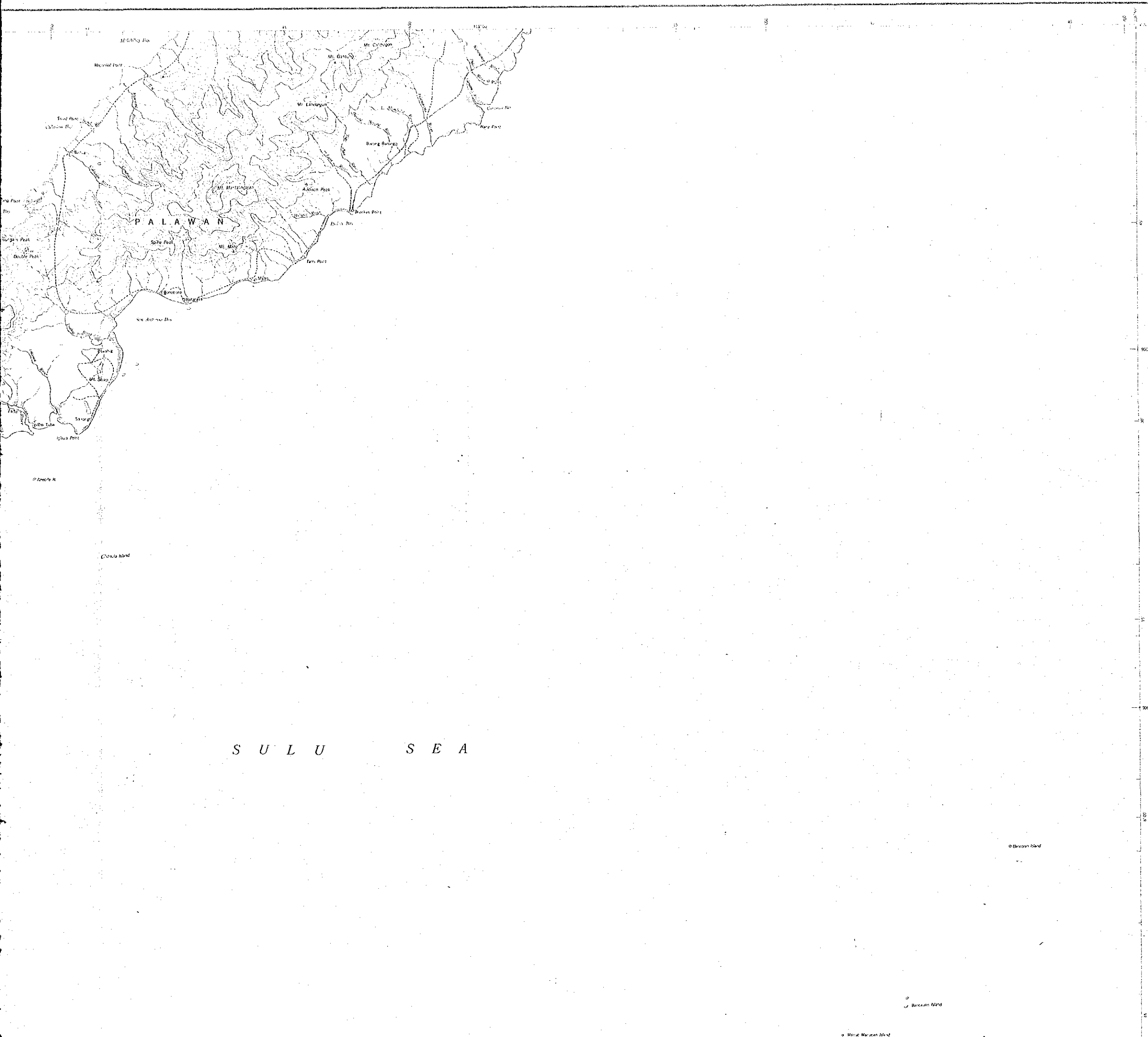




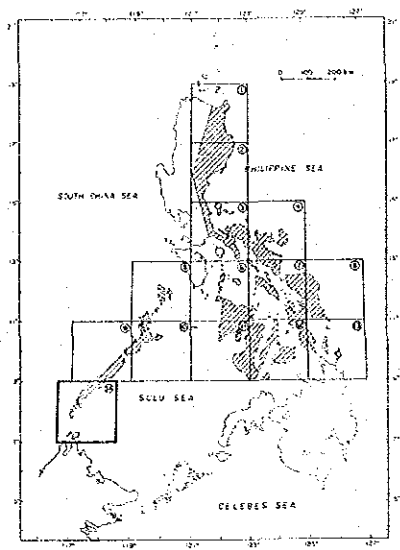
© Stevens Island

© Stevens Island



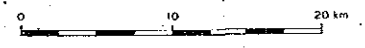
フィリピン共和国  
 鉱物資源基本図調査  
 第1年次  
 重力探査実績図

