | 12 | 22 | 34 | 0,4 | -7,57 | 27,94 | 10 | 4,7 | USG |
| 1983 | 7 | 12 | 23 | 11 | 14,1 | -7,555 | 28 | 10 | 5 | LG |
| 1983 | 7 | 19 | 1 | 10 | 46,7 | -7,371 | 27,99 | 10 | 4,1 | NEI |
| 1983 | 7 | 23 | 11 | 16 | 14,5 | -7,502 | 27,71 | 10 | 4,4 | NEI |
| 1983 | 7 | 27 | 20 | 50 | 29 | -13,4 | 26,2 | 33 | 4,4 | NAO |
| 1983 | 9 | 24 | 23 | 26 | 13 | -4 | 26,4 | 33 | 4,8 | NAO |
| 1983 | 11 | 24 | 23 | 26 | 21,6 | -1,56 | 28,38 | 0 | 5,1 | LG |
| 1983 | 12 | 11 | 9 | 2 | 54,8 | -4,07 | 32,33 | 10 | 4,8 | NEI7 |
| 1983 | 12 | 11 | 23 | 42 | 38,5 | -7,364 | 27,78 | 10 | 4,1 | NEI1 |
| 1983 | 12 | 12 | 0 | 37 | 58,6 | -7,466 | 27,66 | 10 | 4 | NEI |
| 1984 | 1 | 11 | 18 | 40 | 29,6 | -6,239 | 27,86 | 10 | 5,3 | NEI17 |
| 1984 | 1 | 11 | 18 | 40 | 32 | -6.68 | 27.35 | 10 | 5.6 | mbGS |
| 19 | 4 | 16 | 14 | 56 | 48, | - | 25, | 5 | 4, | NEI |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 84 | | | | | 1 | 12,48 | 64 | | 4 | 1 |
| 1984 | 6 | 18 | 10 | 50 | 1,1 | -7,458 | 27,98 | 10 | 4,1 | NEI3 |
| 1984 | 7 | 17 | 9 | 23 | 50,2 | -0,19 | 29,7 | 5 | 4,1 | NEI |
| 1984 | 7 | 31 | 22 | 18 | 45 | -13,4 | 26,2 | 33 | 4,5 | NAO |
| 1984 | 8 | 22 | 1 | 58 | 2 | -2,7 | 29,26 | 10 | 4,4 | LQ |
| 1984 | 8 | 22 | 6 | 16 | 19 | -7 | 27,4 | 33 | 4,1 | NAO |
| 1984 | 8 | 25 | 20 | 37 | 49,8 | -8,749 | 32,46 | 10 | 5,1 | NEI12 |
| 1984 | 8 | 30 | 10 | 26 | 32 | -11,3 | 28,5 | 33 | 4,4 | NAO |
| 1984 | 8 | 30 | 11 | 13 | 56,9 | -7,58 | 28,07 | 10 | 4,2 | NEI2 |
| 1984 | 9 | 8 | 22 | 38 | 5,5 | -6,65 | 30,81 | 10 | 4 | NEI |
| 1984 | 9 | 25 | 11 | 23 | 19,9 | -7,66 | 28,08 | 0 | 4,4 | LQ |
| 1984 | 10 | 30 | 15 | 24 | 7,5 | -2,73 | 26,2 | 10 | 4,2 | USG |
| 1984 | 10 | 31 | 16 | 38 | 52 | -8,36 | 31,68 | 0 | 7,4 | LQ |
| 1984 | 11 | 25 | 15 | 42 | 15 | -8,735 | 32,59 | 10 | 4 | NEI |
| 1985 | 2 | 23 | 14 | 45 | 35,9 | -6,97 | 30,93 | 10 | 5,5 | USG |
| 1985 | 3 | 24 | 3 | 43 | 32,8 | -6,62 | 27,85 | 10 | 4,1 | USG |
| 1985 | 3 | 24 | 9 | 4 | 35,7 | -7,39 | 28,15 | 10 | 4,4 | USG |
| 1985 | 4 | 23 | 12 | 29 | 25,5 | -8,83 | 29,33 | 10 | 4,4 | USG |
| 1985 | 5 | 26 | 12 | 55 | 9,5 | -15,64 | 32,01 | 10 | 4 | NEI |
| 1985 | 5 | 28 | 6 | 1 | 32,3 | -4,98 | 30,63 | 0 | 4,4 | LQ |
| 1985 | 5 | 28 | 22 | 46 | 19,8 | -2,465 | 28,91 | 10 | 4,7 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1985 | 6 | 13 | 4 | 34 | 53,9 | -7,56 | 27,56 | 0 | 4,7 | LQ |
| 1985 | 6 | 15 | 3 | 43 | 37 | -5,17 | 25,02 | 0 | 4,7 | LQ |
| 1985 | 6 | 28 | 22 | 46 | 2 | -6,3 | 27,9 | 33 | 4,4 | NAO |
| 1985 | 6 | 28 | 22 | 46 | 19,8 | -2,46 | 28,91 | 10 | 4,4 | USG |
| 1985 | 8 | 12 | 22 | 58 | 17,8 | -4,85 | 23,17 | 0 | 6,9 | HFS |
| 1985 | 8 | 20 | 5 | 45 | 52 | 3 | 31,6 | 0 | 4,9 | LQ |
| 1985 | 9 | 3 | 9 | 49 | 22,9 | -0,966 | 29,17 | 33 | 5,3 | LQ |
| 1985 | 9 | 3 | 16 | 42 | 1,5 | -8,81 | 32,84 | 33 | 4,7 | USG |
| 1985 | 11 | 12 | 7 | 14 | 43,5 | -1,01 | 26,74 | 0 | 5 | LQ |
| 1985 | 11 | 28 | 17 | 40 | 16 | -14,2 | 31,2 | 33 | 4,7 | NAO |
| 1986 | 1 | 20 | 7 | 19 | 22,9 | -14,41 | 24,57 | 10 | 4 | NEI |
| 1986 | 3 | 14 | 4 | 15 | 58,5 | -10,69 | 27,64 | 10 | 5 | NEI8 |
| 1986 | 3 | 23 | 15 | 26 | 46,9 | 0,515 | 30,28 | 10 | 4,1 | NEI |
| 1986 | 5 | 2 | 18 | 44 | 51 | -9,4 | 22,4 | 33 | 4,4 | NAO |
| 1986 | 5 | 2 | 18 | 45 | 10 | -5,42 | 24,78 | 10 | 4,4 | USG |
| 1986 | 6 | 17 | 9 | 42 | 47,4 | -1,77 | 26,8 | 0 | 4,2 | USG |
| 1986 | 6 | 28 | 18 | 19 | 5,9 | -7,416 | 27,73 | 10 | 4,1 | USG |
| 1986 | 6 | 29 | 21 | 47 | 59,5 | -5,336 | 29,54 | 20 | 5,4 | NEI |
| 1986 | 7 | 10 | 5 | 2 | 20,4 | -5,515 | 29,02 | 10 | 4,5 | NEI |
| 1986 | 7 | 21 | 17 | 4 | 47,4 | -8,614 | 31,24 | 10 | 4,5 | NEI |

| **ear** | **Month** | **Day** | **Hour** | **Min** | **Sec** | **Lat.** | **Long** | **Deph** | **Ms.** | **Source** |
|---|---|---|---|---|---|---|---|---|---|---|
| 1986 | 10 | 21 | 17 | 4 | 47,4 | -8,614 | 31,24 | 10 | 4,2 | NEI |
| 1987 | 1 | 16 | 19 | 40 | 3,3 | -1,581 | 28,77 | 10 | 4,5 | LQ |
| 1987 | 1 | 17 | 5 | 42 | 7 | -0,9 | 28,8 | 0 | 4,5 | LQ |
| 1987 | 1 | 26 | 23 | 11 | 33,4 | 6,373 | 12,45 | 10 | 4,2 | NEI6 |
| 1987 | 1 | 28 | 1 | 47 | 28,8 | -9,97 | 33,72 | 10 | 4,2 | USG |
| 1987 | 7 | 14 | 10 | 17 | 43,3 | -5,39 | 29,17 | 10 | 4,8 | USG |
| 1987 | 9 | 13 | 6 | 38 | 15 | -0,7 | 26,6 | 0 | 4,7 | LQ |
| 1988 | 1 | 2 | 9 | 5 | 52,2 | 0,48 | 30,15 | 10 | 4,2 | LQ |
| 1988 | 1 | 7 | 22 | 55 | 53,9 | 0,55 | 18,44 | 33 | 4,2 | USG |
| 1988 | 1 | 12 | 11 | 40 | 17,9 | -8,783 | 32,6 | 10 | 4,1 | NEI1 |
| 1988 | 4 | 16 | 21 | 17 | 7,6 | -10,33 | 27,67 | 3 | 5,1 | MOS |
| 1988 | 6 | 10 | 10 | 7 | 7 | -8,9 | 34,9 | 33 | 4,1 | NAO |
| 1988 | 12 | 1 | 21 | 58 | 53,1 | -11,93 | 26,71 | 33 | 4,1 | USG |
| 1989 | 1 | 5 | 5 | 8 | 2,6 | 0,63 | 27,77 | 3 | 4,1 | LSZ |
| 1989 | 2 | 9 | 23 | 48 | 55 | -12,8 | 27,4 | 33 | 5,6 | NAO |
| 1989 | 2 | 9 | 23 | 49 | 16,2 | -8,55 | 29,84 | 35 | 4,8 | USG |
| 1989 | 3 | 9 | 2 | 36 | 26,8 | -13,8 | 34,74 | 10 | 5,3 | LSZ |
| 1989 | 3 | 25 | 0 | 56 | 59,5 | -13,52 | 33,65 | 10 | 4,1 | NEI1 |
| 1989 | 4 | 11 | 20 | 8 | 41 | -5.53 | 29.57 | 10 | 4.1 | mbGS |
| 1989 | 5 | 11 | 20 | 53 | 51 | 8,52 | 39,8 | 33 | 4,5 | MOS |
| 19 | 6 | 5 | 16 | 23 | 40, | -12 | 14, | 10 | 4, | NEI |

