

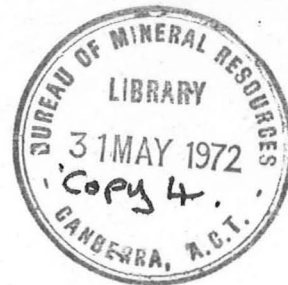
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Record 1971/96



**SEISMICITY OF THE NEW GUINEA/SOLOMON ISLANDS
REGION, 1967**

by

D. Denham

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SUMMARY

Basic earthquake statistics for 1967 in the New Guinea and British Solomon Islands region are provided. 510 earthquakes were large enough to be located accurately during the year, and 753 reports of felt earthquakes have been catalogued. This is a significant increase in data over previous years, and is due to more effective collection of felt reports, more seismic stations operating in the region, and the availability of a computer program of the location of local earthquakes.

The level of seismic activity in 1967 in terms of energy release was lower than average and during the year only one earthquake gave a body wave magnitude of 6. The most important series of earthquakes occurred in August 1967 in the Gazelle Peninsula of New Britain. The largest earthquake in this series was of only moderate size ($m_B = 5.5$), but nearly \$200,000 worth of damage was caused in the Kokopo region owing to its shallow depth and proximity to a developed area.

The Vitiaz Strait region, off the north coast of the Huon Peninsula, produced several earthquakes felt in the Markham Valley and surrounding areas. These events exhibited unusual isoseismals because the areas most affected were located generally over 80 km south of the epicentre and in several cases the epicentral area did not feel the shock. This phenomenon is attributed to the westward extension of the New Britain arc.

1. INTRODUCTION

In recent years the increased importance of the study of the seismicity of the Territory of Papua & New Guinea has led to a large increase in the number of seismograph stations operating in the region. In order to provide up-to-date earthquake statistics and to keep abreast with the large amount of data now being recorded, it was decided to produce annual reports containing analyses of the local seismicity. This report describes the seismic activity for the year 1967, and in general it follows the form taken by the previous Record (Denham, Byrne & Wilkie, 1968) which covered the same region for 1966.

One main change affecting the analysis of local earthquakes and their effects has been the introduction of a computerized storage and retrieval system (Denham & Byrne, 1969). This was developed at the Port Moresby observatory specifically to meet the processing demands resulting from the large amount of data now being produced from the increased number of seismographs operating in the region. The present study has also included, for the first time, the earthquakes that occurred in West Irian and the British Solomon Islands regions. This was done to make the area under review a more or less complete tectonic unit, and in fact the Vogelkop and Santa Cruz islands provide sensible boundaries to the area of interest.

Unfortunately there are no facilities for gathering felt reports of earthquakes in either West Irian or the Solomon Islands, so in this respect the coverage is incomplete. Furthermore, as no seismographs are presently operating in West Irian, the location and detection of earthquakes in that region are not as effective as wished.

There are two important reasons for the study of local seismicity. The first concerns the economic problems associated with earthquake risk. As a country develops, an increasing amount of money is invested in capital works. It is therefore important to know where and when earthquakes are likely to occur, and also what is the likely risk of earthquake damage to buildings in any particular region.

In New Guinea, the earthquake risk was negligible until the last ten years or so because of the absence of any buildings likely to be seriously damaged by earthquakes. Until recently the only buildings of any significant monetary value were single storey European type houses and the occasional hospital or church. However, the situation is changing rapidly and considerable development is now taking place in areas of high earthquake risk, both on the mainland of New Guinea and on the islands of Bougainville and New Britain. It is therefore highly desirable for the earthquake risk to be assessed quantitatively, so that it can be considered in the design and construction of buildings.

The second important reason for the study of local earthquakes is to assist in the understanding of the tectonic processes at work in the area. The zones where earthquakes occur identify the regions which are tectonically active and delineate such features as mid-ocean ridges, active faults, and dipping seismic zones which are associated with deep sea

trenches (Isacks, Oliver & Sykes, 1968). Furthermore it is possible to make some deductions regarding the properties of the crust and upper mantle by studying where the earthquakes occur and how the energy is radiated from the source (Molnar & Oliver, 1969). Eventually it is hoped to be able to predict earthquakes and studies such as are undertaken here will provide the basic data from which to make any predictions.

Data on the seismicity of the region for earlier years can be found in the report by Brooks (1965), in the annual reports of the Port Moresby Geophysical Observatory (see for example, Denham, 1967), and in the recent paper by Denham (1969) which examines the spatial distribution of earthquakes in the region for the period 1958-1966.

The level of seismic activity in 1967 was lower than average and similar to that experienced in 1966. During 1966 four earthquakes were assigned m_B values of 6 or greater by USCGS compared with only one in 1967. However, in 1966 only one event gave a surface wave magnitude of 7 or greater, while in 1967 two events of at least 7 occurred. The year was not without incident, however, for on 14 August a series of earthquakes shook the Gazelle Peninsula of New Britain and caused considerable damage in the Kokopo region (Heming, 1969; Skinner & Denham, 1967). The earthquakes were not particularly large (the largest being m_B 5.5), but they occurred at very shallow depth under a comparatively well developed area and the damage was quite spectacular in the immediate epicentral area.

It was fortunate that, when these earthquakes occurred, a world authority on earthquake engineering, Mr I.R. Skinner of the DSIR New Zealand, was visiting the Territory under BMR's auspices (Skinner, 1967), and on-the-spot investigations of the epicentral area (Skinner & Denham, 1967) were made during his visit.

The only results omitted from this report are the focal mechanism studies that are carried out at the Port Moresby Observatory on all large earthquakes occurring in the New Guinea region. These results will be published separately when enough solutions have been obtained to give a comprehensive picture of the different types of mechanism observed in each of the major seismic zones in the region.

2. SEISMIC INSTRUMENTS

Sixteen seismic stations were occupied in the New Guinea/Solomon Islands region during 1967. Five were controlled by the Port Moresby Geophysical Observatory (PMG, GRK, KRG, LAE and TPN), one by the Geological Survey of the British Solomon Islands (HNR), and the remainder by the Volcanological Observatory at Rabaul. The instrumental constants, standard abbreviations of station names, geographic positions, dates of operation, and other information are given in Tables 1 and 2. Plate 1 shows the locations of all the stations.

One major advance during the year was the commissioning of the Rabaul network, which consists of five stations positioned around the main caldera at Rabaul. This array of stations was designed primarily for monitoring local volcanic and seismic activity. The aperture of the array is rather small, having dimensions of about 10 x 8 km and it is not very effective for locating earthquakes outside the immediate East New Britain region because of its poor azimuthal resolution. Nevertheless it has added significantly to the recording facilities in the region, and all the stations can be used in hypocentral determinations.

The Rabaul outstations, Agenahambo (AGE), Esa'Ala (ESA), Kerevat (KRT), and Tabele (TBL) operated more or less continuously throughout the year. The Esa'Ala station is particularly useful in locating earthquakes in the New Britain and Bougainville regions, but the Tabele and Agenahambo stations do not record many earthquakes and are of limited value. These stations were established for volcano-surveillance rather than for earthquake location, and are very close to the volcanoes, which are usually very noisy sites.

The operation of the Port Moresby outstations was changed during the year by converting the seismographs from long-period to short-period systems. The stations at Kerema (KRG) and Tapini (TPN) were closed down, and new sites were occupied at Bubia near Lae (LAE) and Goroka (GRK) in the Eastern Highlands. Both these locations were quite noisy, but they provided valuable readings for earthquakes in the East New Guinea and West New Britain regions. The Lae station is very close to the zone of high seismic activity occurring near the Huon Peninsula, and gives good depth control for events occurring in this region.

During the year four strong-motion instruments were installed in the New Guinea/Solomon Islands area. These were located at the Upper Ramu dam site in the Eastern Highlands, Kieta in Bougainville (two instruments), and Honiara in the British Solomon Islands. All the instruments are MO2 accelerographs, manufactured in New Zealand. They will supplement the seismographs by recording ground motion in a very strong earthquake, when most conventional seismographs are overloaded.

3. DATA COLLECTION AND ANALYSIS

Data were collected from a number of sources for the compilation of this report. The earthquake locations were obtained either from the Epicentre Determination Reports published by the United States Coast & Geodetic Survey (USCGS), or from hypocentral determinations made at the Port Moresby Geophysical Observatory (PMG) using the computer program developed at the Carnegie Institution's Department of Terrestrial Magnetism (DTM) (James et al., 1969). The DTM program was used on earthquakes which were not located by USCGS and also on large earthquakes selected for special study.

Data giving the locations of the earthquakes in the region are supplemented by felt-intensity observations obtained from a network of observers established throughout the Territory of Papua & New Guinea. These reports are obtained from questionnaires completed whenever an observer feels an earthquake. When a large earthquake occurs, a special set of questionnaires is issued so that a complete coverage of the felt intensities can be established (see Denham, Byrne & Wilkie, 1968, for further details).

Earthquake data and felt reports are stored on a magnetic disc of an IBM 1130 computer (Denham & Byrne, 1969). Any combination of the input data can be readily extracted. Table 3 lists all the known earthquakes originating in the New Guinea/Solomon Islands region for 1967 and Table 4 is a print-out of all the felt reports. In the estimation of intensity the New Zealand Scale as devised by Eiby (1966) has been used for guide lines.

Plate 2 is a plot of all the earthquakes with known magnitudes m_B of 4 or greater. There are many earthquakes with magnitudes between 4 and 5 which have not been plotted either because they were not located or because they were located and no magnitude determination was possible. Plate 3 is a histogram of all the earthquakes with known magnitudes. As in 1966 the magnitude cut-off below which not all events can be located occurs at about 5.

The spatial distribution of the earthquakes follows that of previous years and all the known active tectonic features in the area are represented. The greatest seismic activity occurred in the regions associated with the deep ocean trenches at the northern edges of the Solomon Sea. At each end of this zone (the Vitiaz Strait and off the southern tip of Bougainville) there is an abrupt decline in the number of earthquakes. This is particularly noticeable at the Bougainville end. The New Britain Arc shows up well with the shallow events mostly occurring at the southern convex side and the deep earthquakes originating under the Bismarck Sea. One unusual series of earthquakes occurred almost midway between Bougainville and New Britain. The main shock in the series was the largest to have occurred during the year in the region, and it had a magnitude of 6. Very few earthquakes have been recorded previously from this location, which is under the flat part of the Solomon Sea bed, just to the west of where it plunges down to the Planet Deep off Bougainville.

The Bismarck Sea seismic lineation was active only along its eastern half; the West Melanesian Arc at the north of the region had five earthquakes in its vicinity large enough to plot on the map.

Eleven earthquakes having depths greater than 300 km were reported during the year. Only 5 of these had a magnitude greater than 4. The deepest event occurred to the east of Bougainville, at an estimated depth of 507 km. This was located using the DTM program, which gave a very reliable solution.

Table 5 gives a monthly breakdown of the earthquakes and felt reports listed in Tables 3 and 4. Five hundred and ten events were located and 262 events were reported felt; however, only 109 of the felt events corresponded to located earthquakes. This indicates the large number of felt earthquakes that are not located. Nevertheless events felt with an intensity of MM IV or greater were all located.

The DTM program reliably located 86 events not found by USCGS. This is a significant increase over previous years in the number of hypocentres located, and arises for two reasons. In the first place only four stations are needed to give a solution (in fact three are sufficient if consistent origin times are available for all the stations); secondly it was possible to use stations like ESA, TBL, and AGE, which are so remote that their records do not always arrive in Rabaul in time for the results to be included in the USCGS hypocentral computations. Therefore for many events additional readings are available only at a later date.

4. EARTHQUAKE ACTIVITY 1967

In this section the largest and most important earthquakes that occurred in the New Guinea/Solomon Islands region in 1967 are analysed. They are examined in chronological order and all dates and times are given in Universal Time, which is 10 hours behind local time. The print-outs of the USCGS solutions can be found in their standard Earthquake Data Reports, and those from the DTM program are listed in the appendix. Table 6 contains a summary of the hypocentral data for the earthquakes discussed in this section.

18 March 1967:

Plate 4 shows the felt effects and hypocentral details of this earthquake, which was felt in the Morobe and Madang Districts. All the felt intensities were assessed as MM.IV or MM.V and no meaningful isoseismals could be drawn. No felt reports for intensities less than MM.IV were obtained because the shock took place at 3:15 a.m. local time and most observers were asleep when the earthquake occurred.

There is a significant difference between the hypocentres determined by USCGS and by the DTM program, but neither is preferred. The USCGS solution does not use stations AGE, TBL, and ESA but most of the residuals obtained with the DTM solution are larger than those obtained with the USCGS solution. The depth obtained from the DTM solution could be unreliable, because there is no station near enough to the hypocentre to give good depth control. The individual origin times obtained from PMG, TBL, and RAB give considerable scatter, and this could lead to a poor estimate of the true origin time and affect the depth estimate accordingly.

The only damage reported was that associated with the fall of small objects like lamps.

April 1967 - Treasury Island Earthquake Swarm:

From 8-19 April 1967 a remarkable series of over 30 earthquakes, large enough to be located, occurred close to Treasury Island off the southern coast of Bougainville. The largest shock in the series occurred on 10 April, and it had a body wave magnitude of 5.8. On the same day at least ten earthquakes were felt at Buin, on the southern tip of Bougainville, but the maximum intensity was only MM.IV. Plate 5 is an enlargement of the region and shows where most of the earthquakes occurred.

It can be seen that most of the shocks were located in a well defined zone trending almost E-W. This is parallel to the 4 km bathymetric contour, which defines the shelf bounding the southern edge of the deep part of the Solomon Sea. This zone of earthquakes probably marks the southern edge of the active zone associated with the development of the Solomon Sea; south of this zone seismic activity is reduced abruptly.

13 June 1967:

This earthquake, which was located beneath Dampier Strait between Umboi Island and New Britain, was felt mainly in the Morobe District, and as far as is known was not felt at all on New Britain. The PMG and the USCGS hypocentral solutions give similar results. A slight preference is given for the PMG solution, because it uses the station ESA and because the residuals are lower than in the USCGS solution. However, both determinations are very good and the difference has little statistical significance.

No known damage resulted from the earthquake, but a large landslide of about $\frac{1}{2}$ sq km was opened up near Garaina (see Plate 6). This illustrates the unstable nature of some of the hillsides in New Guinea and the care needed in planning routes for roads and sites of development in the Highlands areas. Plate 7 shows the observed Modified Mercalli intensities and the hypocentral details.

20 July 1967:

This earthquake was located under the Huon Peninsula close to the event that occurred on 18 March. No damage was reported, but it was felt over a wide area of the Morobe District.

The PMG solution is unreliable because of the uncertain ESA times. On the first run these gave an origin time one minute after the PMG and RAB origins. Subtracting 1 minute from each ESA arrival still does not bring it well into line with the other stations. Nevertheless its P residual is no bigger than those of PMG or AGE.

The USCGS solution did not use either the AGE or the ESA times in computing its solution, which fits the isoseismals better. Plate 8 shows the felt effects of the earthquake.

13 August 1967 - The Kokopo Earthquakes:

In terms of earthquake damage the Kokopo shocks of 13 August 1967 surpass any other earthquakes that took place during the year and they probably were the most damaging series of earthquakes that have

occurred in New Guinea to that date. The first large earthquake occurred at about 1655 UT on 13 August and was assigned a body wave magnitude of 5.0 by USCGS. This estimate is probably low, and by including more stations, a value of 5.3 is obtained. The Richter magnitude (M_L) as measured on the Port Moresby Wood-Anderson seismographs was about 6.2.

It was felt over most of the Gazelle Peninsula, particularly in the eastern part, and Plate 9 shows a smoothed isoseismal map for this event. The highest intensities observed were between MM.VI and MM.VII. No structural damage to buildings was reported, but landslides which occurred in the pumice cliffs along the Kokopo road from Rabaul closed the road. In some places water tanks were split and damage to furniture, crockery, and ornaments was common in areas experiencing the higher intensities.

The hypocentral solution given by USCGS is slightly different from that determined at Port Moresby using the DTM program. Both solutions give low P time residuals, and the USCGS solution fits the isoseismals slightly better.

The 1655 hr earthquake was followed by many after-shocks, but most of them were quite small and did no damage. Then at 2211 hr and 2215 hr two earthquakes occurred which caused considerable damage. The first earthquake had a body wave magnitude of about 4.7 and a Richter magnitude of 5.7 as measured at Port Moresby. The second earthquake, which was the largest of the series, had a body wave magnitude of about 5.5 (USCGS gave 5.3, but used fewer stations than here) and a Richter magnitude of 6.4. These two earthquakes were followed by hundreds of after-shocks, but none caused any further significant damage and only two were large enough to be recorded by sufficient stations for USCGS to make hypocentral determinations.

Plate 10 shows a smoothed isoseismal map for the 2215 event. The USCGS and Port Moresby hypocentres are well apart, and the PMG solution is preferred because of its excellent agreement with the macroseismic evidence. The intense shaking was felt over the northeast corner of the Gazelle Peninsula, and a well defined area about 13 km long and 5 km wide experienced shaking equivalent to MM.VIII. In some isolated cases the intensity was estimated to be MM.IX.

Heming (1968), in his description of the earthquakes, gives a figure of \$172,000 as an estimate of the building damage. Most of this occurred at the Kabaleo Teachers' Training College, which was rendered uninhabitable, and the Vunapau Catholic Mission, which suffered considerable damage. The damage at these institutions and at other places will now be discussed.

The Kabaleo Teachers' Training College, for the most part, consisted of a series of single-storey timber-frame buildings set on concrete slabs. Plate 11 shows an exterior view of typical damage and an interior view. The walls were attached inadequately to the concrete slab and were unable to meet the accelerations experienced, and this resulted in most of the damage.

Permanent displacements of up to 30 cm were experienced after the walls had sprung from the floor. Most plumbing facilities were badly damaged or seriously destroyed. All the toilet cistern lids and the concrete laundry tubs were thrown to the ground. Plate 12, Fig. 1 shows the fate of one of the water tanks. This illustrates very well the strength of the shaking.

The Sisters' house was built on concrete piles. These failed as shown in Plate 12, Fig. 2, but fortunately the building lurched strongly in one direction and came to rest in a position where it was supported by the front steps (made of concrete) and the toilet block. Plate 13 Fig. 1 shows the toilet block end.

At the Vunapau Catholic Mission, which is situated close to the middle of the intensity MM.VII zone, similar damage occurred; Plate 13, Fig. 2, shows an interior view of the church. The altar was twisted out of position, and many large bookcases and stoves were thrown about like a child's building blocks.

It is unfortunate that no accelerograph was operating in the area, because the ground acceleration must have been very high. An impressive example was the fate of a Volkswagen utility truck at Vunapau. This was displaced so strongly by the shaking of the ground that its right hand rear tyre was shaken completely from the wheel, and the vehicle was prevented from overturning completely only by a collision with the roof of its car port. At the same site the Father in charge of the Mission was thrown to the ground and could not regain his feet until the shaking had ceased.

In the surrounding areas further damage occurred. Plate 14, Fig. 1, shows the failure of masonry type "D" in the Rainan area and Plate 14, Fig. 2, shows the damaged Bitagalip cocoa fermentery.

An aerial inspection of the region revealed no indication of any permanent earth movements at the surface, apart from the superficial slumping and land sliding which occurred in areas of steep cut pumice and fill. This is probably due to the thick layers of weathered pumice which overlie the competent rocks.

In general the building structures were inadequately designed for earthquake forces. Bracing was too light, incorrectly placed, or absent. Little or no attention was paid to relative stiffness, and no attempt was made to ensure that the building resisted horizontal forces.

Foundation systems were usually completely inadequate. Little or no steel was used in non-pile foundations, slabs, and blocks. The concrete was frequently of poor quality and occasionally it showed excessive friability.

1 September 1967:

This was the first of a series of earthquakes that occurred during the year in the Vitiaz Strait vicinity. Both the USCGS and the PMG solutions are excellent and nearly equivalent.

The felt effects from these earthquakes have a very distinctive pattern, where areas feeling the highest shakings are all located on or near the Markham Valley area of the mainland. The transmission path to Port Moresby must also be very efficient, because this earthquake was felt there by those favourably located in the higher buildings. On Umboi, Kar Kar, and Long Islands the earthquakes from this region are very slightly felt. This is analogous to the New Britain region, where large shocks under the north coast of the island are strongly felt on the south coast, and gives further support to the theory that there is a buried island arc structure continuing westward from west New Britain under the Huon Peninsula (Denham, 1969). Plate 15 shows the felt intensities reported from this earthquake.

Fortunately most of the earthquakes sited in this region occur at intermediate depth and usually cause little damage.

3 September 1967:

This earthquake, which had a body wave magnitude of 5.4, was located almost directly underneath Garaina. Both the USCGS and the Port Moresby solutions are very good. Slight preference should be given to the Port Moresby result, because eight local stations, all situated within seven degrees of the epicentre were used and the P wave residuals are all low. The USCGS solution uses only four local stations.

The location of the earthquake is rather unusual because of its southerly position relative to the main seismic zone; very few events have previously occurred in this vicinity. Plate 16 shows the felt intensities reported from this earthquake, which caused no known damage.

18 September 1967:

This was the third large earthquake felt throughout the Morobe and Madang Districts. Being located beneath the Huon Peninsula, it was felt with an intensity MM.V over a large area. As with previous earthquakes in the same region, it was scarcely felt on the islands off the north coast. In a few places, the intensity reached MM.VI and although no report of any water tanks breaking was received, many people were afraid that they might.

The Richter magnitude of 6.4 made it the fourth largest event of the year. The USCGS solution is preferred to the PMG hypocentre because of the high residuals associated with the PMG solution. Plate 17 shows the felt intensities observed from this earthquake. It is significant that the areas west and southwest of Madang did not feel this earthquake very

strongly. This pattern has been observed for all the shocks originating near the Vitiaz Strait and Huon Peninsula. Plates 15, 18 and 19 illustrate the same phenomena. Presumably there must be a large lateral discontinuity either in the crust or the upper mantle in the vicinity of Madang.

24 September 1967:

This earthquake had a body wave magnitude of 5.1 and was felt over large parts of the Morobe and the Madang Districts. The effects of this event were very similar to those of other earthquakes occurring near the Huon peninsula, but the area that felt the shaking covers a smaller region because the earthquake was of smaller magnitude than either of the earlier events. No structural damage was reported. Plate 18 shows the reported Modified Mercalli intensities.

28 September 1967:

On 28 September 1967 one of the largest earthquakes during the year occurred. It had a body wave magnitude of 6.0, a surface wave magnitude of 6.5, and a Richter magnitude of 6.8. The main shock was followed by many after-shocks, of which fourteen were large enough to be located. Those occurring in the first week following the main earthquake are plotted on Plate 18 together with the Modified Mercalli intensities reported from the first shock. The after-shocks mainly fall on two lines, one stretching north south and the other stretching northwest to southeast.

First event studies show that the earthquake is similar to those originating under the Aleutian Trench and analysed by Stauder (1968). In terms of the New Global Tectonics (Isacks, Oliver & Sykes, 1968), this can be interpreted as the bending of the plate before it is underthrust beneath the island arc.

The main shock was felt over most of Bougainville and parts of the Gazelle Peninsula, but the intensities were usually low. No damage was reported.

4 October 1967:

The event on 28 September was followed by an event of similar size on 4 October. Its body wave magnitude of 5.7 was only slightly less than the large September event, while the surface wave magnitude of 7.2 and Richter magnitude of 7.0 are both somewhat larger. Both the USCGS and the Port Moresby solutions use the same six local stations, and the P wave residuals for both solutions are acceptable, but the two hypocentres are widely separated and it is not clear which solution is to be preferred. The USCGS one is perhaps slightly favoured because of the high surface wave magnitude; this would not be expected from a deep source as suggested by the DTM solution.

Poor azimuthal control in the northeast segment is probably the main cause of the ambiguity.

The earthquake was felt strongly over the whole of Bougainville, the southern part of New Ireland, and the Gazelle Peninsula of New Britain. Plate 15 shows the felt reports from this event. An accelerograph situated on an alluvium site at Kieta on Bougainville was triggered by the shock. Most people on Bougainville who reported the felt effects describe the shock as lasting at least half a minute, and in many places people were frightened. It was also felt as far away as Garaina in the Morobe District.

14 November 1967:

Located under the Vitiaz Strait, this earthquake caused felt effects similar to the others in this region earlier in the year. The most violent shaking was again experienced in the Markham Valley region, and the shock was felt as far away as Port Moresby. In the east-west direction, however, little was felt. The shock was not felt on Kar Kar Island, and at Umboi Island the intensity was only about MM.III. No report was received from Long Island or west New Britain so the shaking must have been very small in these regions. This earthquake gives further evidence for a strong channelling effect, which transmits the energy along a definite zone and indicates that there must be lateral velocity changes in the crust or upper mantle in this vicinity. The most acceptable explanation is that energy is being transmitted upwards through the westward extension of the New Britain Arc seismic zone.

The USCGS solution is preferred to the Port Moresby one, because only one S time was available from the six local stations and the residuals of the three nearest stations are high. Plate 19 illustrates the felt effects from this earthquake.

25 December 1967:

This was the last major earthquake to occur in the New Guinea region during 1967. It occurred close to the October event in space and was felt over a similar area. An ambiguity in hypocentre between the USCGS and PMG solutions is again evident, and it is not certain which of the two solutions is correct. Plate 19 shows the regions affected by this earthquake.