国際協力事業団  
 15158  
 図書資料室蔵



昭和60年6月(第1版)  
 国際協力事業団  
 金属鉱業事業団

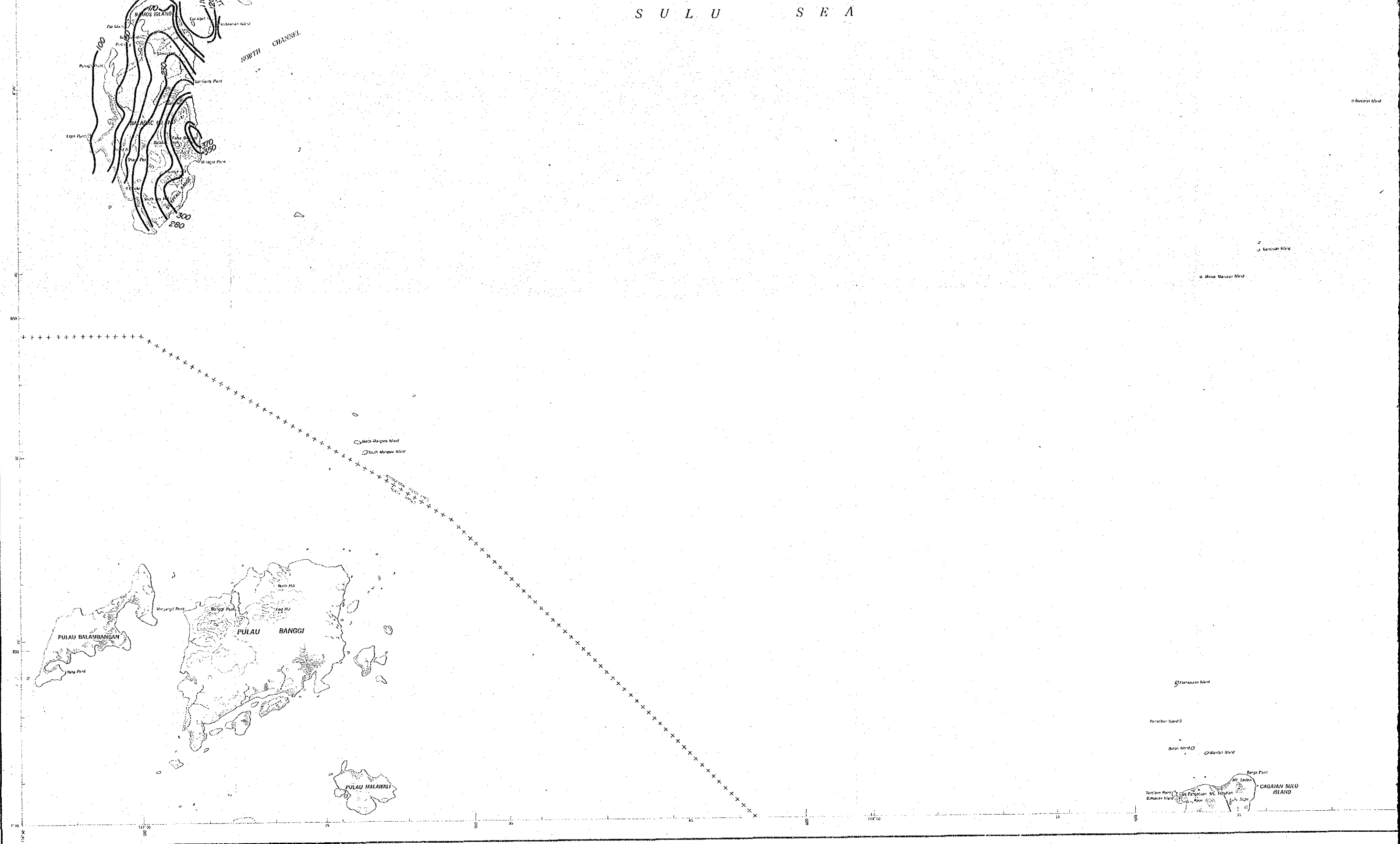
Scale 1:250,000



LEGEND

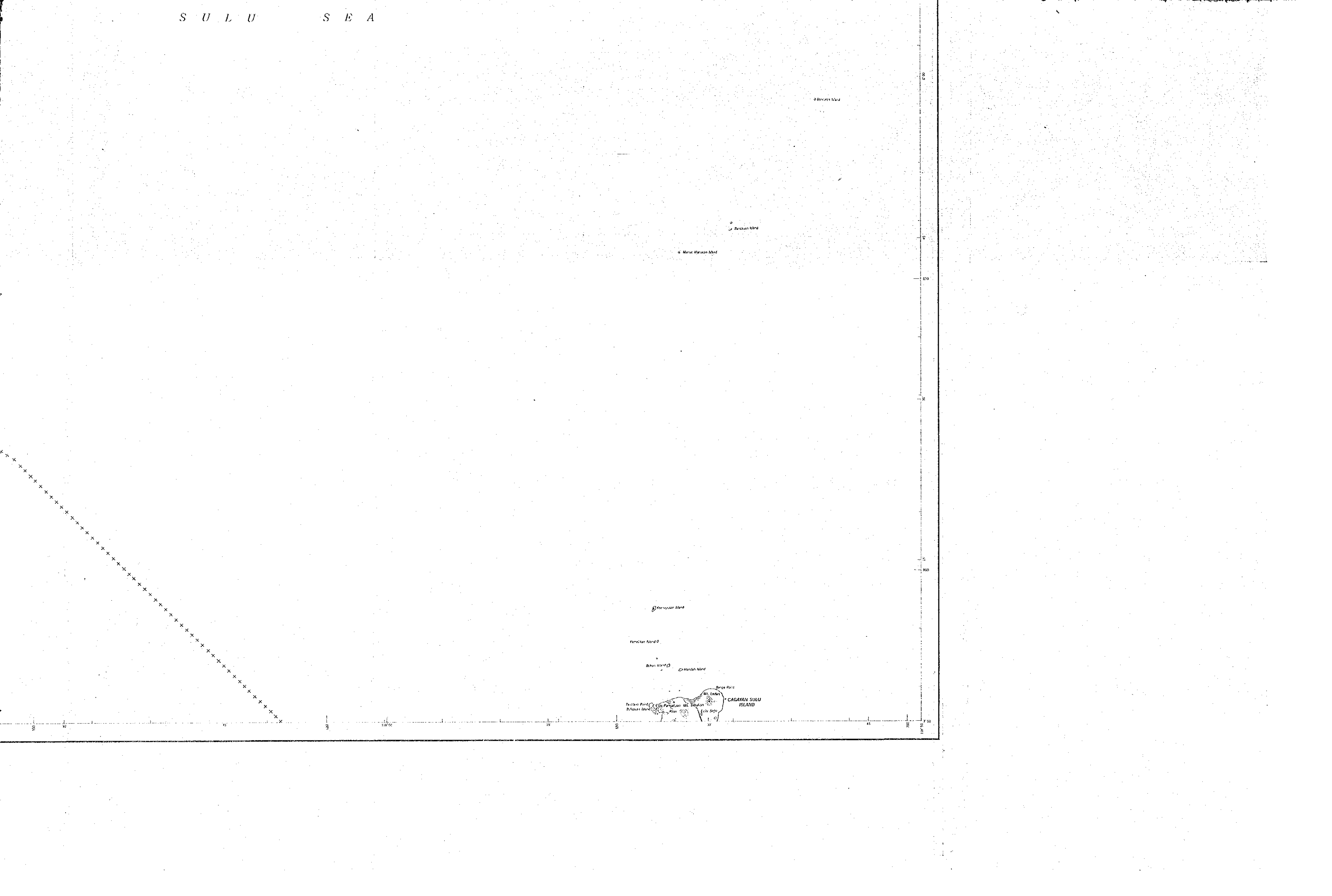
— } Bouguer Gravity Contour  
 (milligal)

S U L U S E A



**LEGEND**

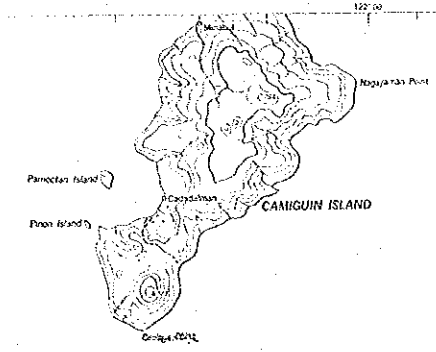
Charted depth	● MICHILIA	Shoal or rock	○
Charted depth of 100 fms.	⊙ BATAVIA	Shoal or rock	○
Charted depth of 200 fms.	⊙ MALOLO	Shoal or rock	○
Charted depth of 300 fms.	○ MALABO	Shoal or rock	○
Charted depth of 400 fms.	○ MALABO	Shoal or rock	○
Charted depth of 500 fms.	○ MALABO	Shoal or rock	○
Charted depth of 600 fms.	○ MALABO	Shoal or rock	○
Charted depth of 700 fms.	○ MALABO	Shoal or rock	○
Charted depth of 800 fms.	○ MALABO	Shoal or rock	○
Charted depth of 900 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1000 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1100 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1200 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1300 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1400 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1500 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1600 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1700 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1800 fms.	○ MALABO	Shoal or rock	○
Charted depth of 1900 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2000 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2100 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2200 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2300 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2400 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2500 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2600 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2700 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2800 fms.	○ MALABO	Shoal or rock	○
Charted depth of 2900 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3000 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3100 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3200 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3300 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3400 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3500 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3600 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3700 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3800 fms.	○ MALABO	Shoal or rock	○
Charted depth of 3900 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4000 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4100 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4200 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4300 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4400 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4500 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4600 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4700 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4800 fms.	○ MALABO	Shoal or rock	○
Charted depth of 4900 fms.	○ MALABO	Shoal or rock	○
Charted depth of 5000 fms.	○ MALABO	Shoal or rock	○