| **ear** | **Month** | **Day** | **Hour** | **Min** | **Sec** | **Lat.** | **Long** | **Deph** | **Ms.** | **Source** |
|---|---|---|---|---|---|---|---|---|---|---|
| 89 | | | | | 4 | | 56 | | 7 | 7 |
| 1989 | 8 | 5 | 19 | 38 | 34,8 | -9,81 | 28,19 | 10 | 4,9 | USG |
| 1989 | 9 | 5 | 20 | 49 | 32,6 | -11,72 | 34,37 | 6 | 4,4 | BJ |
| 1990 | 2 | 28 | 20 | 5 | 27,3 | -13,73 | 33,94 | 5 | 4,7 | BJ |
| 1990 | 2 | 28 | 22 | 18 | 5 | -16,6 | 35,1 | 0 | 4,4 | HFS |
| 1990 | 4 | 5 | 19 | 20 | 41,4 | -3,85 | 36,09 | 33 | 4,4 | MOS |
| 1990 | 5 | 15 | 16 | 23 | 54 | -8,7 | 33,8 | 33 | 5,1 | NAO |
| 1990 | 5 | 20 | 2 | 22 | 1,6 | 5,121 | 32,15 | 15 | 7,4 | LQ |
| 1990 | 6 | 9 | 8 | 5 | 28 | -1 | 26,1 | 0 | 4,1 | HFS |
| 1990 | 6 | 12 | 11 | 18 | 26 | -6.23 | 30.92 | 33 | 4.2 | mbGS |
| 1990 | 7 | 29 | 7 | 48 | 40 | 1.28 | 31.94 | 10 | 4.3 | mbGS |
| 1990 | 9 | 4 | 1 | 47 | 41 | -4,1 | 29,8 | 33 | 4,5 | NAO |
| 1990 | 9 | 4 | 1 | 48 | 0,8 | -0,48 | 29,08 | 10 | 4,5 | USG |
| 1990 | 9 | 7 | 14 | 37 | 0 | 1 | 28,4 | 10 | 4,1 | LQ |
| 1990 | 9 | 18 | 4 | 55 | 42 | -4,061 | 29,48 | 10 | 4,5 | NEI6 |
| 1990 | 12 | 11 | 5 | 9 | 3 | 3,8 | 32,1 | 33 | 4,5 | NAO |
| 1990 | 12 | 15 | 20 | 56 | 20 | -4,5 | 30,3 | 0 | 4,2 | HFS |
| 1990 | 12 | 20 | 18 | 37 | 44 | -0.32 | 29.46 | 33 | 4.6 | mbGS |
| 1991 | 1 | 5 | 15 | 47 | 49,1 | 5,14 | 32,08 | 33 | 4,4 | NEI2 |
| 1991 | 1 | 10 | 7 | 6 | 21,8 | 4,73 | 31,01 | 5 | 4,8 | BJ |
| 1991 | 1 | 24 | 12 | 55 | 51,2 | -13,14 | 23,23 | 10 | 4,4 | NEI5 |
| 1991 | 1 | 31 | 6 | 13 | 10,7 | 5,307 | 32,61 | 10 | 4,1 | NEI1 |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1991 | 2 | 15 | 22 | 31 | 3,1 | -4,379 | 28,52 | 10 | 4,1 | NEI 1 |
| 1991 | 2 | 22 | 22 | 6 | 11,1 | -3,972 | 35,81 | 10 | 5,3 | LQ |
| 1991 | 2 | 24 | 19 | 31 | 53,1 | -1,68 | 28,77 | 10 | 4 | USG |
| 1991 | 3 | 4 | 14 | 8 | 29,7 | 4,951 | 32,55 | 10 | 4,1 | ISC 1 |
| 1991 | 7 | 16 | 7 | 28 | 42 | 0.64 | 29.89 | 33 | 4.4 | mb GS |
| 1991 | 3 | 29 | 9 | 5 | 54 | 2,2 | 29,8 | 33 | 5,1 | NAO |
| 1991 | 9 | 6 | 16 | 8 | 34 | 5,38 | 31,99 | 12 | 4,1 | BJ |
| 1991 | 10 | 8 | 17 | 22 | 5,4 | 1,84 | 31,3 | 10 | 5,9 | LQ |
| 1991 | 10 | 8 | 18 | 51 | 20 | -2.04 | 27.45 | 10 | 4.8 | LQ |
| 1991 | 10 | 9 | 17 | 22 | 0 | 0,8 | 32,5 | 33 | 5,5 | NAO |
| 1992 | 3 | 1 | 11 | 15 | 12,4 | -2,24 | 29,14 | 10 | 6,2 | USG |
| 1992 | 4 | 1 | 9 | 18 | 50 | -6.4 | 30.85 | 10 | 3.8 | mb GS |
| 1992 | 9 | 11 | 3 | 57 | 26,5 | -6,087 | 26,65 | 11 | 6,5 | LQ |
| 1992 | 9 | 15 | 0 | 29 | 57 | -6.07 | 26.3 | 10 | 4.5 | LQ |
| 1992 | 9 | 16 | 18 | 34 | 46 | -6.34 | 26.62 | 10 | 4.6 | LQ |
| 1992 | 9 | 19 | 14 | 20 | 4 | -6.25 | 26.66 | 16 | 4.8 | mb GS |
| 1992 | 9 | 23 | 0 | 53 | 35 | -6.28 | 26.51 | 10 | 3.9 | mb GS |
| 1992 | 9 | 23 | 2 | 40 | 5 | -6.3 | 26.61 | 10 | 3.6 | mb GS |
| 1992 | 9 | 23 | 14 | 52 | 27 | -6.16 | 26.72 | 11 | 5.6 | mb GS |
| 1992 | 9 | 25 | 0 | 39 | 21 | -6.18 | 26.84 | 10 | 4.9 | mb GS |
| 1992 | 10 | 12 | 23 | 42 | 9,3 | 5,02 | 32,02 | 33 | 6,2 | USG |
| 1992 | 10 | 13 | 16 | 21 | 58 | 2,4 | 29,3 | 33 | 4,1 | NAO |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1992 | 10 | 21 | 15 | 5 | 24,7 | -6,32 | 26,77 | 10 | 4.8 | USG |
| 1992 | 12 | 13 | 5 | 7 | 27,9 | -4,74 | 28,92 | 15 | 4 | TZN |
| 1993 | 1 | 24 | 16 | 43 | 6 | -2.16 | 27.56 | 10 | 4.6 | mb GS |
| 1993 | 4 | 11 | 19 | 41 | 19 | -7,8 | 34,3 | 0 | 5,6 | HFS |
| 1993 | 6 | 20 | 13 | 2 | 15,8 | -5,95 | 26,65 | 15 | 4,2 | TZN |
| 1993 | 6 | 20 | 13 | 2 | 16 | -6.13 | 26.86 | 10 | 4.9 | mb GS |
| 1993 | 7 | 23 | 19 | 1 | 15 | -8,4 | 35,5 | 33 | 4,4 | NAO |
| 1993 | 7 | 31 | 2 | 32 | 40,7 | -4,07 | 28,3 | 15 | 5 | TZN |
| 1993 | 8 | 11 | 17 | 11 | 34,7 | -3,53 | 29,36 | 21 | 4,2 | USG |
| 1993 | 9 | 3 | 10 | 50 | 54 | -3,995 | 34,06 | 33 | 4,2 | NEI 2 |
| 1993 | 9 | 28 | 22 | 30 | 49 | -2.53 | 28.6 | 10 | 4.9 | mb GS |
| 1993 | 10 | 18 | 5 | 50 | 17,4 | 0,63 | 30,22 | 33 | 4,4 | USG |
| 1993 | 11 | 16 | 2 | 55 | 28,6 | -1,592 | 29,23 | 10 | 4,1 | LQ |
| 1994 | 2 | 5 | 23 | 34 | 8,6 | 0,58 | 30,14 | 10 | 6,2 | LQ |
| 1994 | 2 | 6 | 0 | 3 | 14 | 3.83 | 27.16 | 10 | 4.7 | mb GS |
| 1994 | 2 | 7 | 1 | 32 | 14 | 0.61 | 30.14 | 10 | 4.3 | mb GS |
| 1994 | 2 | 8 | 10 | 16 | 25 | 0.65 | 30.27 | 33 | 4.4 | mb GS |
| 1994 | 3 | 9 | 8 | 25 | 5 | -1.8 | 29.8 | 33 | 4.8 | mb GS |
| 1994 | 3 | 20 | 2 | 12 | 35 | 0.46 | 30.17 | 19 | 4.9 | mb GS |
| 1994 | 3 | 29 | 22 | 59 | 22 | 0.49 | 30.17 | 10 | 4.5 | mb GS |
| 1994 | 4 | 24 | 9 | 52 | 55,3 | -9,36 | 30,74 | 33 | 4,7 | MOS |
| 1994 | 5 | 22 | 0 | 50 | 20 | 0.01 | 29.93 | 10 | 4.6 | mb GS |
| 19 | 8 | 18 | 0 | 45 | 47, | - | 31, | 25 | 5, | NEI |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 94 | | | | | 2 | 7,433 | 75 | ,2 | 7 | 40 |
| 1994 | 8 | 22 | 19 | 56 | 39 | 2 | 34 | 0 | 4 | NAO |
| 1994 | 8 | 31 | 14 | 59 | 42 | -2 | 30 | 0 | 4,4 | NAO |
| 1994 | 8 | 31 | 14 | 59 | 56 | 1.6 | 32 | 10 | 5 | mb GS |
| 1994 | 9 | 5 | 4 | 8 | 37,9 | -6,807 | 31,19 | 3,7 | 4 | EAF |
| 1994 | 9 | 30 | 1 | 36 | 53 | -5.92 | 29.89 | 11 | 4.5 | mb GS |
| 994 | 10 | 2 | 2 | 25 | 32 | -7.85 | 30.82 | 35 | 6.5 | mb GS |
| 1994 | 11 | 12 | 12 | 17 | 59,4 | -7,1 | 29,88 | 20 | 4,4 | BJ |
| 1994 | 11 | 12 | 20 | 16 | 53 | -7,01 | 30,07 | 0 | 4 | EAF |
| 1994 | 11 | 16 | 1 | 8 | 7,5 | -9,181 | 33,68 | 0 | 4,5 | EAF |
| 1994 | 12 | 25 | 4 | 25 | 35 | -5.17 | 30.58 | 29 | 4.2 | mb GS |
| 1995 | 4 | 29 | 11 | 50 | 53,2 | -1,324 | 28,77 | 10 | 4,9 | LQ |
| 1995 | 5 | 26 | 11 | 29 | 7 | 0.77 | 30.54 | 10 | 4.5 | mb GS |
| 1995 | 7 | 2 | 2 | 34 | 35 | -3.13 | 26.46 | 10 | 4.4 | mb GS |
| 1995 | 8 | 26 | 14 | 27 | 47 | 2.07 | 31.35 | 33 | 4 | mb GS |
| 1995 | 9 | 19 | 1 | 33 | 14,2 | 0,23 | 27,61 | 0 | 4 | EID |
| 1995 | 9 | 22 | 8 | 51 | 49,2 | 1,08 | 19,41 | 6 | 5,5 | BJI |
| 1995 | 9 | 25 | 17 | 3 | 55,8 | -1,796 | 13,61 | 19,2 | 5,2 | EAF |
| 1995 | 9 | 30 | 20 | 46 | 2 | -13,87 | 34,55 | 0 | 4,1 | EID |
| 1995 | 11 | 12 | 19 | 0 | 4,8 | -13,84 | 31,61 | 10 | 4,2 | USG |
| 19 | 12 | 11 | 17 | 48 | 30 | - | 26, | 10 | 5. | US |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 95 | | | | | | 6,37 | 7 | | 2 | G |
| 1995 | 12 | 11 | 17 | 54 | 39 | -6.22 | 26.71 | 10 | 5.7 | mb GS |
| 1996 | 2 | 9 | 0 | 23 | 8 | -0.1 | 29.75 | 10 | 3.9 | mb GS |
| 1996 | 2 | 12 | 23 | 21 | 2 | -5.09 | 30.02 | 10 | 4.3 | mb GS |
| 1996 | 3 | 24 | 8 | 24 | 2 | -4 | 29 | 0 | 4,5 | NAO |
| 1996 | 3 | 24 | 8 | 24 | 24 | 0.56 | 30.17 | 10 | 5.4 | USG |
| 1996 | 3 | 24 | 11 | 20 | 46 | 0,459 | 30,2 | 0 | 5,3 | EAF |
| 1996 | 3 | 24 | 22 | 52 | 42,3 | 0,605 | 30,38 | 9,4 | 4,9 | EAF |
| 1996 | 6 | 9 | 20 | 12 | 14,5 | -15,69 | 24,9 | 10 | 4,4 | MOS |
| 1996 | 7 | 8 | 21 | 22 | 3,3 | -1,561 | 29,51 | 13,1 | 4,8 | EAF |
| 1996 | 7 | 26 | 15 | 14 | 6 | -6.57 | 29.42 | 10 | 4.2 | mb GS |
| 1996 | 8 | 28 | 7 | 58 | 34,2 | -2,287 | 29,02 | 13,1 | 4,4 | EAF |
| 1996 | 12 | 15 | 16 | 56 | 19 | -6.26 | 29.86 | 10 | 4.3 | mb GS |
| 1996 | 12 | 23 | 12 | 16 | 0 | 1.27 | 30.29 | 33 | 4.4 | mb GS |
| 1997 | 2 | 11 | 7 | 36 | 37 | -2,72 | 29,11 | 10 | 4.7 | LQ |
| 1997 | 4 | 15 | 19 | 4 | 27,3 | -8,7 | 26,4 | 10 | 4,2 | BJI |
| 1997 | 5 | 14 | 21 | 14 | 40 | -3.91 | 28.68 | 10 | 4.4 | mb GS |
| 1997 | 5 | 27 | 15 | 18 | 38 | 2.52 | 31.35 | 10 | 4 | mb GS |
| 1997 | 5 | 27 | 16 | 41 | 2,5 | 2,393 | 31,46 | 0 | 4.8 | EID2 |
| 1997 | 5 | 27 | 17 | 21 | 41 | 1.97 | 31.37 | 10 | 4.1 | mb GS |
| 1997 | 6 | 16 | 23 | 16 | 54 | 2.32 | 31.37 | 10 | 4.5 | mb GS |
| 1997 | 7 | 18 | 1 | 43 | 12 | 2.45 | 31.61 | 10 | 4.7 | NAO |
| 19 | 7 | 18 | 1 | 45 | 5 | 0 | 29 | 0 | 4, | mb |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 97 | | | | | | | | | 1 | GS |
| 1997 | 7 | 18 | 2 | 44 | 24 | 2.33 | 31.56 | 10 | 4.6 | mb GS |
| 1997 | 7 | 18 | 2 | 49 | 55 | 0 | 29 | 0 | 4 | NAO |
| 1997 | 7 | 18 | 2 | 50 | 2,4 | 2,48 | 31,49 | 10 | 4.7 | USG |
| 1997 | 7 | 18 | 3 | 17 | 23 | 1 | 29 | 0 | 4,1 | NAO |
| 1997 | 7 | 18 | 3 | 17 | 24 | 2.35 | 31.57 | 10 | 4.8 | mb GS |
| 1997 | 7 | 19 | 13 | 45 | 19 | 2.52 | 31.72 | 33 | 4.7 | mb GS |
| 1997 | 7 | 19 | 14 | 21 | 37 | 2.18 | 31.14 | 33 | 4 | mb GS |
| 1997 | 9 | 21 | 18 | 12 | 43 | -15 | 30 | 0 | 5,2 | mb GS |
| 1997 | 9 | 21 | 18 | 13 | 33 | -7.29 | 30.27 | 30 | 5.9 | NAO |
| 1997 | 10 | 21 | 22 | 48 | 6,1 | -7,332 | 30,35 | 10 | 4,2 | LQ |
| 1997 | 11 | 10 | 6 | 25 | 55,9 | -11,79 | 28,7 | 33 | 4,5 | LQ |
| 1997 | 11 | 11 | 4 | 11 | 21,1 | -10,65 | 24,92 | 10 | 4,4 | LQ |
| 1997 | 11 | 11 | 22 | 42 | 51 | -2.73 | 28.91 | 10 | 4.7 | mb GS |
| 1997 | 11 | 21 | 23 | 24 | 7 | -4.83 | 29.38 | 10 | 4.7 | mb GS |