5. DISCUSSION AND CONCLUSIONS

This is the second annual seismicity report for the New Guinea region. Already the results of improved instrumentation in the region are apparent. Not only are more earthquakes being located, but the hypocentral determinations are more accurate owing to the increased number of local stations necessary to constrain accurately the hypocentral parameters. At the same time additional computing facilities have been made available locally to determine hypocentres, and these have also contributed to the improvement in the seismic coverage of the region. Another benefit from these additional stations is that it is now possible to carry out more first event studies on local earthquakes. The lack of suitable local stations in the past made it impossible to solve dip-slip mechanism

because of the lack of readings at critical parts of the focal sphere. This is now being remedied, and it is hoped that this will lead to a better understanding of the tectonic processes at work in the region.

6. ACKNOWLEDGEMENTS

The results contained in this report would not have been possible without the help and co-operation of several outside bodies. The author would particularly like to thank:

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- (2) Drs James and Sacks of the Carnegie Institution, Washington, for making available a computer program for locating the hypocentres of local earthquakes.
- (3) The many volunteer reporters who have co-operated most enthusiastically in supplying data on earthquakes felt throughout the Territory.

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TABLE 1
Seismograph Station Descriptions

Place	Code	Lat.(S)	Long. (E)	Elevation (Metres)	Lithological Foundation	Remarks
Agenahambo	AGE	08° 48' 49"	148° 05' 56"	- 303	Unconsolidated volcanic ash	Operated by Rabaul Observatory
Esa'Ala	ESA	09 44 18	150 48 51	46	Granite gneiss	Operated by Rabaul Observatory.
Goroka	GRK	06 03 51	145 24 05	1800	Pleistocene sediments	Operated by Port Moresby Observatory
Honiara	HNR	09 25 54	159 56 48	85	Pleistocene Coral Reef	
Kerema	KRG	07 57 35	145 46 08	14	Clay	Station closed May, 1967.
Kerevat	KRT	04 21 10	152 03 06	20	Coastal alluvium	Operated by Rabaul Observatory
Lae	LAE	06 40 23	146 54 48	100	Alluvium	Operated by Port Moresby Observatory
Port Moresby	PMG	09 24 33	147 09 14	67	Eocene Chert	
Rabaul	RAB	04 11 29	152 10 11	184	Basalt flow	
Rabalanakaia	RAL	04 13 13	152 12 07	91	Volcanic Ash	Rabaul harbour network
Sulphur Creek	SUL	04 13 10	152 10 33	08	Volcanic Ash	Rabaul harbour network
Tavurvar	TAV	04 14 12	152 13 18	60	Andesite flow	Rabaul harbour network
Tabele	TBL	04 06 05	145 00 41	180	Basalt flow	Operated by Rabaul
Tapini	TPN	08 21 25	146 59 01	989	Clay	Station closed May, 1967.
Taviliu	VUL	04 16 58	152 08 45	332	Volcanic Ash	Rabaul harbour network
Wanliss Street	WAN	04 11 40	152 10 32	25	Basalt flow	Rabaul harbour network

TABLE 2

Seismograph Station Instruments

Station	Seismometer			Recorder			System Magnification	Remarks
	Type	Comp	To	Type	Speed mm/min	Tg sec		
AGE	Wil	Z	0.6	Wil	60	0.25	3000	Underdamped
ESA	Ben	Z	1.0	Film	15	0.2	36000	Critically damped
	Ben	N, E	1.0	Geo 1301-A	15	0.2	18000	Critically damped
	Ben	Z, N, E	1.0	Geo 1565-D	30	60	2000	Critically damped
GRK	W/L	Z	1.0	ER230	60	-	5000	ER239 modified for SP recording
HNR	Z, N, E			World Standard SP			12500	
	Z, N, E			World Standard LP			3000 (Z) 1500 (N, E)	
KRG	Wil	Z	1.0	ER230	60	-	5000	ER230 modified for SP recording
KRT	Ben	Z, N, E		Film	15	0.2	Unknown	Critically damped
LAE	Wil	Z	1.0	ER230	60	-	5000	ER230 modified for SP recording
PMG	Z, N, E			World Standard SP			50000	
	Z, N, E			World Standard LP			3000	
	SPH, N, E			15	Sprengnether	30	15	700
	P/E	Z	15	"	30	15	700	Overdamped
	W/A	N, E	0.8	"	30	-	2000	
	GT	Z	1.0	"	30	1.0	10000	
	DTM	Z	4	Tape	9		0-100k	3 displacement channels and 2 velocity channels are recorded on magnetic tape

Seismograph Station Instruments

Station	Seismometer			Recorder			System Magnification	Remarks
	Type	Comp	To	Type	Speed mm/min	Tg sec		
RAB		Z	1.0	World Standard	SP		12500	
		N,E	1.0	World Standard		SP	6250	
		Z,N,E	15	World Standard		LP	750	
	Ben	Z	1.0	Helicorder	180	0.2	4000	Recording is triggered only by earthquakes of predetermined amplitudes.
	Omo	N	3.6	Smoked Paper	24	-	12	
	Omo	E	3.6	Smoked Paper	24	-	10	
	W/A	N,E	0.8	Photo drum	60		2800	
RAL	Ben	Z	1.0	Helicorder	60	0.2	8000	Rabaul harbour network
SUL	Ben	Z	1.0	Helicorder	60	0.2	3000	Rabaul harbour network
TAV	Ben	Z	1.0	Helicorder	60	0.2	2000	Rabaul harbour network
TBL	Ben	Z	1.0	Willmore	60	0.2	1000	
TPN	Wil	Z	1.0	ER230	60	-	10000	ER230 modified for short period recording
VUL	Ben	Z	1.0	Helicorder	60	0.2	5000	Rabaul harbour network
WAN	Ben	Z	1.0	Helicorder	60	0.2	5000	Rabaul harbour network

Wil = Willmore; Ben = Benioff; Geo = Geotech; W/L = Wilson Lamison; ER230 = UED Pen recorder;

SPH = Sprengnether type H; W/A = Wood Anderson; GT = Grenet; Omo = Omori; DTM = Seismometer built by

Department of Terrestrial Magnetism, Washington; P/E = Press-Ewing.

TABLE 3 - Earthquakes occurring in the
New Guinea - Solomon Islands Region 1967

SEISMICITY PAPUA AND NEW GUINEA

PAGE 1

TYPE	YR	MO	DAY	HR	MIN	SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
1	67	1	4	2	53	28.1	9	3.58	148.95	4.9	12	0
1	67	1	4	16	30	28.0	19	3.17	142.18	5.5	16	0
1	67	1	4	16	56	37.2	33	6.00	149.33	4.7	3	0
1	67	1	5	18	24	56.3	50	8.15	149.47	4.4	6	0
1	67	1	9	15	10	57.6	138	4.60	151.78	4.6	7	0
1	67	1	10	7	49	21.6	32	6.48	149.48	4.3	5	0
1	67	1	11	11	50	14.1	46	6.82	146.28	4.6	9	0
1	67	1	12	3	44	34.3	33	5.27	152.70	5.1	3	0
1	67	1	13	13	21	30.4	28	11.64	164.94	4.7	10	0
1	67	1	13	13	48	11.7	32	10.63	161.36	5.7	28	0
1	67	1	15	15	11	54.3	33	5.69	153.55	0.0	4	0
1	67	1	16	11	9	8.4	40	10.66	161.33	5.2	34	0
1	67	1	16	11	46	16.2	33	10.71	161.33	4.9	13	0
1	67	1	16	12	22	33.4	33	10.57	161.33	4.6	8	0
1	67	1	16	13	52	43.9	94	5.74	150.60	4.5	3	0
1	67	1	17	2	59	11.2	47	5.85	145.91	4.8	8	0
1	67	1	17	5	58	9.0	150	5.33	150.48	5.0	8	0
1	67	1	17	23	12	30.8	108	5.66	150.50	4.4	3	0
1	67	1	19	0	58	27.8	35	3.30	135.22	4.8	11	0
1	67	1	20	0	19	16.0	33	3.73	151.92	5.2	13	0
1	67	1	20	0	22	53.2	23	3.89	152.05	5.0	9	0
1	67	1	21	23	9	50.0	72	4.98	144.69	5.1	12	0
1	67	1	22	13	42	18.0	64	5.40	152.78	5.2	7	0
1	67	1	22	14	21	44.0	87	8.00	147.85	5.3	11	0
1	67	1	23	3	39	37.3	33	10.60	161.74	4.9	11	0
1	67	1	23	18	34	6.0	17	7.06	144.60	4.8	11	0
1	67	1	24	15	20	3.9	69	5.46	152.95	5.0	9	0
1	67	1	26	3	57	46.4	69	6.56	147.63	5.1	12	0
1	67	1	28	13	51	6.7	156	5.64	151.64	0.0	3	0
1	67	1	29	16	38	4.1	33	5.55	149.37	4.8	3	0
1	67	1	30	23	9	1.9	93	8.45	159.17	5.2	8	0
1	67	1	31	11	27	36.5	209	5.67	154.22	0.0	3	0
1	67	2	1	23	38	47.2	55	5.37	152.44	5.0	8	0
1	67	2	2	4	56	25.9	77	10.26	161.55	4.7	14	0
1	67	2	2	18	18	17.4	247	4.34	153.73	5.2	29	0
1	67	2	3	16	27	45.0	198	5.45	146.95	4.9	12	0
1	67	2	4	6	19	59.2	41	4.44	134.06	4.9	5	0
1	67	2	7	18	19	49.3	189	5.56	147.23	4.6	8	0
1	67	2	7	22	56	10.0	33	2.45	138.35	4.6	5	0
1	67	2	10	10	14	18.6	33	6.28	150.55	4.4	3	0
1	67	2	10	21	3	3.8	35	3.53	135.45	4.9	8	0
1	67	2	12	17	54	35.9	95	5.89	149.31	5.2	16	0
1	67	2	13	15	29	5.1	57	5.09	153.11	5.1	20	0
1	67	2	16	8	22	43.7	489	4.75	155.37	4.6	11	0
1	67	2	16	17	52	7.0	72	7.51	156.13	5.0	11	0
1	67	2	17	2	46	51.0	62	6.67	147.50	4.6	8	0
1	67	2	18	2	39	15.4	41	5.90	153.17	5.5	31	0
1	67	2	19	10	37	34.3	39	0.49	131.51	5.0	17	0
1	67	2	20	19	59	53.6	87	4.21	152.49	5.1	3	0
1	67	2	21	14	4	34.9	99	5.07	151.58	5.2	11	0
1	67	2	22	11	45	9.5	33	5.92	150.74	4.7	3	0
1	67	2	22	19	58	38.8	63	7.28	156.03	5.2	5	0
1	67	2	23	4	53	24.4	63	4.95	152.30	4.7	11	0
1	67	2	24	0	54	50.4	219	3.56	153.37	0.0	3	0
1	67	2	25	5	41	18.0	101	10.29	161.30	4.9	16	0
1	67	2	26	10	29	14.2	54	6.19	149.08	5.1	14	0
1	67	2	26	17	19	15.9	78	6.61	154.21	4.9	12	0
1	67	2	27	15	50	58.0	77	6.25	154.77	4.9	7	0
1	67	3	2	6	23	53.8	127	6.23	151.88	4.8	3	0
1	67	3	2	13	16	4.9	303	6.59	143.81	4.2	3	0
1	67	3	7	6	52	25.5	124	6.16	148.15	3.9	3	0
1	67	3	7	13	22	0.4	38	5.71	152.62	5.0	3	0
1	67	3	13	0	32	10.0	164	6.54	155.88	4.9	12	0
1	67	3	13	4	53	30.0	33	3.17	147.60	4.9	13	0
1	67	3	14	7	55	32.1	33	5.47	147.33	4.8	3	0
1	67	3	16	3	19	34.7	64	3.01	136.33	4.8	11	0
1	67	3	17	0	53	16.3	33	5.52	152.11	0.0	3	0
1	67	3	17	11	24	45.7	33	3.60	150.92	5.5	50	0
1	67	3	17	13	48	14.4	32	7.92	155.49	5.2	20	0
1	67	3	18	16	43	30.4	55	5.73	150.62	5.0	8	0
1	67	3	18	19	1	50.1	471	5.28	154.60	0.0	3	0
1	67	3	18	19	15	35.9	108	6.02	146.31	3.6	33	0
1	67	3	19	0	11	39.7	33	6.32	150.58	4.4	3	0
1	67	3	20	8	47	47.5	52	6.19	148.26	5.1	18	0
1	67	3	21	8	8	0.8	33	5.12	150.88	0.0	3	0
1	67	3	22	13	0	26.9	70	5.37	146.39	5.5	37	0
1	67	3	22	13	41	35.8	33	5.77	153.96	0.0	3	0
1	67	3	22	19	13	4.6	33	10.54	161.63	4.7	18	0
1	67	3	25	14	19	17.3	60	7.88	154.29	0.0	6	0
1	67	3	26	22	39	1.5	14	9.27	148.58	5.3	27	0
1	67	3	29	4	47	11.1	55	6.02	150.52	4.4	8	0
1	67	3	29	10	33	38.4	38	2.39	138.45	5.3	22	0
1	67	4	2	3	21	40.6	33	9.50	155.89	5.0	8	0
1	67	4	2	4	36	39.5	33	9.48	155.93	4.9	6	0
1	67	4	2	8	31	43.6	33	9.34	155.98	4.5	10	0
1	67	4	2	17	40	38.8	37	6.28	148.82	5.1	31	0
1	67	4	3	8	4	15.4	16	6.06	151.50	5.3	45	0
1	67	4	4	0	37	25.1	11	2.34	138.71	5.6	22	0
1	67	4	4	7	50	11.2	45	9.56	160.22	4.7	7	0
1	67	4	4	18	28	26.2	54	4.17	152.88	5.0	11	0
1	67	4	5	12	21	9.9	129	5.98	152.07	0.0	4	0
1	67	4	5	12	33	1.9	44	5.97	151.60	4.5	8	0
1	67	4	5	13	3	36.3	165	6.04	152.35	0.0	4	0
1	67	4	6	12	1	7.5	43	6.30	148.76	4.9	15	0
1	67	4	8	17	33	44.1	66	7.29	155.96	5.0	11	0
1	67	4	9	0	5	7.0	15	3.97	135.78	5.3	34	0
1	67	4	9	1	43	57.9	20	4.21	153.68	4.9	12	0
1	67	4	9	1	50	31.8	176	6.38	151.41	0.0	4	0
1	67	4	9	5	58	19.8	45	7.33	155.86	4.8	12	0
1	67	4	9	8	29	26.2	72	7.40	155.88	4.9	10	0

TYPE	YR:MN:DY	HR:MM:SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
1	67 4 9	8 56 59.7	40	7.24	155.83	5.4	30	0
1	67 4 9	18 50 58.3	70	7.31	155.73	4.8	8	0
1	67 4 9	19 22 54.3	71	4.89	152.60	4.3	6	0
1	67 4 9	21 18 36.5	44	7.29	155.71	5.0	18	0
1	67 4 10	4 59 53.9	37	7.41	155.68	5.5	37	0
1	67 4 10	5 11 5.6	72	7.47	155.76	4.6	18	0
1	67 4 10	8 27 33.1	109	7.55	155.84	5.1	8	0
1	67 4 10	15 2 42.2	29	7.30	155.50	5.8	55	0
1	67 4 10	15 41 43.6	401	7.27	156.26	0.0	5	0
1	67 4 10	18 3 5.3	81	7.45	155.87	4.6	6	0
1	67 4 10	18 24 51.7	78	7.30	155.84	5.3	9	0
1	67 4 10	20 34 38.7	405	7.23	156.03	0.0	4	0
1	67 4 10	20 45 27.7	507	6.44	156.78	0.0	4	0
1	67 4 10	21 7 47.5	103	7.39	155.68	5.4	11	0
1	67 4 10	21 49 19.5	39	7.28	155.90	5.3	31	0
1	67 4 10	23 13 7.7	33	3.37	143.17	5.5	21	0
1	67 4 11	3 13 18.4	66	6.71	155.77	0.0	5	0
1	67 4 11	4 52 48.3	86	7.42	155.73	5.4	10	0
1	67 4 11	22 46 34.8	58	7.66	155.76	5.0	13	0
1	67 4 12	2 0 15.9	33	3.10	148.09	4.8	14	0
1	67 4 12	13 46 5.0	49	7.46	155.76	5.2	28	0
1	67 4 12	13 54 57.2	52	7.34	155.63	5.4	37	0
1	67 4 12	14 4 24.8	33	7.97	156.44	0.0	4	0
1	67 4 12	14 51 49.4	21	7.45	155.72	5.3	23	0
1	67 4 12	18 45 12.2	73	7.47	155.69	4.9	5	0
1	67 4 12	22 26 25.0	107	7.44	155.31	3.1	9	0
1	67 4 12	22 50 43.9	72	7.13	155.64	4.8	7	0
1	67 4 12	23 22 20.4	78	7.47	155.58	4.9	9	0
1	67 4 14	14 41 17.6	77	7.36	155.49	5.0	11	0
1	67 4 15	1 12 51.4	419	7.29	155.16	0.0	5	0
1	67 4 16	5 51 33.0	33	8.13	153.78	4.6	6	0
1	67 4 16	8 25 57.3	154	9.08	148.73	3.6	4	0
1	67 4 16	20 28 41.4	33	6.33	151.93	5.1	4	0
1	67 4 17	18 10 31.3	115	6.03	151.82	0.0	4	0
1	67 4 17	23 22 4.7	106	6.71	151.68	0.0	4	0
1	67 4 18	0 39 54.8	33	7.65	156.13	0.0	3	0
1	67 4 19	3 27 59.5	55	7.92	155.46	4.7	8	0
1	67 4 20	7 33 14.5	186	5.60	149.28	4.4	5	0
1	67 4 21	10 10 8.0	181	5.63	147.12	4.1	5	0
1	67 4 23	1 11 19.5	37	5.41	152.42	4.8	10	0
1	67 4 23	12 13 16.8	48	6.90	148.20	3.8	5	0
1	67 4 23	18 20 56.9	49	5.53	151.83	4.7	8	0
1	67 4 24	0 49 41.3	204	6.07	148.60	4.4	5	0
1	67 4 24	18 52 21.3	63	6.05	148.54	5.1	14	0
1	67 4 25	12 46 40.6	111	5.52	150.90	5.0	11	0
1	67 4 27	8 9 47.9	33	1.84	138.69	5.3	38	0
1	67 4 27	8 36 48.4	33	1.97	138.39	5.1	10	0
1	67 4 27	10 57 35.2	17	3.78	139.27	0.0	5	0
1	67 4 29	3 1 49.9	33	11.01	163.47	4.5	8	0
1	67 4 30	7 7 0.5	32	6.35	150.54	0.0	6	0
1	67 4 30	16 59 0.6	33	1.77	138.74	5.3	34	0
1	67 4 30	23 6 15.1	72	6.19	154.22	4.7	15	0
1	67 5 1	4 0 30.3	33	1.82	138.23	5.2	13	0
1	67 5 1	17 12 5.2	33	5.34	149.00	4.4	6	0
1	67 5 2	9 13 19.5	195	6.98	149.94	4.3	5	0
1	67 5 2	17 10 4.7	148	5.60	147.25	5.4	29	0
1	67 5 3	10 25 49.2	103	8.72	159.40	4.7	8	0
1	67 5 4	13 32 42.3	39	5.96	146.69	5.1	13	0
1	67 5 4	16 22 0.9	49	6.01	146.67	5.2	23	0
1	67 5 4	16 48 58.6	63	6.06	146.72	4.8	7	0
1	67 5 5	14 2 37.2	18	5.78	146.48	5.0	10	0
1	67 5 5	15 0 7.7	41	10.49	161.34	5.5	50	0
1	67 5 6	15 45 35.0	51	6.13	149.09	4.7	10	0
1	67 5 7	10 16 36.2	47	4.14	152.51	5.1	20	0
1	67 5 11	6 9 57.9	33	9.63	154.15	0.0	3	0
1	67 5 12	13 1 57.6	33	8.02	154.76	4.4	15	0
1	67 5 14	12 24 8.9	37	10.50	161.44	5.4	49	0
1	67 5 15	12 57 29.7	48	6.01	146.72	4.8	8	0
1	67 5 16	6 19 20.0	53	5.72	146.45	5.4	26	0
1	67 5 17	12 56 55.4	32	9.70	159.76	5.1	24	0
1	67 5 18	16 50 31.5	60	6.36	147.74	4.1	6	0
1	67 5 19	11 20 52.7	180	5.49	146.46	4.2	3	0
1	67 5 21	5 38 56.0	112	4.29	142.78	4.4	6	0
1	67 5 21	12 17 21.2	58	5.74	146.50	5.1	27	0
1	67 5 21	17 40 41.1	57	6.10	147.34	4.5	5	0
1	67 5 23	23 34 49.2	50	10.26	162.00	0.0	7	0
1	67 5 26	1 51 24.0	75	4.91	152.26	0.0	3	0
1	67 5 29	7 32 59.7	20	5.87	146.00	4.8	10	0
1	67 5 31	7 37 0.4	75	4.59	152.70	0.0	5	0
1	67 5 31	17 25 47.7	27	6.45	150.18	4.6	5	0
1	67 6 1	20 47 45.6	31	6.82	154.97	5.6	39	0
1	67 6 1	21 40 31.7	92	6.78	154.67	4.8	15	0
1	67 6 3	1 53 45.4	33	7.51	155.00	0.0	4	0
1	67 6 3	3 9 56.8	83	6.63	154.64	0.0	7	0
1	67 6 3	3 15 17.9	33	7.15	155.27	0.0	3	0
1	67 6 3	13 37 0.4	33	7.01	155.27	0.0	3	0
1	67 6 3	14 12 24.8	104	9.96	146.90	4.8	12	0
1	67 6 4	7 20 7.6	78	9.80	159.96	4.5	8	0
1	67 6 4	16 7 33.6	33	6.23	152.25	4.7	4	0
1	67 6 4	21 5 29.0	87	6.75	154.44	4.7	6	0
1	67 6 5	14 35 18.9	6	5.33	133.86	5.0	16	0
1	67 6 6	6 35 13.1	58	6.23	152.03	5.4	27	0
1	67 6 6	11 15 52.7	33	9.74	159.84	5.0	19	0
1	67 6 6	13 47 9.0	33	6.19	151.61	4.6	3	0
1	67 6 6	16 40 45.5	33	6.27	151.95	0.0	3	0
1	67 6 7	15 39 9.8	33	5.85	154.21	0.0	3	0
1	67 6 7	17 44 14.3	39	10.75	162.05	4.7	13	0
1	67 6 7	18 44 40.8	113	5.89	147.36	4.8	8	0
1	67 6 8	8 19 17.1	34	7.12	154.69	4.9	6	0
1	67 6 8	17 36 6.8	80	6.58	154.93	4.9	6	0