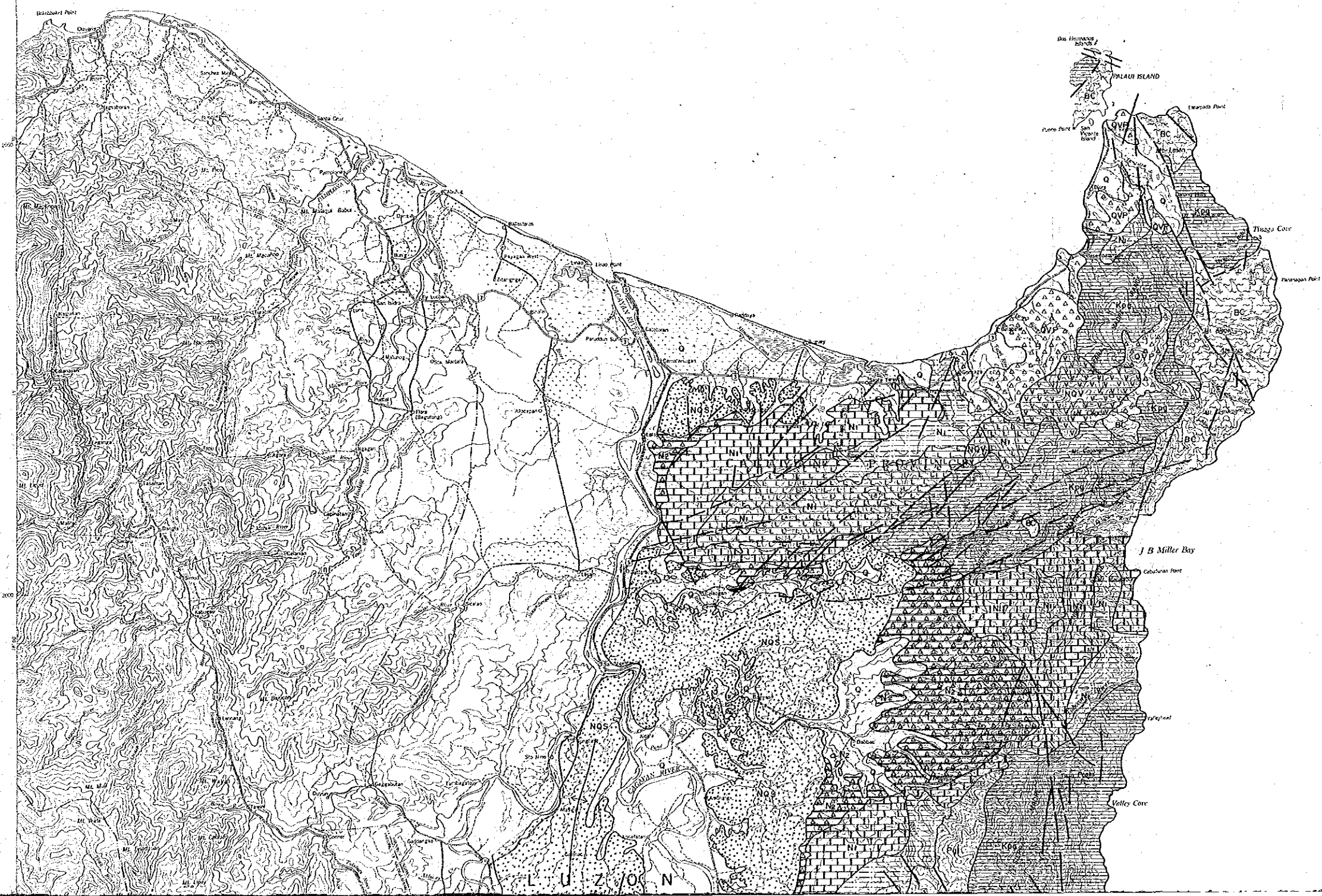
18° 00' 21° 00'

18° 00'

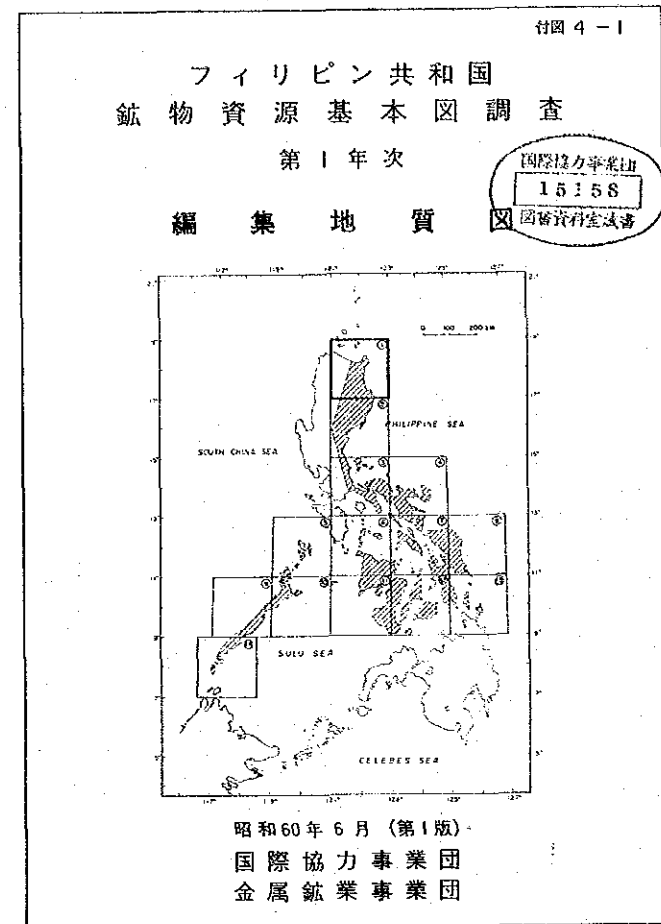
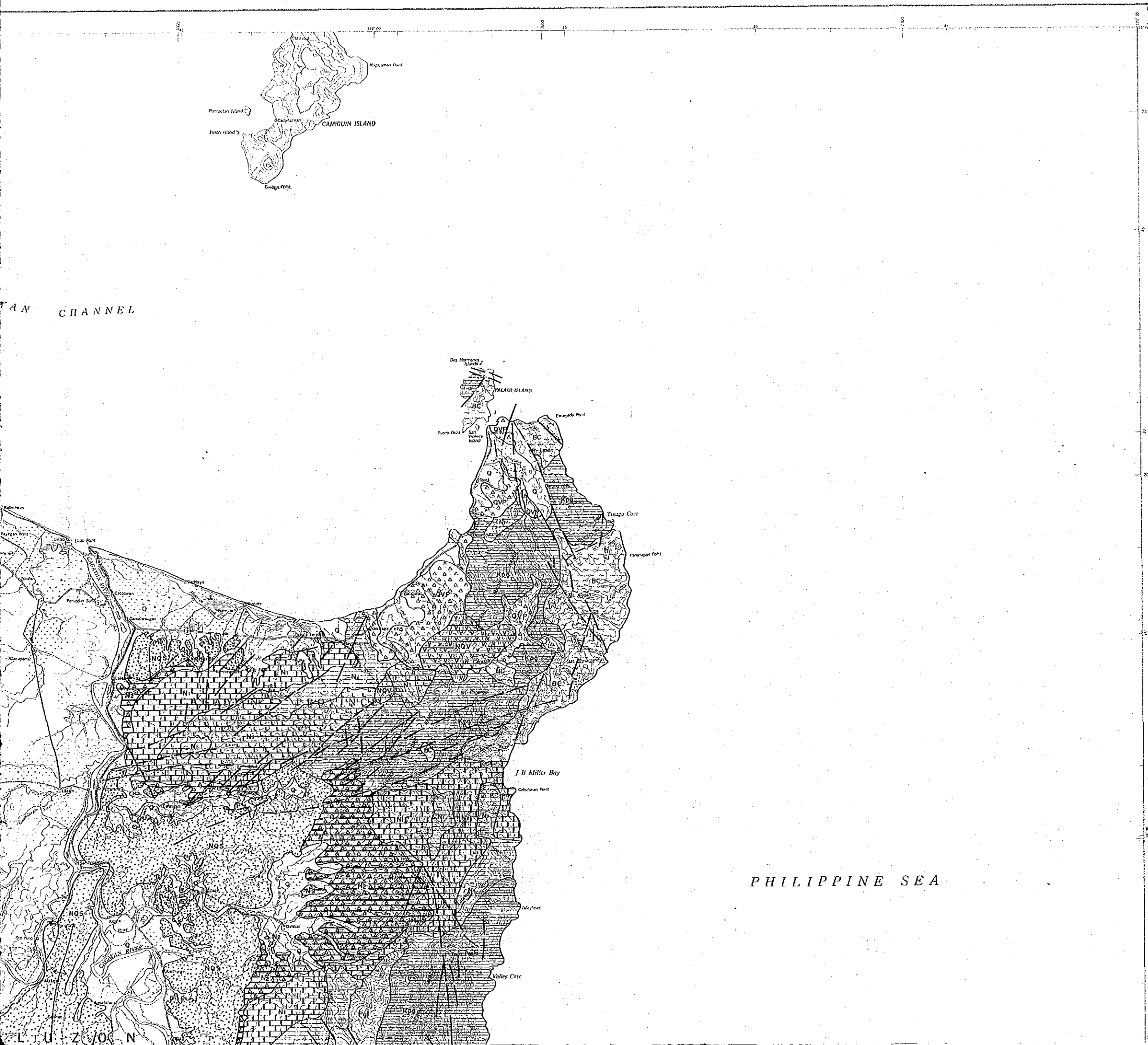
122° 00'