| 1998 | 1 | 11 | 6 | 32 | 56,4 | -7,95 | 30,63 | 33 | 4,1 | USG |
| 1998 | 2 | 22 | 17 | 19 | 56 | 0.52 | 29.32 | 10 | 4.5 | mb GS |
| 1998 | 3 | 5 | 2 | 59 | 36 | -1 | 14 | 0 | 5,2 | NAO |
| 1998 | 3 | 28 | 21 | 59 | 26 | -12 | 28 | 0 | 4,8 | NAO |
| 1998 | 3 | 28 | 21 | 59 | 56 | -6.02 | 29.52 | 10 | 5.3 | mb GS |
| 1998 | 4 | 12 | 10 | 48 | 54,7 | -12,23 | 26,01 | 0 | 4,4 | EID |
| 1998 | 4 | 25 | 5 | 34 | 29 | -6.47 | 30.08 | 10 | 4.2 | mb GS |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | 4 | 26 | 14 | 16 | 45 | -1 | 14 | 0 | 5,1 | NAO |
| 1998 | 7 | 1 | 17 | 16 | 56,9 | -0,591 | 30,78 | 18,3 | 4,2 | ENT |
| 1998 | 7 | 2 | 20 | 7 | 40,2 | 1,314 | 29,24 | 10 | 5 | ENT |
| 1998 | 7 | 23 | 11 | 2 | 22,7 | 1,332 | 30,77 | 38,1 | 4,1 | ENT |
| 1998 | 8 | 3 | 10 | 59 | 17,6 | -1,093 | 29,98 | 10 | 5,5 | ENT |
| 1998 | 8 | 14 | 4 | 44 | 49,8 | 0,222 | 29,72 | 15 | 5,5 | ENT |
| 1998 | 8 | 15 | 5 | 41 | 1 | -4 | 30 | 0 | 4 | NAO |
| 1998 | 8 | 15 | 5 | 41 | 24 | 0.95 | 30.05 | 10 | 4.7 | mb GS |
| 1998 | 8 | 15 | 14 | 57 | 28 | 1.21 | 29.84 | 10 | 4.7 | mb GS |
| 1998 | 8 | 15 | 15 | 57 | 45 | 1.87 | 30.05 | 10 | 4.6 | mb GS |
| 1998 | 8 | 15 | 16 | 16 | 46 | 0.32 | 30.17 | 10 | 4.4 | mb GS |
| 1998 | 8 | 15 | 17 | 28 | 45 | -5 | 29 | 0 | 4,1 | NAO |
| 1998 | 8 | 15 | 17 | 29 | 16 | 0.75 | 29.96 | 10 | 4.8 | mb GS |
| 1998 | 8 | 16 | 4 | 47 | 40 | 0 | 30 | 0 | 4 | NAO |
| 1998 | 8 | 16 | 4 | 47 | 40 | 0.88 | 29.9 | 10 | 4.7 | NAO |
| 1998 | 8 | 16 | 4 | 50 | 19,9 | -1,286 | 30,01 | 4,9 | 6,2 | ENT |
| 1998 | 8 | 16 | 5 | 32 | 30,6 | -0,916 | 29,95 | 0 | 4,4 | ENT |
| 1998 | 8 | 17 | 2 | 38 | 19 | -0,228 | 30,29 | 18,4 | 4,3 | ENT |
| 1998 | 8 | 20 | 14 | 42 | 42,9 | -0,434 | 28,65 | 0,1 | 4,8 | ENT |
| 1998 | 8 | 20 | 18 | 28 | 12,2 | -0,553 | 27,72 | 0 | 5,5 | ENT |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1998 | 8 | 20 | 21 | 17 | 41 | -1,051 | 31,07 | 6,5 | 4,9 | ENT |
| 1998 | 8 | 29 | 4 | 49 | 56 | -2.01 | 27.59 | 10 | 4.5 | mbGS |
| 1998 | 10 | 4 | 8 | 38 | 9 | -0.95 | 27.92 | 10 | 4.6 | mbGS |
| 1998 | 10 | 14 | 15 | 46 | 21 | -0.18 | 27.32 | 10 | 4.5 | mbGS |
| 1998 | 10 | 22 | 15 | 13 | 41 | -2.08 | 28.35 | 10 | 4 | mbGS |
| 1999 | 1 | 2 | 3 | 50 | 18,1 | -1,643 | 29,59 | 13,1 | 4,9 | EAF |
| 1999 | 1 | 7 | 1 | 31 | 37,2 | 5,421 | 32,5 | 13 | 4,9 | EAF |
| 1999 | 1 | 19 | 4 | 33 | 35,4 | -4,107 | 33,87 | 13 | 4,5 | EAF |
| 1999 | 1 | 22 | 23 | 44 | 23,4 | 4,545 | 31,69 | 10 | 5 | EAF |
| 1999 | 1 | 26 | 22 | 23 | 55 | -1,358 | 30,98 | 10 | 4,2 | EAF |
| 1999 | 1 | 29 | 6 | 33 | 38,3 | -1,696 | 30,67 | 10 | 5 | EAF |
| 1999 | 1 | 29 | 11 | 56 | 34,6 | -3,206 | 30,22 | 13,1 | 5 | EAF |
| 1999 | 1 | 29 | 12 | 4 | 4,6 | -1,458 | 30,91 | 10 | 5,2 | EAF |
| 1999 | 1 | 29 | 14 | 2 | 40,7 | -2,843 | 30,07 | 11,9 | 5,1 | EAF |
| 1999 | 2 | 6 | 23 | 27 | 0,5 | -5,65 | 29,28 | 10 | 4.8 | USG |
| 1999 | 2 | 10 | 4 | 12 | 34 | -1,516 | 30,84 | 10 | 4,8 | EAF |
| 1999 | 2 | 15 | 12 | 49 | 55,7 | -0,069 | 30,25 | 13 | 5,3 | EAF |
| 1999 | 2 | 15 | 12 | 57 | 11,9 | -1,868 | 30,52 | 10 | 6 | EAF |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 1999 | 2 | 18 | 19 | 28 | 44,4 | -1,136 | 31,13 | 10 | 4,2 | EAF |
| 1999 | 2 | 21 | 18 | 29 | 56,1 | -1,638 | 30,81 | 10 | 4,6 | EAF |
| 1999 | 2 | 22 | 13 | 20 | 59,8 | 3,381 | 31,74 | 9,7 | 4,6 | EAF |
| 1999 | 2 | 22 | 13 | 27 | 57,9 | -1,984 | 30,42 | 10 | 4,9 | EAF |
| 1999 | 2 | 25 | 16 | 27 | 37,2 | 0,261 | 32,59 | 10 | 4 | EAF |
| 1999 | 2 | 26 | 11 | 8 | 1,9 | -1,477 | 30,67 | 10 | 4,3 | EAF |
| 1999 | 2 | 28 | 22 | 20 | 57 | -1,318 | 31,28 | 10 | 4,3 | EAF |
| 1999 | 3 | 1 | 5 | 2 | 52,3 | -1,626 | 30,82 | 10 | 4,5 | EAF |
| 1999 | 3 | 10 | 3 | 49 | 35,7 | 5,469 | 32,55 | 13,1 | 5,1 | EAF |
| 1999 | 3 | 12 | 6 | 30 | 59,4 | -3,091 | 29,2 | 13,1 | 4,7 | EAF |
| 1999 | 3 | 29 | 22 | 30 | 46,3 | -1,173 | 31,19 | 10 | 4,1 | EAF |
| 1999 | 3 | 30 | 11 | 43 | 51 | -1.18 | 27.58 | 10 | 4.6 | mbGS |
| 1999 | 4 | 4 | 17 | 49 | 54,3 | 0,54 | 29,4 | 10 | 4.6 | USG |
| 1999 | 5 | 7 | 2 | 10 | 5,3 | -15 | 33 | 0 | 4,8 | NAO |
| 1999 | 5 | 7 | 2 | 10 | 42 | -7,51 | 31,6 | 10 | 4,8 | USG |
| 1999 | 5 | 7 | 14 | 6 | 54,1 | -14 | 32 | 0 | 5,2 | NAO |
| 1999 | 5 | 7 | 14 | 7 | 28,7 | -7,49 | 31,68 | 10 | 5,4 | USG |
| 1999 | 5 | 12 | 7 | 16 | 6,1 | 1,167 | 28,85 | 0 | 5,6 | EAF |
| 1999 | 8 | 4 | 6 | 41 | 0,4 | -13 | 27 | 0 | 4,2 | NAO |
| 19 | 8 | 4 | 6 | 42 | 13, | - | 26, | 10 | 4. | US |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 99 | | | | | 8 | 6,16 | 54 | | 7 | G |
| 1999 | 8 | 6 | 17 | 22 | 49 | -8.6 | 21.6 | 10 | 4.6 | mb GS |
| 1999 | 10 | 7 | 12 | 34 | 45 | -12,4 | 26,17 | 10 | 4,1 | LSZ |
| 1999 | 11 | 8 | 22 | 1 | 27,3 | -13,07 | 26,54 | 10 | 4 | LSZ |
| 1999 | 11 | 27 | 13 | 52 | 8,7 | -9,26 | 27,67 | 10 | 4 | USG |
| 2000 | 1 | 5 | 23 | 8 | 36 | -8 | 30.5 | 25 | 4.8 | mb GS |
| 2000 | 2 | 22 | 20 | 17 | 18 | -2.37 | 27.92 | 33 | 4 | mb GS |
| 2000 | 3 | 2 | 2 | 44 | 51 | -2.58 | 27.83 | 10 | 5.4 | mb GS |
| 2000 | 3 | 2 | 4 | 29 | 46,5 | -2,562 | 28,28 | 10 | 4,4 | LDG2 |
| 2000 | 3 | 2 | 4 | 29 | 48 | -2.37 | 28.37 | 10 | 5 | mb GS |
| 2000 | 3 | 3 | 5 | 3 | 18,8 | -2,273 | 28,79 | 10 | 4,4 | LDG2 |
| 2000 | 3 | 3 | 5 | 3 | 20 | -2.43 | 28.01 | 10 | 4.9 | mb GS |
| 2000 | 6 | 25 | 3 | 31 | 7 | -4.27 | 27.86 | 10 | 3.8 | mb GS |
| 2000 | 7 | 10 | 17 | 47 | 0,6 | -13 | 27 | 0 | 4,1 | NAO |
| 2000 | 7 | 10 | 17 | 48 | 27,2 | -7,2 | 27,75 | 10 | 4,2 | USG |
| 2000 | 9 | 12 | 16 | 51 | 17,5 | -2,27 | 28,74 | 10 | 4.6 | USG |
| 2000 | 10 | 2 | 2 | 24 | 4,6 | -8,901 | 27,92 | 15 | 5,9 | JSO2 |
| 2000 | 10 | 2 | 2 | 25 | 31,3 | -7,98 | 30,71 | 34 | 6,7 | USG |
| 2000 | 10 | 2 | 9 | 38 | 48,9 | -8,05 | 30,27 | 33 | 4,1 | USG |
| 2000 | 10 | 5 | 10 | 8 | 24 | -1.15 | 28.71 | 10 | 4.5 | mb GS |
| 2000 | 10 | 5 | 23 | 8 | 34,5 | -8,04 | 30,52 | 33 | 4,2 | USG |
| 2000 | 10 | 7 | 1 | 38 | 0,3 | -16 | 32 | 0 | 4,1 | USG |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Depth | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | 10 | 7 | 1 | 39 | 8,4 | -7,99 | 30,68 | 33 | 4,2 | USG |
| 2000 | 10 | 11 | 3 | 55 | 10 | -1.61 | 28.53 | 10 | 4 | mb GS |
| 2000 | 10 | 23 | 12 | 2 | 12,9 | 1,51 | 30,59 | 21 | 4.8 | USG |
| 2000 | 10 | 26 | 18 | 20 | 37 | -1.14 | 27.94 | 10 | 4.4 | mb GS |
| 2000 | 11 | 19 | 16 | 3 | 40 | -3.48 | 29.03 | 10 | 4 | mb GS |
| 2000 | 11 | 28 | 4 | 23 | 5,9 | -2,07 | 26,45 | 0 | 4,2 | IDC |
| 2000 | 12 | 2 | 4 | 16 | 8,8 | -12,4 | 27 | 10 | 4,5 | ZUR1 |
| 2000 | 12 | 15 | 10 | 1 | 19,9 | -5,51 | 29,62 | 10 | 4.9 | USG |
| 2001 | 1 | 31 | 19 | 15 | 30 | 0.47 | 29.49 | 27 | 4.9 | mb GS |
| 2001 | 4 | 17 | 4 | 39 | 1,8 | -6,182 | 22,73 | 18 | 4,1 | SYO |
| 2001 | 6 | 29 | 23 | 40 | 0,8 | 0,292 | 29,97 | 10 | 5,3 | SYO |
| 2001 | 7 | 13 | 19 | 23 | 55,5 | -6,883 | 30,92 | 10 | 4.8 | SYO |
| 2001 | 7 | 13 | 19 | 24 | 12 | -6.95 | 30.82 | 10 | 4.6 | mb GS |
| 2001 | 9 | 18 | 11 | 0 | 59,4 | -7,544 | 31,48 | 10 | 4,1 | NEI |
| 2001 | 9 | 11 | 2 | 57 | 52 | -5.66 | 29.4 | 10 | 4.5 | mb GS |
| 2001 | 9 | 24 | 1 | 29 | 7,2 | -0,024 | 35,99 | 0 | 4 | IDC |
| 2001 | 10 | 19 | 13 | 1 | 23,1 | -7,906 | 12,11 | 0 | 5,1 | IDC |
| 2001 | 11 | 22 | 9 | 27 | 59 | -6.77 | 30.42 | 10 | 4.4 | mb GS |
| 2001 | 11 | 27 | 0 | 20 | 30 | -5.55 | 29.37 | 10 | 4.5 | mb GS |
| 2002 | 1 | 4 | 13 | 2 | 18 | -0.14 | 29.76 | 10 | 4.8 | mb GS |
| 2002 | 1 | 17 | 20 | 1 | 28,3 | -1,75 | 29,1 | 0 | 4,2 | IDC |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 3 | | | | |
| 2002 | 1 | 18 | 8 | 7 | 57 | -1.58 | 29.03 | 10 | 4.7 | mb GS |
| 2002 | 1 | 18 | 15 | 14 | 2 | -1.78 | 29.08 | 10 | 4.7 | mb GS |
| 2002 | 1 | 18 | 21 | 8 | 53 | -1.66 | 28.87 | 10 | 4.4 | mb GS |
| 2002 | 1 | 19 | 4 | 26 | 20 | -1.76 | 28.97 | 10 | 4.4 | mb GS |
| 2002 | 1 | 19 | 17 | 9 | 29 | -1.93 | 29.58 | 10 | 4.7 | mb GS |
| 2002 | 1 | 19 | 20 | 38 | 55 | -1.88 | 29.06 | 10 | 4.4 | mb GS |
| 2002 | 1 | 20 | 0 | 14 | 44,4 | -1,681 | 28,98 | 10 | 5.2 | NEI |
| 2002 | 1 | 20 | 5 | 17 | 19 | -1.64 | 29.04 | 10 | 4.4 | mb GS |
| 2002 | 1 | 20 | 23 | 28 | 17 | -1.6 | 29.05 | 10 | 4.6 | mb GS |
| 2002 | 1 | 20 | 23 | 31 | 45 | -1.73 | 29.17 | 10 | 4.2 | mb GS |
| 2002 | 1 | 21 | 1 | 19 | 32 | -1.73 | 28.85 | 10 | 4.9 | mb GS |
| 2002 | 1 | 21 | 2 | 0 | 14 | -1.5 | 28.94 | 10 | 4.5 | mb GS |
| 2002 | 1 | 21 | 4 | 39 | 21,6 | -1,776 | 29,04 | 10 | 5,1 | NEI |
| 2002 | 1 | 21 | 10 | 55 | 3,5 | -1,995 | 28,99 | 10 | 5.1 | IDC |
| 2002 | 1 | 22 | 1 | 2 | 32,2 | -1,787 | 28,97 | 10 | 4,1 | NEI |