TYPE	YR.MN.DY	HR.MM.SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
1	67 6 9	1 53 17.9	16	3.89	151.30	4.7	9	0
1	67 6 11	9 16 5.5	75	6.22	150.97	4.1	5	0
1	67 6 11	15 8 59.9	191	5.72	147.25	4.2	3	0
1	67 6 12	7 31 59.0	33	10.83	161.90	4.5	5	0
1	67 6 13	15 39 29.7	213	5.58	148.12	5.5	43	0
1	67 6 13	20 29 1.0	33	3.92	140.10	4.6	11	0
1	67 6 14	4 43 55.3	28	6.89	155.05	0.0	3	0
1	67 6 14	6 15 54.1	33	3.66	131.10	4.5	11	0
1	67 6 14	7 13 14.5	33	6.68	151.94	0.0	3	0
1	67 6 14	15 41 10.0	70	6.08	149.07	4.2	5	0
1	67 6 15	0 14 47.9	92	10.23	161.32	4.6	3	0
1	67 6 15	14 9 42.9	97	6.53	154.53	5.0	10	0
1	67 6 15	14 45 5.3	106	6.13	149.95	4.0	3	0
1	67 6 15	15 12 8.9	126	6.38	145.96	4.4	9	0
1	67 6 15	20 44 47.9	65	5.43	153.03	5.0	16	0
1	67 6 16	5 27 55.6	128	6.28	146.38	3.7	5	0
1	67 6 16	6 44 28.2	11	4.86	151.65	4.7	8	0
1	67 6 16	17 24 16.9	155	4.30	152.08	5.0	17	0
1	67 6 17	19 25 53.6	46	6.32	153.08	4.4	9	0
1	67 6 18	12 24 44.7	26	3.46	149.02	4.5	9	0
1	67 6 18	13 52 20.7	61	3.32	149.21	4.4	7	0
1	67 6 18	20 4 56.7	301	3.69	151.64	4.9	31	0
1	67 6 20	3 44 34.8	54	5.58	151.79	4.9	11	0
1	67 6 20	4 46 10.9	33	5.56	153.49	0.0	3	0
1	67 6 20	13 41 20.9	25	11.21	161.74	4.7	11	0
1	67 6 20	15 37 11.6	33	5.58	153.71	0.0	3	0
1	67 6 20	18 22 4.7	210	5.68	147.18	4.0	3	0
1	67 6 21	10 41 8.7	103	6.33	151.70	0.0	3	0
1	67 6 21	15 0 41.6	75	7.03	154.85	4.1	9	0
1	67 6 21	15 29 35.1	33	7.17	155.05	3.9	6	0
1	67 6 22	7 13 26.3	33	7.47	155.09	0.0	3	0
1	67 6 22	15 35 20.4	32	7.83	147.27	5.2	15	0
1	67 6 22	17 56 43.0	33	5.56	152.97	4.6	6	0
1	67 6 22	19 8 33.5	34	1.33	149.83	5.0	27	0
1	67 6 23	22 38 8.2	34	10.52	161.59	4.5	7	0
1	67 6 24	21 35 56.4	32	2.83	147.27	4.9	9	0
1	67 6 25	11 25 58.9	49	3.20	147.20	5.0	22	0
1	67 6 25	13 28 3.8	43	0.95	145.41	5.1	16	0
1	67 6 26	14 4 23.9	33	5.78	147.66	5.3	16	0
1	67 6 26	20 1 28.0	75	6.72	154.70	0.0	6	0
1	67 6 28	0 14 34.3	16	9.54	157.41	3.4	31	0
1	67 7 3	0 13 11.0	85	6.90	155.13	4.8	7	0
1	67 7 5	22 48 24.6	70	6.04	149.43	0.0	5	0
1	67 7 6	7 44 59.4	63	9.25	147.74	0.0	6	0
1	67 7 7	19 25 19.1	42	9.79	159.96	4.6	19	0
1	67 7 10	10 56 26.2	23	3.23	130.02	5.1	10	0
1	67 7 11	4 17 2.1	88	7.04	155.78	3.0	28	0
1	67 7 14	22 36 59.9	33	3.57	149.38	4.6	17	0
1	67 7 14	23 31 1.4	41	9.76	160.19	4.8	9	0
1	67 7 15	19 49 4.6	68	11.02	163.05	4.5	6	0
1	67 7 16	7 58 35.5	76	6.84	154.64	4.9	7	0
1	67 7 16	13 34 29.9	33	0.82	132.61	5.6	95	0
1	67 7 17	5 3 11.6	190	7.13	146.15	3.7	5	0
1	67 7 19	0 41 44.3	65	7.37	156.04	4.4	11	0
1	67 7 19	6 39 47.4	412	3.55	151.58	4.4	7	0
1	67 7 19	22 24 12.4	33	8.62	157.73	5.2	15	0
1	67 7 20	9 2 25.7	94	4.64	144.25	5.1	16	0
1	67 7 20	11 40 41.2	61	6.27	146.97	5.2	43	0
1	67 7 24	18 5 48.3	55	10.65	164.58	0.0	7	0
1	67 7 25	10 49 42.3	129	10.43	161.39	4.4	10	0
1	67 7 27	0 8 40.1	54	6.76	155.44	5.2	20	0
1	67 7 27	12 17 32.1	33	5.55	151.70	0.0	4	0
1	67 7 28	17 38 37.5	33	5.76	151.99	5.0	4	0
1	67 7 28	17 46 3.9	33	5.83	146.66	4.3	4	0
1	67 7 28	23 33 59.9	81	5.23	145.01	5.0	22	0
1	67 7 29	4 32 33.1	33	7.44	154.40	0.0	3	0
1	67 7 29	5 20 5.3	381	6.65	155.16	5.0	20	0
1	67 7 29	7 4 27.7	49	4.60	153.45	4.9	10	0
1	67 7 29	14 19 9.7	85	6.98	155.84	4.6	11	0
1	67 7 30	13 35 14.4	50	5.27	153.55	5.6	44	0
1	67 7 31	3 13 28.1	33	5.45	153.46	0.0	3	0
1	67 7 31	9 22 24.9	33	11.34	162.58	4.8	11	0
1	67 7 31	23 46 34.0	77	5.23	145.57	5.1	13	0
1	67 8 2	8 8 50.0	43	6.61	149.93	4.2	6	0
1	67 8 2	12 28 25.4	33	5.93	154.48	0.0	3	0
1	67 8 5	2 1 40.1	33	5.19	153.72	5.2	3	0
1	67 8 5	5 19 24.4	237	5.28	152.62	5.0	4	0
1	67 8 5	10 31 27.4	39	5.65	151.99	4.8	9	0
1	67 8 5	11 20 31.4	27	5.73	152.09	4.6	7	0
1	67 8 6	1 16 8.9	33	5.60	151.82	0.0	4	0
1	67 8 6	21 35 59.7	84	6.49	154.48	4.6	8	0
1	67 8 7	6 31 32.9	64	2.97	138.47	0.0	9	0
1	67 8 7	17 12 51.6	33	5.05	154.17	0.0	3	0
1	67 8 8	2 46 48.0	103	4.64	133.68	0.0	7	0
1	67 8 12	7 13 26.5	47	2.81	136.85	0.0	7	0
1	67 8 12	21 33 52.5	66	5.66	151.09	4.5	6	0
1	67 8 13	16 54 43.9	33	4.26	152.59	5.3	8	0
1	67 8 13	22 11 9.4	38	3.85	152.36	4.8	7	0
1	67 8 13	22 15 11.0	33	4.36	152.19	5.5	26	0
1	67 8 13	23 52 39.1	3	4.57	152.30	4.8	5	0
1	67 8 15	8 42 49.3	33	3.27	141.84	0.0	8	0
1	67 8 15	19 6 21.1	58	6.00	153.82	0.0	7	0
1	67 8 19	7 10 21.0	72	10.33	161.39	0.0	12	0
1	67 8 20	12 23 32.0	33	5.71	151.19	4.9	4	0
1	67 8 21	15 4 58.7	148	5.03	151.47	5.0	13	0
1	67 8 21	21 37 5.3	13	1.95	151.86	5.0	17	0
1	67 8 21	23 32 22.8	33	10.80	161.88	4.6	6	0
1	67 8 23	17 8 46.7	33	8.41	155.19	0.0	5	0
1	67 8 24	22 27 53.2	189	5.33	150.50	4.7	10	0
1	67 8 27	2 4 43.5	14	4.28	152.40	5.0	10	0

TYPE	YR.MN.DY	HR.MN.SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
1	67 8 27	2 33 26.0	87	6.02	147.24	3.5	5	0
1	67 8 27	21 38 39.2	62	4.73	153.05	4.8	13	0
1	67 8 29	10 50 9.4	41	3.25	141.50	5.2	31	0
1	67 8 30	13 7 31.8	64	5.11	151.83	5.0	14	0
1	67 8 30	14 8 47.4	70	6.20	149.54	4.8	11	0
1	67 8 31	10 10 32.6	181	5.38	146.97	4.2	9	0
1	67 9 1	3 31 10.5	182	5.57	147.18	5.6	22	0
1	67 9 1	20 41 56.3	33	6.92	147.70	3.9	2	0
1	67 9 3	1 23 19.6	139	7.84	147.12	5.4	29	0
1	67 9 4	13 0 11.3	70	4.72	153.20	4.7	23	0
1	67 9 4	14 51 27.3	176	5.82	147.15	0.0	3	0
1	67 9 4	18 1 32.7	33	8.76	157.68	5.2	28	0
1	67 9 4	18 42 41.3	169	5.15	145.37	0.0	4	0
1	67 9 4	18 48 51.3	33	7.76	156.97	0.0	6	0
1	67 9 5	3 39 55.9	27	4.39	144.78	5.2	21	0
1	67 9 5	4 29 20.9	33	4.42	144.53	0.0	4	0
1	67 9 5	5 15 35.8	33	4.42	144.51	0.0	4	0
1	67 9 5	16 30 20.9	33	8.48	155.99	0.0	4	0
1	67 9 5	23 1 2.6	183	5.80	147.11	0.0	4	0
1	67 9 6	15 44 7.9	74	5.18	151.71	5.2	31	0
1	67 9 8	11 45 51.9	33	5.62	151.86	0.0	4	0
1	67 9 9	2 48 31.3	13	8.39	147.50	4.3	7	0
1	67 9 12	1 57 8.4	49	4.18	153.10	3.7	6	0
1	67 9 12	7 31 34.9	137	7.73	146.81	3.9	8	0
1	67 9 12	21 49 47.6	50	5.49	151.70	5.3	36	0
1	67 9 12	22 30 39.4	27	5.48	152.07	3.8	6	0
1	67 9 12	22 38 57.1	96	5.34	151.92	0.0	4	0
1	67 9 13	2 30 35.7	34	5.65	152.20	4.6	7	0
1	67 9 13	21 51 22.2	24	9.31	158.00	5.2	9	0
1	67 9 13	23 56 18.5	179	5.89	147.17	3.6	5	0
1	67 9 14	19 17 18.9	55	10.22	161.72	5.1	18	0
1	67 9 15	8 25 50.9	33	5.75	152.52	5.1	5	0
1	67 9 16	19 12 13.6	31	10.10	161.24	5.3	37	0
1	67 9 18	15 33 6.5	39	5.94	146.63	5.6	67	0
1	67 9 19	14 0 54.9	36	2.43	137.63	0.0	10	0
1	67 9 20	10 40 7.4	213	5.50	147.47	4.9	4	0
1	67 9 21	3 31 33.3	60	6.13	145.82	4.7	10	0
1	67 9 21	12 17 42.7	53	7.38	145.98	4.3	7	0
1	67 9 21	17 58 39.0	109	5.98	148.33	4.1	4	0
1	67 9 21	19 12 41.1	33	2.87	139.57	0.0	9	0
1	67 9 22	20 48 26.7	76	4.58	152.99	0.0	14	0
1	67 9 22	23 10 58.0	79	6.26	154.37	0.0	5	0
1	67 9 24	7 48 36.4	84	6.25	146.92	5.1	16	0
1	67 9 25	4 34 29.3	33	6.86	154.78	5.0	12	0
1	67 9 25	16 58 7.3	109	6.33	145.95	4.5	8	0
1	67 9 26	14 14 9.6	42	6.19	151.13	5.0	13	0
1	67 9 26	17 5 55.0	94	7.10	155.80	5.4	27	0
1	67 9 28	4 56 56.3	44	6.59	153.40	6.0	121	0
1	67 9 28	6 6 58.6	33	6.52	152.84	0.0	4	0
1	67 9 28	8 24 51.4	33	6.58	153.76	0.0	8	0
1	67 9 28	8 45 38.4	33	6.83	153.32	0.0	4	0
1	67 9 28	10 19 45.0	33	6.49	153.07	0.0	4	0
1	67 9 28	10 57 53.9	33	6.66	153.25	0.0	7	0
1	67 9 28	23 52 3.2	33	6.63	153.34	4.7	7	0
1	67 9 29	15 13 26.4	44	6.43	153.40	4.7	8	0
1	67 9 30	0 57 25.3	78	4.95	152.06	4.5	12	0
1	67 9 30	9 9 35.0	41	6.45	153.41	4.6	8	0
1	67 9 30	10 29 29.8	36	6.53	153.48	0.0	9	0
1	67 9 30	10 40 49.0	33	6.63	153.37	4.8	7	0
1	67 9 30	13 4 20.4	13	3.54	130.90	5.0	14	0
1	67 9 30	15 4 43.0	33	3.52	130.83	0.0	7	0
1	67 9 30	18 40 15.6	168	4.50	144.34	0.0	8	0
1	67 10 2	8 45 40.6	62	6.48	153.13	4.8	9	0
1	67 10 2	14 38 54.3	49	6.58	153.40	4.9	9	0
1	67 10 2	14 54 8.4	27	6.69	153.36	5.3	47	0
1	67 10 3	4 54 47.3	17	1.03	149.49	5.0	26	0
1	67 10 3	15 14 52.9	40	6.47	153.38	4.2	8	0
1	67 10 4	6 18 33.2	52	3.34	139.74	5.2	44	0
1	67 10 4	10 24 41.1	92	4.77	150.71	4.6	8	0
1	67 10 4	17 21 20.7	52	5.72	153.89	5.8	102	0
1	67 10 4	23 14 32.6	76	5.80	153.81	0.0	10	0
1	67 10 5	4 7 41.9	75	5.79	153.98	5.1	25	0
1	67 10 5	8 14 9.8	68	6.23	149.04	4.3	7	0
1	67 10 5	12 35 38.8	100	5.21	154.10	5.0	14	0
1	67 10 5	17 58 36.6	54	6.33	153.03	5.0	15	0
1	67 10 5	19 48 30.0	43	6.24	154.94	4.9	20	0
1	67 10 6	0 30 59.8	86	6.54	154.20	4.8	6	0
1	67 10 6	23 2 44.0	57	7.96	148.03	4.8	9	0
1	67 10 7	19 11 1.6	33	6.04	154.12	4.1	5	0
1	67 10 7	19 52 7.4	92	5.56	153.73	5.3	26	0
1	67 10 7	20 46 46.0	107	5.02	153.88	4.7	11	0
1	67 10 8	13 13 45.8	54	5.78	153.86	0.0	7	0
1	67 10 8	13 55 48.4	40	6.59	153.44	4.6	12	0
1	67 10 8	16 59 34.4	17	9.54	148.82	5.5	45	0
1	67 10 8	18 8 18.1	70	5.60	153.96	5.5	62	0
1	67 10 9	13 27 56.7	41	5.75	153.96	5.2	52	0
1	67 10 10	3 1 47.7	33	9.54	155.08	5.3	22	0
1	67 10 10	5 15 13.3	67	5.60	153.85	5.2	40	0
1	67 10 10	8 23 25.0	94	4.49	143.89	4.8	9	0
1	67 10 10	10 59 57.2	108	6.20	146.89	4.6	8	0
1	67 10 11	8 20 32.7	158	5.13	151.34	5.1	23	0
1	67 10 11	13 14 21.2	69	5.61	153.81	5.0	20	0
1	67 10 12	1 22 11.6	124	5.56	153.29	4.5	10	0
1	67 10 12	8 38 45.7	56	6.21	147.25	4.4	8	0
1	67 10 12	11 2 4.6	55	7.85	156.13	4.9	8	0
1	67 10 13	1 13 55.0	33	3.16	139.24	0.0	5	0
1	67 10 13	7 26 31.5	38	3.90	141.92	5.1	17	0
1	67 10 13	12 39 28.8	56	4.92	152.54	5.1	29	0
1	67 10 14	1 15 22.2	101	5.89	153.47	0.0	8	0
1	67 10 14	11 58 11.7	60	7.56	156.06	0.0	6	0

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TYPE	YR-MN-DY	HR-MN-SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
1	67 10 15	16 46 11.4	120	7.03	146.63	4.8	8	0
1	67 10 16	13 29 16.4	111	5.11	154.00	5.1	13	0
1	67 10 17	18 47 29.3	51	2.30	138.49	5.2	17	0
1	67 10 19	14 9 12.9	60	6.52	148.64	4.1	9	0
1	67 10 20	14 56 24.1	190	3.96	152.27	4.0	6	0
1	67 10 20	16 34 15.9	24	3.77	140.03	0.0	6	0
1	67 10 21	7 16 49.6	8	3.31	146.21	0.0	5	0
1	67 10 21	12 50 38.7	92	5.82	149.40	5.2	15	0
1	67 10 21	14 47 2.7	22	6.47	153.34	0.0	7	0
1	67 10 21	20 11 18.9	209	5.76	146.90	4.2	3	0
1	67 10 22	6 30 9.3	33	2.16	137.37	5.2	12	0
1	67 10 22	21 31 48.1	42	6.75	150.78	4.9	15	0
1	67 10 22	22 55 42.1	111	6.05	145.29	4.8	7	0
1	67 10 24	9 50 14.8	26	5.77	153.01	4.7	13	0
1	67 10 24	11 47 25.3	39	6.17	151.83	4.9	13	0
1	67 10 28	7 31 52.1	33	5.88	151.91	4.5	8	0
1	67 10 28	11 46 33.0	58	5.92	150.99	4.9	8	0
1	67 10 29	5 24 0.1	91	10.29	161.26	4.9	22	0
1	67 10 30	9 8 59.3	59	6.15	148.60	4.4	6	0
1	67 10 30	23 24 41.4	33	4.20	134.15	5.1	12	0
1	67 10 31	13 4 0.6	33	5.99	153.96	4.0	10	0
1	67 10 31	13 36 2.8	39	6.02	154.18	4.3	9	0
1	67 10 31	16 8 16.1	189	5.74	147.34	0.0	4	0
1	67 11 1	17 29 20.8	119	4.08	143.37	5.0	11	0
1	67 11 1	18 56 54.8	14	4.84	135.68	5.8	64	0
1	67 11 6	7 20 29.0	40	3.65	140.13	0.0	7	0
1	67 11 7	10 21 49.7	40	4.37	135.20	5.1	14	0
1	67 11 11	1 53 52.1	61	5.81	148.37	0.0	7	0
1	67 11 11	22 18 0.6	155	6.17	148.55	3.9	5	0
1	67 11 13	8 55 5.3	186	5.43	146.81	3.8	6	0
1	67 11 14	5 28 36.9	201	5.43	147.07	5.8	63	0
1	67 11 15	4 47 38.5	51	6.08	148.21	3.9	7	0
1	67 11 16	13 22 43.8	33	10.84	164.38	4.8	18	0
1	67 11 17	5 22 44.9	97	4.77	152.11	5.1	23	0
1	67 11 17	9 19 21.0	60	6.30	154.95	5.3	35	0
1	67 11 18	14 50 58.7	33	4.76	133.85	4.9	16	0
1	67 11 19	2 11 50.5	62	5.40	151.56	4.8	10	0
1	67 11 21	7 1 42.0	204	5.47	147.05	4.8	18	0
1	67 11 22	20 42 41.1	56	3.23	153.23	4.6	9	0
1	67 11 24	18 15 52.2	70	4.94	152.50	4.6	14	0
1	67 11 27	9 59 42.9	33	6.06	152.55	0.0	8	0
1	67 11 27	13 30 7.2	33	5.26	152.30	0.0	7	0
1	67 11 28	22 10 5.1	84	4.88	144.84	4.4	9	0
1	67 11 29	4 7 37.2	62	4.89	153.20	4.9	22	0
1	67 11 29	17 25 53.4	49	4.29	153.31	0.0	9	0
1	67 11 30	6 46 4.1	60	5.76	146.59	4.5	6	0
1	67 12 1	17 50 30.7	74	10.47	161.58	4.9	15	0
1	67 12 1	20 38 33.9	77	6.31	154.27	0.0	8	0
1	67 12 3	20 46 12.9	64	5.90	151.30	4.6	8	0
1	67 12 5	7 5 28.0	33	11.35	164.32	4.6	14	0
1	67 12 7	23 0 28.0	66	5.80	146.54	5.2	19	0
1	67 12 8	2 0 27.9	14	10.65	161.51	5.4	53	0
1	67 12 8	3 29 34.5	33	3.44	148.82	4.7	15	0
1	67 12 8	9 4 59.1	75	5.62	146.76	4.4	4	0
1	67 12 9	3 38 34.4	20	6.44	150.99	4.1	10	0
1	67 12 9	6 43 25.9	59	5.50	151.60	5.2	29	0
1	67 12 9	13 54 0.8	124	5.60	145.88	4.7	7	0
1	67 12 9	17 0 24.2	109	4.44	153.56	4.2	10	0
1	67 12 10	2 8 30.0	45	11.40	162.24	5.3	13	0
1	67 12 11	16 18 20.3	54	5.19	152.90	3.1	16	0
1	67 12 12	4 24 42.3	54	5.23	152.83	5.0	28	0
1	67 12 12	4 35 28.2	58	5.13	152.43	3.8	7	0
1	67 12 12	11 8 11.5	52	5.18	152.87	4.8	13	0
1	67 12 12	17 24 32.3	92	6.55	154.89	0.0	5	0
1	67 12 13	20 48 2.2	382	5.03	149.71	4.9	28	0
1	67 12 14	23 26 39.7	150	5.09	151.15	5.2	32	0
1	67 12 15	19 39 6.3	37	11.39	163.25	5.2	15	0
1	67 12 16	17 55 5.2	63	8.93	161.01	4.8	10	0
1	67 12 17	15 5 46.5	33	5.11	152.34	0.0	6	0
1	67 12 17	21 56 45.2	75	6.06	148.58	4.6	6	0
1	67 12 18	12 27 38.4	61	6.10	153.54	0.0	9	0
1	67 12 19	2 58 27.4	53	6.03	153.50	0.0	9	0
1	67 12 20	6 10 57.4	84	9.04	144.38	4.7	13	0
1	67 12 20	18 39 8.7	29	6.77	153.72	0.0	5	0
1	67 12 21	19 52 22.2	53	6.83	153.38	5.0	16	0
1	67 12 22	12 43 45.3	55	7.38	156.13	4.9	14	0
1	67 12 22	13 48 18.6	69	5.29	151.68	0.0	9	0
1	67 12 23	10 28 52.0	107	5.75	145.69	4.7	7	0
1	67 12 23	13 23 15.0	61	5.23	151.84	3.5	34	0
1	67 12 23	21 31 27.6	112	6.67	146.77	4.0	7	0
1	67 12 25	1 23 33.6	64	5.28	153.67	3.7	102	0
1	67 12 25	9 29 29.3	101	5.20	154.00	4.7	10	0
1	67 12 25	10 15 15.7	107	5.03	153.97	4.7	11	0
1	67 12 25	10 23 55.4	46	5.36	153.90	4.8	9	0
1	67 12 25	11 41 24.8	95	4.93	153.87	4.5	9	0
1	67 12 25	12 9 38.4	104	4.88	153.71	5.1	29	0
1	67 12 25	18 52 4.2	119	5.22	154.02	5.1	10	0
1	67 12 25	19 41 48.0	59	8.17	158.56	4.5	10	0
1	67 12 25	19 49 52.3	103	5.02	153.66	4.5	14	0
1	67 12 25	22 18 23.1	69	5.18	153.56	0.0	12	0
1	67 12 26	5 24 32.8	111	4.95	153.95	4.9	10	0
1	67 12 26	8 52 42.3	59	5.15	153.71	5.2	30	0
1	67 12 27	1 43 25.0	85	5.81	147.13	5.0	20	0
1	67 12 27	2 11 26.5	113	5.19	153.95	5.0	8	0
1	67 12 27	3 44 42.5	33	11.16	163.35	4.4	9	0
1	67 12 27	4 28 21.3	130	4.99	153.65	5.1	34	0
1	67 12 27	12 11 23.3	161	4.55	153.35	0.0	9	0
1	67 12 27	13 19 20.7	71	5.28	153.59	4.4	11	0
1	67 12 27	14 39 8.5	36	3.49	141.30	5.1	26	0
1	67 12 27	14 47 18.1	143	4.60	153.42	0.0	9	0

SEISMICITY PAPUA AND NEW GUINEA

6

TYPE	YR.MN.DY	HR.MN.SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
1	67 12 28	13 29 24.9	144	4.60	153.66	4.8	10	0
1	67 12 28	15 45 43.6	118	4.94	153.88	5.1	11	0
1	67 12 29	5 10 26.1	69	5.67	153.84	4.9	18	0
1	67 12 30	0 54 39.7	43	6.64	150.63	4.7	11	0
1	67 12 30	9 6 38.0	33	6.37	154.28	4.5	10	0
1	67 12 31	4 55 48.3	65	5.80	150.94	4.7	10	0
1	67 12 31	13 59 13.9	59	7.13	154.68	4.6	12	0
1	67 12 31	15 3 32.3	19	7.14	154.84	5.4	36	0
1	67 12 31	15 53 58.4	47	7.09	154.87	4.8	8	0
1	67 12 31	20 3 23.8	33	7.02	154.93	0.0	12	0