BABUYAN CHANNEL

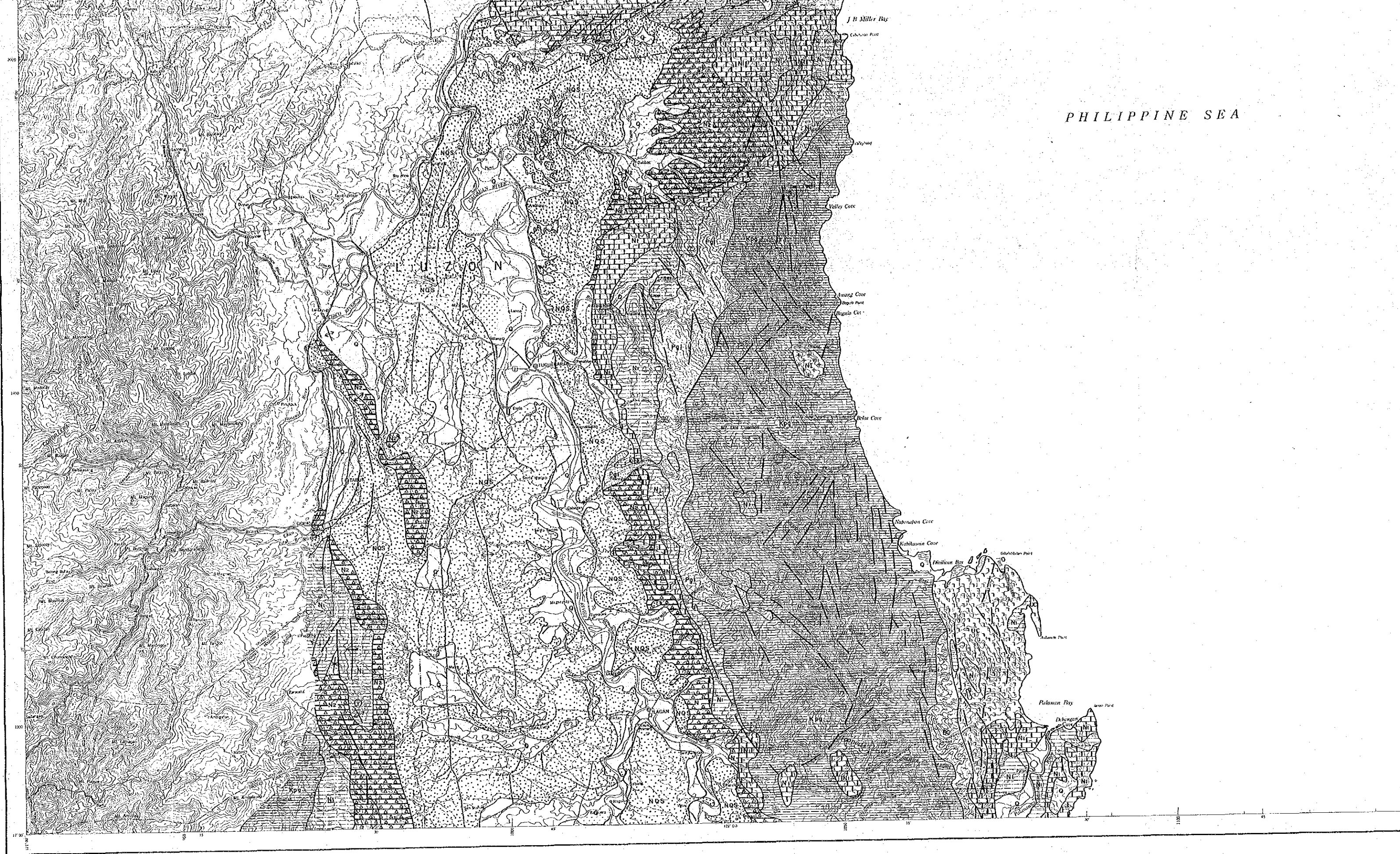


PHILIPPINE SEA



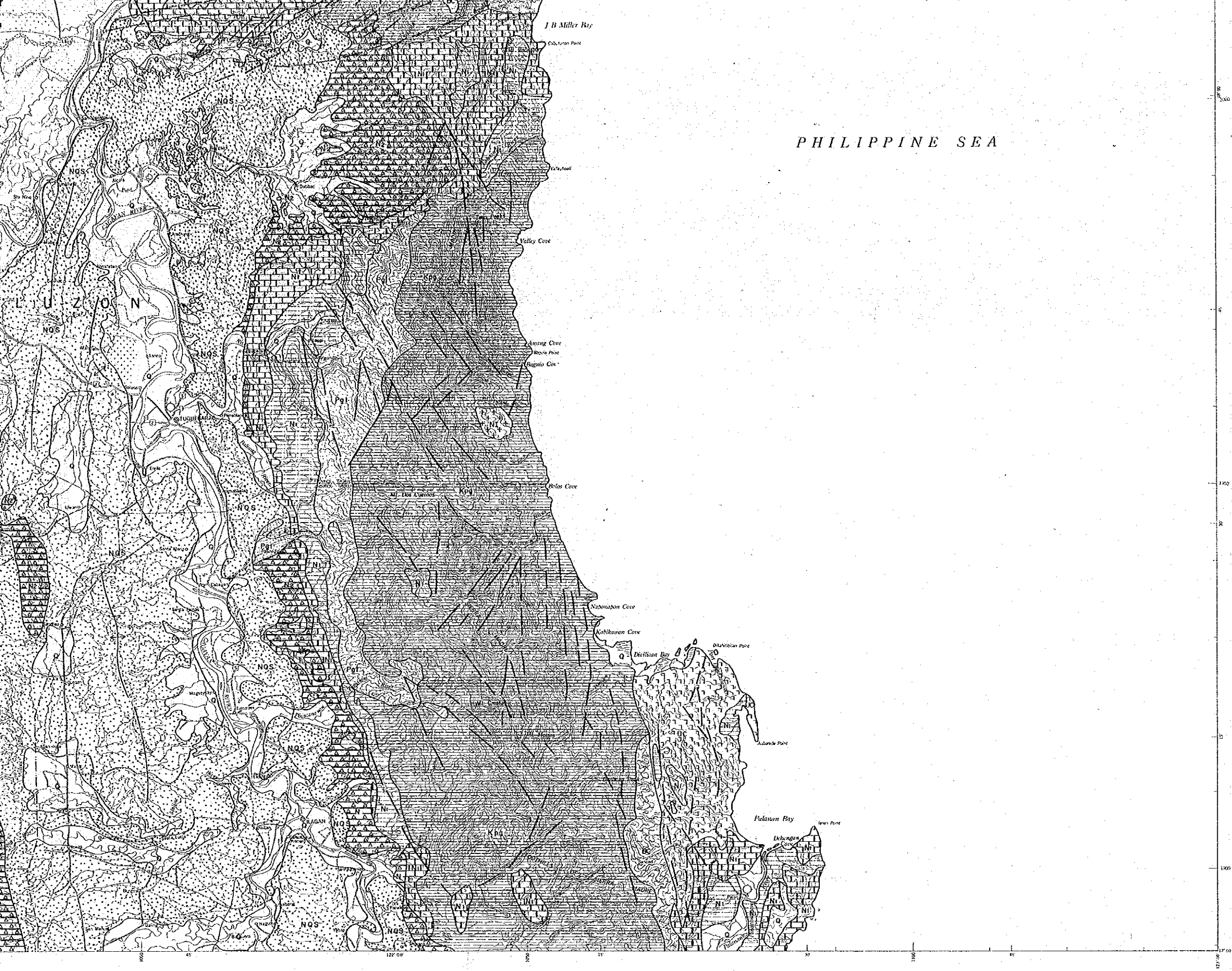
**LEGEND**

- LITHOLOGY**
- IGNEOUS ROCKS**
- Pliocene, Pleistocene and Recent volcanic deposits, mostly andesites and basalts with associated dacites and rhyodacites in places, occurring mainly as lava flows in volcanic centers and pyroclastics in their aprons.
  - Plateau basalt.
  - Intermediate to acidic, mainly diorite, granodiorite, quartz diorite and monzonite; tonalite, adamellite, gabbro, syenite and granite are localized facies.
  - Mostly submarine andesite and or basalt intercalated with pyroclastics and clastics sedimentary rocks.
  - Basic to ultrabasic, mainly peridotite, dunite and layered gabbro; peridotite and dunite are generally serpentinized; troctolite, norite, ironjhemite.
- SEDIMENTARY ROCKS**
- Quaternary alluvial, lacustrine, beach and residual deposits.
  - Pliocene to Pleistocene sediments, both marine and terrestrial, includes extensive reef limestone and water-laid pyroclastics, also localized terrace gravel deposits.
  - Upper Miocene sediments and volcanics, largely marine clastics, reef limestone and andesitic-basaltic pyroclastics and lavas.
  - Late Oligocene to Middle Miocene sediments and volcanics, mainly marine sandstone, shale and reef limestone, some conglomerate, coal measure and marine andesitic-basaltic pyroclastics and lavas.
  - Paleocene to Oligocene sediments and volcanics, mainly marine sandstone, shale and limestone, dacite and andesite lavas and pyroclastics.
  - Undifferentiated Cretaceous to Paleogene strata, commonly mapped as a metavolcanics and metasediments consisting mainly of spilites chert, pelagic to hemipelagic sediments and turbidites.
  - This pattern indicates major limestone bodies of N<sub>1</sub>
- METAMORPHIC ROCK**
- Schist, phyllite, gneiss, marble and quartzite ranging from the greenschist to paragneiss facies.










**LEGEND**

- |                              |          |                    |       |
|------------------------------|----------|--------------------|-------|
| Coastal city                 | MANILA   | Sea level or below | 100'  |
| City capital of province     | BATANGAS | Sea level or below | 200'  |
| Capital of province          | MAILOLOS | Sea level or below | 300'  |
| Municipality or market place | MAKINA   | Sea level or below | 400'  |
| Barangay                     | MAKINA   | Sea level or below | 500'  |
| Normal gauge station         | MAKINA   | Sea level or below | 600'  |
| Town or village              | MAKINA   | Sea level or below | 700'  |
| International boundary       | MAKINA   | Sea level or below | 800'  |
| Provincial boundary          | MAKINA   | Sea level or below | 900'  |
| Railroad                     | MAKINA   | Sea level or below | 1000' |
| Highway                      | MAKINA   | Sea level or below | 1100' |