| 2002 | 1 | 22 | 2 | 1 | 1 | -1.75 | 29.09 | 10 | 4.5 | mb GS |
| 2002 | 1 | 22 | 15 | 32 | 5,5 | -1,621 | 29,03 | 10 | 5,2 | IDC |
| 2002 | 1 | 22 | 16 | 22 | 23,7 | -1,658 | 29 | 10 | 4,8 | IDC |
| 2002 | 1 | 22 | 16 | 51 | 0 | -1.46 | 29.25 | 10 | 4.6 | mb GS |
| 2002 | 1 | 27 | 13 | 42 | 43 | 0.77 | 29.72 | 10 | 4.7 | mb GS |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 2002 | 1 | 30 | 0 | 33 | 9 | -1.63 | 28.89 | 10 | 4.6 | mb GS |
| 2002 | 2 | 11 | 13 | 49 | 26 | -1.39 | 29.01 | 10 | 4.4 | mb GS |
| 2002 | 2 | 21 | 20 | 14 | 44 | -1.19 | 26.91 | 10 | 4.2 | mb GS |
| 2002 | 3 | 5 | 17 | 7 | 42,3 | -1.8 | 24,8 | 10 | 4,7 | BJI1 |
| 2002 | 3 | 12 | 2 | 25 | 18 | -1.13 | 26.63 | 10 | 4.6 | mb GS |
| 2002 | 4 | 10 | 20 | 18 | 27 | -5.45 | 30.18 | 33 | 4.7 | mb GS |
| 2002 | 4 | 21 | 8 | 43 | 57 | -3.07 | 27.97 | 10 | 4.3 | mb GS |
| 2002 | 5 | 11 | 7 | 17 | 57 | -1.15 | 26.1 | 10 | 4.4 | mb GS |
| 2002 | 5 | 18 | 15 | 15 | 8,7 | -2,877 | 33,59 | 0 | 4,7 | IDC |
| 2002 | 5 | 29 | 11 | 11 | 28,5 | -2,909 | 33,77 | 0 | 4,4 | IDC |
| 2002 | 7 | 4 | 20 | 52 | 31 | -1.37 | 26.62 | 10 | 4.3 | mb GS |
| 2002 | 8 | 19 | 3 | 44 | 36 | -6.75 | 30.88 | 10 | 4 | mb GS |
| 2002 | 9 | 9 | 14 | 13 | 27 | -2.57 | 28.87 | 10 | 4.5 | mb GS |
| 2002 | 10 | 24 | 6 | 8 | 37,7 | -1,899 | 28,9 | 11 | 6.3 | LQ |
| 2002 | 10 | 24 | 7 | 12 | 18 | -1.82 | 28.98 | 10 | 5.5 | mb GS |
| 2002 | 10 | 24 | 10 | 19 | 22 | -2.02 | 28.98 | 10 | 4.8 | mb GS |
| 2002 | 10 | 24 | 11 | 40 | 27 | -2.02 | 28.97 | 10 | 4.7 | mb GS |
| 2002 | 10 | 24 | 8 | 3 | 15 | -2.01 | 29.01 | 10 | 5 | mb GS |
| 2002 | 10 | 26 | 12 | 56 | 47,7 | -1,572 | 29,16 | 10 | 4.7 | NEI |
| 2002 | 12 | 13 | 13 | 24 | 25 | -1.85 | 29.04 | 10 | 4.7 | mb GS |
| 2003 | 1 | 19 | 1 | 15 | 13 | 0.92 | 29.95 | 10 | 4.5 | mb GS |
| 20 | 2 | 1 | 15 | 24 | 47 | - | 27. | 10 | 4. | mb |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 03 | | | | | | 0.93 | 59 | | 9 | GS |
| 2003 | 3 | 20 | 6 | 14 | 52,1 | -8,075 | 28,71 | 33 | 4,2 | NAO |
| 2003 | 3 | 20 | 6 | 15 | 20 | -2.42 | 29.56 | 10 | 5.2 | NEI |
| 2003 | 3 | 23 | 18 | 9 | 26,6 | -13,76 | 14,27 | 0 | 4,1 | NEI |
| 2003 | 4 | 5 | 22 | 48 | 19 | -3.62 | 29.56 | 10 | 5.2 | mbGS |
| 2003 | 4 | 10 | 16 | 3 | 56 | -5.55 | 29.51 | 10 | 5.1 | mbGS |
| 2003 | 5 | 3 | 3 | 48 | 31 | 0.51 | 29.66 | 10 | 4.5 | mbGS |
| 2003 | 5 | 8 | 18 | 56 | 58 | -0,875 | 29,33 | 32 | 5,1 | LQ |
| 2003 | 6 | 30 | 20 | 42 | 10,3 | -6,82 | 29,8 | 25 | 4.7 | USG |
| 2003 | 7 | 17 | 11 | 49 | 15 | -2.36 | 28.85 | 10 | 4.3 | mbGS |
| 2003 | 8 | 5 | 18 | 56 | 46,3 | -2.28 | 28,09 | 33 | 4,2 | NAO |
| 2003 | 8 | 5 | 18 | 56 | 50 | -0.52 | 29.45 | 10 | 5.3 | mbGS |
| 2003 | 8 | 5 | 21 | 33 | 25 | -0.34 | 29.13 | 10 | 4.4 | mbGS |
| 2003 | 8 | 22 | 22 | 6 | 50 | -1.9 | 29.03 | 10 | 4.3 | mbGS |
| 2003 | 8 | 25 | 2 | 5 | 57,9 | -0,534 | 29,2 | 10 | 4.6 | MOS |
| 2003 | 9 | 1 | 0 | 39 | 3 | -4.2 | 30.07 | 10 | 4.8 | mbGS |
| 2003 | 11 | 2 | 12 | 47 | 18 | 0.47 | 30.17 | 10 | 3.8 | mbGS |
| 2003 | 12 | 31 | 4 | 17 | 24 | -2.55 | 30.45 | 10 | 4.1 | mbGS |
| 2004 | 2 | 5 | 21 | 35 | 35 | 0.96 | 30.45 | 10 | 4.8 | mbGS |
| 2004 | 2 | 24 | 2 | 14 | 30,8 | -4,245 | 28,3 | 33 | 4,1 | MOS |
| 2004 | 2 | 24 | 2 | 14 | 34 | -3.39 | 29.56 | 10 | 4.7 | mbGS |
| 20 | 2 | 24 | 7 | 0 | 2 | - | 29. | 10 | 4. | mb |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 04 | | | | | | 3.41 | 6 | | 5 | GS |
| 2004 | 3 | 14 | 14 | 7 | 55,2 | -10,23 | 34,15 | 10 | 4 | MOS |
| 2004 | 3 | 18 | 20 | 37 | 44 | 2.09 | 31.4 | 30 | 4.7 | MOS |
| 2004 | 3 | 18 | 22 | 13 | 5,4 | 4,784 | 31,77 | 33 | 4 | MOS |
| 2004 | 5 | 12 | 9 | 45 | 43,7 | -12,71 | 26,18 | 0 | 4,1 | IDC |
| 2004 | 5 | 16 | 11 | 21 | 46 | -2.88 | 29.49 | 10 | 4.7 | mbGS |
| 2004 | 5 | 24 | 4 | 13 | 2 | 0.12 | 30.05 | 10 | 4.4 | mbGS |
| 2004 | 5 | 30 | 3 | 15 | 15 | -6.64 | 28.5 | 10 | 4 | mbGS |
| 2004 | 6 | 7 | 7 | 47 | 30 | 3.41 | 31.52 | 4 | 3.7 | mbGS |
| 2004 | 6 | 25 | 19 | 32 | 13 | -6.34 | 26.66 | 10 | 3.5 | mbGS |
| 2004 | 10 | 4 | 3 | 1 | 45 | -3.54 | 28.02 | 10 | 3 | mbGS |
| 2004 | 12 | 13 | 3 | 6 | 55 | 0.65 | 30.17 | 20 | 4.3 | mbGS |
| 2004 | 12 | 13 | 4 | 9 | 4 | 0,775 | 30,17 | 18 | 4.8 | NEI |
| 2005 | 1 | 13 | 10 | 4 | 56,4 | 0,691 | 17,29 | 0 | 4 | NEI |
| 2005 | 1 | 24 | 22 | 32 | 7 | -0.74 | 26.06 | 10 | 4.2 | mbGS |
| 2005 | 1 | 30 | 21 | 16 | 9 | -1.98 | 28.97 | 10 | 4.5 | mbGS |
| 2005 | 3 | 13 | 3 | 4 | 22 | 0.19 | 29.88 | 10 | 4.5 | mbGS |
| 2005 | 3 | 19 | 11 | 49 | 18,4 | 4,18 | 11,02 | 10 | 4 | USG |
| 2005 | 4 | 28 | 14 | 21 | 18 | -6.91 | 30.21 | 10 | 4.2 | mbGS |
| 2005 | 4 | 28 | 19 | 40 | 18 | 0.29 | 29.17 | 15 | 3 | mbGS |
| 2005 | 5 | 20 | 8 | 9 | 27 | -6.31 | 26.79 | 10 | 4.5 | mbGS |
| 2005 | 7 | 18 | 13 | 26 | 54 | -4.93 | 28.8 | 10 | 4.1 | mbGS |
| 2005 | 7 | 22 | 15 | 39 | 36 | -5.35 | 29.81 | 10 | 4.5 | mbGS |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 2005 | 9 | 3 | 6 | 5 | 12 | 0.06 | 29.9 | 10 | 4.4 | mbGS |
| 2005 | 9 | 14 | 3 | 2 | 51 | -1,222 | 29,3 | 7,5 | 4 | LQ |
| 2005 | 9 | 29 | 3 | 34 | 47 | -3.32 | 28.39 | 10 | 3.9 | mbGS |
| 2005 | 10 | 26 | 22 | 10 | 13 | -3,1 | 29,31 | 17 | 4,5 | LQ |
| 2005 | 11 | 27 | 14 | 33 | 58 | -1,826 | 29,14 | 4 | 4,3 | LQ |
| 2005 | 12 | 5 | 12 | 19 | 56,6 | -6,22 | 29,83 | 22 | 7,2 | MsGS |
| 2005 | 12 | 5 | 13 | 2 | 34 | -6.41 | 29.63 | 10 | 4 | mbGS |
| 2005 | 12 | 5 | 15 | 41 | 27 | -6.51 | 30.03 | 10 | 3.6 | mbGS |
| 2005 | 12 | 5 | 15 | 42 | 44 | -6.44 | 29.89 | 10 | 4.1 | mbGS |
| 2005 | 12 | 5 | 16 | 11 | 51 | -6.36 | 29.9 | 10 | 3.8 | mbGS |
| 2005 | 12 | 5 | 23 | 15 | 28 | -6.09 | 29.52 | 10 | 4.7 | mbGS |
| 2005 | 12 | 6 | 5 | 53 | 8 | -6.08 | 29.64 | 10 | 5.3 | mbGS |
| 2005 | 12 | 8 | 3 | 16 | 34 | -6.28 | 29.51 | 10 | 5.1 | MsGS |
| 2005 | 12 | 8 | 11 | 51 | 22 | -6.55 | 29.51 | 10 | 4.9 | mbGS |
| 2005 | 12 | 9 | 23 | 30 | 23 | -6.18 | 29.71 | 10 | 5.5 | mbGS |
| 2005 | 12 | 10 | 18 | 17 | 23 | -6.41 | 29.76 | 10 | 4.4 | mbGS |
| 2005 | 12 | 15 | 22 | 8 | 29 | -6.26 | 29.55 | 10 | 4.7 | |
| 2006 | 1 | 9 | 20 | 59 | 41 | -5.87 | 29.54 | 27 | 5.3 | |
| 2006 | 1 | 22 | 14 | 18 | 28 | -3,172 | 28,22 | 8,1 | 4,1 | LQ |
| 2006 | 2 | 6 | 18 | 50 | 44,4 | -9,88 | 28,56 | 10 | 4,4 | USG |
| 2006 | 3 | 9 | 3 | 41 | 22 | -3,47 | 28,28 | 10 | 4 | USG |
| 2006 | 4 | 27 | 4 | 18 | 28,1 | 0,34 | 30,08 | 10 | 5 | USG |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 2006 | 5 | 29 | 15 | 30 | 37,8 | 0,34 | 30,11 | 23 | 4,2 | USG |
| 2006 | 6 | 10 | 20 | 25 | 19,2 | -4,81 | 29,4 | 10 | 4,1 | USG |
| 2006 | 7 | 13 | 5 | 36 | 36,7 | -8,35 | 30,32 | 29 | 4,2 | USG |
| 2006 | 7 | 13 | 5 | 36 | 43 | -8.33 | 30.25 | 36 | 5 | mbGS |
| 2006 | 7 | 15 | 10 | 4 | 0,3 | -9,69 | 25,39 | 10 | 4,1 | USG |
| 2006 | 7 | 30 | 7 | 59 | 46,2 | -6,366 | 29,72 | 36 | 4 | MOS |
| 2006 | 8 | 6 | 10 | 35 | 59,6 | -1,587 | 29,16 | 12,7 | 4,1 | LQ |
| 2006 | 8 | 30 | 2 | 46 | 36 | -1,334 | 29,22 | 4 | 4,9 | LQ |
| 2006 | 11 | 25 | 6 | 53 | 31,6 | -7,74 | 30,5 | 10 | 4,4 | USG |
| 2007 | 2 | 19 | 2 | 33 | 44,4 | 1,76 | 30,75 | 28 | 5,4 | USG |
| 2007 | 3 | 28 | 21 | 16 | 34,7 | -13,25 | 28,5 | 33 | 4 | NAO |
| 2007 | 3 | 28 | 21 | 17 | 11,6 | -6,14 | 29,72 | 10 | 5,8 | USG |
| 2007 | 4 | 29 | 19 | 44 | 3,2 | 0,863 | 28,91 | 33 | 4 | NAO |
| 2008 | 2 | 3 | 7 | 34 | 12 | -2,314 | 28,9 | 10 | 6 | LQ |
| 2008 | 2 | 3 | 10 | 56 | 11 | -2.54 | 28.91 | 18 | 5 | MwGCMT |
| 2008 | 2 | 3 | 11 | 0 | 7 | -2.29 | 28.98 | 10 | 4.9 | mbGS |
| 2008 | 2 | 3 | 11 | 37 | 48 | -2.81 | 28.88 | 10 | 4.8 | mbGS |
| 2008 | 2 | 3 | 23 | 28 | 32 | -2.81 | 28.88 | 10 | 4.1 | mbGS |
| 2008 | 2 | 14 | 2 | 7 | 48 | -2.37 | 28.84 | 12 | 5.3 | |
| 2008 | 2 | 4 | 0 | 24 | 34 | -2.43 | 28.88 | 10 | 4.6 | mbGS |
| 20 | 2 | 5 | 17 | 29 | 8 | - | 28. | 10 | 4. | mb |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 08 | | | | | | 2.53 | 89 | | 7 | GS |
| 2008 | 2 | 5 | 22 | 54 | 44 | -2.43 | 29.01 | 10 | 3.8 | mb GS |
| 2008 | 2 | 11 | 23 | 59 | 57 | -2.47 | 28.94 | 10 | 3.7 | mb GS |
| 2008 | 2 | 14 | 2 | 7 | 46 | -2.4 | 28.92 | 10 | 5.3 | mb GS |
| 2008 | 2 | 15 | 4 | 4 | 53 | -2.42 | 28.82 | 10 | 4.7 | mb GS |
| 2008 | 2 | 16 | 23 | 18 | 38 | -6.31 | 27.25 | 10 | 3.6 | mb GS |
| 2008 | 2 | 16 | 23 | 18 | 47 | -6.24 | 27.49 | 10 | 3.8 | mb GS |
| 2008 | 2 | 27 | 2 | 7 | 59 | -2.39 | 28.97 | 10 | 4.6 | mb GS |
| 2008 | 4 | 20 | 7 | 30 | 44 | -3,721 | 26,28 | 10 | 5,2 | Mw GCMT |
| 2008 | 5 | 11 | 10 | 34 | 10 | 0.48 | 29.59 | 10 | 4.4 | mb GS |
| 2008 | 6 | 8 | 17 | 13 | 5 | -2.72 | 28.94 | 10 | 3.8 | mb GS |
| 2008 | 6 | 19 | 7 | 25 | 16 | -4.62 | 29.5 | 10 | 4.7 | mb GS |