NO OF RECORDS SELECTED AND PRINTED = 310

B-113

Table 4- Reports of earthquakes felt in
N.G. - Solomon Region 1967

SEISMICITY PAPUA AND NEW GUINEA

PAGE 1

TYPE	YR.	MO.	DAY	HR.	MIN.	SEC.	DEP.	LAT-S	LONG-E	MAG	STN	INT
2	67	1	4	15	30	0.0	0	3.12	142.33	0.0	0	3
2	67	1	4	16	35	0.0	0	4.23	142.32	0.0	0	2
2	67	1	4	16	35	0.0	0	3.12	142.33	0.0	0	3
2	67	1	7	5	29	0.0	0	5.98	147.20	0.0	0	2
2	67	1	11	11	50	0.0	0	6.83	145.92	0.0	0	2
2	67	1	11	11	51	0.0	0	7.00	146.58	0.0	0	5
2	67	1	11	11	55	0.0	0	6.97	146.58	0.0	0	4
2	67	1	12	3	41	0.0	0	4.17	152.17	0.0	0	1
2	67	1	17	3	0	0.0	0	6.83	145.92	0.0	0	2
2	67	1	17	3	0	0.0	0	6.08	145.42	0.0	0	1
2	67	1	20	0	19	0.0	0	4.17	152.17	0.0	0	3
2	67	1	20	0	23	0.0	0	4.17	152.17	0.0	0	3
2	67	1	21	0	45	0.0	0	9.75	150.93	0.0	0	5
2	67	1	21	23	10	0.0	0	5.17	144.17	0.0	0	2
2	67	1	21	23	10	0.0	0	5.23	144.55	0.0	0	3
2	67	1	23	0	25	0.0	0	8.93	143.17	0.0	0	4
2	67	1	29	0	20	0.0	0	8.93	148.17	0.0	0	1
2	67	1	29	15	0	0.0	0	6.25	149.58	0.0	0	2
2	67	2	2	18	20	0.0	0	4.37	152.28	0.0	0	3
2	67	2	8	13	45	0.0	0	3.57	142.78	0.0	0	2
2	67	2	8	13	45	0.0	0	3.47	142.95	0.0	0	3
2	67	2	13	0	0	0.0	0	6.55	149.77	0.0	0	4
2	67	2	13	18	0	0.0	0	8.93	148.17	0.0	0	2
2	67	2	14	7	19	0.0	0	4.37	152.28	0.0	0	3
2	67	2	17	2	47	0.0	0	7.00	146.58	0.0	0	3
2	67	2	17	2	47	0.0	0	6.73	147.02	0.0	0	3
2	67	2	17	2	47	0.0	0	6.42	147.57	0.0	0	3
2	67	2	17	2	47	0.0	0	6.02	147.53	0.0	0	3
2	67	2	17	2	47	0.0	0	6.97	146.58	0.0	0	3
2	67	2	17	2	50	0.0	0	6.63	146.57	0.0	0	3
2	67	2	18	2	39	0.0	0	5.00	151.25	0.0	0	1
2	67	2	18	2	40	0.0	0	4.42	152.08	0.0	0	2
2	67	2	20	20	0	0.0	0	4.42	152.08	0.0	0	3
2	67	2	22	3	9	0.0	0	4.17	152.17	0.0	0	1
2	67	2	23	4	52	0.0	0	4.37	152.28	0.0	0	3
2	67	2	23	4	53	0.0	0	4.37	152.10	0.0	0	2
2	67	2	23	4	53	0.0	0	5.00	151.25	0.0	0	1
2	67	2	23	4	53	0.0	0	4.17	152.17	0.0	0	1
2	67	2	23	4	55	0.0	0	4.37	152.28	0.0	0	2
2	67	2	24	10	8	0.0	0	6.02	147.53	0.0	0	3
2	67	2	24	10	9	0.0	0	5.98	147.20	0.0	0	3
2	67	2	24	10	15	0.0	0	6.42	146.82	0.0	0	3
2	67	2	26	10	30	0.0	0	6.00	149.17	0.0	0	4
2	67	2	26	10	30	0.0	0	5.33	150.08	0.0	0	3
2	67	2	26	10	30	0.0	0	5.50	148.33	0.0	0	3
2	67	2	26	10	30	0.0	0	5.57	150.09	0.0	0	1
2	67	2	26	17	20	0.0	0	6.23	155.05	0.0	0	4
2	67	2	26	17	20	0.0	0	9.22	152.67	0.0	0	5
2	67	2	27	15	45	0.0	0	6.23	155.05	0.0	0	3
2	67	2	28	5	24	0.0	0	6.25	149.55	0.0	0	2
2	67	2	28	6	19	0.0	0	5.00	151.25	0.0	0	2
2	67	2	28	15	0	0.0	0	5.23	155.05	0.0	0	1
2	67	2	28	23	40	0.0	0	5.00	151.25	0.0	0	1
2	67	3	1	17	35	0.0	0	3.12	142.33	0.0	0	4
2	67	3	1	17	35	0.0	0	3.05	142.07	0.0	0	3
2	67	3	2	15	17	0.0	0	6.63	146.57	0.0	0	3
2	67	3	4	4	37	0.0	0	6.38	149.53	0.0	0	2
2	67	3	10	0	26	0.0	0	5.00	151.25	0.0	0	2
2	67	3	14	7	53	0.0	0	6.23	145.72	0.0	0	3
2	67	3	17	0	54	0.0	0	5.50	151.50	0.0	0	3
2	67	3	18	5	15	0.0	0	6.08	145.42	0.0	0	3
2	67	3	18	16	19	0.0	0	5.63	145.47	0.0	0	3
2	67	3	18	17	16	0.0	0	6.42	147.57	0.0	0	3
2	67	3	18	19	10	0.0	0	5.23	145.75	0.0	0	3
2	67	3	18	19	15	0.0	0	6.83	145.92	0.0	0	4
2	67	3	18	19	15	0.0	0	6.28	145.38	0.0	0	4
2	67	3	18	19	15	0.0	0	6.26	146.25	0.0	0	3
2	67	3	18	19	15	0.0	0	6.23	145.72	0.0	0	4
2	67	3	18	19	16	0.0	0	7.32	146.72	0.0	0	4
2	67	3	18	19	16	0.0	0	6.42	147.97	0.0	0	4
2	67	3	18	19	19	0.0	0	7.37	146.18	0.0	0	5
2	67	3	18	19	20	0.0	0	6.63	146.57	0.0	0	4
2	67	3	18	19	20	0.0	0	4.55	145.95	0.0	0	4
2	67	3	18	19	20	0.0	0	6.08	145.42	0.0	0	4
2	67	3	18	19	20	0.0	0	6.97	146.58	0.0	0	4
2	67	3	18	19	20	0.0	0	6.02	147.03	0.0	0	4
2	67	3	18	19	20	0.0	0	6.63	146.97	0.0	0	4
2	67	3	18	19	25	0.0	0	4.77	145.70	0.0	0	3
2	67	3	19	13	15	0.0	0	5.58	143.32	0.0	0	3
2	67	3	19	18	15	0.0	0	4.72	144.67	0.0	0	2
2	67	3	20	1	50	0.0	0	6.63	146.97	0.0	0	2
2	67	3	20	8	30	0.0	0	5.95	147.35	0.0	0	5
2	67	3	20	8	47	0.0	0	6.02	147.53	0.0	0	4
2	67	3	20	8	49	0.0	0	5.98	147.20	0.0	0	4
2	67	3	20	8	50	0.0	0	5.58	148.32	0.0	0	3
2	67	3	20	9	0	0.0	0	5.50	151.50	0.0	0	1
2	67	3	22	5	53	0.0	0	5.00	151.25	0.0	0	3
2	67	3	22	5	55	0.0	0	4.42	152.08	0.0	0	4
2	67	3	22	6	30	0.0	0	5.00	151.25	0.0	0	2
2	67	3	22	6	54	0.0	0	4.42	152.08	0.0	0	3
2	67	3	22	13	0	0.0	0	5.63	145.48	0.0	0	3
2	67	3	22	13	2	0.0	0	6.02	147.53	0.0	0	3
2	67	3	22	13	4	0.0	0	4.77	145.70	0.0	0	4
2	67	3	22	13	5	0.0	0	4.72	144.67	0.0	0	3
2	67	4	2	17	0	0.0	0	6.02	147.53	0.0	0	3
2	67	4	2	17	40	0.0	0	5.33	150.08	0.0	0	3
2	67	4	2	17	40	0.0	0	6.63	146.57	0.0	0	3
2	67	4	2	17	44	0.0	0	6.38	149.53	0.0	0	5
2	67	4	2	17	44	0.0	0	8.36	147.75	0.0	0	3
2	67	4	3	9	0	0.0	0	6.23	155.05	0.0	0	1

TYPE	YR:MN:DY	HR:MN:SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
2	67 4 3	16 50 0.0	0	6.23	149.56	0.0	0	3
2	67 4 4	18 28 0.0	0	4.17	152.17	0.0	0	4
2	67 4 4	18 30 0.0	0	4.37	152.26	0.0	0	3
2	67 4 4	19 30 0.0	0	4.42	152.08	0.0	0	3
2	67 4 4	18 30 0.0	0	4.37	152.28	0.0	0	3
2	67 4 6	12 0 0.0	0	6.02	147.53	0.0	0	3
2	67 4 6	12 2 0.0	0	5.33	150.08	0.0	0	2
2	67 4 6	12 2 0.0	0	6.38	149.53	0.0	0	5
2	67 4 8	5 0 0.0	0	6.23	155.05	0.0	0	1
2	67 4 8	17 58 0.0	0	6.83	155.75	0.0	0	3
2	67 4 9	1 20 0.0	0	5.00	151.25	0.0	0	2
2	67 4 9	8 30 0.0	0	6.85	155.73	0.0	0	2
2	67 4 9	9 0 0.0	0	6.23	155.05	0.0	0	3
2	67 4 9	18 0 0.0	0	4.42	152.08	0.0	0	3
2	67 4 9	19 23 0.0	0	4.37	152.28	0.0	0	3
2	67 4 9	19 25 0.0	0	4.37	152.28	0.0	0	3
2	67 4 9	19 30 0.0	0	4.42	152.08	0.0	0	4
2	67 4 9	21 20 0.0	0	6.85	155.73	0.0	0	2
2	67 4 10	5 1 0.0	0	6.85	155.44	0.0	0	3
2	67 4 10	9 13 0.0	0	6.85	155.44	0.0	0	1
2	67 4 10	8 27 0.0	0	6.85	155.44	0.0	0	1
2	67 4 10	10 47 0.0	0	6.85	155.44	0.0	0	1
2	67 4 10	12 32 0.0	0	6.35	155.44	0.0	0	1
2	67 4 10	15 0 0.0	0	6.23	155.05	0.0	0	1
2	67 4 10	15 4 0.0	0	6.85	155.73	0.0	0	4
2	67 4 10	19 49 0.0	0	6.85	155.73	0.0	0	1
2	67 4 10	18 21 0.0	0	6.85	155.73	0.0	0	2
2	67 4 10	20 46 0.0	0	6.85	155.73	0.0	0	2
2	67 4 10	21 8 0.0	0	6.85	155.73	0.0	0	3
2	67 4 10	21 50 0.0	0	6.85	155.73	0.0	0	3
2	67 4 12	14 0 0.0	0	6.23	155.05	0.0	0	3
2	67 4 12	23 30 0.0	0	6.83	149.97	0.0	0	3
2	67 4 12	23 39 0.0	0	6.73	147.62	0.0	0	3
2	67 4 16	8 26 0.0	0	6.79	148.25	0.0	0	4
2	67 4 16	9 28 0.0	0	9.05	148.37	0.0	0	5
2	67 4 20	23 49 0.0	0	7.90	147.17	0.0	0	4
2	67 4 23	12 0 0.0	0	6.02	147.53	0.0	0	2
2	67 4 29	17 38 0.0	0	5.63	146.47	0.0	0	3
2	67 4 29	13 45 0.0	0	6.42	146.83	0.0	0	3
2	67 4 30	4 22 0.0	0	5.17	141.58	0.0	0	4
2	67 4 30	17 2 0.0	0	7.32	146.72	0.0	0	4
2	67 5 2	17 0 0.0	0	6.02	147.53	0.0	0	4
2	67 5 2	17 0 0.0	0	5.92	145.10	0.0	0	4
2	67 5 2	17 11 0.0	0	6.42	147.57	0.0	0	4
2	67 5 2	17 45 0.0	0	4.38	149.33	0.0	0	3
2	67 5 4	13 39 0.0	0	5.63	146.47	0.0	0	3
2	67 5 4	13 34 0.0	0	6.42	147.57	0.0	0	3
2	67 5 4	15 0 0.0	0	6.02	147.53	0.0	0	3
2	67 5 5	14 2 0.0	0	6.63	146.57	0.0	0	3
2	67 5 5	21 29 0.0	0	3.17	152.87	0.0	0	3
2	67 5 6	16 0 0.0	0	5.63	146.47	0.0	0	3
2	67 5 7	10 15 0.0	0	4.37	152.28	0.0	0	4
2	67 5 7	10 15 0.0	0	3.30	151.75	0.0	0	4
2	67 5 7	10 18 0.0	0	5.00	151.25	0.0	0	1
2	67 5 7	11 20 0.0	0	4.42	152.08	0.0	0	4
2	67 5 14	2 19 0.0	0	9.08	149.32	0.0	0	2
2	67 5 16	6 0 0.0	0	6.02	147.53	0.0	0	3
2	67 5 16	6 23 0.0	0	5.63	146.47	0.0	0	3
2	67 5 20	12 0 0.0	0	5.63	146.47	0.0	0	3
2	67 5 21	12 20 0.0	0	6.63	146.57	0.0	0	3
2	67 5 21	12 20 0.0	0	6.02	144.97	0.0	0	3
2	67 5 21	12 20 0.0	0	4.95	145.95	0.0	0	3
2	67 5 21	12 24 0.0	0	5.47	145.73	0.0	0	4
2	67 5 21	13 0 0.0	0	6.52	145.97	0.0	0	2
2	67 5 21	18 0 0.0	0	6.02	147.53	0.0	0	4
2	67 5 27	0 30 0.0	0	5.63	146.52	0.0	0	3
2	67 5 29	7 34 0.0	0	6.28	146.03	0.0	0	3
2	67 5 31	16 30 0.0	0	5.92	144.68	0.0	0	3
2	67 6 1	20 43 0.0	0	6.65	155.73	0.0	0	5
2	67 6 1	20 34 0.0	0	6.85	155.73	0.0	0	2
2	67 6 1	21 41 0.0	0	6.85	155.73	0.0	0	2
2	67 6 2	14 15 0.0	0	6.23	145.72	0.0	0	3
2	67 6 3	14 13 0.0	0	6.63	146.57	0.0	0	4
2	67 6 3	14 15 0.0	0	6.67	146.92	0.0	0	4
2	67 6 3	14 19 0.0	0	6.02	147.53	0.0	0	4
2	67 6 3	15 30 0.0	0	9.23	152.87	0.0	0	4
2	67 6 6	6 35 0.0	0	4.17	152.17	0.0	0	2
2	67 6 6	6 36 0.0	0	4.42	152.08	0.0	0	3
2	67 6 6	13 5 0.0	0	3.12	142.33	0.0	0	3
2	67 6 6	16 0 0.0	0	7.32	146.72	0.0	0	3
2	67 6 7	5 45 0.0	0	5.00	151.25	0.0	0	1
2	67 6 7	18 30 0.0	0	6.02	147.53	0.0	0	3
2	67 6 13	15 40 0.0	0	6.28	146.25	0.0	0	3
2	67 6 13	15 40 0.0	0	7.90	147.17	0.0	0	5
2	67 6 13	15 40 0.0	0	7.32	146.72	0.0	0	4
2	67 6 13	15 40 0.0	0	6.67	146.92	0.0	0	4
2	67 6 13	15 40 0.0	0	6.73	147.02	0.0	0	4
2	67 6 13	15 40 0.0	0	6.73	147.02	0.0	0	4
2	67 6 13	15 40 0.0	0	6.97	146.58	0.0	0	3
2	67 6 13	15 40 0.0	0	6.02	147.53	0.0	0	4
2	67 6 13	15 40 0.0	0	6.28	145.88	0.0	0	4
2	67 6 13	15 40 0.0	0	5.63	146.48	0.0	0	4
2	67 6 13	15 40 0.0	0	6.15	145.65	0.0	0	4
2	67 6 13	20 30 0.0	0	3.55	141.23	0.0	0	3
2	67 6 14	11 30 0.0	0	7.75	147.62	0.0	0	4
2	67 6 14	20 30 0.0	0	3.33	141.13	0.0	0	2
2	67 6 14	21 7 0.0	0	3.50	141.33	0.0	0	3
2	67 6 16	6 45 0.0	0	5.00	151.25	0.0	0	2
2	67 6 20	3 44 0.0	0	4.17	152.17	0.0	0	1
2	67 6 20	3 44 0.0	0	4.52	152.18	0.0	0	2

TYPE	YR.	MO.	DAY	HR.	MIN.	SEC.	DEP	LAT-S	LONG-E	MAG	STN	INT
2	67	6	22	3	38	0.0	0	3.17	192.67	0.0	0	1
2	67	6	22	15	42	0.0	0	7.90	147.17	0.0	0	5
2	67	6	22	19	9	0.0	0	1.68	149.92	0.0	0	3
2	67	6	22	19	10	0.0	0	1.55	149.70	0.0	0	3
2	67	6	22	19	15	0.0	0	2.42	150.15	0.0	0	3
2	67	6	23	3	10	0.0	0	7.90	147.17	0.0	0	3
2	67	6	26	14	4	0.0	0	6.57	147.85	0.0	0	4
2	67	6	26	14	5	0.0	0	6.55	147.87	0.0	0	3
2	67	6	26	14	5	0.0	0	6.42	147.57	0.0	0	4
2	67	6	26	14	5	0.0	0	6.68	147.77	0.0	0	4
2	67	6	26	14	5	0.0	0	6.02	147.53	0.0	0	4
2	67	6	26	14	7	0.0	0	5.50	148.33	0.0	0	3
2	67	6	26	20	15	0.0	0	6.23	155.05	0.0	0	2
2	67	6	26	22	30	0.0	0	3.17	152.92	0.0	0	2
2	67	6	26	22	35	0.0	0	3.17	152.92	0.0	0	2
2	67	6	29	13	31	0.0	0	6.55	147.87	0.0	0	3
2	67	7	2	22	18	0.0	0	3.17	152.67	0.0	0	2
2	67	7	5	22	30	0.0	0	6.50	149.87	0.0	0	5
2	67	7	6	7	46	0.0	0	5.98	147.20	0.0	0	3
2	67	7	11	0	45	0.0	0	5.98	147.20	0.0	0	3
2	67	7	11	4	18	0.0	0	6.43	155.75	0.0	0	5
2	67	7	19	23	42	0.0	0	6.55	147.87	0.0	0	3
2	67	7	19	23	45	0.0	0	5.63	146.47	0.0	0	4
2	67	7	19	23	45	0.0	0	6.12	146.47	0.0	0	4
2	67	7	19	23	54	0.0	0	7.00	146.58	0.0	0	3
2	67	7	20	11	38	0.0	0	6.97	146.58	0.0	0	4
2	67	7	20	11	38	0.0	0	6.48	147.87	0.0	0	3
2	67	7	20	11	40	0.0	0	6.52	145.97	0.0	0	3
2	67	7	20	11	40	0.0	0	5.50	148.33	0.0	0	3
2	67	7	20	11	40	0.0	0	7.37	146.18	0.0	0	4
2	67	7	20	11	41	0.0	0	6.73	147.02	0.0	0	4
2	67	7	20	11	42	0.0	0	5.98	147.20	0.0	0	4
2	67	7	20	11	42	0.0	0	6.55	147.87	0.0	0	3
2	67	7	20	11	43	0.0	0	6.63	146.57	0.0	0	4
2	67	7	20	11	43	0.0	0	6.73	147.02	0.0	0	4
2	67	7	20	11	45	0.0	0	6.42	147.57	0.0	0	4
2	67	7	20	11	45	0.0	0	7.32	146.72	0.0	0	3
2	67	7	20	11	47	0.0	0	6.02	147.53	0.0	0	4
2	67	7	20	16	0	0.0	0	7.32	146.72	0.0	0	4
2	67	7	23	10	48	0.0	0	6.83	155.75	0.0	0	4
2	67	7	25	4	7	0.0	0	7.32	146.72	0.0	0	3
2	67	7	25	4	8	0.0	0	6.73	147.02	0.0	0	4
2	67	7	25	4	8	0.0	0	7.37	146.18	0.0	0	4
2	67	7	26	5	0	0.0	0	6.23	155.05	0.0	0	3
2	67	7	26	5	30	0.0	0	6.23	155.05	0.0	0	3
2	67	7	27	0	6	0.0	0	6.83	155.75	0.0	0	4
2	67	7	27	13	0	0.0	0	4.42	152.08	0.0	0	3
2	67	7	28	14	31	0.0	0	6.23	155.05	0.0	0	3
2	67	7	28	17	45	0.0	0	5.63	146.47	0.0	0	3
2	67	7	28	23	40	0.0	0	4.08	145.08	0.0	0	3
2	67	7	28	23	40	0.0	0	6.08	145.42	0.0	0	1
2	67	7	28	23	41	0.0	0	5.83	144.68	0.0	0	3
2	67	7	30	13	30	0.0	0	6.23	150.05	0.0	0	3
2	67	7	30	13	35	0.0	0	4.17	152.17	0.0	0	3
2	67	7	30	13	37	0.0	0	3.17	152.67	0.0	0	3
2	67	7	30	13	44	0.0	0	3.17	152.67	0.0	0	1
2	67	7	31	4	35	0.0	0	5.20	151.25	0.0	0	1
2	67	7	31	23	55	0.0	0	4.77	145.70	0.0	0	4
2	67	8	4	11	49	0.0	0	5.83	144.68	0.0	0	3
2	67	8	5	10	21	0.0	0	4.17	152.17	0.0	0	2
2	67	8	5	10	31	0.0	0	5.50	151.50	0.0	0	3
2	67	8	5	11	20	0.0	0	5.50	151.50	0.0	0	3
2	67	8	6	1	12	0.0	0	5.50	151.20	0.0	0	4
2	67	8	8	10	55	0.0	0	5.90	144.68	0.0	0	2
2	67	8	8	21	57	0.0	0	4.17	152.17	0.0	0	1
2	67	8	13	16	49	0.0	0	3.17	152.67	0.0	0	3
2	67	8	13	16	54	0.0	0	4.17	152.17	0.0	0	5
2	67	8	13	16	54	0.0	0	4.17	152.17	0.0	0	6
2	67	8	13	16	54	0.0	0	4.50	152.37	0.0	0	7
2	67	8	13	16	54	0.0	0	4.50	152.37	0.0	0	8
2	67	8	13	16	54	0.0	0	4.52	152.18	0.0	0	6
2	67	8	13	16	55	0.0	0	5.53	151.52	0.0	0	4
2	67	8	13	17	0	0.0	0	4.82	152.92	0.0	0	5
2	67	8	13	17	0	0.0	0	4.82	152.92	0.0	0	6
2	67	8	13	17	0	0.0	0	4.42	152.08	0.0	0	4
2	67	8	13	17	0	0.0	0	4.40	152.20	0.0	0	6
2	67	8	13	17	0	0.0	0	3.78	152.55	0.0	0	4
2	67	8	13	17	0	0.0	0	4.37	152.38	0.0	0	6
2	67	8	13	17	0	0.0	0	4.37	152.28	0.0	0	6
2	67	8	13	17	0	0.0	0	4.17	152.17	0.0	0	6
2	67	8	13	17	0	0.0	0	5.45	154.68	0.0	0	3
2	67	8	13	17	0	0.0	0	4.17	152.17	0.0	0	7
2	67	8	13	17	0	0.0	0	4.37	152.28	0.0	0	6
2	67	8	13	17	0	0.0	0	3.90	152.52	0.0	0	3
2	67	8	13	17	0	0.0	0	3.67	152.47	0.0	0	4
2	67	8	13	17	0	0.0	0	4.78	152.85	0.0	0	4
2	67	8	13	17	0	0.0	0	4.25	151.75	0.0	0	4
2	67	8	13	17	0	0.0	0	5.67	151.50	0.0	0	4
2	67	8	13	17	3	0.0	0	5.00	151.25	0.0	0	2
2	67	8	13	17	20	0.0	0	5.00	151.25	0.0	0	2
2	67	8	13	20	50	0.0	0	4.17	152.17	0.0	0	3
2	67	8	13	20	50	0.0	0	4.17	152.17	0.0	0	3
2	67	8	13	20	50	0.0	0	4.52	152.18	0.0	0	3
2	67	8	13	21	0	0.0	0	5.50	151.50	0.0	0	1
2	67	8	13	22	10	0.0	0	3.17	152.67	0.0	0	2
2	67	8	13	22	10	0.0	0	3.17	152.67	0.0	0	3
2	67	8	13	22	10	0.0	0	4.37	152.28	0.0	0	8
2	67	8	13	22	11	0.0	0	4.17	152.17	0.0	0	4
2	67	8	13	22	11	0.0	0	4.50	152.37	0.0	0	4
2	67	8	13	22	11	0.0	0	3.17	152.67	0.0	0	3