| Telegraph line               | MAKINA   | Sea level or below | 1200' |
| Power line                   | MAKINA   | Sea level or below | 1300' |
| Waterfall                    | MAKINA   | Sea level or below | 1400' |
| Swamp                        | MAKINA   | Sea level or below | 1500' |
| Marsh                        | MAKINA   | Sea level or below | 1600' |
| Shrubland                    | MAKINA   | Sea level or below | 1700' |
| Open land                    | MAKINA   | Sea level or below | 1800' |
| Forest                       | MAKINA   | Sea level or below | 1900' |
| Mountain                     | MAKINA   | Sea level or below | 2000' |
| Peak                         | MAKINA   | Sea level or below | 2100' |
| Pass                         | MAKINA   | Sea level or below | 2200' |
| Valley                       | MAKINA   | Sea level or below | 2300' |
| Plateau                      | MAKINA   | Sea level or below | 2400' |
| Scarp                        | MAKINA   | Sea level or below | 2500' |
| Cliff                        | MAKINA   | Sea level or below | 2600' |
| Rock                         | MAKINA   | Sea level or below | 2700' |
| Gravel                       | MAKINA   | Sea level or below | 2800' |
| Sand                         | MAKINA   | Sea level or below | 2900' |
| Mud                          | MAKINA   | Sea level or below | 3000' |
| Ice                          | MAKINA   | Sea level or below | 3100' |
| Snow                         | MAKINA   | Sea level or below | 3200' |
| Perpetual snow               | MAKINA   | Sea level or below | 3300' |
| Glacier                      | MAKINA   | Sea level or below | 3400' |
| Iceberg                      | MAKINA   | Sea level or below | 3500' |
| Ice shelf                    | MAKINA   | Sea level or below | 3600' |
| Ice cap                      | MAKINA   | Sea level or below | 3700' |
| Ice field                    | MAKINA   | Sea level or below | 3800' |
| Ice stream                   | MAKINA   | Sea level or below | 3900' |
| Ice flow                     | MAKINA   | Sea level or below | 4000' |
| Ice drift                    | MAKINA   | Sea level or below | 4100' |
| Ice deposit                  | MAKINA   | Sea level or below | 4200' |
| Ice erosion                  | MAKINA   | Sea level or below | 4300' |
| Ice scour                    | MAKINA   | Sea level or below | 4400' |
| Ice drift                    | MAKINA   | Sea level or below | 4500' |
| Ice deposit                  | MAKINA   | Sea level or below | 4600' |
| Ice erosion                  | MAKINA   | Sea level or below | 4700' |
| Ice scour                    | MAKINA   | Sea level or below | 4800' |
| Ice drift                    | MAKINA   | Sea level or below | 4900' |
| Ice deposit                  | MAKINA   | Sea level or below | 5000' |