| 2008 | 8 | 26 | 14 | 56 | 57 | 2.27 | 30.91 | 10 | 4.4 | mb GS |
| 2008 | 9 | 9 | 0 | 43 | 1 | -5.12 | 29.6 | 10 | 4.2 | mb GS |
| 2008 | 9 | 10 | 10 | 15 | 23 | -7.46 | 30.45 | 10 | 4.5 | mb GS |
| 2008 | 9 | 15 | 15 | 50 | 51 | -4.98 | 30.15 | 10 | 5.2 | Mw GCMT |
| 2008 | 10 | 5 | 0 | 2 | 12 | -1.13 | 9.12 | 4 | 5.3 | Mw GCMT |
| 2008 | 10 | 5 | 0 | 32 | 10 | -1.4 | 29.09 | 10 | 4 | mb GS |
| 2008 | 11 | 3 | 21 | 48 | 15 | -4.66 | 29.31 | 10 | 3.9 | mb GS |
| 2008 | 11 | 13 | 11 | 7 | 23 | -6.37 | 26.86 | 10 | 5 | mb GS |
| 2008 | 11 | 14 | 1 | 40 | 12 | 0 | 27.83 | 10 | 4.4 | mb GS |
| 2008 | 12 | 2 | 23 | 42 | 12 | -0.12 | 28 | 10 | 3.9 | mb GS |
| 20 | 12 | 14 | 9 | 43 | 10 | - | 30. | 10 | 5. | Mw |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 08 | | | | | | 7.35 | 13 | | 2 | GCMT |
| 2009 | 1 | 10 | 9 | 2 | 2 | -3.26 | 28.03 | 10 | 3.8 | Mw GCMT |
| 2009 | 2 | 4 | 9 | 24 | 21 | -3.54 | 25.06 | 10 | 4.2 | mb GS |
| 2009 | 3 | 5 | 3 | 28 | 56 | -0.24 | 29.55 | 10 | 4.2 | mb GS |
| 2009 | 3 | 25 | 5 | 3 | 22 | -2.47 | 29.52 | 10 | 4 | mb GS |
| 2009 | 7 | 13 | 10 | 15 | 41 | -1.4 | 28.27 | 10 | 4.1 | mb GS |
| 2009 | 7 | 20 | 23 | 1 | 12 | -6.55 | 29.91 | 10 | 5 | mb GS |
| 2009 | 7 | 30 | 14 | 48 | 6 | 1.29 | 30.5 | 10 | 4.6 | mb GS |
| 2009 | 8 | 14 | 12 | 6 | 55 | -5.48 | 29.8 | 32 | 4.6 | mb GS |
| 2009 | 8 | 15 | 16 | 58 | 36 | -7.24 | 31.3 | 10 | 4.1 | mb GS |
| 2009 | 9 | 26 | 13 | 26 | 37 | -7.53 | 30.45 | 10 | 5.2 | Mw GCMT |
| 2009 | 10 | 18 | 0 | 39 | 43 | 0.56 | 30.15 | 10 | 4.9 | mb GS |
| 2009 | 11 | 5 | 3 | 36 | 18 | -1.06 | 27.5 | 10 | 4.2 | mb GS |
| 2009 | 11 | 14 | 4 | 47 | 2 | -6.85 | 29.84 | 10 | 5.4 | Mw GCMT |
| 2009 | 11 | 14 | 4 | 50 | 17 | -6.78 | 29.82 | 10 | 5.3 | Mw GCMT |
| 2009 | 11 | 20 | 16 | 28 | 23 | -3.64 | 25.2 | 10 | 4.8 | mb GS |
| 2009 | 11 | 20 | 21 | 17 | 16 | -3.64 | 25.22 | 10 | 4.1 | mb GS |
| 2009 | 11 | 21 | 2 | 18 | 0 | -3.58 | 25.17 | 10 | 4.4 | mb GS |
| 2009 | 12 | 27 | 9 | 51 | 53 | -1.17 | 27.75 | 10 | 4.3 | mb GS |
| 2009 | 12 | 28 | 6 | 48 | 15 | -7.02 | 29.96 | 10 | 4.5 | mb GS |
| 2010 | 1 | 28 | 23 | 52 | 30 | -0.9 | 29.2 | 10 | 4.9 | Mw GCMT |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 2010 | 6 | 25 | 13 | 17 | 34 | -2.76 | 28.68 | 10 | 3.7 | mbGS |
| 2010 | 7 | 9 | 18 | 30 | 51 | -0.4 | 29.56 | 10 | 4.4 | mbGS |
| 2010 | 7 | 22 | 6 | 33 | 15 | -4.61 | 30.42 | 10 | 4.2 | mbGS |
| 2010 | 8 | 17 | 1 | 36 | 49 | -1.24 | 27.52 | 10 | 4.4 | mbGS |
| 2010 | 9 | 7 | 15 | 45 | 15 | -6.57 | 30.78 | 10 | 4.6 | mbGS |
| 2010 | 9 | 15 | 11 | 18 | 34 | -7.84 | 30.54 | 10 | 4 | mbGS |
| 2010 | 9 | 25 | 6 | 15 | 30 | -3.42 | 29.76 | 10 | 3.8 | mbGS |
| 2010 | 10 | 8 | 23 | 40 | 57 | 1.24 | 30.56 | 26 | 4.6 | mbGS |
| 2010 | 10 | 20 | 10 | 13 | 5 | 1.29 | 26.82 | 10 | 4.3 | mbGS |
| 2010 | 12 | 11 | 5 | 16 | 28 | 0.02 | 25.72 | 10 | 4.9 | mbGS |
| 2010 | 12 | 12 | 20 | 34 | 20 | 0.8 | 29.67 | 10 | 4.8 | mbGS |
| 2010 | 12 | 18 | 0 | 37 | 32 | -4.93 | 30.15 | 5 | 4.3 | mbGS |
| 2010 | 12 | 26 | 20 | 32 | 28 | -9.79 | 25 | 10 | 4.2 | mbGS |
| 2011 | 6 | 15 | 20 | 50 | 18,1 | -7,5 | 30,8 | 10 | 3,2 | ISC |
| 2011 | 6 | 21 | 21 | 24 | 46 | -13,9 | 21,4 | 26 | 3,2 | LSZ |
| 2011 | 4 | 29 | 11 | 26 | 58,9 | -4,8 | 30,16 | 10 | 3,3 | ISCJB |
| 2011 | 5 | 2 | 5 | 52 | 40,1 | -8,46 | 27,69 | 10 | 3,3 | NEIC |
| 2011 | 7 | 1 | 21 | 13 | 47 | -9,5 | 28,9 | 10 | 3,3 | ISCJB |
| 2011 | 12 | 4 | 5 | 7 | 4,39 | -8,5 | 30,1 | 10 | 3,3 | ISCJB |
| 2011 | 9 | 25 | 12 | 47 | 31 | -10,7 | 27 | 10 | 3,4 | NEIC |
| 2011 | 12 | 26 | 16 | 1 | 49,4 | -2,3 | 28,8 | 12 | 3,6 | ISCJB |
| 2011 | 3 | 19 | 19 | 44 | 9,13 | -7,7 | 30,4 | 18 | 3,7 | ISCJB |
| 2011 | 5 | 1 | 16 | 5 | 22,4 | -4,6 | 28,5 | 10 | 3,7 | ISCJB |
| 20 | 11 | 5 | 15 | 28 | 18, | -1,6 | 29, | 0 | 3, | IDC |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | | | | | 6 | | 12 | | 7 | |
| 2011 | 3 | 22 | 2 | 14 | 56 | -9 | 29,42 | 10 | 3,9 | ISCJB |
| 2011 | 4 | 26 | 18 | 50 | 53 | -11 | 32,9 | 10 | 3,9 | ISC |
| 2011 | 10 | 15 | 21 | 59 | 52,8 | -8,4 | 26,4 | 10 | 4,1 | ISCJB |
| 2011 | 6 | 24 | 15 | 54 | 31,4 | -8,2 | 32,3 | 0 | 4,2 | IDC |
| 2011 | 8 | 23 | 3 | 18 | 24,4 | -1,3 | 26,1 | 10 | 4,4 | NEIC |
| 2011 | 3 | 15 | 3 | 25 | 17,5 | 1,7 | 31,2 | 10 | 4,5 | ISCJB |
| 2011 | 1 | 17 | 8 | 22 | 25,7 | 1,55 | 30,7 | 10 | 4,6 | BJI |
| 2011 | 4 | 3 | 4 | 37 | 55,2 | -4,36 | 29,37 | 0 | 4,7 | BJI |
| 2011 | 2 | 7 | 4 | 29 | 25 | -10 | 33,6 | 10 | 4,8 | BUL |
| 2011 | 9 | 20 | 2 | 21 | 38 | -5 | 33,3 | 8 | 4,9 | BJI |
| 2012 | 1 | 26 | 1 | 53 | 32 | -7,4 | 30,3 | 10 | 3 | ISC |
| 2012 | 2 | 29 | 5 | 11 | 32,6 | -13,45 | 24,21 | 10 | 3 | ISCJB |
| 2012 | 3 | 31 | 6 | 12 | 4,9 | -8,4 | 30,3 | 10 | 3 | ISCJB |
| 2012 | 9 | 6 | 22 | 12 | 35,7 | -5,6 | 29,8 | 10 | 3 | ISCJB |
| 2012 | 10 | 17 | 21 | 34 | 8,9 | -5,6 | 30,2 | 0 | 3 | IDC |
| 2012 | 12 | 11 | 3 | 28 | 41,7 | -3,4 | 29,7 | 10 | 3 | ISCJB |
| 2012 | 1 | 14 | 11 | 24 | 57,3 | -8,54 | 33 | 10 | 3,1 | ISCJB |
| 2012 | 8 | 21 | 3 | 54 | 53,9 | -1,4 | 26,8 | 10 | 3,3 | ISC |
| 2012 | 12 | 25 | 19 | 18 | 27,4 | -6,1 | 29,6 | 10 | 3,3 | ISCJB |
| 2012 | 2 | 2 | 2 | 54 | 1,5 | -1,3 | 28,4 | 10 | 3,4 | ISCJB |
| 2012 | 4 | 25 | 7 | 24 | 19,3 | -2,8 | 22,8 | 10 | 3,4 | ISC |
| 2012 | 5 | 12 | 8 | 26 | 4,61 | -4,2 | 28,9 | 10 | 3,4 | NEIC |
| 20 | 11 | 14 | 23 | 59 | 56 | -1,2 | 26, | 10 | 3, | ISC |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 12 | | | | | | | 77 | | 4 | JB |
| 2012 | 10 | 2 | 18 | 40 | 33,5 | 0,58 | 30,1 | 0 | 3,5 | IDC |
| 2012 | 6 | 14 | 18 | 40 | 6,42 | -9,2 | 28,3 | 0 | 3,6 | IDC |
| 2012 | 1 | 25 | 18 | 58 | 35,8 | -3 | 29,2 | 0 | 3,7 | IDC |
| 2012 | 6 | 6 | 15 | 38 | 27,1 | -1,1 | 27,1 | 10 | 3,7 | MOS |
| 2012 | 1 | 29 | 1 | 55 | 25,2 | -7,14 | 30,4 | 10 | 4 | ISCJB |
| 2012 | 11 | 11 | 15 | 40 | 29,9 | -0,76 | 28,19 | 0 | 4 | IDC |
| 2012 | 11 | 20 | 16 | 23 | 49,1 | -0,37 | 29,9 | 16,7 | 4,4 | NEIC |
| 2012 | 10 | 14 | 16 | 25 | 49 | -1,8 | 26,9 | 4 | 5 | BJI |
| 2012 | 12 | 24 | 14 | 35 | 29,6 | -3,9 | 28,2 | 10 | 5 | BJI |
| 2013 | 4 | 28 | 13 | 14 | 12,8 | -0,11 | 29,74 | 0 | 3 | IDC |
| 2013 | 5 | 17 | 4 | 41 | 48,2 | -2,91 | 28,74 | 0 | 3 | LQ |
| 2013 | 9 | 20 | 23 | 47 | 47,1 | -11,2 | 28,6 | 10 | 3 | LSZ |
| 2013 | 10 | 13 | 22 | 35 | 27,4 | -12,9 | 29,8 | 10 | 3 | LQ |
| 2013 | 12 | 2 | 18 | 54 | 1,7 | -1,1 | 26,8 | 0 | 3 | IDC |
| 2013 | 9 | 27 | 3 | 34 | 25,9 | -2,9 | 28,7 | 0 | 3,1 | IDC |
| 2013 | 3 | 18 | 15 | 59 | 24,8 | -0,8 | 26,7 | 0 | 3,2 | LQ |
| 2013 | 5 | 16 | 9 | 51 | 6 | -0,65 | 27,19 | 10 | 3,2 | ISC |
| 2013 | 7 | 5 | 13 | 42 | 21,2 | -0,19 | 29,8 | 10 | 3,2 | NEIC |
| 2013 | 8 | 5 | 18 | 3 | 3,22 | -2,1 | 20,6 | 10 | 3,3 | NEIC |
| 2013 | 3 | 16 | 17 | 12 | 34,7 | -3 | 28,8 | 0 | 3,4 | LQ |
| 2013 | 4 | 5 | 10 | 43 | 9,17 | -7,1 | 27,9 | 10 | 3,4 | LQ |
| 2013 | 9 | 10 | 10 | 35 | 8,5 | -11,7 | 23,2 | 10 | 3,5 | LSZ |
| 2013 | 9 | 18 | 1 | 12 | 22 | -4,1 | 29,3 | 0 | 3,6 | IDC |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | 7 | 11 | 10 | 44 | 47,1 | -3 | 28,4 | 0 | 3,7 | LQ |
| 2013 | 11 | 1 | 18 | 36 | 56 | -8,8 | 31,3 | 9 | 3,7 | NEIC |
| 2013 | 2 | 17 | 19 | 25 | 30,7 | -7,4 | 27,8 | 0 | 3,8 | IDC |
| 2013 | 2 | 27 | 9 | 16 | 44 | -5,3 | 29,71 | 10 | 3,8 | ISCJB |
| 2013 | 2 | 22 | 5 | 33 | 20,6 | -8,76 | 27,31 | 0 | 4 | IDC |
| 2013 | 3 | 10 | 3 | 0 | 15,2 | -4,4 | 29,2 | 10 | 4 | ISCJB |
| 2013 | 5 | 30 | 20 | 47 | 28,7 | -7,5 | 30,2 | 10 | 4 | LQ |
| 2013 | 8 | 26 | 22 | 53 | 38,3 | -4,8 | 28,6 | 10 | 4 | LSZ |
| 2013 | 8 | 27 | 5 | 35 | 7,5 | -12,1 | 30,2 | 10 | 4 | LSZ |
| 2013 | 11 | 7 | 13 | 39 | 27,7 | -8,6 | 29,1 | 13,7 | 4 | EAF |
| 2013 | 11 | 23 | 9 | 5 | 33,7 | -10,5 | 21,6 | 0 | 4 | LQ |
| 2013 | 4 | 20 | 0 | 30 | 25 | 1,5 | 30,8 | 10 | 4,5 | ISCJB |
| 2013 | 10 | 1 | 11 | 33 | 40 | -11,8 | 26,6 | 10 | 4,5 | LQ |
| 2013 | 6 | 8 | 3 | 18 | 25,4 | -8 | 32,1 | 0 | 5 | IDC |
| 2013 | 12 | 1 | 8 | 13 | 53 | -3,3 | 24,6 | 33 | 5 | NAO |
| 2013 | 11 | 30 | 19 | 19 | 54,7 | -5,3 | 24,5 | 33 | 5,1 | NAO |
| 2013 | 7 | 3 | 19 | 21 | 46 | 1,4 | 30,9 | 13 | 5,4 | NEIC |
| 2013 | 7 | 2 | 13 | 33 | 5 | 1,2 | 29,5 | 15 | 5,5 | AAE |
| 2014 | 1 | 20 | 20 | 10 | 0,53 | -2 | 27,6 | 0 | 3 | IDC |
| 2014 | 4 | 7 | 1 | 48 | 39,6 | -5,4 | 30,4 | 10 | 3 | BUL |
| 2014 | 4 | 23 | 10 | 17 | 34,1 | -4,6 | 24,6 | 10 | 3 | EAF |
| 2014 | 5 | 1 | 19 | 58 | 44,6 | -1,3 | 20,8 | 10 | 3 | EAF |
| 2014 | 5 | 13 | 12 | 25 | 33,5 | -7,4 | 31,8 | 10 | 3 | IDC |
| 20 | 7 | 25 | 16 | 15 | 30, | -6,1 | 24, | 80 | 3 | EA |