TYPE	YR.MN.DY	HR.MN.SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
2	67 8 13	22 11 0.0	0	3.17	152.67	0.0	0	2
2	67 8 13	22 12 0.0	0	4.17	152.17	0.0	0	6
2	67 8 13	22 13 0.0	0	4.17	152.17	0.0	0	8
2	67 8 13	22 13 0.0	0	4.17	152.17	0.0	0	6
2	67 8 13	22 15 0.0	0	4.50	152.37	0.0	0	7
2	67 8 13	22 15 0.0	0	4.50	152.37	0.0	0	7
2	67 8 13	22 15 0.0	0	4.52	152.18	0.0	0	5
2	67 8 13	22 15 0.0	0	4.52	152.18	0.0	0	7
2	67 8 13	22 15 0.0	0	3.17	152.67	0.0	0	3
2	67 8 13	22 15 0.0	0	3.17	152.67	0.0	0	4
2	67 8 13	22 15 0.0	0	5.00	151.25	0.0	0	2
2	67 8 13	22 15 0.0	0	3.92	152.83	0.0	0	4
2	67 8 13	22 16 0.0	0	5.50	151.50	0.0	0	4
2	67 8 13	22 16 0.0	0	4.82	152.92	0.0	0	3
2	67 8 13	22 16 0.0	0	4.82	152.92	0.0	0	4
2	67 8 13	22 16 0.0	0	5.53	151.52	0.0	0	5
2	67 8 13	22 20 0.0	0	4.42	152.08	0.0	0	5
2	67 8 13	22 20 0.0	0	4.13	152.47	0.0	0	5
2	67 8 13	22 20 0.0	0	4.37	152.28	0.0	0	6
2	67 8 13	22 20 0.0	0	4.40	152.20	0.0	0	7
2	67 8 13	22 20 0.0	0	4.42	152.08	0.0	0	5
2	67 8 13	22 22 0.0	0	4.82	152.92	0.0	0	6
2	67 8 14	18 50 0.0	0	3.17	152.67	0.0	0	2
2	67 8 14	20 10 0.0	0	3.17	152.67	0.0	0	2
2	67 8 15	0 45 0.0	0	3.12	142.32	0.0	0	4
2	67 8 16	4 42 0.0	0	5.50	148.33	0.0	0	3
2	67 8 18	5 30 0.0	0	6.33	147.58	0.0	0	5
2	67 8 27	2 3 0.0	0	3.78	152.55	0.0	0	3
2	67 8 27	2 4 0.0	0	4.17	152.17	0.0	0	2
2	67 8 27	21 39 0.0	0	4.17	152.17	0.0	0	2
2	67 8 27	21 45 0.0	0	3.17	152.67	0.0	0	2
2	67 8 29	10 30 0.0	0	3.53	141.33	0.0	0	4
2	67 8 29	10 50 0.0	0	3.33	141.13	0.0	0	4
2	67 8 29	10 52 0.0	0	3.53	142.17	0.0	0	3
2	67 8 29	10 52 0.0	0	3.05	142.07	0.0	0	4
2	67 8 29	22 11 0.0	0	4.17	152.17	0.0	0	1
2	67 9 1	3 30 0.0	0	5.50	145.45	0.0	0	3
2	67 9 1	3 30 0.0	0	5.32	145.58	0.0	0	3
2	67 9 1	3 30 0.0	0	6.28	145.88	0.0	0	4
2	67 9 1	3 30 0.0	0	6.13	145.13	0.0	0	5
2	67 9 1	3 30 0.0	0	6.67	146.92	0.0	0	4
2	67 9 1	3 30 0.0	0	5.20	145.65	0.0	0	3
2	67 9 1	3 30 0.0	0	6.23	143.72	0.0	0	5
2	67 9 1	3 30 0.0	0	5.62	147.85	0.0	0	3
2	67 9 1	3 30 0.0	0	6.40	145.98	0.0	0	4
2	67 9 1	3 30 0.0	0	6.13	145.45	0.0	0	4
2	67 9 1	3 30 0.0	0	5.23	145.75	0.0	0	5
2	67 9 1	3 30 0.0	0	5.98	147.20	0.0	0	4
2	67 9 1	3 30 0.0	0	5.17	144.50	0.0	0	3
2	67 9 1	3 31 0.0	0	5.75	145.23	0.0	0	4
2	67 9 1	3 31 0.0	0	6.55	147.87	0.0	0	3
2	67 9 1	3 31 0.0	0	6.57	147.85	0.0	0	2
2	67 9 1	3 32 0.0	0	6.05	145.25	0.0	0	3
2	67 9 1	3 32 0.0	0	6.08	145.42	0.0	0	1
2	67 9 1	3 33 0.0	0	6.97	146.58	0.0	0	3
2	67 9 1	3 34 0.0	0	6.73	147.02	0.0	0	4
2	67 9 1	3 34 0.0	0	6.83	145.92	0.0	0	3
2	67 9 1	3 35 0.0	0	6.13	147.58	0.0	0	5
2	67 9 1	3 35 0.0	0	6.32	147.53	0.0	0	3
2	67 9 1	3 35 0.0	0	7.37	146.18	0.0	0	4
2	67 9 1	3 35 0.0	0	7.37	146.18	0.0	0	3
2	67 9 1	3 35 0.0	0	7.00	146.58	0.0	0	3
2	67 9 1	3 35 0.0	0	6.12	145.47	0.0	0	4
2	67 9 1	3 35 0.0	0	6.30	145.87	0.0	0	3
2	67 9 1	3 40 0.0	0	6.22	145.95	0.0	0	4
2	67 9 1	3 40 0.0	0	6.42	146.82	0.0	0	4
2	67 9 1	3 40 0.0	0	5.90	145.10	0.0	0	3
2	67 9 3	1 19 0.0	0	7.37	146.60	0.0	0	4
2	67 9 3	1 20 0.0	0	7.20	146.65	0.0	0	4
2	67 9 3	1 20 0.0	0	8.35	147.33	0.0	0	4
2	67 9 3	1 20 0.0	0	8.55	147.27	0.0	0	4
2	67 9 3	1 20 0.0	0	6.88	146.77	0.0	0	4
2	67 9 3	1 20 0.0	0	8.36	146.98	0.0	0	5
2	67 9 3	1 20 0.0	0	7.90	147.17	0.0	0	4
2	67 9 3	1 20 0.0	0	8.79	148.25	0.0	0	4
2	67 9 3	1 20 0.0	0	8.03	148.95	0.0	0	4
2	67 9 3	1 20 0.0	0	9.67	147.67	0.0	0	2
2	67 9 3	1 23 0.0	0	9.50	147.13	0.0	0	3
2	67 9 3	1 24 0.0	0	6.55	147.87	0.0	0	3
2	67 9 3	1 24 0.0	0	6.55	147.87	0.0	0	3
2	67 9 3	1 24 0.0	0	6.57	147.85	0.0	0	2
2	67 9 3	1 25 0.0	0	7.37	146.18	0.0	0	2
2	67 9 3	1 25 0.0	0	6.08	145.42	0.0	0	1
2	67 9 3	1 26 0.0	0	6.67	146.92	0.0	0	3
2	67 9 4	11 9 0.0	0	4.17	152.17	0.0	0	2
2	67 9 4	13 0 0.0	0	4.17	152.17	0.0	0	2
2	67 9 4	13 5 0.0	0	3.17	152.67	0.0	0	2
2	67 9 5	3 35 0.0	0	4.27	144.98	0.0	0	5
2	67 9 5	3 56 0.0	0	4.10	149.00	0.0	0	4
2	67 9 5	20 12 0.0	0	5.50	151.50	0.0	0	3
2	67 9 6	19 44 0.0	0	4.52	152.18	0.0	0	3
2	67 9 6	19 44 0.0	0	5.00	151.23	0.0	0	2
2	67 9 6	19 44 0.0	0	4.17	152.17	0.0	0	2
2	67 9 6	19 45 0.0	0	5.50	151.50	0.0	0	4
2	67 9 7	17 58 0.0	0	5.00	151.25	0.0	0	1
2	67 9 7	19 48 0.0	0	4.50	152.18	0.0	0	3
2	67 9 7	19 48 0.0	0	5.00	151.25	0.0	0	2
2	67 9 8	11 22 0.0	0	5.50	151.50	0.0	0	2
2	67 9 8	11 46 0.0	0	5.50	151.50	0.0	0	4
2	67 9 8	17 58 0.0	0	5.00	151.25	0.0	0	1

TYPE	YR.MN.DY	HR.MN.SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
2	67 9 11	13 15 0.0	0	4.17	152.17	0.0	0	1
2	67 9 12	21 50 0.0	0	4.17	152.17	0.0	0	3
2	67 9 12	21 51 0.0	0	5.50	151.50	0.0	0	3
2	67 9 12	21 51 0.0	0	4.95	151.13	0.0	0	3
2	67 9 12	21 51 0.0	0	5.00	151.25	0.0	0	2
2	67 9 12	22 5 0.0	0	5.50	151.50	0.0	0	2
2	67 9 14	1 14 0.0	0	4.17	152.17	0.0	0	2
2	67 9 15	8 26 0.0	0	5.50	151.50	0.0	0	2
2	67 9 16	15 30 0.0	0	7.90	147.17	0.0	0	4
2	67 9 18	15 30 0.0	0	6.30	145.87	0.0	0	4
2	67 9 18	15 32 0.0	0	6.40	145.98	0.0	0	4
2	67 9 18	15 32 0.0	0	6.78	145.90	0.0	0	4
2	67 9 18	15 32 0.0	0	6.83	145.92	0.0	0	4
2	67 9 18	15 34 0.0	0	6.42	147.57	0.0	0	5
2	67 9 18	15 34 0.0	0	6.72	147.00	0.0	0	5
2	67 9 18	15 34 0.0	0	7.00	146.58	0.0	0	5
2	67 9 18	15 35 0.0	0	5.90	145.10	0.0	0	5
2	67 9 18	15 35 0.0	0	7.37	146.18	0.0	0	4
2	67 9 18	15 35 0.0	0	5.57	146.18	0.0	0	5
2	67 9 18	15 35 0.0	0	6.52	145.97	0.0	0	4
2	67 9 18	15 35 0.0	0	6.55	145.60	0.0	0	5
2	67 9 18	15 35 0.0	0	5.75	145.23	0.0	0	5
2	67 9 18	15 35 0.0	0	5.95	144.85	0.0	0	4
2	67 9 18	15 35 0.0	0	6.02	147.53	0.0	0	5
2	67 9 18	15 35 0.0	0	5.20	145.65	0.0	0	5
2	67 9 18	15 35 0.0	0	6.73	147.02	0.0	0	5
2	67 9 18	15 35 0.0	0	6.05	145.42	0.0	0	4
2	67 9 18	15 35 0.0	0	5.63	146.48	0.0	0	5
2	67 9 18	15 35 0.0	0	6.73	147.03	0.0	0	5
2	67 9 18	15 35 0.0	0	6.67	146.92	0.0	0	4
2	67 9 18	15 35 0.0	0	6.60	147.77	0.0	0	5
2	67 9 18	15 35 0.0	0	6.55	147.87	0.0	0	4
2	67 9 18	15 35 0.0	0	5.63	146.48	0.0	0	4
2	67 9 18	15 35 0.0	0	4.70	144.03	0.0	0	3
2	67 9 18	15 35 0.0	0	6.13	145.13	0.0	0	4
2	67 9 18	15 35 0.0	0	6.27	145.86	0.0	0	5
2	67 9 18	15 35 0.0	0	6.33	145.93	0.0	0	5
2	67 9 18	15 35 0.0	0	6.63	146.97	0.0	0	5
2	67 9 18	15 35 0.0	0	4.08	143.15	0.0	0	4
2	67 9 18	15 35 0.0	0	6.20	147.20	0.0	0	5
2	67 9 18	15 35 0.0	0	5.90	145.10	0.0	0	4
2	67 9 18	15 35 0.0	0	6.08	146.20	0.0	0	5
2	67 9 18	15 35 0.0	0	6.28	146.25	0.0	0	5
2	67 9 18	15 35 0.0	0	5.98	147.20	0.0	0	5
2	67 9 18	15 35 0.0	0	6.63	146.57	0.0	0	5
2	67 9 18	15 35 0.0	0	6.97	145.58	0.0	0	5
2	67 9 18	15 35 0.0	0	6.58	146.37	0.0	0	5
2	67 9 18	15 35 0.0	0	7.32	146.72	0.0	0	6
2	67 9 18	15 35 0.0	0	6.42	146.82	0.0	0	6
2	67 9 18	15 35 0.0	0	5.75	145.25	0.0	0	4
2	67 9 18	15 35 0.0	0	6.05	145.42	0.0	0	2
2	67 9 18	15 35 0.0	0	6.52	145.97	0.0	0	4
2	67 9 18	15 37 0.0	0	7.37	146.60	0.0	0	5
2	67 9 18	15 37 0.0	0	6.08	145.88	0.0	0	5
2	67 9 18	15 40 0.0	0	6.42	147.57	0.0	0	5
2	67 9 18	15 40 0.0	0	6.15	145.55	0.0	0	5
2	67 9 18	15 43 0.0	0	6.35	145.45	0.0	0	4
2	67 9 20	10 40 0.0	0	6.58	146.37	0.0	0	4
2	67 9 20	10 42 0.0	0	7.37	146.60	0.0	0	4
2	67 9 20	10 42 0.0	0	6.83	145.92	0.0	0	3
2	67 9 20	10 43 0.0	0	6.63	146.57	0.0	0	3
2	67 9 20	10 55 0.0	0	7.32	146.72	0.0	0	3
2	67 9 20	11 18 0.0	0	6.83	145.92	0.0	0	3
2	67 9 20	20 55 0.0	0	6.97	146.58	0.0	0	3
2	67 9 21	3 32 0.0	0	6.58	146.37	0.0	0	3
2	67 9 21	3 32 0.0	0	6.63	146.57	0.0	0	4
2	67 9 21	3 33 0.0	0	5.98	147.20	0.0	0	4
2	67 9 22	20 48 0.0	0	3.17	152.67	0.0	0	4
2	67 9 22	20 50 0.0	0	5.00	151.25	0.0	0	2
2	67 9 23	19 45 0.0	0	6.40	145.98	0.0	0	3
2	67 9 23	19 45 0.0	0	4.17	152.17	0.0	0	4
2	67 9 23	19 45 0.0	0	4.68	145.88	0.0	0	4
2	67 9 23	20 0 0.0	0	4.25	151.75	0.0	0	4
2	67 9 24	7 45 0.0	0	6.27	145.86	0.0	0	5
2	67 9 24	7 45 0.0	0	6.33	145.88	0.0	0	4
2	67 9 24	7 45 0.0	0	5.38	145.60	0.0	0	4
2	67 9 24	7 45 0.0	0	6.08	145.88	0.0	0	4
2	67 9 24	7 45 0.0	0	6.02	147.53	0.0	0	4
2	67 9 24	7 45 0.0	0	5.95	147.35	0.0	0	5
2	67 9 24	7 45 0.0	0	6.28	145.88	0.0	0	3
2	67 9 24	7 45 0.0	0	6.35	145.45	0.0	0	4
2	67 9 24	7 45 0.0	0	6.13	147.38	0.0	0	4
2	67 9 24	7 45 0.0	0	6.32	146.07	0.0	0	5
2	67 9 24	7 45 0.0	0	6.63	146.97	0.0	0	4
2	67 9 24	7 45 0.0	0	4.27	144.08	0.0	0	3
2	67 9 24	7 45 0.0	0	6.55	145.60	0.0	0	3
2	67 9 24	7 45 0.0	0	6.20	144.90	0.0	0	2
2	67 9 24	7 45 0.0	0	7.05	147.07	0.0	0	5
2	67 9 24	7 45 0.0	0	6.20	147.20	0.0	0	5
2	67 9 24	7 45 0.0	0	6.55	147.87	0.0	0	4
2	67 9 24	7 45 0.0	0	5.32	145.58	0.0	0	4
2	67 9 24	7 45 0.0	0	6.43	145.20	0.0	0	3
2	67 9 24	7 45 0.0	0	5.50	145.45	0.0	0	3
2	67 9 24	7 45 0.0	0	6.60	147.77	0.0	0	3
2	67 9 24	7 45 0.0	0	7.37	146.11	0.0	0	4
2	67 9 24	7 45 0.0	0	7.05	147.07	0.0	0	5
2	67 9 24	7 48 0.0	0	6.78	145.90	0.0	0	3
2	67 9 24	7 48 0.0	0	6.83	145.92	0.0	0	3
2	67 9 24	7 49 0.0	0	7.32	146.72	0.0	0	4
2	67 9 24	7 49 0.0	0	6.42	147.57	0.0	0	4

TYPE	YR.MN.DY	HR.MN.SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
2	67 9 24	7 50 0.0	0	5.98	147.20	0.0	0	5
2	67 9 24	7 50 0.0	0	6.63	146.57	0.0	0	4
2	67 9 24	7 50 0.0	0	6.97	146.58	0.0	0	3
2	67 9 24	7 50 0.0	0	6.40	146.55	0.0	0	4
2	67 9 24	7 50 0.0	0	6.05	145.42	0.0	0	4
2	67 9 24	7 50 0.0	0	6.73	147.02	0.0	0	4
2	67 9 24	7 50 0.0	0	2.28	148.22	0.0	0	3
2	67 9 24	7 50 0.0	0	6.08	145.42	0.0	0	1
2	67 9 24	7 58 0.0	0	6.30	145.87	0.0	0	3
2	67 9 24	8 0 0.0	0	6.13	142.98	0.0	0	5
2	67 9 25	15 0 0.0	0	6.20	155.05	0.0	0	3
2	67 9 26	17 0 0.0	0	6.83	145.75	0.0	0	5
2	67 9 26	17 0 0.0	0	6.83	145.92	0.0	0	3
2	67 9 26	17 10 0.0	0	6.22	155.63	0.0	0	3
2	67 9 26	17 12 0.0	0	6.33	155.50	0.0	0	4
2	67 9 26	17 12 0.0	0	6.33	155.50	0.0	0	4
2	67 9 27	0 11 0.0	0	5.50	151.30	0.0	0	2
2	67 9 28	4 57 0.0	0	4.37	152.28	0.0	0	3
2	67 9 28	4 57 0.0	0	4.17	152.17	0.0	0	3
2	67 9 28	4 57 0.0	0	5.45	154.68	0.0	0	4
2	67 9 28	4 57 0.0	0	5.40	154.67	0.0	0	4
2	67 9 28	4 57 0.0	0	5.67	155.10	0.0	0	4
2	67 9 28	4 57 0.0	0	4.17	152.17	0.0	0	2
2	67 9 28	4 57 0.0	0	5.45	154.67	0.0	0	4
2	67 9 28	4 57 0.0	0	6.20	155.05	0.0	0	3
2	67 9 28	5 0 0.0	0	6.20	155.05	0.0	0	3
2	67 9 28	5 1 0.0	0	6.33	155.50	0.0	0	3
2	67 9 28	7 57 0.0	0	5.17	151.25	0.0	0	2
2	67 9 28	7 58 0.0	0	5.50	151.50	0.0	0	1
2	67 9 28	14 0 0.0	0	5.12	144.72	0.0	0	4
2	67 9 28	14 45 0.0	0	6.33	155.50	0.0	0	3
2	67 9 28	14 45 0.0	0	6.33	155.50	0.0	0	2
2	67 9 28	17 5 0.0	0	6.85	155.73	0.0	0	6
2	67 10 2	14 54 0.0	0	4.17	152.17	0.0	0	3
2	67 10 3	15 50 0.0	0	6.33	155.50	0.0	0	4
2	67 10 3	17 15 0.0	0	6.33	155.50	0.0	0	5
2	67 10 3	19 0 0.0	0	5.12	144.72	0.0	0	4
2	67 10 4	10 29 0.0	0	3.03	141.17	0.0	0	3
2	67 10 4	10 30 0.0	0	5.50	151.50	0.0	0	2
2	67 10 4	17 21 0.0	0	5.40	154.67	0.0	0	6
2	67 10 4	17 21 0.0	0	5.45	154.67	0.0	0	7
2	67 10 4	17 21 0.0	0	6.85	155.73	0.0	0	6
2	67 10 4	17 21 0.0	0	6.20	155.05	0.0	0	6
2	67 10 4	17 21 0.0	0	4.07	153.57	0.0	0	5
2	67 10 4	17 21 0.0	0	3.17	152.67	0.0	0	4
2	67 10 4	17 21 0.0	0	5.83	155.17	0.0	0	4
2	67 10 4	17 21 0.0	0	5.50	151.50	0.0	0	4
2	67 10 4	17 21 0.0	0	4.17	152.17	0.0	0	4
2	67 10 4	17 21 0.0	0	3.42	154.75	0.0	0	4
2	67 10 4	17 24 0.0	0	3.18	152.67	0.0	0	2
2	67 10 4	17 25 0.0	0	6.57	155.51	0.0	0	3
2	67 10 4	17 25 0.0	0	6.76	155.60	0.0	0	3
2	67 10 4	17 25 0.0	0	6.86	155.60	0.0	0	4
2	67 10 4	17 25 0.0	0	4.78	152.83	0.0	0	3
2	67 10 4	17 25 0.0	0	3.78	152.55	0.0	0	3
2	67 10 4	17 25 0.0	0	5.73	154.72	0.0	0	5
2	67 10 4	17 25 0.0	0	3.92	152.83	0.0	0	3
2	67 10 4	17 25 0.0	0	4.40	152.20	0.0	0	4
2	67 10 4	17 25 0.0	0	6.83	155.75	0.0	0	6
2	67 10 4	17 25 0.0	0	6.20	155.63	0.0	0	3
2	67 10 4	17 25 0.0	0	5.85	155.22	0.0	0	5
2	67 10 4	17 25 0.0	0	6.57	155.35	0.0	0	5
2	67 10 4	17 25 0.0	0	7.90	147.17	0.0	0	3
2	67 10 4	17 25 0.0	0	5.45	154.68	0.0	0	3
2	67 10 4	17 25 0.0	0	4.17	152.17	0.0	0	3
2	67 10 4	17 25 0.0	0	4.42	152.08	0.0	0	5
2	67 10 4	17 25 0.0	0	4.37	152.28	0.0	0	4
2	67 10 4	17 25 0.0	0	5.45	154.68	0.0	0	3
2	67 10 4	17 25 0.0	0	3.15	151.77	0.0	0	3
2	67 10 4	17 25 0.0	0	5.53	151.52	0.0	0	5
2	67 10 4	17 25 0.0	0	6.83	155.75	0.0	0	5
2	67 10 4	17 25 0.0	0	3.90	152.52	0.0	0	4
2	67 10 4	17 25 0.0	0	3.38	153.32	0.0	0	4
2	67 10 4	17 25 0.0	0	5.84	155.22	0.0	0	5
2	67 10 4	17 25 0.0	0	5.85	155.22	0.0	0	5
2	67 10 4	17 25 0.0	0	5.67	155.10	0.0	0	5
2	67 10 4	17 25 0.0	0	5.85	155.22	0.0	0	5
2	67 10 4	17 25 0.0	0	4.42	152.08	0.0	0	5
2	67 10 4	17 25 0.0	0	6.68	155.73	0.0	0	5
2	67 10 4	17 25 0.0	0	6.25	155.08	0.0	0	6
2	67 10 4	17 25 0.0	0	4.25	151.75	0.0	0	4
2	67 10 4	17 25 0.0	0	5.55	154.98	0.0	0	5
2	67 10 4	17 25 0.0	0	3.30	151.75	0.0	0	4
2	67 10 4	17 25 0.0	0	6.58	155.30	0.0	0	5
2	67 10 4	17 25 0.0	0	5.00	151.25	0.0	0	3
2	67 10 4	17 25 0.0	0	5.83	155.25	0.0	0	4
2	67 10 4	17 25 0.0	0	5.17	154.58	0.0	0	3
2	67 10 4	17 25 0.0	0	4.52	152.18	0.0	0	5
2	67 10 4	17 25 0.0	0	6.22	155.63	0.0	0	4
2	67 10 4	17 25 0.0	0	4.17	152.17	0.0	0	4
2	67 10 4	17 30 0.0	0	4.48	152.68	0.0	0	6
2	67 10 4	17 30 0.0	0	3.67	152.47	0.0	0	6
2	67 10 4	17 30 0.0	0	5.40	154.67	0.0	0	4
2	67 10 5	4 8 0.0	0	4.17	152.17	0.0	0	1
2	67 10 5	4 9 0.0	0	5.45	154.67	0.0	0	4
2	67 10 5	19 0 0.0	0	6.33	155.50	0.0	0	3
2	67 10 5	19 30 0.0	0	6.22	155.63	0.0	0	1
2	67 10 5	19 49 0.0	0	6.17	155.17	0.0	0	4
2	67 10 5	20 47 0.0	0	6.33	155.50	0.0	0	3
2	67 10 5	13 21 0.0	0	5.50	151.50	0.0	0	3