paralite and Junita are generally serpenitized, ironiferous horite, ironjunita.





**SEDIMENTARY ROCKS**

-  **Q** Quaternary alluvial, lacustrine, beach and residual deposits.
-  **NOS** Pliocene to Pleistocene sediments both marine and terrestrial, includes extensive reef limestone and water-laid pyroclastics, also localized terrace gravel deposits.
-  **N<sub>2</sub>** Upper Miocene sediments and volcanics, largely marine clastics, reef limestone and andesitic-basaltic pyroclastics and lavas.
-  **N<sub>1</sub>** Late Oligocene to Middle Miocene sediments and volcanics, mainly marine sandstone, shale and reef limestone, some conglomerate, coal measure and marine andesitic-basaltic pyroclastics and lavas.
-  **Pg** Paleocene to Oligocene sediments and volcanics, mainly marine sandstone, shale and limestone, dacite and andesite lavas and pyroclastics.
-  **Kpg** Undifferentiated Cretaceous to Paleogene strata, commonly mapped as a metavolcanics and metasediments consisting mainly of spilites, chert, pelagic to hemipelagic sediments and turbidites.
-  **N<sub>1</sub>** This pattern indicates major limestone bodies of N<sub>1</sub>.

**METAMORPHIC ROCK**

-  **Bc** Schist, phyllite, gneiss, marble and quartzite ranging from the greenschist to pyroxenite facies.

**GEOLOGIC SYMBOLS**

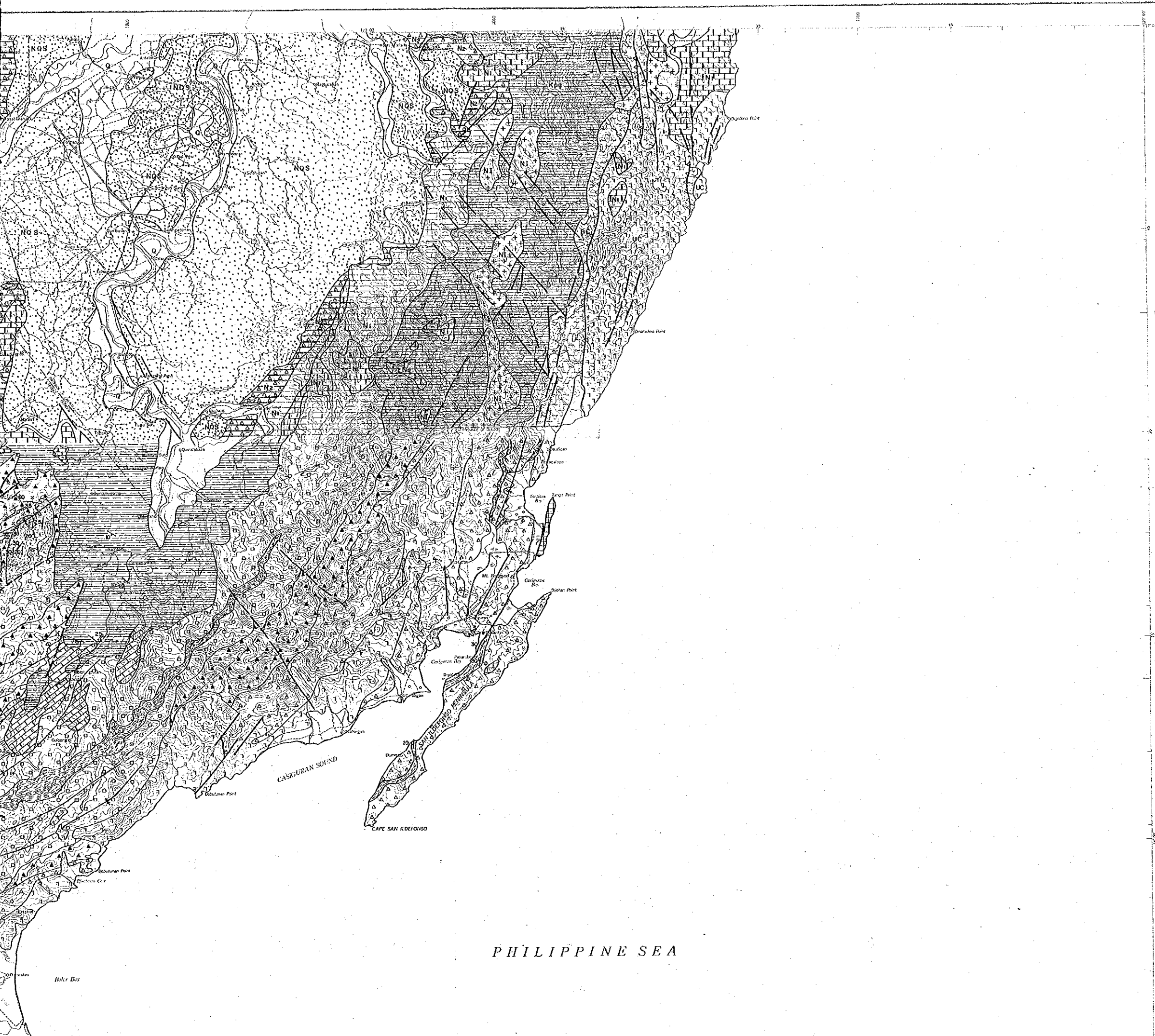
-  Geologic contact.
-  Anticline axis.
-  Syncline axis.
-  High angle fault.

Compiled from Geological Map (1:250,000) by BMG Regional Office No.1, Cagayan (Oct. 1984), Kalinga-Apayao (Mar. 1982), Mt. Province (Mar. 1982), Ifugao (Mar. 1982), Isabela (Oct. 1984), Nueva Vizcaya and Quirino (Oct. 1984).