ISSN No:-2456-2165

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 14 | | | | | 3 | | 6 | | | F |
| 2014 | 8 | 17 | 5 | 20 | 55 | -2,8 | 28,5 | 0,1 | 3 | EAF |
| 2014 | 11 | 10 | 1 | 29 | 5 | -13,6 | 15,1 | 10 | 3 | BUL |
| 2014 | 9 | 24 | 19 | 38 | 11,5 | -8,4 | 29,2 | 10 | 3,3 | EAF |
| 2014 | 1 | 16 | 11 | 41 | 25,9 | -6,1 | 29,6 | 0 | 3,4 | IDC |
| 2014 | 4 | 10 | 11 | 58 | 32,8 | -8,9 | 23,2 | 70 | 3,4 | LQ |
| 2014 | 7 | 12 | 22 | 2 | 26,5 | -3,9 | 29,2 | 0 | 3,4 | IDC |
| 2014 | 11 | 20 | 23 | 56 | 0,6 | -0,1 | 29,5 | 0 | 3,4 | IDC |
| 2014 | 1 | 26 | 6 | 20 | 20,2 | 2,3 | 18,8 | 0 | 3,5 | LQ |
| 2014 | 3 | 1 | 0 | 7 | 24 | -6,2 | 29,3 | 10 | 3,5 | EAF |
| 2014 | 4 | 20 | 2 | 10 | 54,1 | 0,32 | 29,9 | 0 | 3,5 | IDC |
| 2014 | 5 | 3 | 10 | 37 | 6,6 | -4,5 | 29,3 | 0 | 3,5 | IDC |
| 2014 | 6 | 8 | 2 | 41 | 3,9 | -14,7 | 24,1 | 18,5 | 3,5 | BUL |
| 2014 | 8 | 13 | 10 | 35 | 43 | -8 | 31,6 | 0 | 3,5 | IDC |
| 2014 | 9 | 5 | 16 | 25 | 8,6 | -9,9 | 24,5 | 10 | 3,5 | EAF |
| 2014 | 9 | 21 | 10 | 18 | 24 | 0,7 | 30,1 | 0 | 3,5 | IDC |
| 2014 | 10 | 31 | 1 | 5 | 1 | 0,3 | 29,8 | 10 | 3,5 | NEIC |
| 2014 | 11 | 20 | 17 | 10 | 18 | -5,4 | 29,4 | 10 | 3,5 | NEIC |
| 2014 | 3 | 13 | 4 | 8 | 27,4 | -8,6 | 31,1 | 82 | 4 | LQ |
| 2014 | 10 | 21 | 16 | 17 | 53,7 | -13,1 | 21,6 | 10 | 4 | LQ |
| 2014 | 10 | 28 | 3 | 17 | 31,9 | -10,5 | 27,9 | 15 | 4 | LQ |
| 2014 | 10 | 30 | 17 | 13 | 47,8 | -12 | 30,6 | 9,4 | 4 | EAF |
| 2014 | 11 | 18 | 19 | 39 | 12,7 | -6,4 | 26,7 | 10 | 4 | EAF |
| 2014 | 1 | 31 | 3 | 18 | 0,4 | -9 | 27,1 | 15 | 4,2 | LQ |

| ear | Month | Day | Hour | Min | Sec | Lat. | Long | Deph | Ms. | Source |
|---|---|---|---|---|---|---|---|---|---|---|
| 2014 | 6 | 26 | 19 | 8 | 14,4 | -12,4 | 29,3 | 87,7 | 4,2 | BUL |
| 2014 | 12 | 7 | 11 | 16 | 51,7 | -7,3 | 30,4 | 10 | 4,5 | LQ |
| 2014 | 11 | 11 | 3 | 20 | 30,7 | -3,6 | 25,4 | 10 | 5 | BJI |
| 2014 | 12 | 19 | 23 | 7 | 10 | -7,4 | 28,4 | 0 | 5 | LQ |
| 2014 | 11 | 2 | 18 | 25 | 35 | -11 | 30 | 10 | 5,1 | BJI |
| 2014 | 12 | 20 | 1 | 45 | 33,6 | -7,8 | 27,5 | 15 | 5,2 | LQ |
| 2014 | 10 | 31 | 17 | 5 | 21 | -6 | 32 | 0 | 5,6 | EAF |
| 2015 | 11 | 24 | 17 | 47 | 36 | 1,4 | 31 | 0 | 3,2 | IDC |
| 2015 | 5 | 18 | 19 | 55 | 33,2 | -8,9 | 31,1 | 0 | 3,3 | IDC |
| 2015 | 7 | 13 | 20 | 49 | 26,7 | -4,8 | 27,4 | 0 | 3,4 | IDC |
| 2015 | 11 | 4 | 2 | 1 | 30,4 | -3,4 | 28,2 | 0 | 3,4 | IDC |
| 2015 | 2 | 12 | 17 | 18 | 8,9 | -6,5 | 27,5 | 0 | 3,5 | IDC |
| 2015 | 5 | 21 | 13 | 19 | 9,2 | -3,2 | 29,8 | 0 | 3,5 | IDC |
| 2015 | 9 | 12 | 12 | 32 | 0,8 | 0,41 | 29,57 | 0 | 3,5 | IDC |
| 2015 | 9 | 13 | 4 | 40 | 41,2 | 0,04 | 2956 | 0 | 3,5 | LQ |
| 2015 | 3 | 21 | 8 | 14 | 33,7 | -3,2 | 28,7 | 0 | 3,6 | IDC |
| 2015 | 6 | 29 | 21 | 0 | 39,6 | -2,7 | 27,6 | 0 | 3,6 | IDC |
| 2015 | 11 | 8 | 8 | 6 | 36,8 | -0,71 | 29,3 | 0 | 3,7 | IDC |
| 2015 | 1 | 3 | 9 | 35 | 30,1 | -2,1 | 28,5 | 0 | 3,8 | IDC |
| 2015 | 7 | 17 | 18 | 32 | 52,4 | 0,9 | 30 | 0 | 3,8 | IDC |
| 2015 | 11 | 9 | 0 | 42 | 12,9 | -4,8 | 29,6 | 0 | 3,8 | IDC |
| 2015 | 11 | 25 | 9 | 38 | 13 | -0,07 | 29,7 | 10 | 4 | NEIC |
| 2015 | 2 | 24 | 23 | 43 | 15,5 | -10,3 | 23,7 | 10 | 5 | MOS |
| 20 | 8 | 7 | 1 | 24 | 58 | -2,1 | 28, | 10 | 5, | MO |

ISSN No:-2456-2165

| 15 | | | | | | | 7 | | 5 | S |
|---|---|---|---|---|---|---|---|---|---|---|

**Annex 2 : Aeromagnetic data**

| d | X | Y | Valeur C |
|---|---|---|---|
| 1 | 977326 | 8820294 | 2030 |
| 2 | 977438 | 8820253 | 2030 |
| 3 | 977864 | 8820373 | 2030 |
| 4 | 978312 | 8821374 | 2030 |
| 5 | 978932 | 8821150 | 2030 |
| 6 | 979724 | 8822285 | 2030 |
| 7 | 979822 | 8822427 | 2030 |
| 8 | 980180 | 8822883 | 2030 |
| 9 | 977857 | 8821486 | 2020 |
| 10 | 978312 | 8822203 | 2020 |
| 11 | 978865 | 8822427 | 2020 |
| 12 | 975959 | 8821658 | 2030 |
| 13 | 976519 | 8821927 | 2030 |
| 14 | 976542 | 8821747 | 2030 |
| 15 | 975869 | 8819655 | 2030 |
| 16 | 976549 | 8819454 | 2040 |
| 17 | 976549 | 8819058 | 2040 |
| 18 | 977416 | 8819678 | 2040 |
| 19 | 977319 | 8819648 | 2040 |
| 20 | 976833 | 8819028 | 2040 |
| 21 | 976833 | 8818565 | 2040 |
| 22 | 977296 | 8818946 | 2040 |
| 23 | 977401 | 8819073 | 2040 |
| 24 | 975742 | 8816622 | 2045 |

| d | X | Y | Valeur C |
|---|---|---|---|
| 25 | 976504 | 8817377 | 2045 |
| 26 | 976542 | 8817952 | 2045 |
| 27 | 976833 | 8818236 | 2045 |
| 28 | 977393 | 8818766 | 2045 |
| 29 | 977819 | 8819155 | 2045 |
| 30 | 978320 | 8819641 | 2045 |
| 31 | 978918 | 8820373 | 2045 |
| 32 | 979724 | 8821351 | 2045 |
| 33 | 979822 | 8821478 | 2045 |
| 34 | 980135 | 8821792 | 2045 |
| 35 | 980344 | 8822024 | 2045 |
| 36 | 980755 | 8822315 | 2045 |
| 37 | 981383 | 8822592 | 2045 |
| 38 | 981966 | 8822831 | 2045 |
| 39 | 975720 | 8816114 | 2050 |
| 40 | 976489 | 8816861 | 2050 |
| 41 | 976803 | 8817683 | 2050 |
| 42 | 977371 | 8818378 | 2050 |
| 43 | 977819 | 8818774 | 2050 |
| 44 | 978312 | 8819200 | 2050 |
| 45 | 978910 | 8819581 | 2050 |
| 46 | 979724 | 8820642 | 2050 |
| 47 | 979807 | 8820761 | 2050 |
| 48 | 980135 | 8821187 | 2050 |
| 49 | 980322 | 8821396 | 2050 |
| 50 | 980755 | 8821717 | 2050 |
| 51 | 981383 | 8822076 | 2050 |
| 52 | 981936 | 8822494 | 2050 |
| 53 | 975705 | 8815681 | 2060 |
| 54 | 976475 | 8816690 | 2060 |
| 55 | 976788 | 8817138 | 2060 |
| 56 | 977289 | 8817900 | 2060 |
| 57 | 977379 | 8818004 | 2060 |
| 58 | 978305 | 8818826 | 2060 |
| 59 | 978305 | 8818834 | 2060 |
| 60 | 978903 | 8819260 | 2060 |
| 61 | 979687 | 8820089 | 2060 |
| 62 | 979739 | 8820164 | 2060 |
| 63 | 980105 | 8820664 | 2060 |
| 64 | 980307 | 8820948 | 2060 |
| 65 | 980748 | 8821434 | 2060 |
| 66 | 981151 | 8821695 | 2060 |
| 67 | 981383 | 8821844 | 2060 |
| 68 | 981936 | 8822360 | 2060 |
| 69 | 975683 | 8815419 | 2060 |
| 70 | 976460 | 8816428 | 2060 |

ISSN No:-2456-2165

| d | X | Y | Valeur C |
|---|---|---|---|
| 71 | 976788 | 8816682 | 2060 |
| 72 | 977326 | 8816884 | 2060 |
| 73 | 977558 | 8817242 | 2060 |
| 74 | 977789 | 8817698 | 2060 |
| 75 | 978036 | 8817227 | 2060 |
| 76 | 978320 | 8817616 | 2060 |
| 77 | 977767 | 8817026 | 2060 |
| 78 | 977774 | 8816592 | 2060 |
| 79 | 977774 | 8816585 | 2060 |
| 80 | 976773 | 8816398 | 2060 |
| 81 | 976773 | 8816137 | 2060 |
| 82 | 976415 | 8815285 | 2060 |
| 83 | 976781 | 8815060 | 2060 |
| 84 | 976773 | 8815494 | 2060 |
| 85 | 976788 | 8815756 | 2060 |
| 86 | 977281 | 8815494 | 2060 |
| 87 | 977774 | 8816174 | 2060 |
| 88 | 978297 | 8816622 | 2060 |
| 89 | 978664 | 8817205 | 2060 |
| 90 | 978888 | 8817489 | 2060 |
| 91 | 978903 | 8818109 | 2060 |
| 92 | 978888 | 8818341 | 2060 |
| 93 | 979590 | 8818520 | 2060 |
| 94 | 979582 | 8818595 | 2060 |
| 95 | 979605 | 8818744 | 2060 |
| 96 | 979635 | 8819103 | 2060 |
| 97 | 980083 | 8819588 | 2060 |
| 98 | 980292 | 8819678 | 2060 |
| 99 | 980733 | 8819723 | 2060 |
| 100 | 981361 | 8819588 | 2060 |
| 101 | 981861 | 8819880 | 2060 |
| 102 | 982317 | 8820066 | 2060 |
| 103 | 982855 | 8821673 | 2060 |
| 104 | 982870 | 8821904 | 2060 |
| 105 | 982937 | 8822233 | 2060 |
| 106 | 977812 | 8818169 | 2070 |
| 107 | 977804 | 8817922 | 2070 |
| 108 | 978312 | 8818049 | 2070 |
| 109 | 978327 | 8818176 | 2070 |
| 110 | 978312 | 8818385 | 2070 |
| 111 | 978305 | 8818662 | 2070 |
| 112 | 978903 | 8818893 | 2070 |
| 113 | 978895 | 8818550 | 2070 |
| 114 | 980752 | 8820842 | 2020 |
| 115 | 980752 | 8820771 | 2120 |
| 116 | 980748 | 8820729 | 2110 |
| 117 | 980745 | 8820948 | 2110 |

| d | X | Y | Valeur C |
|---|---|---|---|
| 118 | 980735 | 8821010 | 2100 |
| 119 | 981386 | 8821262 | 2100 |
| 120 | 981386 | 8820954 | 2100 |
| 121 | 980746 | 8820571 | 2100 |
| 122 | 980740 | 8820385 | 2100 |
| 123 | 980751 | 8821141 | 2100 |
| 124 | 981381 | 8821425 | 2100 |
| 125 | 981758 | 8821699 | 2100 |
| 126 | 981944 | 8821846 | 2100 |
| 127 | 982355 | 8821874 | 2100 |
| 128 | 982387 | 8821584 | 2100 |
| 129 | 982393 | 8821589 | 2100 |
| 130 | 982393 | 8821359 | 2100 |
| 131 | 981933 | 8821277 | 2100 |
| 132 | 981386 | 8820637 | 2100 |
| 133 | 980729 | 8820265 | 2100 |
| 134 | 980292 | 8820030 | 2100 |
| 135 | 980117 | 8820090 | 2100 |
| 136 | 980314 | 8820544 | 2100 |
| 137 | 980735 | 8821146 | 2100 |
| 138 | 981392 | 8821562 | 2100 |
| 139 | 981944 | 8822021 | 2100 |
| 140 | 981375 | 8820260 | 2100 |
| 141 | 981889 | 8820342 | 2100 |
| 142 | 982360 | 8820861 | 2100 |
| 143 | 982634 | 8821677 | 2100 |
| 144 | 982661 | 8821885 | 2100 |
| 145 | 982935 | 8822695 | 2100 |
| 146 | 982924 | 8822514 | 2100 |
| 147 | 982787 | 8821896 | 2100 |
| 148 | 982749 | 8821682 | 2100 |
| 149 | 982344 | 8820418 | 2100 |
| 150 | 981879 | 8820068 | 2100 |
| 151 | 981359 | 8819762 | 2100 |
| 152 | 980735 | 8820095 | 2100 |
| 153 | 980281 | 8819833 | 2100 |
| 154 | 979684 | 8819630 | 2100 |
| 155 | 975701 | 8813994 | 2110 |
| 156 | 976374 | 8814550 | 2110 |
| 157 | 976779 | 8881430 | 2110 |
| 158 | 976773 | 8814665 | 2110 |
| 159 | 977277 | 8815152 | 2110 |
| 160 | 977786 | 8815721 | 2110 |
| 161 | 978305 | 8816241 | 2110 |
| 162 | 978891 | 8817072 | 2110 |
| 163 | 979022 | 8817204 | 2110 |
| 164 | 979531 | 8817362 | 2110 |