TYPE	YR.MN.DY	HR.MN.SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
2	67 10 8	17 0 0.0	0	9.08	149.32	0.0	0	1
2	67 10 8	18 8 0.0	0	3.17	152.67	0.0	0	3
2	67 10 8	18 8 0.0	0	5.45	154.67	0.0	0	5
2	67 10 8	18 13 0.0	0	3.17	152.67	0.0	0	1
2	67 10 8	18 30 0.0	0	6.33	155.50	0.0	0	2
2	67 10 8	19 30 0.0	0	5.45	154.67	0.0	0	4
2	67 10 9	1 2 0.0	0	5.50	151.50	0.0	0	1
2	67 10 9	18 30 0.0	0	6.33	155.50	0.0	0	2
2	67 10 10	11 0 0.0	0	6.23	149.72	0.0	0	2
2	67 10 10	11 0 0.0	0	6.73	147.02	0.0	0	4
2	67 10 10	11 1 0.0	0	5.20	145.65	0.0	0	3
2	67 10 10	11 2 0.0	0	6.63	146.57	0.0	0	3
2	67 10 11	11 30 0.0	0	5.00	151.25	0.0	0	2
2	67 10 11	11 35 0.0	0	5.00	151.25	0.0	0	2
2	67 10 12	8 40 0.0	0	6.02	147.53	0.0	0	4
2	67 10 13	7 27 0.0	0	3.05	142.07	0.0	0	4
2	67 10 13	12 39 0.0	0	4.17	152.17	0.0	0	2
2	67 10 21	12 50 0.0	0	6.08	149.07	0.0	0	4
2	67 10 22	10 41 0.0	0	5.17	141.35	0.0	0	2
2	67 10 23	12 55 0.0	0	3.42	143.42	0.0	0	4
2	67 10 23	17 40 0.0	0	3.42	143.42	0.0	0	4
2	67 10 24	0 43 0.0	0	4.25	142.83	0.0	0	3
2	67 10 24	15 15 0.0	0	3.00	142.03	0.0	0	5
2	67 10 24	20 43 0.0	0	3.00	142.03	0.0	0	5
2	67 10 24	21 0 0.0	0	3.00	142.03	0.0	0	5
2	67 10 25	1 18 0.0	0	6.58	155.33	0.0	0	2
2	67 10 25	1 20 0.0	0	6.35	155.73	0.0	0	2
2	67 10 30	16 42 0.0	0	6.22	145.78	0.0	0	4
2	67 10 30	16 49 0.0	0	6.08	145.88	0.0	0	4
2	67 10 30	16 50 0.0	0	6.25	145.88	0.0	0	4
2	67 10 30	16 50 0.0	0	6.08	145.42	0.0	0	1
2	67 10 30	16 50 0.0	0	6.30	145.52	0.0	0	4
2	67 11 1	17 30 0.0	0	5.98	144.80	0.0	0	4
2	67 11 2	5 30 0.0	0	3.03	142.03	0.0	0	4
2	67 11 5	21 14 0.0	0	6.50	149.87	0.0	0	3
2	67 11 12	2 40 0.0	0	4.17	152.17	0.0	0	2
2	67 11 14	5 25 0.0	0	6.67	146.92	0.0	0	5
2	67 11 14	5 28 0.0	0	6.05	145.42	0.0	0	4
2	67 11 14	5 28 0.0	0	6.08	145.42	0.0	0	2
2	67 11 14	5 28 0.0	0	5.90	144.95	0.0	0	3
2	67 11 14	5 30 0.0	0	6.08	145.88	0.0	0	4
2	67 11 14	5 30 0.0	0	9.50	147.13	0.0	0	1
2	67 11 14	5 30 0.0	0	6.58	146.37	0.0	0	5
2	67 11 14	5 30 0.0	0	5.90	144.85	0.0	0	4
2	67 11 14	5 30 0.0	0	7.20	146.65	0.0	0	4
2	67 11 14	5 30 0.0	0	6.32	144.97	0.0	0	4
2	67 11 14	5 30 0.0	0	6.73	147.02	0.0	0	4
2	67 11 14	5 30 0.0	0	5.98	144.80	0.0	0	4
2	67 11 14	5 30 0.0	0	7.05	147.07	0.0	0	4
2	67 11 14	5 30 0.0	0	6.97	146.55	0.0	0	4
2	67 11 14	5 30 0.0	0	6.25	145.63	0.0	0	4
2	67 11 14	5 30 0.0	0	5.63	146.48	0.0	0	4
2	67 11 14	5 30 0.0	0	5.82	146.48	0.0	0	4
2	67 11 14	5 30 0.0	0	7.37	146.18	0.0	0	4
2	67 11 14	5 30 0.0	0	5.20	145.65	0.0	0	4
2	67 11 14	5 30 0.0	0	6.27	145.87	0.0	0	5
2	67 11 14	5 30 0.0	0	5.92	144.68	0.0	0	5
2	67 11 14	5 30 0.0	0	5.98	147.20	0.0	0	4
2	67 11 14	5 30 0.0	0	6.12	146.47	0.0	0	5
2	67 11 14	5 30 0.0	0	5.47	145.73	0.0	0	4
2	67 11 14	5 30 0.0	0	7.90	147.17	0.0	0	4
2	67 11 14	5 30 0.0	0	6.33	147.58	0.0	0	5
2	67 11 14	5 30 0.0	0	6.78	145.90	0.0	0	4
2	67 11 14	5 30 0.0	0	6.55	145.60	0.0	0	4
2	67 11 14	5 30 0.0	0	6.23	145.72	0.0	0	6
2	67 11 14	5 30 0.0	0	6.38	146.03	0.0	0	4
2	67 11 14	5 30 0.0	0	6.33	145.93	0.0	0	4
2	67 11 14	5 30 0.0	0	5.90	145.10	0.0	0	4
2	67 11 14	5 30 0.0	0	6.25	145.63	0.0	0	6
2	67 11 14	5 30 0.0	0	6.48	144.85	0.0	0	4
2	67 11 14	5 30 0.0	0	6.43	145.20	0.0	0	5
2	67 11 14	5 30 0.0	0	6.23	145.78	0.0	0	5
2	67 11 14	5 30 0.0	0	5.00	145.73	0.0	0	2
2	67 11 14	5 30 0.0	0	5.62	147.25	0.0	0	3
2	67 11 14	5 30 0.0	0	7.00	146.58	0.0	0	3
2	67 11 14	5 30 0.0	0	6.00	147.17	0.0	0	4
2	67 11 14	5 31 0.0	0	6.20	147.20	0.0	0	4
2	67 11 14	5 33 0.0	0	6.55	147.87	0.0	0	4
2	67 11 14	5 33 0.0	0	7.22	146.72	0.0	0	4
2	67 11 14	5 33 0.0	0	6.13	147.58	0.0	0	4
2	67 11 14	5 37 0.0	0	6.55	147.87	0.0	0	4
2	67 11 14	5 37 0.0	0	9.05	148.37	0.0	0	5
2	67 11 17	9 13 0.0	0	6.25	155.08	0.0	0	5
2	67 11 17	9 19 0.0	0	6.33	155.50	0.0	0	4
2	67 11 17	9 20 0.0	0	6.83	155.75	0.0	0	4
2	67 11 17	9 20 0.0	0	6.58	155.33	0.0	0	4
2	67 11 17	9 20 0.0	0	6.85	155.73	0.0	0	4
2	67 11 17	9 21 0.0	0	6.65	155.33	0.0	0	5
2	67 11 17	9 22 0.0	0	6.68	155.73	0.0	0	4
2	67 11 17	9 25 0.0	0	5.85	155.22	0.0	0	4
2	67 11 24	18 16 0.0	0	5.00	151.25	0.0	0	2
2	67 11 24	22 25 0.0	0	5.50	151.50	0.0	0	1
2	67 11 29	4 7 0.0	0	4.17	152.17	0.0	0	2
2	67 11 30	6 45 0.0	0	5.63	146.48	0.0	0	3
2	67 12 4	23 0 0.0	0	6.38	146.03	0.0	0	3
2	67 12 7	23 1 0.0	0	6.20	147.20	0.0	0	4
2	67 12 7	23 1 0.0	0	5.98	147.20	0.0	0	4
2	67 12 7	23 2 0.0	0	6.00	147.17	0.0	0	4
2	67 12 8	11 14 0.0	0	6.97	146.58	0.0	0	3
2	67 12 9	6 43 0.0	0	4.17	152.17	0.0	0	3

TYPE	YR.MM.DY	HR.MM.SEC	DEP	LAT-S	LONG-E	MAG	STN	INT
2	67 12 12	17 25 0.0	0	6.33	155.50	0.0	0	4
2	67 12 14	18 25 0.0	0	6.08	145.42	0.0	0	2
2	67 12 14	23 0 0.0	0	5.63	148.32	0.0	0	4
2	67 12 15	10 18 0.0	0	6.85	155.73	0.0	0	2
2	67 12 15	12 30 0.0	0	5.17	141.58	0.0	0	3
2	67 12 23	13 23 0.0	0	4.17	152.17	0.0	0	4
2	67 12 23	13 24 0.0	0	5.00	151.25	0.0	0	4
2	67 12 23	13 29 0.0	0	5.50	151.50	0.0	0	6
2	67 12 25	0 0 0.0	0	4.13	152.47	0.0	0	5
2	67 12 25	0 0 0.0	0	4.25	151.75	0.0	0	5
2	67 12 25	0 15 0.0	0	6.25	155.08	0.0	0	5
2	67 12 25	1 24 0.0	0	5.40	154.67	0.0	0	6 -
2	67 12 25	1 24 0.0	0	4.17	152.17	0.0	0	6 -
2	67 12 25	1 25 0.0	0	6.25	155.08	0.0	0	6 -
2	67 12 25	1 25 0.0	0	2.57	150.48	0.0	0	5 -
2	67 12 25	1 25 0.0	0	4.17	152.17	0.0	0	6 -
2	67 12 25	1 25 0.0	0	5.45	154.68	0.0	0	5 -
2	67 12 25	1 25 0.0	0	5.03	154.58	0.0	0	4 -
2	67 12 25	1 25 0.0	0	4.40	152.20	0.0	0	6 -
2	67 12 25	1 25 0.0	0	3.67	152.47	0.0	0	6 -
2	67 12 25	1 25 0.0	0	2.58	150.83	0.0	0	3 -
2	67 12 25	1 25 0.0	0	3.20	151.90	0.0	0	5 -
2	67 12 25	1 25 0.0	0	3.67	152.47	0.0	0	7 -
2	67 12 25	1 25 0.0	0	5.13	154.68	0.0	0	4 -
2	67 12 25	1 25 0.0	0	4.42	152.08	0.0	0	6 -
2	67 12 25	1 25 0.0	0	5.73	154.72	0.0	0	5 -
2	67 12 25	1 25 0.0	0	5.50	148.30	0.0	0	3 -
2	67 12 25	1 25 0.0	0	3.38	153.32	0.0	0	4 -
2	67 12 25	1 25 0.0	0	5.50	151.50	0.0	0	5 -
2	67 12 25	1 25 0.0	0	5.00	151.25	0.0	0	3 -
2	67 12 25	1 25 0.0	0	2.95	150.87	0.0	0	2 -
2	67 12 25	1 26 0.0	0	6.20	155.63	0.0	0	5 -
2	67 12 25	1 26 0.0	0	6.57	155.35	0.0	0	5 -
2	67 12 25	1 27 0.0	0	5.53	151.52	0.0	0	6 -
2	67 12 25	1 27 0.0	0	6.33	155.50	0.0	0	5 -
2	67 12 25	1 29 0.0	0	8.52	151.07	0.0	0	4 -
2	67 12 25	1 30 0.0	0	6.83	155.75	0.0	0	5 -
2	67 12 25	1 30 0.0	0	6.85	155.73	0.0	0	5 -
2	67 12 26	5 0 0.0	0	7.75	147.62	0.0	0	4
2	67 12 26	8 55 0.0	0	6.33	155.50	0.0	0	3
2	67 12 26	8 58 0.0	0	4.42	152.08	0.0	0	3
2	67 12 26	18 0 0.0	0	4.23	142.82	0.0	0	6
2	67 12 27	1 43 0.0	0	5.50	148.33	0.0	0	3
2	67 12 27	4 27 0.0	0	4.52	152.18	0.0	0	2
2	67 12 27	11 44 0.0	0	4.52	152.18	0.0	0	2
2	67 12 28	2 15 0.0	0	3.50	141.33	0.0	0	5
2	67 12 28	2 17 0.0	0	5.50	151.50	0.0	0	2
2	67 12 28	4 15 0.0	0	3.50	141.33	0.0	0	5
2	67 12 28	4 33 0.0	0	4.52	152.18	0.0	0	2
2	67 12 31	13 57 0.0	0	6.83	155.75	0.0	0	3
2	67 12 31	15 1 0.0	0	5.58	148.32	0.0	0	4
2	67 12 31	15 5 0.0	0	6.83	155.75	0.0	0	5
2	67 12 31	17 55 0.0	0	6.48	155.73	0.0	0	4

NO OF RECORDS SELECTED AND PRINTED = 753

TABLE 5

Monthly Breakdown of Earthquake Statistics New Guinea & Solomon Islands
Region, 1967.

Month	Total number of located Earthquakes	Number Located by USCGS	Number Located by PMG	Number of Located Events felt	Number of Felt Earthquakes	Total of Felt Reports
Jan.	32	24	8	7	12	18
Feb.	26	22	4	8	17	35
Mar.	24	14	10	5	17	41
April	70	54	16	16	34	47
May	28	25	3	6	19	27
June	61	46	15	11	22	48
July	32	27	5	4	20	42
Aug.	33	26	7	11	20	78
Sept.	56	41	15	15	35	197
Oct.	61	59	2	9	33	99
Nov.	23	23	0	6	10	62
Dec.	64	63	1	11	23	59
TOTALS	510	424	86	109	262	753

TABLE 6

HYPOCENTRAL DATA (FOR EARTHQUAKES DISCUSSED IN THE TEXT)

The unmarked solutions are taken from the USCGS earthquake bulletins; the others are Port Moresby solutions obtained by using DTM computer program.⁵² Where a definite preference between solutions can be given, the more reliable one is underlined.

Date	Origin Time			Lat. [°] S	Long. [°] E	Depth (km)	m_B	Ms	M_L
18.3.67	19	15	35.9	6.02	146.31	108	5.6		
*18.3.67	19	15	37.7	6.57	146.56	257			5.8
13.6.67	15	39	29.7	5.58	148.12	213	5.4		
*13.6.67	15	39	31.3	5.66	148.31	192			6.1
20.7.67	11	40	41.2	6.27	146.97	61	5.1		
*20.7.67	11	40	32.8	6.06	146.26	140			5.5
13.8.67	16	54	45.7	4.33	152.47	25	5.0		
*13.8.67	16	54	43.9	4.26	152.50	33(R)	5.3		6.2
13.8.67	20	50	54.1	4.19	152.32	34	4.5		
*13.8.67	22	11	9.4	3.85	152.36	38			5.7
13.8.69	22	15	09.6	4.37	152.51	29	5.3		
*13.8.67	<u>22</u>	<u>15</u>	<u>11.0</u>	<u>4.36</u>	<u>152.19</u>	<u>33(R)</u>	<u>5.5</u>		6.4
13.8.67	23	52	47.0	4.57	152.30	03	4.4		
27.8.67	02	04	43.5	4.28	152.40	14	4.7		
1.9.67	03	31	10.5	5.57	147.18	182	5.6		
*1.9.67	03	31	13.4	5.65	147.37	131			6.2
3.9.67	01	23	19.6	7.84	147.12	139	5.5		
*3.9.67	01	23	21.3	7.80	147.29	104			5.6
18.9.67	<u>15</u>	<u>33</u>	<u>06.5</u>	<u>5.94</u>	<u>146.63</u>	<u>39</u>	<u>5.5</u>		
*18.9.67	15	32	57.3	6.13	146.10	211			6.4
24.9.67	07	48	36.4	6.25	146.92	84	5.1		
*24.9.67	07	48	34.7	6.03	147.27	45			5.7
28.9.67	04	56	56.3	6.59	153.40	44	6.0		
*28.9.67	04	56	54.6	6.71	153.47	33		6.5	6.8
4.10.67	17	21	20.7	5.72	153.89	52	5.7		
*4.10.67	17	21	13.0	4.54	154.28	271		7.2	7.0
14.11.67	05	28	36.9	5.43	147.07	201	5.8	5.0	
*14.11.67	05	28	40.1	5.18	147.13	33(R)			6.2
25.12.67	01	23	33.6	5.28	153.67	64	5.7	7.0	
*25.12.67	01	23	27.7	4.31	153.77	230			7.5

APPENDIX EARTHQUAKE SOLUTIONS OBTAINED BY DTM PROGRAMME

DATE= 3 18 67

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.	RUN1
0	-8.81	148.09	150.0	39.55	
1	-6.79	146.58	277.2	13.01	
2	-6.66	146.90	268.4	7.61	
3	-6.66	146.16	248.9	5.66	
4	-6.62	146.22	245.1	5.51	
5	-6.64	146.23	244.5	5.50	
6	-6.64	146.24	244.4	5.50	

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
AGE	NO S-P TIME FOR THIS STATION		48.2	2.83	-2.64
PMG	19. 15. 45.2	34.0	51.2	2.89	-0.21
TBL	19. 15. 8.4	64.5	53.7	2.81	2.17
ESA	NO S-P TIME FOR THIS STATION		83.7	5.47	1.45
RAB	19. 15. 59.4	52.0	88.2	6.39	-5.39
HNR	NO S-P TIME FOR THIS STATION		194.2	13.86	6.52

AVERAGE ORIGIN TIME = 19. 15. 37.7

DATE= 3 18 67

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.	RUN2
0	-6.64	146.24	244.4	4.91	
1	-6.57	146.56	257.6	3.48	
2	-6.57	146.56	257.2	3.48	

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
AGE	NO S-P TIME FOR THIS STATION		48.2	2.69	-1.98
PMG	19. 15. 45.2	34.0	51.2	2.87	-0.84
TBL	19. 15. 8.5	64.5	53.7	2.91	1.27
ESA	NO S-P TIME FOR THIS STATION		83.7	5.25	3.93
RAB	19. 15. 59.4	52.0	88.2	6.06	-1.59

AVERAGE ORIGIN TIME = 19. 15. 37.7

LP 124

DATE= 6 13 67

2

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.	RUN 1
0	-6.67	146.91	150.0	24.37	
1	-5.63	148.03	292.8	4.59	
2	-5.41	147.93	244.9	2.37	
3	-5.45	148.01	239.6	1.56	
4	-5.46	148.02	239.2	1.53	

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
LAE	NO S-P TIME FOR THIS STATION		39.3	1.63	0.50
PMG	15. 39. 35.3	44.0	64.3	4.01	0.20
RAB	15. 39. 28.0	52.0	67.3	4.32	-0.55
ESA	15. 39. 31.4	55.8	75.6	5.06	-1.36
HNR	15. 39. 15.8	145.2	174.1	12.47	1.49

AVERAGE ORIGIN TIME = 15. 39. 27.6

DATE= 6 13 67

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.	RUN 2
0	-5.46	148.02	239.2	8.57	
1	-5.62	148.26	202.4	1.67	
2	-5.65	148.30	193.7	0.48	
3	-5.66	148.31	192.2	0.36	
4	-5.66	148.31	192.0	0.36	

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
LAE	NO S-P TIME FOR THIS STATION		35.6	1.71	0.11
PMG	15. 39. 35.0	44.0	60.6	3.89	-0.27
RAB	15. 39. 27.7	52.0	63.6	4.11	-0.11
ESA	15. 39. 31.1	55.8	71.9	4.74	0.17

AVERAGE ORIGIN TIME = 15. 39. 31.3

LP 125

DATE= 7 20 67

3

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
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0	-8.81	148.09	150.0	46.11
1	-6.84	146.65	400.6	14.91
2	-5.76	145.45	196.9	16.83
3	-5.93	146.01	111.0	6.12
4	-6.08	146.32	161.9	4.31
5	-6.03	146.20	136.4	3.98
6	-6.06	146.26	140.6	3.88
7	-6.06	146.26	140.0	3.87

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
AGE	NO S-P TIME FOR THIS STATION		49.1	3.29	-2.56
PMG	11. 40. 42.3	36.3	57.1	3.44	3.42
ESA	11. 40. 17.7	75.6	82.5	5.81	-2.57
RAB	11. 40. 34.8	68.7	90.4	6.17	0.38
HNR	11. 40. 36.3	151.0	195.1	13.98	2.20

AVERAGE ORIGIN TIME = 11. 40. 32.8

DATE= 8 13 67

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
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0	-4.19	152.17	150.0	12.39
1	-4.14	152.74	60.9	5.94
2	-4.29	152.64	27.3	2.53
3	-4.35	152.57	15.0	2.77
4	-4.40	152.52	33.0 (R)	1.81
5	-4.29	152.53	33.0 (R)	1.29
6	-4.27	152.51	33.0 (R)	1.24
7	-4.26	152.50	33.0 (R)	1.24
8	-4.26	152.50	33.0 (R)	1.24

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
WAN	NO S-P TIME FOR THIS STATION		8.5	0.33	-0.40
SUL	NO S-P TIME FOR THIS STATION		8.6	0.33	-0.15
RAL	NO S-P TIME FOR THIS STATION		8.7	0.30	0.21
RAB	16. 54. 47.3	4.0	8.9	0.34	0.02
ESA	16. 54. 42.4	66.0	84.0	5.69	-0.39
AGE	16. 54. 44.1	70.5	91.4	6.29	-1.42
PMG	16. 54. 42.0	86.3	109.9	7.37	1.93

AVERAGE ORIGIN TIME = 16. 54. 43.9

IP 126

DATE= 8 13 67

4

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
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0	-4.22	152.20	150.0	11.96
1	-3.50	152.27	69.1	6.66
2	-3.74	152.33	36.7	1.38
3	-3.85	152.36	43.1	0.92
4	-3.84	152.36	37.4	0.73
5	-3.85	152.36	37.9	0.72

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
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RAL	NO S-P TIME FOR THIS STATION		9.5	0.39	-0.45
SUL	NO S-P TIME FOR THIS STATION		9.7	0.41	-0.37
WAN	NO S-P TIME FOR THIS STATION		9.7	0.38	0.04
RAH	22. 11. 13.6	4.5	10.5	0.38	0.63
AGE	22. 11. 17.6	67.0	95.0	6.50	-0.80
PMG	22. 11. 9.7	86.0	111.5	7.57	0.84
HNR	22. 10. 56.7	115.0	135.5	9.35	0.10

AVERAGE ORIGIN TIME = 22. 11. 9.4

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
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0	-4.22	152.20	150.0	16.63
1	-4.45	152.83	27.6	10.40
2	-4.68	152.65	33.0 (R)	8.72
3	-4.38	152.23	33.0 (R)	3.73
4	-4.25	152.05	33.0 (R)	3.72
5	-4.60	152.50	33.0 (R)	6.56
6	-4.37	152.19	33.0 (R)	3.59
7	-4.23	152.06	33.0 (R)	3.66
8	-4.59	152.49	33.0 (R)	6.36
9	-4.36	152.19	33.0 (R)	3.58
10	-4.23	152.07	33.0 (R)	3.64

CONVERGENCE IS POOR

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
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RAL	NO S-P TIME FOR THIS STATION		3.4	0.13	-3.31
SUL	NO S-P TIME FOR THIS STATION		3.6	0.10	-2.84
WAN	NO S-P TIME FOR THIS STATION		3.8	0.11	-2.70
RAR	NO S-P TIME FOR THIS STATION		6.8	0.11	0.31
ESA	22. 15. 12.6	59.8	79.0	5.61	-4.19
AGE	22. 15. 7.6	70.5	87.8	6.02	-1.22
PMG	22. 15. 13.0	81.0	106.8	7.09	2.76

AVERAGE ORIGIN TIME = 22. 15. 11.0

LP 127

DATE= 9 3 67

5

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
0	-6.67	146.91	150.0	14.39
1	-7.85	147.22	156.5	3.69
2	-7.83	147.25	116.6	1.54
3	-7.80	147.28	104.8	1.21
4	-7.80	147.29	102.6	1.20

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
LAE	NO S-P TIME FOR THIS STATION		24.3	1.18	1.11
GRK	NO S-P TIME FOR THIS STATION		39.8	2.55	-0.90
AGE	NO S-P TIME FOR THIS STATION		25.0	1.28	0.55
PMG	1. 23. 22.4	19.9	27.7	1.60	-0.72
ESA	NO S-P TIME FOR THIS STATION		59.6	3.98	-0.63
TBL	NO S-P TIME FOR THIS STATION		64.2	4.32	-0.61
KRT	NO S-P TIME FOR THIS STATION		86.6	5.84	0.97
RAB	1. 23. 20.3	68.0	86.5	6.03	-1.63

AVERAGE ORIGIN TIME = 1. 23. 21.3

DATE= 9 1 67

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
0	-6.67	146.91	150.0	12.18
1	-5.77	147.35	178.9	3.31
2	-5.64	147.33	143.2	2.05
3	-5.64	147.36	133.5	1.89
4	-5.65	147.37	131.3	1.89
5	-5.65	147.37	130.8	1.89

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
LAE	NO S-P TIME FOR THIS STATION		26.3	1.11	1.79
GRK	NO S-P TIME FOR THIS STATION		33.6	2.01	-1.21
PMG	3. 31. 12.5	43.1	55.4	3.74	-2.07
KRT	NO S-P TIME FOR THIS STATION		71.5	4.83	-0.57
RAB	3. 31. 7.8	61.0	73.4	4.99	-0.75
ESA	3. 31. 20.0	56.2	79.3	5.30	0.92

AVERAGE ORIGIN TIME = 3. 31. 13.4

LP 128

DATE= 9 18 67

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
0	-6.67	146.91	150.0	16.69
1	-6.12	146.16	219.0	8.11
2	-6.13	146.09	212.2	7.94
3	-6.13	146.10	211.3	7.93

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
LAE	NO S-P TIME FOR THIS STATION		23.2	0.96	-7.62
PMG	15. 32. 50.8	53.3	62.3	3.41	6.62
TBL	NO S-P TIME FOR THIS STATION		47.0	2.29	4.17
RAB	15. 33. 3.8	67.5	93.0	6.35	0.37
KRT	NO S-P TIME FOR THIS STATION		93.1	6.19	2.48

AVERAGE ORIGIN TIME = 15. 32. 57.3

DATE= 9 24 67

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
0	-6.67	146.91	150.0	10.54
1	-6.09	147.18	112.5	2.94
2	-6.07	147.20	84.1	1.29
3	-6.06	147.23	71.6	0.91
4	-6.05	147.24	61.0	0.64
5	-6.04	147.26	52.1	0.47
6	-6.03	147.27	44.8	0.41
7	-6.03	147.28	39.0	0.42
8	-6.02	147.28	34.8	0.47
9	-6.02	147.29	31.8	0.60
10	-6.01	147.30	26.3	1.22

CONVERGENCE IS POOR

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
LAE	NO S-P TIME FOR THIS STATION		14.4	0.75	-0.50
TBL	NO S-P TIME FOR THIS STATION		45.7	2.97	-0.91
PMG	7. 48. 34.7	39.0	51.2	3.37	-1.06
KRT	NO S-P TIME FOR THIS STATION		75.2	5.01	-0.41
RAB	NO S-P TIME FOR THIS STATION		77.2	5.18	-0.78