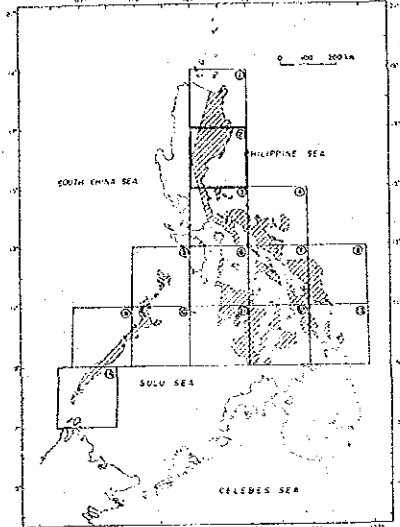


PHILIPPINE SEA



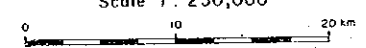
フィリピン共和国  
 鉱物資源基本図調査  
 第1年次  
 編集地質

国際協力事業団  
 1975  
 金属鉱業事業団

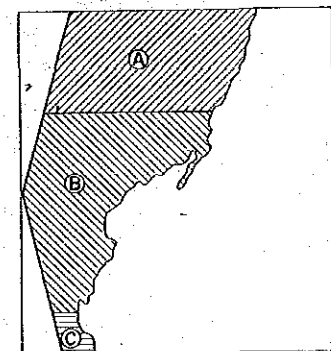


昭和60年6月(第1版)  
 国際協力事業団  
 金属鉱業事業団

Scale 1:250,000



LEGEND



- (A) Compiled from Geological Map 1:250,000 by BNG Regional Office No.1, Cagayan 1964, Palolo-Apo 1962, Mt. Province (Mar. 1962), Itogon 1962, Ilocos 1964, Nueva Vizcaya and Guirino (Oct. 1964).
- (B) Compiled from Geological Map, northeastern Luzon, 1:250,000 by RP-Japan Project, Oct. 1977.
- (C) Compiled from Geologic Map and Sections of Porion of Eastern Sierra Madre Range in Guilan and Nueva Ecija Provinces (1:50,000) by D.E. Ablog, Nov. 1970.

(A)

- LITHOLOGY**
- IGNEOUS ROCKS**
- Granite**  
 Plagioclase and quartz with minor orthopyroxene and biotite with abundant leucite and zircon in some specimens. Some granites contain abundant zircon and monazite in their cores.
  - Diorite**  
 Composed of medium-grained plagioclase, quartz, hornblende and biotite with minor orthopyroxene and zircon. Some diorites contain abundant zircon and monazite in their cores.
  - Basalt**  
 Many basaltic dykes cut or cross-cut amphibolites with pyroxenes and clinopyroxene and quartz.
  - Andesite**  
 Basaltic and andesitic dykes and sills with hornblende, biotite and quartz. Some andesites contain abundant zircon and monazite in their cores.
- SEDIMENTARY ROCKS**
- Quartzite**  
 Quartzite in the Sierra Madre has a variety of textures, ranging from fine-grained to coarse-grained and is composed of quartz, biotite and hornblende.
  - Schist**  
 Most schists are medium- to coarse-grained and contain hornblende, biotite, quartz, and garnet. Some schists contain abundant zircon and monazite in their cores.
  - Gneiss**  
 Gneiss is composed of medium- to coarse-grained plagioclase, quartz, hornblende, biotite, and garnet. Some gneisses contain abundant zircon and monazite in their cores.
  - Amphibolite**  
 Amphibolite is composed of medium- to coarse-grained hornblende and quartz. Some amphibolites contain abundant zircon and monazite in their cores.
  - Metasedimentary rock**  
 Metasedimentary rocks are composed of medium- to coarse-grained quartz, biotite, and hornblende. Some metasedimentary rocks contain abundant zircon and monazite in their cores.
- METAMORPHIC ROCK**
- Schist**  
 Schist is composed of medium- to coarse-grained hornblende, biotite, quartz, and garnet. Some schists contain abundant zircon and monazite in their cores.
  - Gneiss**  
 Gneiss is composed of medium- to coarse-grained plagioclase, quartz, hornblende, biotite, and garnet. Some gneisses contain abundant zircon and monazite in their cores.

(B)

- RECENT**
- Recent
  - Recent
- PLEISTOCENE**
- Recent
  - Recent
- QUATERNARY**
- Recent
  - Recent
- QUATERNARY**
- Recent
  - Recent
- QUATERNARY**
- Recent
  - Recent
- QUATERNARY**
- Recent
  - Recent



PHILIPPINE SEA



LEGEND

Charter school	MANILA	Sea level in miles	100
City capital of province	MAINTENANCE	Sea level in miles	200
City of province	MAIOLOS	Sea level in miles	300
Municipality or pueblo	MANILA	Sea level in miles	400
Barangay	MANILA	Sea level in miles	500
Home (elevation 1000)	MANILA	Sea level in miles	600
Water gauge station	MANILA	Sea level in miles	700
Water gauge station	MANILA	Sea level in miles	800
Water gauge station	MANILA	Sea level in miles	900
Water gauge station	MANILA	Sea level in miles	1000
Water gauge station	MANILA	Sea level in miles	1100
Water gauge station	MANILA	Sea level in miles	1200
Water gauge station	MANILA	Sea level in miles	1300
Water gauge station	MANILA	Sea level in miles	1400
Water gauge station	MANILA	Sea level in miles	1500
Water gauge station	MANILA	Sea level in miles	1600
Water gauge station	MANILA	Sea level in miles	1700
Water gauge station	MANILA	Sea level in miles	1800
Water gauge station	MANILA	Sea level in miles	1900
Water gauge station	MANILA	Sea level in miles	2000
Water gauge station	MANILA	Sea level in miles	2100
Water gauge station	MANILA	Sea level in miles	2200
Water gauge station	MANILA	Sea level in miles	2300
Water gauge station	MANILA	Sea level in miles	2400
Water gauge station	MANILA	Sea level in miles	2500
Water gauge station	MANILA	Sea level in miles	2600
Water gauge station	MANILA	Sea level in miles	2700
Water gauge station	MANILA	Sea level in miles	2800
Water gauge station	MANILA	Sea level in miles	2900
Water gauge station	MANILA	Sea level in miles	3000
Water gauge station	MANILA	Sea level in miles	3100
Water gauge station	MANILA	Sea level in miles	3200
Water gauge station	MANILA	Sea level in miles	3300
Water gauge station	MANILA	Sea level in miles	3400
Water gauge station	MANILA	Sea level in miles	3500
Water gauge station	MANILA	Sea level in miles	3600
Water gauge station	MANILA	Sea level in miles	3700
Water gauge station	MANILA	Sea level in miles	3800
Water gauge station	MANILA	Sea level in miles	3900
Water gauge station	MANILA	Sea level in miles	4000
Water gauge station	MANILA	Sea level in miles	4100
Water gauge station	MANILA	Sea level in miles	4200
Water gauge station	MANILA	Sea level in miles	4300
Water gauge station	MANILA	Sea level in miles	4400
Water gauge station	MANILA	Sea level in miles	4500
Water gauge station	MANILA	Sea level in miles	4600
Water gauge station	MANILA	Sea level in miles	4700
Water gauge station	MANILA	Sea level in miles	4800
Water gauge station	MANILA	Sea level in miles	4900
Water gauge station	MANILA	Sea level in miles	5000