ISSN No:-2456-2165

| d | X | Y | Valeur C |
|---|---|---|---|
| 165 | 979597 | 8817909 | 2110 |
| 166 | 979542 | 8818074 | 2110 |
| 167 | 979608 | 8818172 | 2110 |
| 168 | 980073 | 8818620 | 2110 |
| 169 | 980292 | 8818787 | 2100 |
| 170 | 980724 | 8818604 | 2100 |
| 171 | 981359 | 8819332 | 2110 |
| 172 | 981868 | 8819655 | 2110 |
| 173 | 982283 | 8819256 | 2110 |
| 174 | 982880 | 8819091 | 2110 |
| 175 | 983372 | 8818506 | 2110 |
| 176 | 983788 | 8817619 | 2110 |
| 177 | 984237 | 8818243 | 2100 |
| 178 | 984313 | 8819332 | 2110 |
| 179 | 984319 | 8819732 | 2110 |
| 180 | 984784 | 8818840 | 2110 |
| 181 | 982962 | 8820240 | 2070 |
| 182 | 982956 | 8820142 | 2060 |
| 183 | 982300 | 8819703 | 2060 |
| 184 | 982300 | 8819617 | 2070 |
| 185 | 983416 | 8819606 | 2070 |
| 186 | 983805 | 8819518 | 2070 |
| 187 | 983816 | 8819600 | 2070 |
| 188 | 983799 | 8819693 | 2070 |
| 189 | 983805 | 8820032 | 2070 |
| 190 | 983805 | 8820317 | 2070 |
| 191 | 983810 | 8820996 | 2070 |
| 192 | 983443 | 8820629 | 2070 |
| 193 | 983432 | 8820191 | 2070 |
| 194 | 983432 | 8819972 | 2070 |
| 195 | 983279 | 8821920 | 2050 |
| 196 | 983242 | 8821678 | 2050 |
| 197 | 982952 | 8820948 | 2050 |
| 198 | 983453 | 8821075 | 2050 |
| 199 | 983465 | 8821678 | 2050 |
| 200 | 983465 | 8821775 | 2050 |
| 201 | 983809 | 8821594 | 2050 |
| 202 | 984371 | 8820748 | 2050 |
| 203 | 984884 | 8821050 | 2050 |
| 204 | 985343 | 8820459 | 2050 |
| 205 | 985748 | 8819963 | 2050 |
| 206 | 986400 | 8820646 | 2050 |
| 207 | 986895 | 8820930 | 2050 |
| 208 | 987372 | 8821624 | 2050 |
| 209 | 987408 | 8821745 | 2050 |
| 210 | 987493 | 8821956 | 2050 |
| 211 | 984238 | 8821666 | 2040 |

| d | X | Y | Valeur C |
|---|---|---|---|
| 212 | 984383 | 8821358 | 2040 |
| 213 | 984715 | 8821721 | 2040 |
| 214 | 984800 | 8821968 | 2040 |
| 215 | 984407 | 8821968 | 2040 |
| 216 | 983815 | 8822174 | 2040 |
| 217 | 983827 | 8822252 | 2040 |
| 218 | 986436 | 8822300 | 2040 |
| 219 | 986919 | 8822463 | 2040 |
| 220 | 987438 | 8822367 | 2040 |
| 221 | 988930 | 8822149 | 2050 |
| 222 | 988755 | 8821902 | 2050 |
| 223 | 988537 | 8821600 | 2050 |
| 224 | 988387 | 8821461 | 2050 |
| 225 | 987879 | 8820845 | 2050 |
| 226 | 988374 | 8820773 | 2050 |
| 227 | 988924 | 8821171 | 2050 |
| 228 | 989437 | 8821582 | 2050 |
| 229 | 989878 | 8821854 | 2050 |
| 230 | 990464 | 8822264 | 2040 |
| 231 | 990983 | 8822687 | 2040 |
| 232 | 988405 | 8817578 | 2070 |
| 233 | 987807 | 8817584 | 2070 |
| 234 | 987348 | 8817614 | 2070 |
| 235 | 987233 | 8817657 | 2070 |
| 236 | 986853 | 8817832 | 2070 |
| 237 | 986853 | 8818695 | 2070 |
| 238 | 987281 | 8819082 | 2070 |
| 239 | 987384 | 8819142 | 2070 |
| 240 | 987855 | 8819342 | 2070 |
| 241 | 988405 | 8819535 | 2070 |
| 242 | 988888 | 8819970 | 2070 |
| 243 | 989425 | 8820646 | 2070 |
| 244 | 989908 | 8820887 | 2070 |
| 245 | 990428 | 8821032 | 2070 |
| 246 | 990947 | 8821431 | 2070 |
| 247 | 991170 | 8821558 | 2070 |
| 248 | 991744 | 8821757 | 2070 |
| 249 | 991925 | 8821835 | 2070 |
| 250 | 992958 | 8822288 | 2070 |
| 251 | 993133 | 8822373 | 2070 |
| 252 | 993483 | 8822530 | 2070 |
| 253 | 996647 | 8821666 | 2080 |
| 254 | 996466 | 8821775 | 2080 |
| 255 | 995989 | 8822131 | 2080 |
| 256 | 995530 | 8822343 | 2080 |
| 257 | 994944 | 8822264 | 2080 |
| 258 | 994479 | 8822107 | 2080 |

ISSN No:-2456-2165

| d | X | Y | Valeur C |
|---|---|---|---|
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| 260 | 993459 | 8821811 | 2080 |
| 261 | 993187 | 8821690 | 2080 |
| 262 | 992897 | 8821594 | 2080 |
| 263 | 991901 | 8821135 | 2080 |
| 264 | 991786 | 8821105 | 2080 |
| 265 | 990923 | 8820755 | 2080 |
| 266 | 990434 | 8820513 | 2080 |
| 267 | 990428 | 8819970 | 2080 |
| 268 | 990892 | 8820066 | 2080 |
| 269 | 991847 | 8819782 | 2080 |
| 270 | 992758 | 8819462 | 2080 |
| 271 | 993344 | 8819426 | 2080 |
| 272 | 993417 | 8819444 | 2080 |
| 273 | 993918 | 8819529 | 2080 |
| 274 | 994449 | 8819662 | 2080 |
| 275 | 994896 | 8819788 | 2080 |
| 276 | 995427 | 8819891 | 2080 |
| 277 | 995977 | 8819837 | 2080 |
| 278 | 996478 | 8820054 | 2080 |
| 279 | 996478 | 8820296 | 2080 |
| 280 | 995983 | 8820048 | 2080 |
| 281 | 995446 | 8820193 | 2080 |
| 282 | 994896 | 8820114 | 2080 |
| 283 | 994467 | 8820428 | 2080 |
| 284 | 994926 | 8820791 | 2080 |
| 285 | 995983 | 8820682 | 2080 |
| 286 | 996484 | 8820930 | 2080 |
| 287 | 996484 | 8820924 | 2080 |
| 288 | 989425 | 8816322 | 2070 |
| 289 | 989787 | 8816528 | 2070 |
| 290 | 989848 | 8816606 | 2070 |
| 291 | 990470 | 8818079 | 2070 |
| 292 | 990814 | 8818194 | 2070 |
| 293 | 991822 | 8818206 | 2070 |
| 294 | 992734 | 8818478 | 2070 |
| 295 | 993332 | 8818738 | 2070 |
| 296 | 993392 | 8818774 | 2070 |
| 297 | 993906 | 8819015 | 2070 |
| 298 | 994455 | 8819203 | 2070 |
| 299 | 994902 | 8819354 | 2070 |
| 300 | 995433 | 8819523 | 2070 |
| 301 | 995977 | 8819568 | 2070 |
| 302 | 996478 | 8819779 | 2070 |
| 303 | 989431 | 8814785 | 2040 |
| 304 | 989443 | 8814333 | 2040 |
| 305 | 989353 | 8814369 | 2040 |

| d | X | Y | Valeur C |
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| 307 | 990766 | 8814628 | 2040 |
| 308 | 991460 | 8814912 | 2040 |
| 309 | 991810 | 8814707 | 2040 |
| 310 | 992686 | 8814429 | 2040 |
| 311 | 993121 | 8814592 | 2040 |
| 312 | 993338 | 8814719 | 2040 |
| 313 | 993350 | 8815335 | 2040 |
| 314 | 993157 | 8815474 | 2040 |
| 315 | 992686 | 8815619 | 2040 |
| 316 | 991847 | 8815438 | 2040 |
| 317 | 991521 | 8815401 | 2040 |
| 318 | 990754 | 8815293 | 2040 |
| 319 | 990409 | 8815190 | 2040 |
| 320 | 989812 | 8815250 | 2040 |
| 321 | 994890 | 8816947 | 2040 |
| 322 | 994884 | 8816953 | 2040 |
| 323 | 994630 | 8816368 | 2040 |
| 324 | 994431 | 8814840 | 2040 |
| 325 | 994878 | 8814145 | 2040 |
| 326 | 994262 | 8813626 | 2040 |
| 327 | 994860 | 8813789 | 2040 |
| 328 | 995397 | 8816066 | 2040 |
| 329 | 995874 | 8815589 | 2040 |
| 330 | 996327 | 8816307 | 2040 |
| 331 | 996430 | 8816452 | 2040 |
| 332 | 996421 | 8815311 | 2040 |
| 333 | 995862 | 8815383 | 2040 |
| 334 | 995862 | 8814067 | 2040 |
| 335 | 996406 | 8815105 | 2040 |
| 336 | 993833 | 8813173 | 2050 |
| 337 | 993809 | 8812231 | 2050 |
| 338 | 995446 | 8812690 | 2050 |
| 339 | 995458 | 8812098 | 2050 |
| 340 | 996388 | 8813391 | 2050 |
| 341 | 996369 | 8812992 | 2050 |
| 342 | 997372 | 8811887 | 2050 |
| 343 | 996889 | 8811543 | 2050 |
| 344 | 996382 | 8811144 | 2050 |
| 345 | 995844 | 8810619 | 2050 |
| 346 | 995385 | 8810190 | 2050 |
| 347 | 994769 | 8809484 | 2050 |
| 348 | 994310 | 8808644 | 2050 |
| 349 | 994280 | 8808004 | 2050 |
| 350 | 994401 | 8811014 | 2050 |
| 351 | 994395 | 8811866 | 2050 |
| 352 | 993827 | 8811956 | 2050 |

ISSN No:-2456-2165

| d | X | Y | Valeur C |
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| 354 | 993507 | 8811353 | 2050 |
| 355 | 993314 | 8810719 | 2050 |
| 356 | 992946 | 8811292 | 2050 |
| 357 | 992559 | 8811123 | 2050 |
| 358 | 991738 | 8810332 | 2050 |
| 359 | 991406 | 8810211 | 2050 |
| 360 | 990669 | 8810537 | 2050 |
| 361 | 990204 | 8810682 | 2050 |
| 362 | 990198 | 8810453 | 2050 |
| 363 | 990645 | 8810193 | 2050 |
| 364 | 991406 | 8809764 | 2050 |
| 365 | 991720 | 8809710 | 2050 |
| 366 | 992469 | 8809970 | 2050 |
| 367 | 992354 | 8807089 | 2050 |
| 368 | 992783 | 8805749 | 2050 |
| 369 | 992752 | 8805287 | 2050 |
| 370 | 992710 | 8804275 | 2050 |
| 371 | 993447 | 8803542 | 2050 |
| 372 | 993888 | 8803373 | 2050 |
| 373 | 994365 | 8803318 | 2050 |
| 374 | 994685 | 8803330 | 2050 |
| 375 | 995162 | 8803391 | 2050 |
| 376 | 995693 | 8803475 | 2050 |
| 377 | 996225 | 8803391 | 2050 |
| 378 | 996641 | 8803234 | 2050 |
| 379 | 996659 | 8803626 | 2050 |
| 380 | 996671 | 8803989 | 2050 |
| 381 | 997118 | 8804206 | 2050 |
| 382 | 997209 | 8804206 | 2050 |
| 383 | 997432 | 8804254 | 2050 |
| 384 | 997686 | 8804315 | 2050 |
| 385 | 998296 | 8804526 | 2050 |
| 386 | 998827 | 8804695 | 2050 |
| 387 | 999208 | 8804786 | 2050 |
| 388 | 999310 | 8804816 | 2050 |
| 389 | 999383 | 8804828 | 2050 |
| 390 | 999425 | 8804846 | 2050 |
| 391 | 999522 | 8804870 | 2050 |
| 392 | 999781 | 8804912 | 2050 |
| 393 | 1000566 | 8805136 | 2050 |
| 394 | 1000880 | 8805293 | 2050 |
| 395 | 1001400 | 8806114 | 2050 |
| 396 | 1001249 | 8806543 | 2050 |
| 397 | 1000820 | 8807062 | 2050 |
| 398 | 1000608 | 8807171 | 2050 |
| 399 | 1000270 | 8807304 | 2050 |

| d | X | Y | Valeur C |
|---|---|---|---|
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| 401 | 999485 | 8807373 | 2050 |
| 402 | 999491 | 8807379 | 2050 |
| 403 | 999431 | 8807373 | 2050 |
| 404 | 999371 | 8807367 | 2050 |
| 405 | 999244 | 8807337 | 2050 |
| 406 | 998851 | 8807240 | 2050 |
| 407 | 998410 | 8807144 | 2050 |
| 408 | 997782 | 8807083 | 2050 |
| 409 | 997595 | 8807114 | 2050 |
| 410 | 997281 | 8807174 | 2050 |
| 411 | 996828 | 8807234 | 2050 |
| 412 | 996351 | 8807047 | 2050 |
| 413 | 995741 | 8806691 | 2050 |
| 414 | 995264 | 8806938 | 2050 |
| 415 | 995289 | 8807959 | 2050 |
| 416 | 995820 | 8808659 | 2050 |
| 417 | 996388 | 8808515 | 2050 |
| 418 | 996853 | 8808907 | 2050 |
| 419 | 997336 | 8809583 | 2050 |
| 420 | 997734 | 8809964 | 2050 |
| 421 | 997819 | 8810012 | 2050 |
| 422 | 998465 | 8810356 | 2050 |
| 423 | 998833 | 8810495 | 2050 |
| 424 | 999298 | 8810592 | 2050 |
| 425 | 999817 | 8810712 | 2050 |
| 426 | 1000494 | 8810966 | 2050 |
| 427 | 1000838 | 8811105 | 2050 |
| 428 | 1001412 | 8811401 | 2050 |
| 429 | 1001919 | 8811594 | 2050 |
| 430 | 1002390 | 8811739 | 2050 |
| 431 | 1002879 | 8811872 | 2050 |
| 432 | 1003501 | 8812083 | 2050 |
| 433 | 975995 | 8800350 | 2050 |
| 434 | 976448 | 8801631 | 2050 |
| 435 | 976473 | 8801739 | 2050 |
| 436 | 976780 | 8802573 | 2050 |
| 437 | 977082 | 8803370 | 2050 |
| 438 | 977185 | 8803605 | 2050 |
| 439 | 977674 | 8804481 | 2050 |
| 440 | 978187 | 8805302 | 2050 |
| 441 | 978677 | 8805833 | 2050 |
| 442 | 979184 | 8806341 | 2050 |
| 443 | 979498 | 8806643 | 2050 |
| 444 | 979782 | 8806902 | 2050 |
| 445 | 980144 | 8807210 | 2050 |
| 446 | 980464 | 8807434 | 2050 |