AVERAGE ORIGIN TIME = 7. 48. 34.7

LP 129

DATE= 10 4 67

7

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
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0	-4.35	152.05	150.0	36.82
1	-4.86	154.03	350.4	7.28
2	-4.31	154.33	288.8	4.74
3	-4.46	154.30	272.2	3.95
4	-4.53	154.28	270.9	3.89
5	-4.54	154.28	270.8	3.89

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
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KRT	NO S-P TIME FOR THIS STATION		45.3	2.23	-1.31
RAB	17. 21. 5.0	42.0	45.8	2.13	0.07
HNR	17. 21. 22.3	78.0	108.8	7.43	1.72
LAE	NO S-P TIME FOR THIS STATION		110.0	7.64	0.32
PMG	17. 21. 11.8	93.3	117.5	8.57	-3.85
GRK	NO S-P TIME FOR THIS STATION		131.6	8.99	5.08

AVERAGE ORIGIN TIME = 17. 21. 13.0

DATE= 9 28 67

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
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0	-4.35	152.05	150.0	26.97
1	-6.47	153.64	303.4	11.49
2	-6.40	153.62	189.7	5.53
3	-6.56	153.56	136.4	3.67
4	-6.62	153.54	104.0	3.00
5	-6.65	153.53	85.6	2.72
6	-6.67	153.52	68.8	2.50
7	-6.69	153.51	46.0	2.23
8	-6.71	153.50	8.3	3.22
9	-6.78	153.47	33.0 (R)	2.17
10	-6.71	153.47	33.0 (R)	2.01

CONVERGENCE IS POOR

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
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KRT	NO S-P TIME FOR THIS STATION		42.2	2.74	-0.43
RAB	4. 56. 51.9	34.6	42.6	2.82	-1.12
ESA	NO S-P TIME FOR THIS STATION		58.4	3.99	-2.11
LAE	NO S-P TIME FOR THIS STATION		95.8	6.52	-0.22
PMG	4. 56. 51.9	79.7	100.6	6.81	0.44
HNR	4. 56. 54.2	80.0	103.3	6.95	1.06
GRK	4. 57. 0.5	89.0	120.5	8.06	2.98

AVERAGE ORIGIN TIME = 4. 56. 54.6

IP 130

DATE= 11 14 67

8

ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
0	-6.67	146.91	150.0	15.80
1	-5.38	147.02	175.7	5.77
2	-5.21	147.00	109.6	2.98
3	-5.19	147.05	81.1	2.70
4	-5.18	147.08	62.1	2.88
5	-5.17	147.10	41.5	3.10
6	-5.16	147.12	16.7	4.38
7	-5.13	147.16	33.0 (R)	3.28
8	-5.18	147.13	33.0 (R)	3.15
9	-5.18	147.13	33.0 (R)	3.15

CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
LAE	NO S-P TIME FOR THIS STATION		27.1	1.49	2.41
TBL	NO S-P TIME FOR THIS STATION		34.8	2.37	-2.50
PMG	5. 28. 40.1	45.5	59.3	4.20	-4.04
KRT	NO S-P TIME FOR THIS STATION		73.8	4.97	-0.47
RAB	NO S-P TIME FOR THIS STATION		75.4	5.12	-0.95
SUL	NO S-P TIME FOR THIS STATION		75.8	5.12	-0.51

AVERAGE ORIGIN TIME = 5. 28. 40.1

DATE= 12 25 67

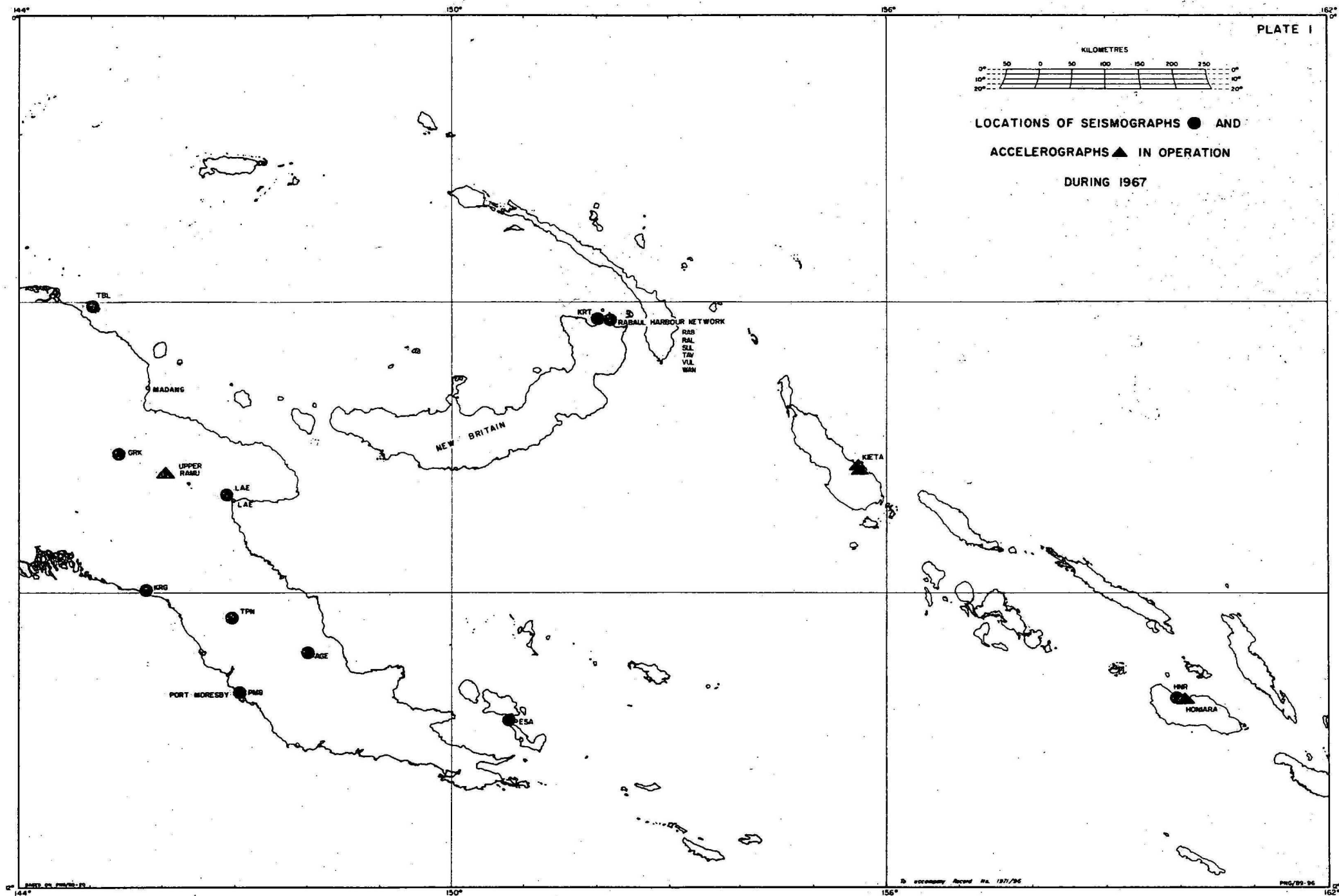
ITERATION	LATITUDE	LONGITUDE	DEPTH	ST. DEV.
0	-4.35	152.05	150.0	29.70
1	-4.59	153.61	268.6	6.16
2	-4.14	153.78	239.6	2.89
3	-4.27	153.78	230.2	2.13
4	-4.30	153.77	229.7	2.10
5	-4.31	153.77	229.7	2.10

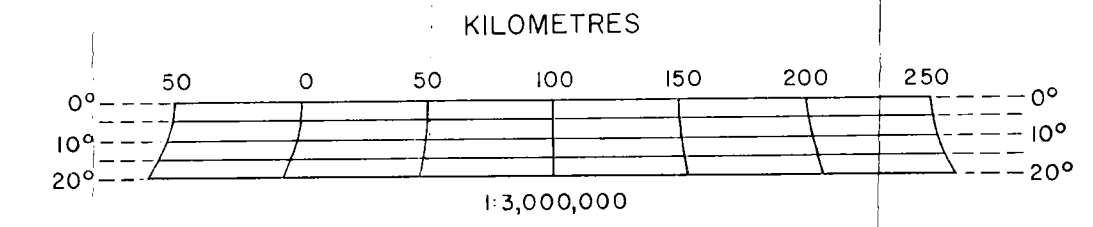
CONVERGED

STATION	ORIGIN TIME	S-P TIME	P TIME	DISTANCE	RESIDUAL
KRT	NO S-P TIME FOR THIS STATION		37.7	1.72	-0.96
RAB	1. 23. 38.7	21.0	38.2	1.60	0.52
HNR	1. 23. 16.5	98.0	114.2	7.96	0.53
LAE	NO S-P TIME FOR THIS STATION		106.3	7.23	2.15
PMG	1. 23. 27.9	90.8	116.4	8.30	-1.65

AVERAGE ORIGIN TIME = 1. 23. 27.7

IP 131

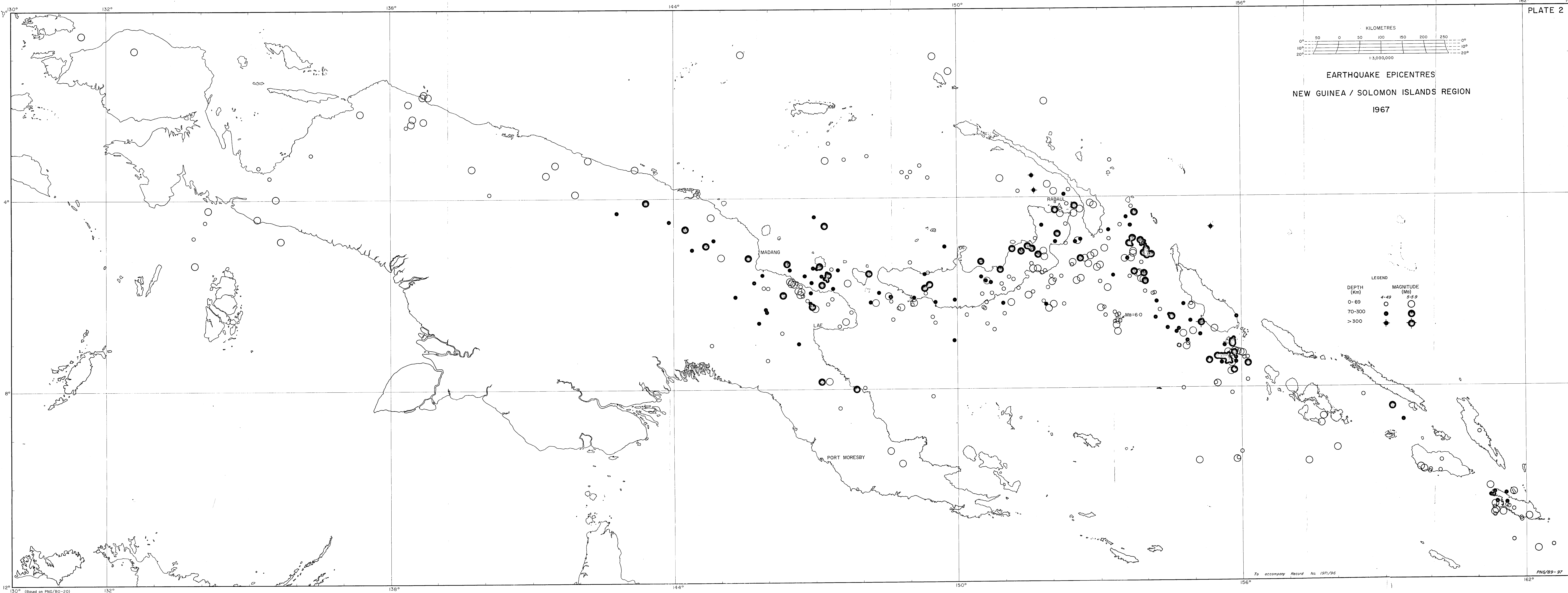


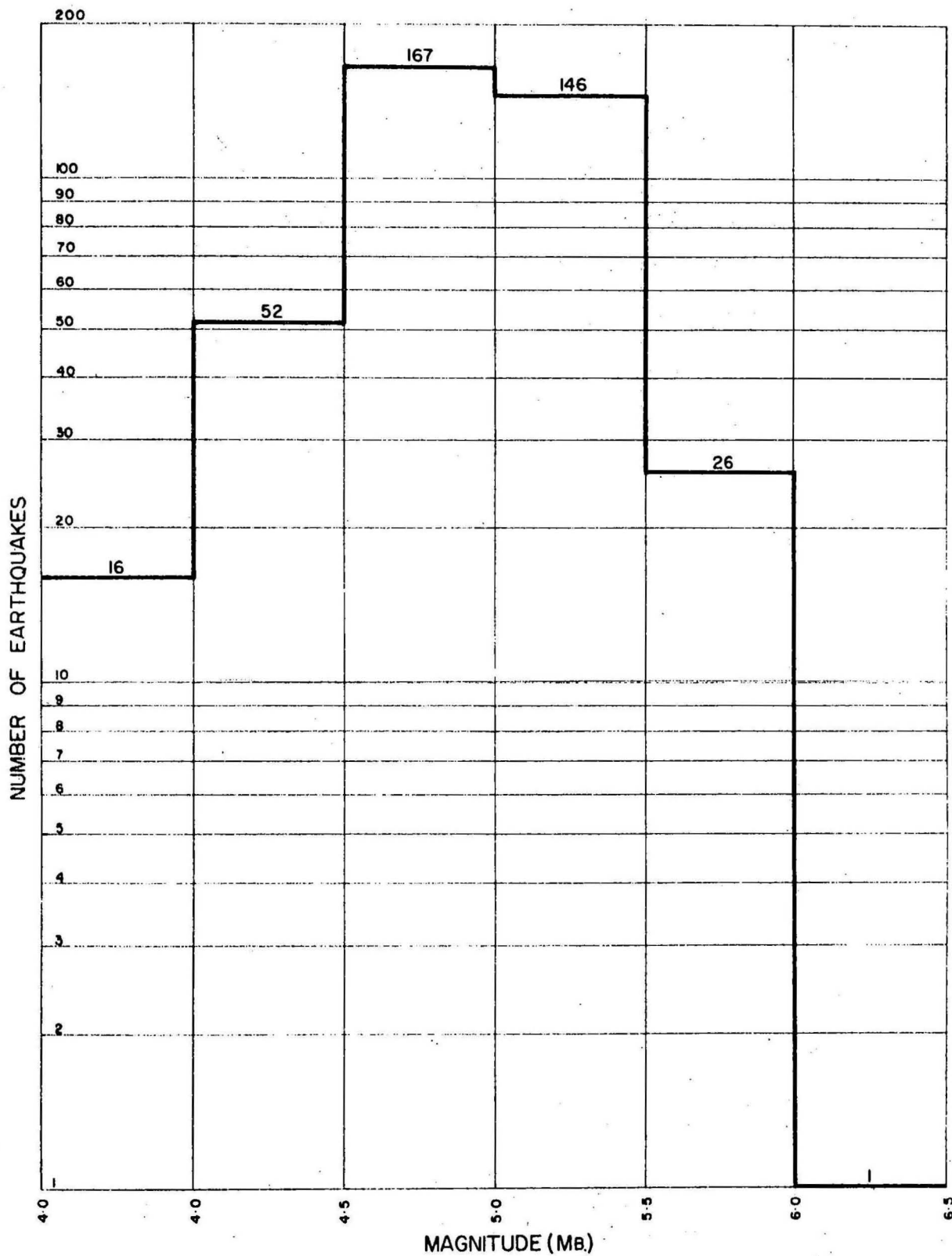


EARTHQUAKE EPICENTRES
NEW GUINEA / SOLOMON ISLANDS REGION
1967

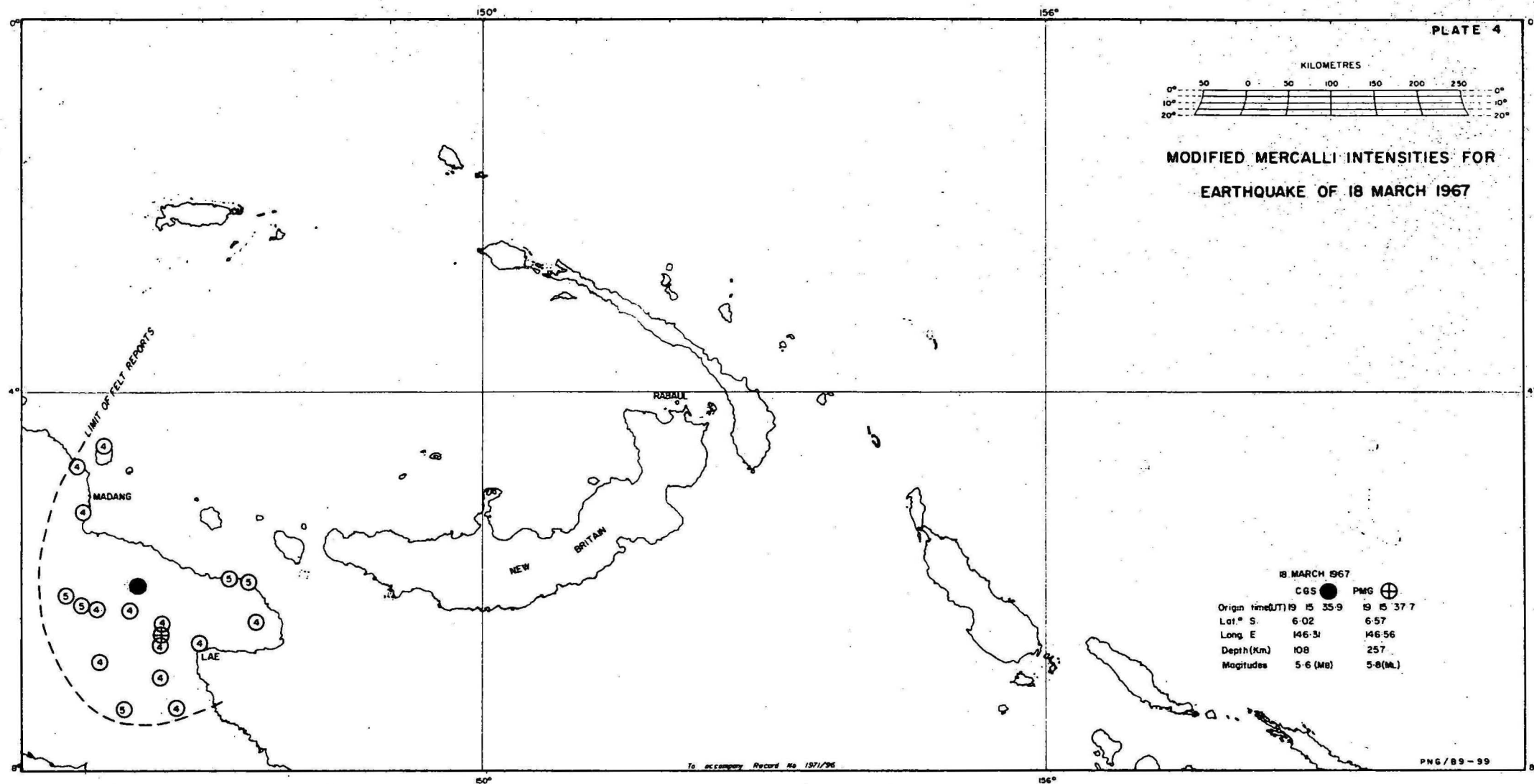
LEGEND

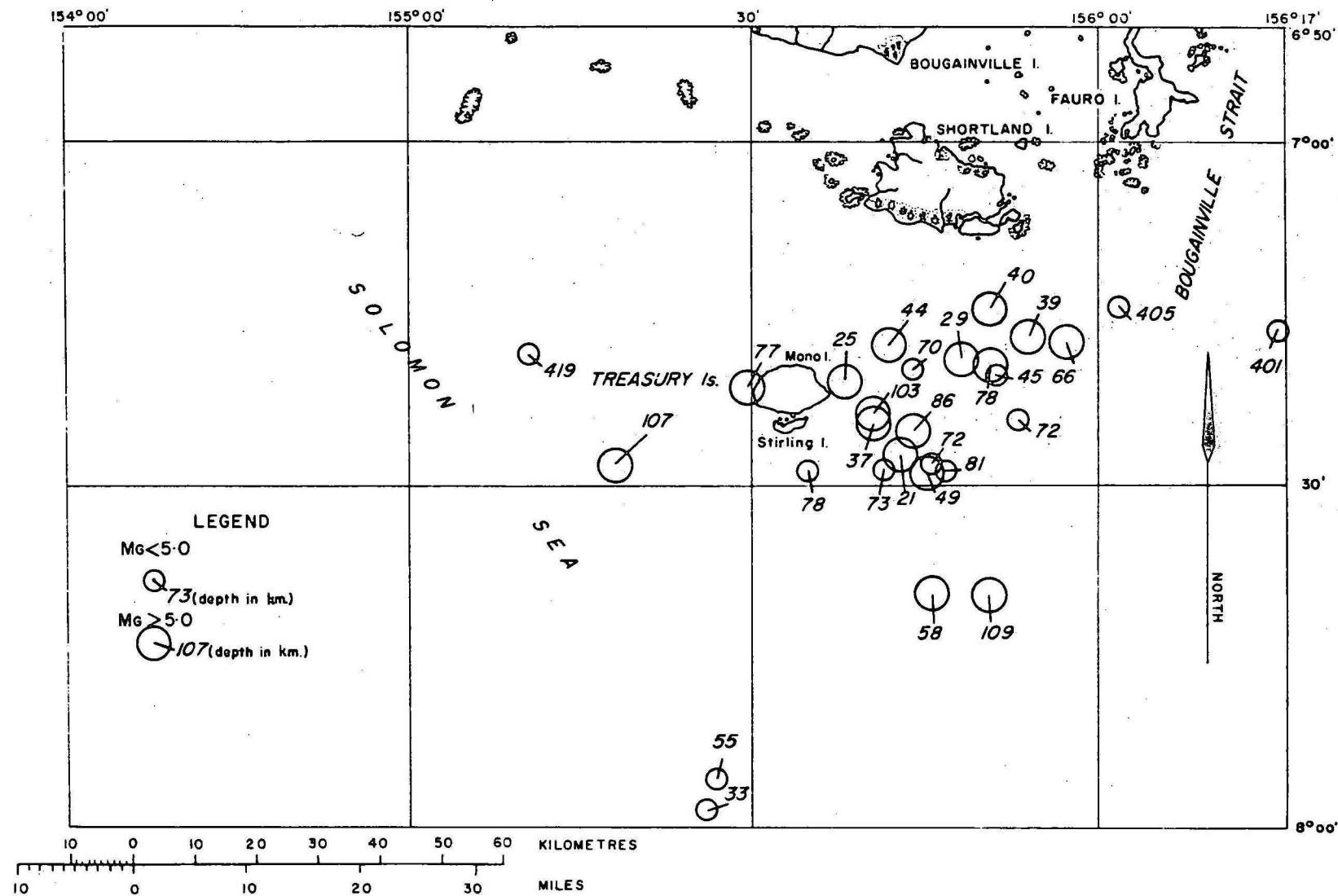
DEPTH (km)	MAGNITUDE (Mb)
0-69	4-4.9
70-300	5-5.9
> 300	





MAGNITUDE DISTRIBUTION OF EARTHQUAKES,
NEW GUINEA-SOLOMON ISLANDS REGION 1967.