ISSN No:-2456-2165

| d | X | Y | Valeur C |
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| 448 | 981648 | 8808225 | 2050 |
| 449 | 982161 | 8808545 | 2050 |
| 450 | 982656 | 8808871 | 2050 |
| 451 | 983212 | 8809173 | 2050 |
| 452 | 983664 | 8809408 | 2050 |
| 453 | 984232 | 8809680 | 2050 |
| 454 | 984745 | 8809758 | 2050 |
| 455 | 985228 | 8810097 | 2050 |
| 456 | 985687 | 8810332 | 2050 |
| 457 | 985766 | 8810356 | 2050 |
| 458 | 986013 | 8810483 | 2050 |
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| 460 | 987070 | 8810803 | 2050 |
| 461 | 987233 | 8810803 | 2050 |
| 462 | 987626 | 8810725 | 2050 |
| 463 | 988217 | 8810785 | 2050 |
| 464 | 988737 | 8811014 | 2050 |
| 465 | 989341 | 8811123 | 2050 |
| 466 | 989751 | 8811099 | 2050 |
| 467 | 990240 | 8811081 | 2050 |
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| 470 | 991351 | 8811975 | 2050 |
| 471 | 991351 | 8812385 | 2050 |
| 472 | 991744 | 8812621 | 2050 |
| 473 | 986816 | 8811975 | 2050 |
| 474 | 989401 | 8813285 | 2050 |
| 475 | 989425 | 8813019 | 2050 |
| 476 | 989866 | 8813394 | 2050 |
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| 484 | 991760 | 8812734 | 2060 |
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| d | X | Y | Valeur C |
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| 495 | 987239 | 8817782 | 2070 |
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| 497 | 976646 | 8798437 | 2080 |
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| 502 | 978107 | 8801473 | 2080 |
| 503 | 978546 | 8802181 | 2080 |
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| 510 | 981627 | 8805971 | 2080 |
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| 514 | 983628 | 8807522 | 2080 |
| 515 | 984168 | 8807848 | 2080 |
| 516 | 984708 | 8808186 | 2080 |
| 517 | 985326 | 8808568 | 2080 |
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| 521 | 987114 | 8809546 | 2080 |
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| 540 | 988088 | 8804682 | 2080 |

ISSN No:-2456-2165

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| 557 | 996628 | 8802487 | 2080 |
| 558 | 997199 | 8802597 | 2080 |
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| 561 | 998214 | 8802892 | 2080 |
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| 572 | 1003858 | 8805521 | 2080 |
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ISSN No:-2456-2165

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| 667 | 987084 | 8798567 | 2080 |
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ISSN No:-2456-2165

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| 758 | 985308 | 8800634 | 2080 |
| 759 | 985566 | 8800692 | 2080 |
| 760 | 986165 | 8800773 | 2080 |
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ISSN No:-2456-2165

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ISSN No:-2456-2165

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ISSN No:-2456-2165

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ISSN No:-2456-2165

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| 1385 | 1000566 | 8799221 | 2050 |
| 1386 | 1000873 | 8799121 | 2050 |

ISSN No:-2456-2165

| d | X | Y | Valeur C |
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| 1388 | 1001703 | 8799444 | 2050 |
| 1389 | 1002223 | 8800119 | 2050 |
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| 1410 | 998195 | 8797477 | 2050 |
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| 1417 | 994997 | 8796558 | 2050 |
| 1418 | 994618 | 8796299 | 2040 |
| 1419 | 995005 | 8796484 | 2040 |
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| 1443 | 994984 | 8796886 | 2080 |
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| 1450 | 995509 | 8797024 | 2100 |
| 1451 | 995496 | 8796512 | 2100 |
| 1452 | 995506 | 8796586 | 2110 |
| 1453 | 995509 | 8796632 | 2120 |
| 1454 | 995506 | 8796783 | 2130 |
| 1455 | 995509 | 8796857 | 2120 |
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ISSN No:-2456-2165

| d | X | Y | Valeur C |
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| 1518 | 988025 | 8796594 | 2000 |
| 1519 | 988875 | 8796630 | 2010 |
| 1520 | 988918 | 8797039 | 2010 |
| 1521 | 988488 | 8796952 | 1990 |
| 1522 | 988037 | 8796934 | 1990 |
| 1523 | 987792 | 8796893 | 1990 |
| 1524 | 987456 | 8796832 | 1990 |
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| d | X | Y | Valeur C |
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| 1529 | 987787 | 8796696 | 1990 |
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ISSN No:-2456-2165

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| 1606 | 1016020 | 8799478 | 2020 |
| 1607 | 1015480 | 8799388 | 2020 |
| 1608 | 1015170 | 8799478 | 2020 |
| 1609 | 1014541 | 8799370 | 2020 |
| 1610 | 1013944 | 8799159 | 2020 |
| 1611 | 1013535 | 8799087 | 2020 |
| 1612 | 1010385 | 8799514 | 2020 |
| 1613 | 1012627 | 8798589 | 2020 |
| 1614 | 1011976 | 8798234 | 2020 |
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| 1636 | 1016446 | 8798521 | 2010 |
| 1637 | 1017071 | 8798535 | 2010 |
| 1638 | 1017534 | 8798544 | 2010 |
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| 1640 | 1018023 | 8799833 | 2010 |
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ISSN No:-2456-2165

| d | X | Y | Valeur C |
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| 1714 | 1010252 | 8808065 | 2070 |
| 1715 | 1009876 | 8808078 | 2070 |

| d | X | Y | Valeur C |
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| 1740 | 1012847 | 8809549 | 2080 |
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ISSN No:-2456-2165

| d | X | Y | Valeur C |
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| 1846 | 1011253 | 8807556 | 2040 |
| 1847 | 1010755 | 8807538 | 2040 |
| 1848 | 1010226 | 8807479 | 2040 |
| 1849 | 1009864 | 8807407 | 2040 |
| 1850 | 1009425 | 8807300 | 2040 |
| 1851 | 1008784 | 8806915 | 2040 |
| 1852 | 1009389 | 8806434 | 2040 |
| 1853 | 1009823 | 8806315 | 2040 |
| 1854 | 1010214 | 8806202 | 2040 |
| 1855 | 1010743 | 8805798 | 2040 |
| 1856 | 1011230 | 8805810 | 2040 |

| d | X | Y | Valeur C |
|---|---|---|---|
| 1857 | 1011610 | 8805949 | 2040 |
| 1858 | 1012298 | 8806071 | 2040 |
| 1859 | 1012779 | 8805733 | 2040 |
| 1860 | 1013242 | 8805769 | 2040 |
| 1861 | 1013604 | 8805870 | 2040 |
| 1862 | 1014198 | 8806166 | 2040 |
| 1863 | 1014655 | 8806119 | 2040 |
| 1864 | 1015297 | 8806071 | 2040 |
| 1865 | 1015706 | 8806083 | 2040 |
| 1866 | 1016276 | 8806143 | 2040 |
| 1867 | 1016858 | 8806214 | 2040 |
| 1868 | 1017214 | 8806261 | 2040 |
| 1869 | 1017666 | 8806404 | 2040 |
| 1870 | 1018135 | 8806808 | 2040 |
| 1871 | 1018241 | 8807775 | 2040 |
| 1872 | 1017648 | 8807734 | 2040 |
| 1873 | 1017238 | 8807722 | 2040 |
| 1874 | 1016929 | 8807692 | 2040 |
| 1875 | 1016336 | 8807651 | 2040 |
| 1876 | 1015760 | 8807615 | 2040 |
| 1877 | 1015297 | 8807615 | 2040 |
| 1878 | 1014709 | 8807609 | 2040 |
| 1879 | 1014264 | 8807597 | 2040 |
| 1880 | 1013676 | 8807562 | 2040 |
| 1881 | 1011247 | 8807342 | 2030 |
| 1882 | 1011241 | 8807336 | 2030 |
| 1883 | 1010755 | 8807271 | 2030 |
| 1884 | 1010743 | 8806647 | 2030 |
| 1885 | 1011230 | 8806618 | 2030 |
| 1886 | 1011616 | 8806730 | 2030 |
| 1887 | 1012346 | 8806831 | 2030 |
| 1888 | 1012779 | 8806511 | 2030 |
| 1889 | 1013266 | 8806588 | 2030 |
| 1890 | 1013640 | 8806730 | 2030 |
| 1891 | 1013676 | 8807324 | 2030 |
| 1892 | 1013314 | 8807336 | 2030 |
| 1893 | 1012839 | 8807336 | 2030 |
| 1894 | 1012364 | 8807271 | 2030 |
| 1895 | 1011206 | 8804326 | 2040 |
| 1896 | 1011598 | 8804071 | 2040 |
| 1897 | 1011604 | 8804813 | 2040 |
| 1898 | 1012269 | 8805104 | 2040 |
| 1899 | 1012821 | 8804807 | 2040 |
| 1900 | 1013219 | 8804777 | 2040 |
| 1901 | 1013569 | 8805371 | 2040 |
| 1902 | 1014186 | 8805721 | 2040 |
| 1903 | 1014180 | 8805383 | 2040 |

| d | X | Y | Valeur C |
|---|---|---|---|
| 1904 | 1014649 | 8805389 | 2040 |
| 1905 | 1015314 | 8805448 | 2040 |
| 1906 | 1015682 | 8805442 | 2040 |
| 1907 | 1016235 | 8805466 | 2040 |
| 1908 | 1016805 | 8805638 | 2040 |
| 1909 | 1017202 | 8805561 | 2040 |
| 1910 | 1017196 | 8804427 | 2040 |
| 1911 | 1017677 | 8804914 | 2040 |
| 1912 | 1017666 | 8804100 | 2040 |
| 1913 | 1013207 | 8804581 | 2050 |
| 1914 | 1012803 | 8804029 | 2050 |
| 1915 | 1013159 | 8803661 | 2050 |
| 1916 | 1013622 | 8804035 | 2050 |
| 1917 | 1013593 | 8804510 | 2050 |
| 1918 | 1014649 | 8804789 | 2050 |
| 1919 | 1014643 | 8804546 | 2050 |
| 1920 | 1018135 | 8803685 | 2050 |
| 1921 | 1017660 | 8803572 | 2050 |
| 1922 | 1017173 | 8803518 | 2050 |
| 1923 | 1016597 | 8803429 | 2050 |
| 1924 | 1016573 | 8802485 | 2050 |
| 1925 | 1017125 | 8802479 | 2050 |
| 1926 | 1017642 | 8802551 | 2050 |
| 1927 | 1018123 | 8802675 | 2060 |
| 1928 | 1017636 | 8802640 | 2060 |
| 1929 | 1017137 | 8802818 | 2060 |
| 1930 | 1017155 | 8803210 | 2060 |
| 1931 | 1017666 | 8803168 | 2060 |
| 1932 | 1018140 | 8803239 | 2060 |
| 1933 | 1018135 | 8803073 | 2080 |
| 1934 | 1017660 | 8802984 | 2080 |
| 1935 | 1017648 | 8802687 | 2080 |
| 1936 | 1018135 | 8802759 | 2080 |
| 1937 | 1018140 | 8802960 | 2080 |
| 1938 | 1017666 | 8802889 | 2080 |
| 1939 | 993710 | 8798070 | 2030 |
| 1940 | 993728 | 8797831 | 2030 |
| 1941 | 993115 | 8799108 | 2050 |
| 1942 | 993096 | 8798758 | 2050 |
| 1943 | 992501 | 8800059 | 2060 |
| 1944 | 992040 | 8799826 | 2060 |
| 1945 | 992482 | 8800329 | 2060 |
| 1948 | 1018059 | 8805407 | 2050 |
| 1949 | 1017678 | 8805167 | 2050 |
| 1950 | 1017672 | 8805701 | 2050 |
| 1951 | 1018084 | 8806121 | 2050 |
| 1952 | 999340 | 8811706 | 2040 |

| d | X | Y | Valeur C |
|---|---|---|---|
| 1953 | 999586 | 8811700 | 2040 |
| 1954 | 999856 | 8811792 | 2040 |
| 1955 | 993311 | 8810429 | 2040 |
| 1956 | 993336 | 8809299 | 2040 |
| 1957 | 976415 | 8815690 | 2080 |
| 1958 | 976428 | 8816003 | 2080 |
| 1959 | 995939 | 8818054 | 2040 |
| 1960 | 996442 | 8816826 | 2040 |
| 1961 | 976329 | 8814125 | 2050 |
| 1962 | 976771 | 8813855 | 2050 |
| 1963 | 977220 | 8814260 | 2050 |
| 1964 | 977772 | 8814751 | 2050 |

| d | X | Y | Valeur C |
|---|---|---|---|
| 1965 | 976931 | 8822126 | 2030 |
| 1966 | 977444 | 8822433 | 2020 |
| 1967 | 1001211 | 8799901 | 2050 |
| 1967 | 997624 | 8800209 | 2080 |
| 1968 | 1001211 | 8800117 | 2050 |
| 1969 | 1010136 | 8800042 | 2030 |
| 1970 | 1010144 | 8799767 | 2030 |
| 1971 | 1010746 | 8799700 | 2030 |
| 1972 | 1010753 | 8800035 | 2030 |