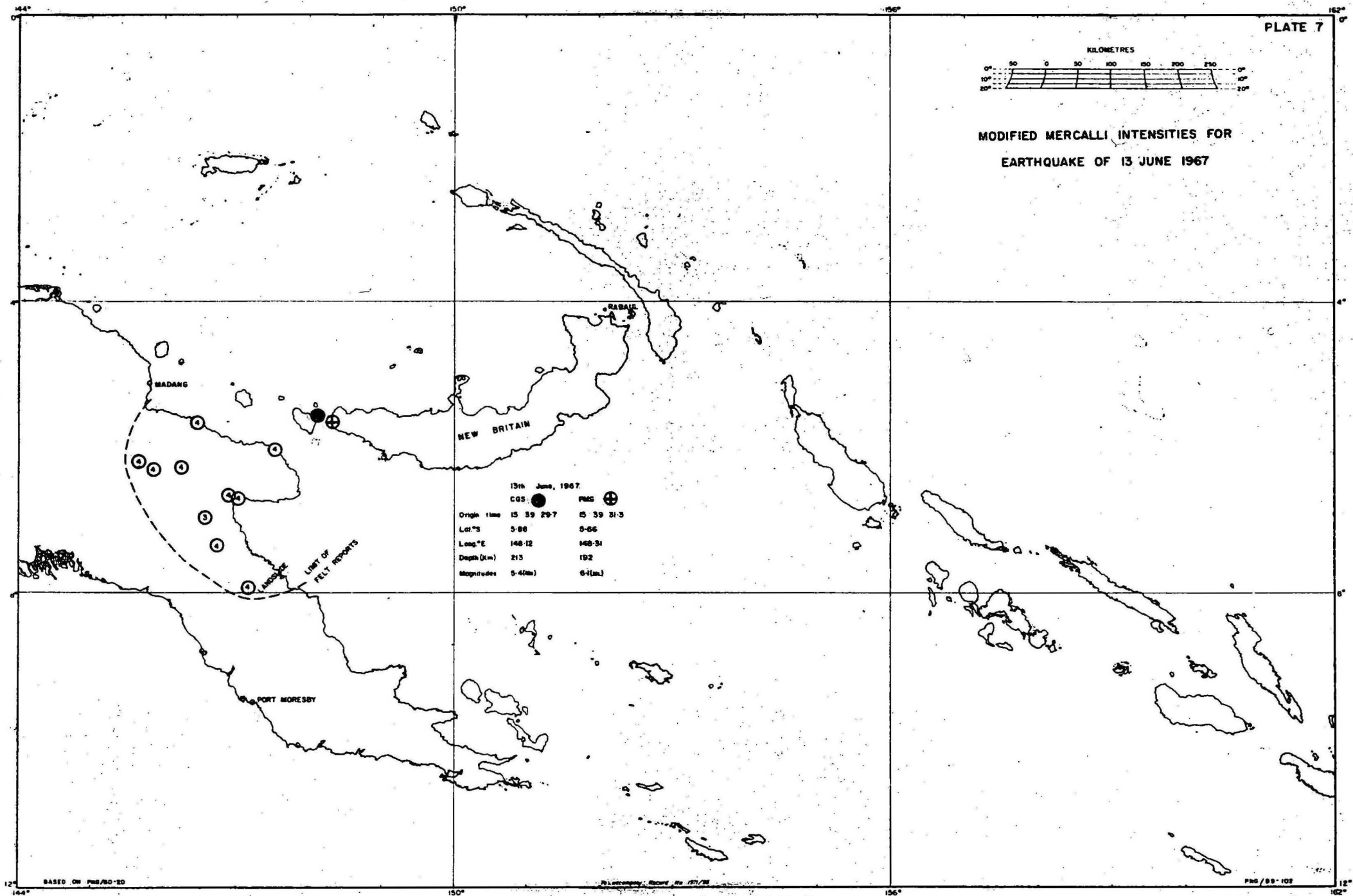


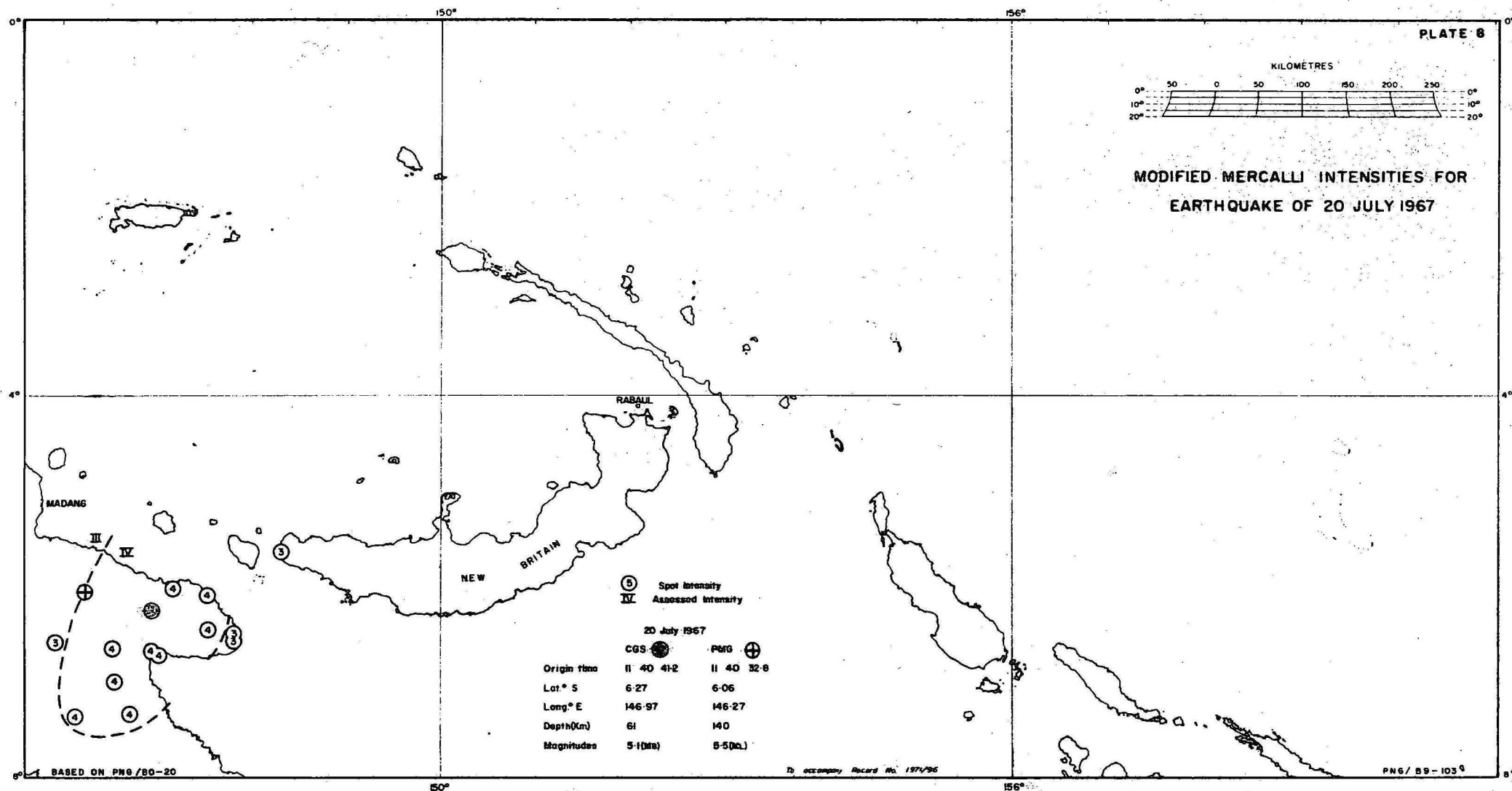


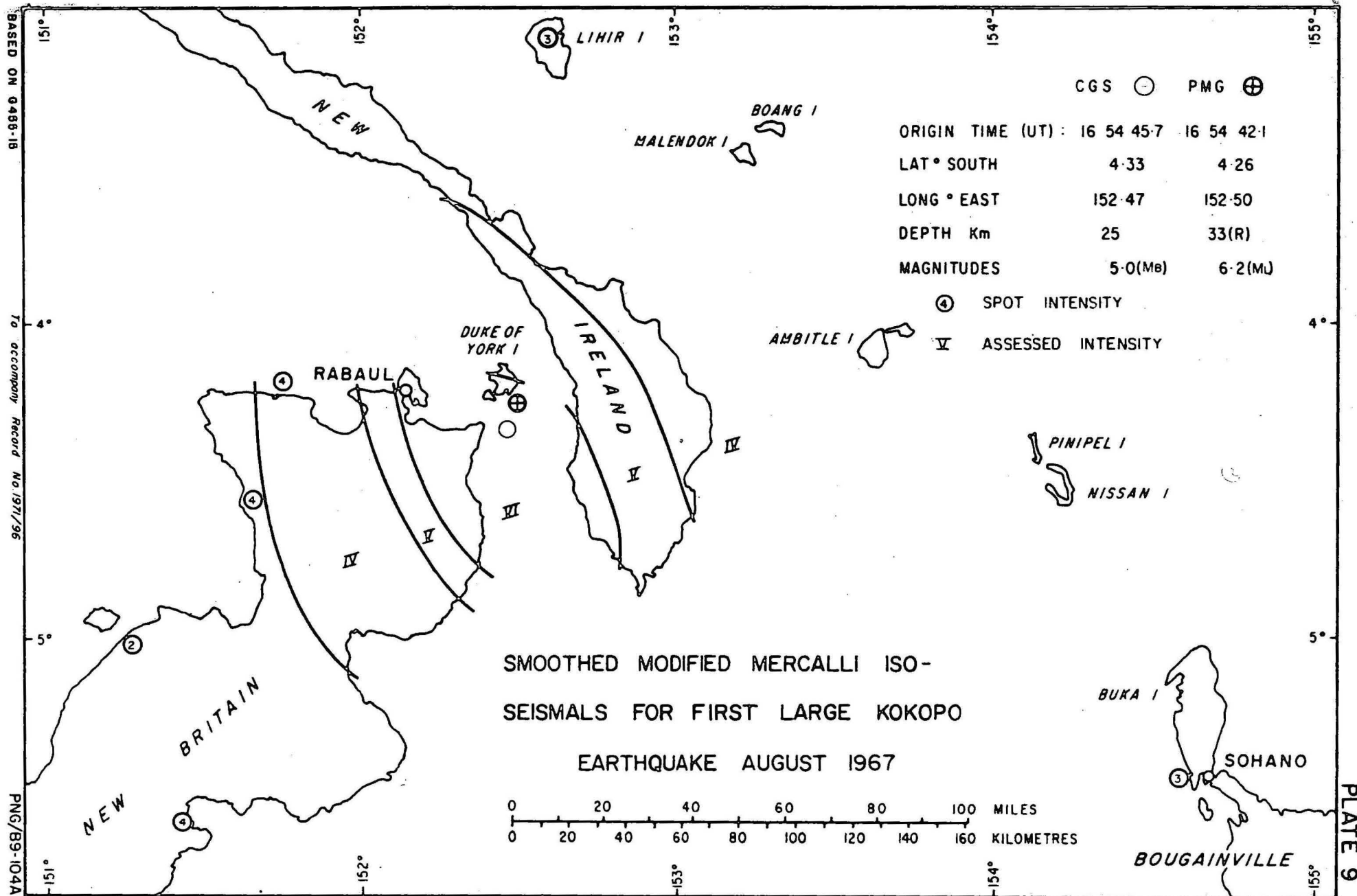
LOCATION OF EARTHQUAKES IN TREASURY ISLAND EARTHQUAKE SWARM, APRIL 1967



Landslide near Garaina







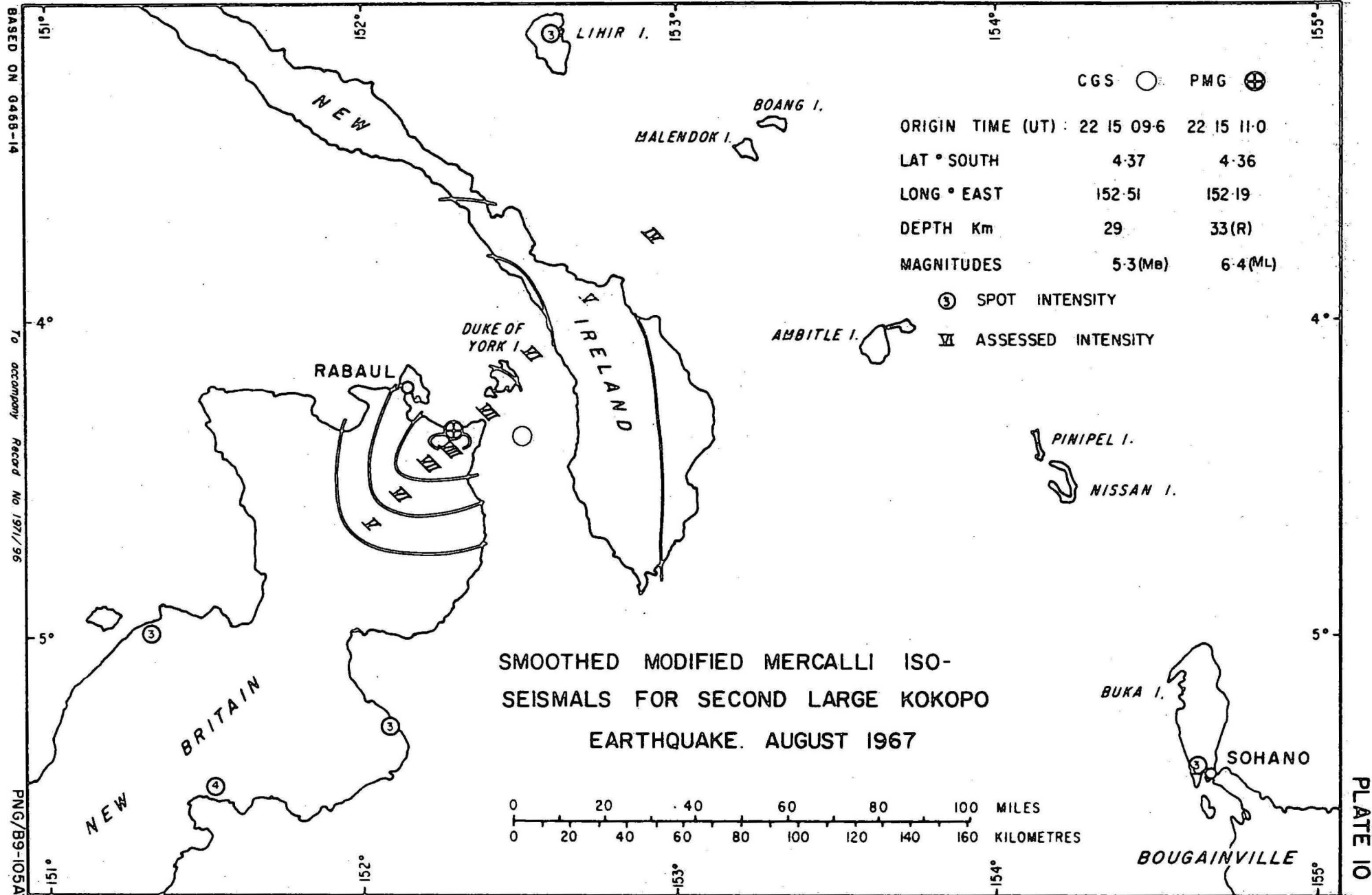




Fig. 1

Kabaleo Teachers' College, August 1967



Fig.2

Kabaleo Teachers' College, August 1967



Fig.1

Failure of water tank, Kabaleo Teachers' College



Fig.2

Sisters' House, Kabaleo Teachers' College



Fig.1

Sisters' House, Kabaleo Teachers' College, August 1967

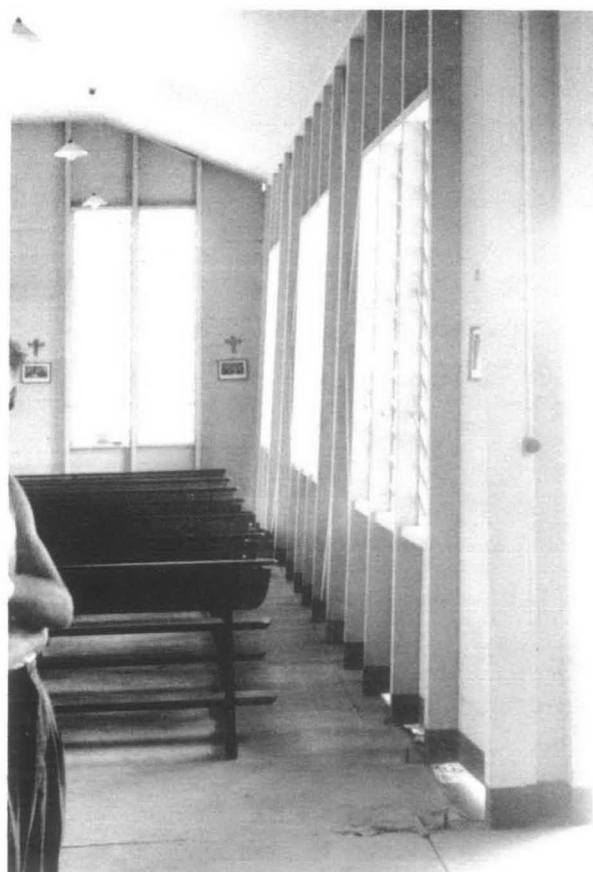


Fig.2

Church at Vunapau Catholic Mission, August 1967



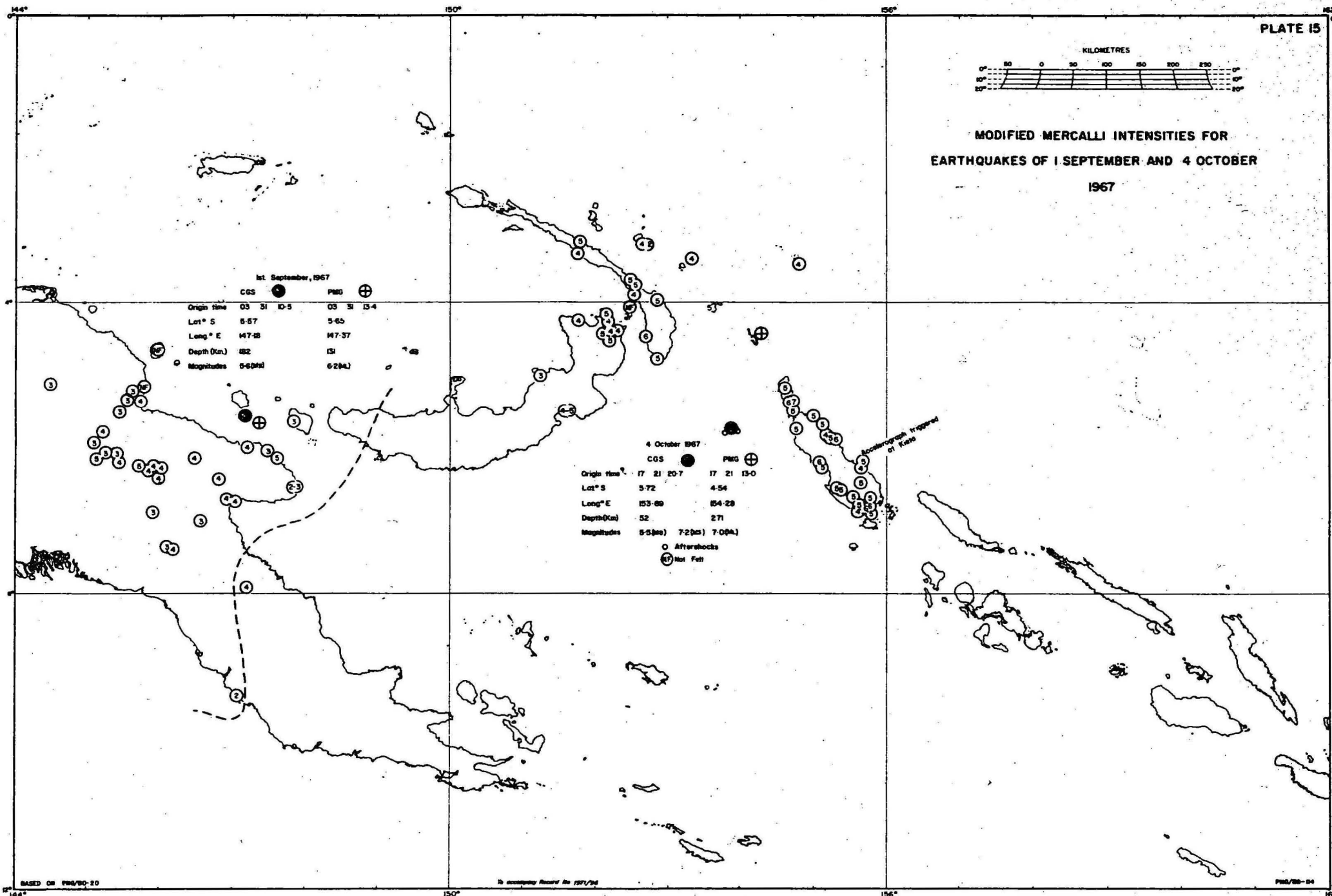
Fig.1

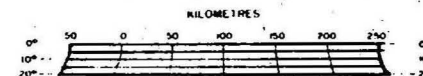
Failure of poor quality masonry at Rainau, August 1967



Fig. 2

Bitagalip Fermentery, August 1967





MODIFIED MERCALLI INTENSITIES FOR
EARTHQUAKE OF 3 SEPTEMBER 1967

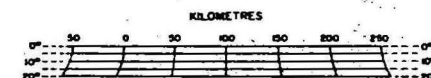
3rd September, 1967

	CGS	PMG
Origin Time	01 23 19.6	01 23 21.3
Lat.°S	7.84	7.80
Long.°E	147.12	147.29
Depth (Km)	139	104
Magnitudes	5.4 (MS)	5.6 (ML)

⑤ Spot Intensity
IV Assessed Intensity

13 September 1957						
	CG5			CG6		
Origin time	15	33	06.5	15	32	57.3
Lat° S	5-04			6-13		
Long° E	146-43			146-40		
Depth(km)	39			28		
Magnitude	5.5 (m)			6.4 (m)		

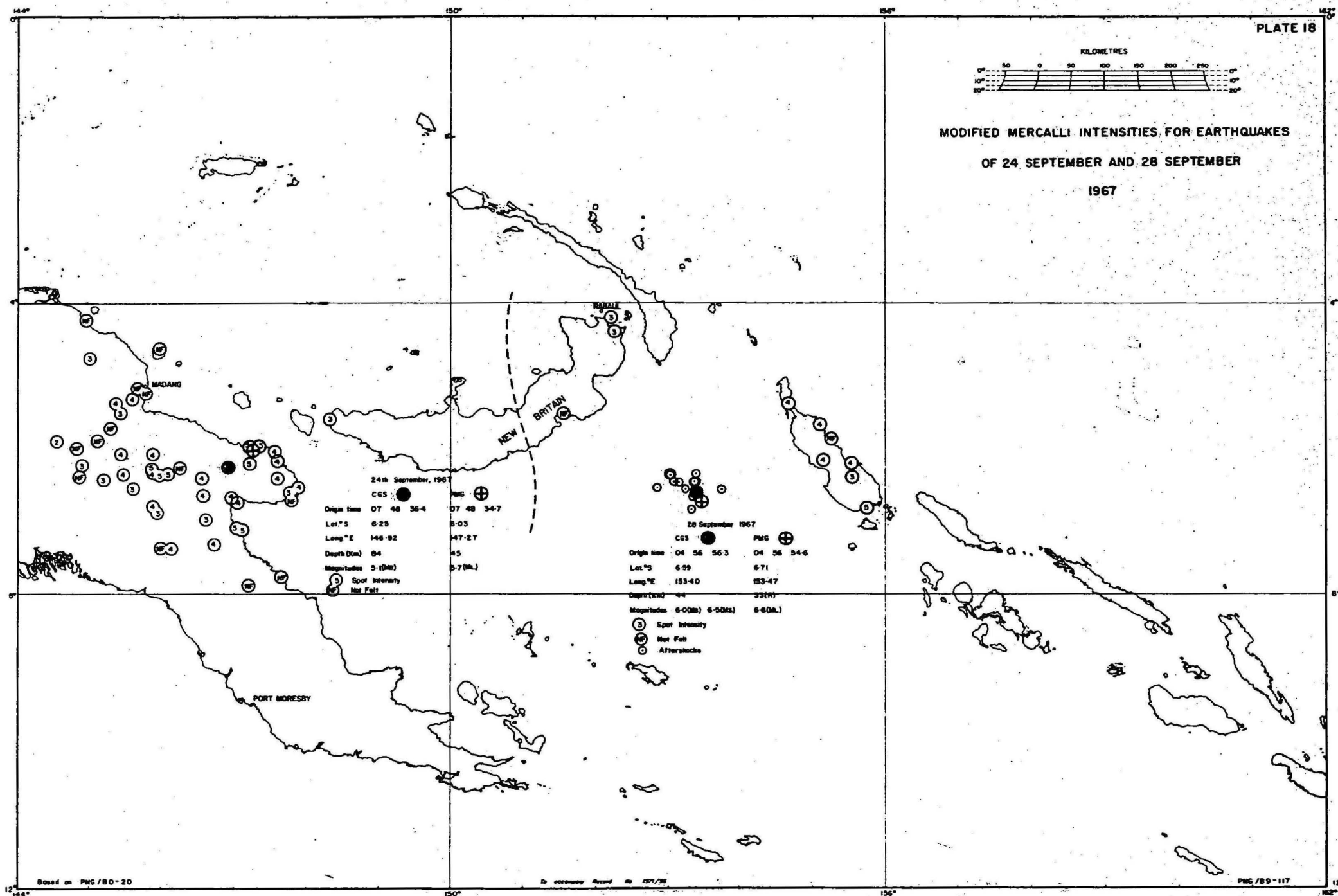
④ **Self** **Intensity**
 V **Assessed Intensity**

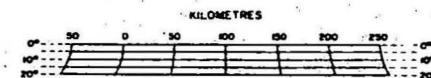


MODIFIED MERCALLI INTENSITIES FOR EARTHQUAKES

OF 24 SEPTEMBER AND 28 SEPTEMBER

1967





MODIFIED MERCALLI INTENSITIES FOR
EARTHQUAKES OF 14 NOVEMBER
AND 25 DECEMBER 1967

14th November, 1967

	CGS	PMG
Origin time	05 28 36.9	05 28 40.1
Lat° S	5-43	5-48
Long° E	147-07	147-03
Depth (Km)	201	33(0)
Magnitudes	5.8(MB) 5.0(MS)	6.2(MA)

25 December, 1967

	CGS	PMG
Origin time	01 23 33.6	01 23 27.7
Lat° S	5-28	4-31
Long° E	153-67	153-77
DEPTH(Km)	64	230
Magnitudes	5.7(MB) 7.0(MS)	7.5(MA)

(A) Spot Intensity
(V) Assessed Intensity
(MF) Not Felt