PHILIPPINE SEA

POLILLO STRAIT

LAGUNA DE BAY

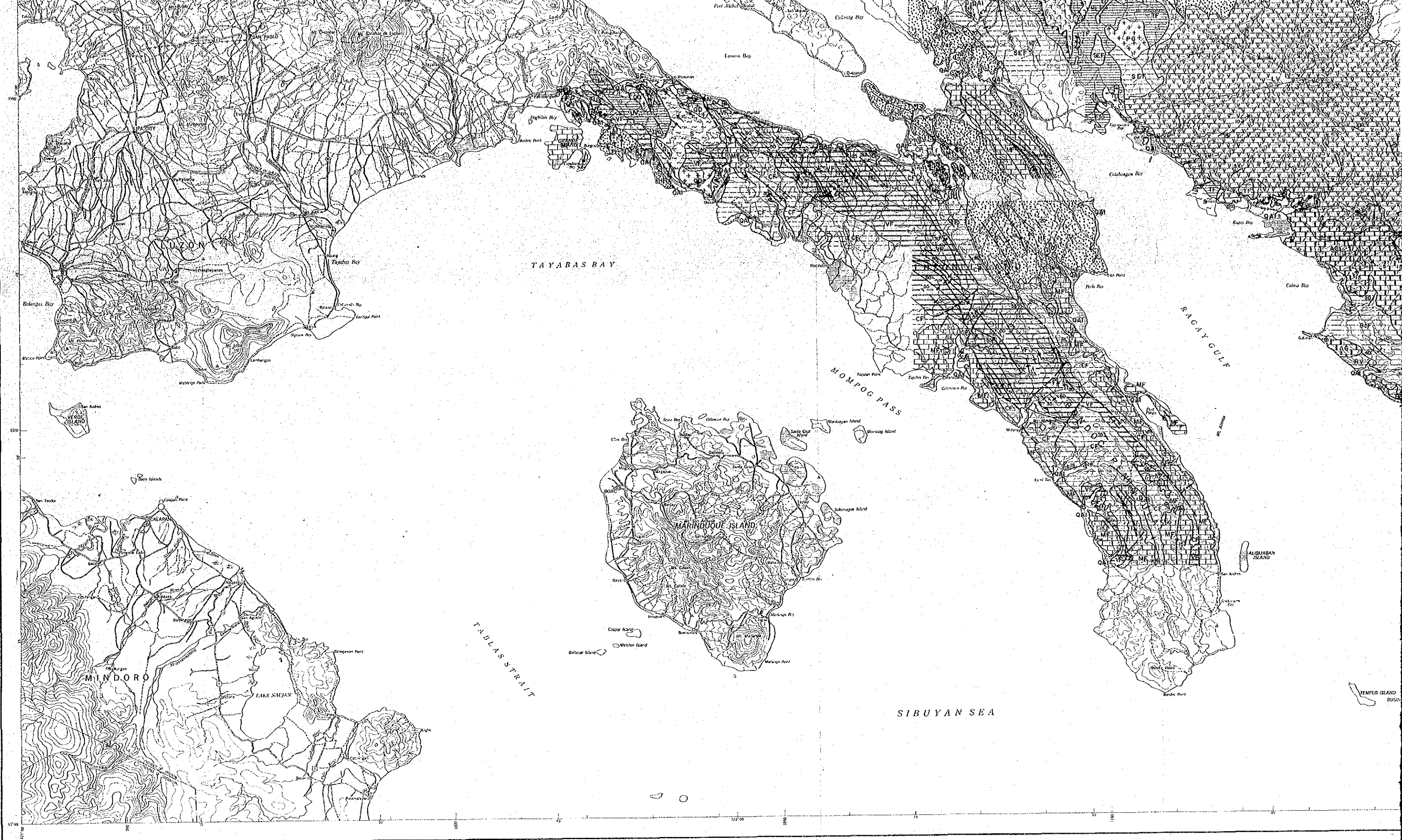
LAMON BAY

TAYABAS BAY

15° 00'  
15° 30'  
16° 00'  
16° 30'  
17° 00'

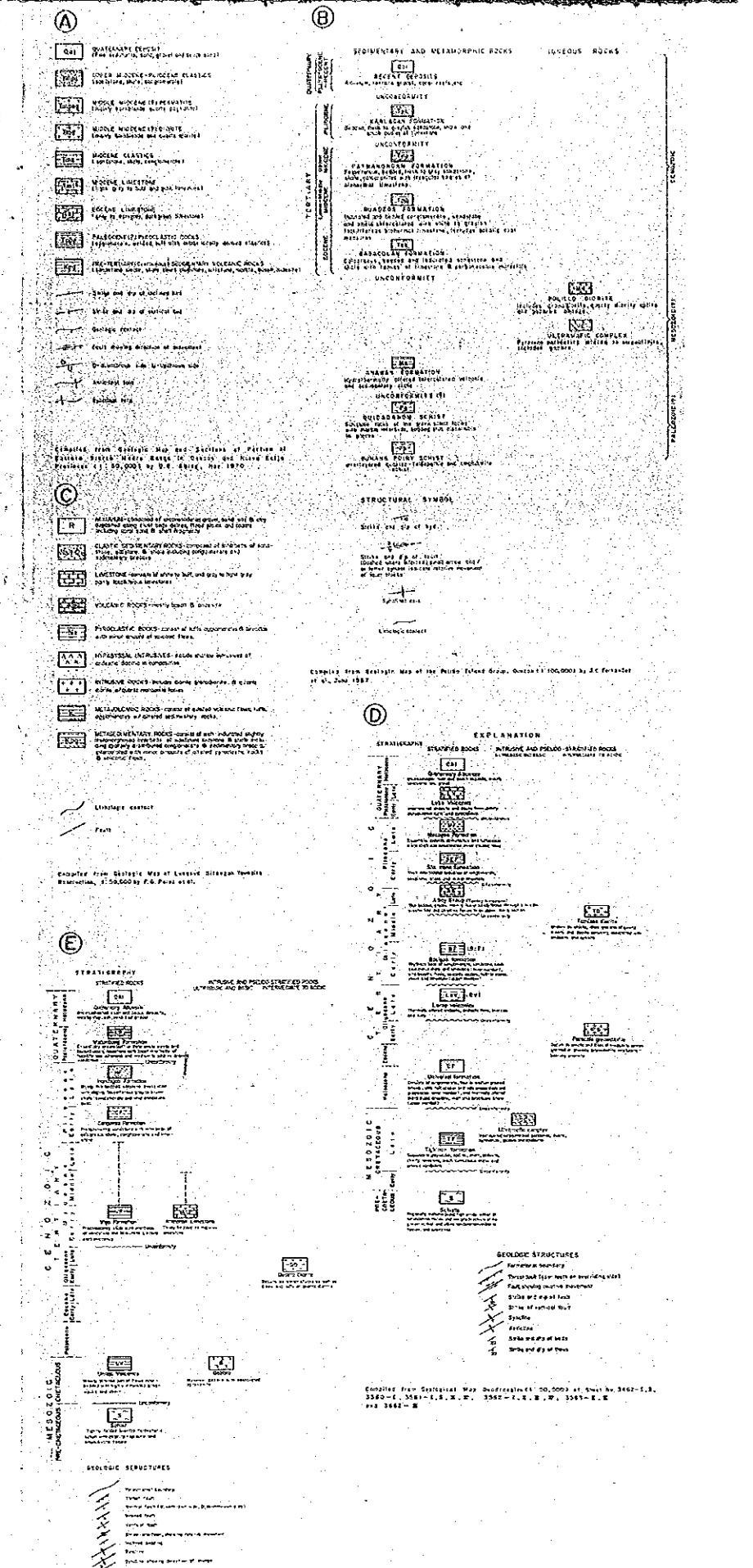
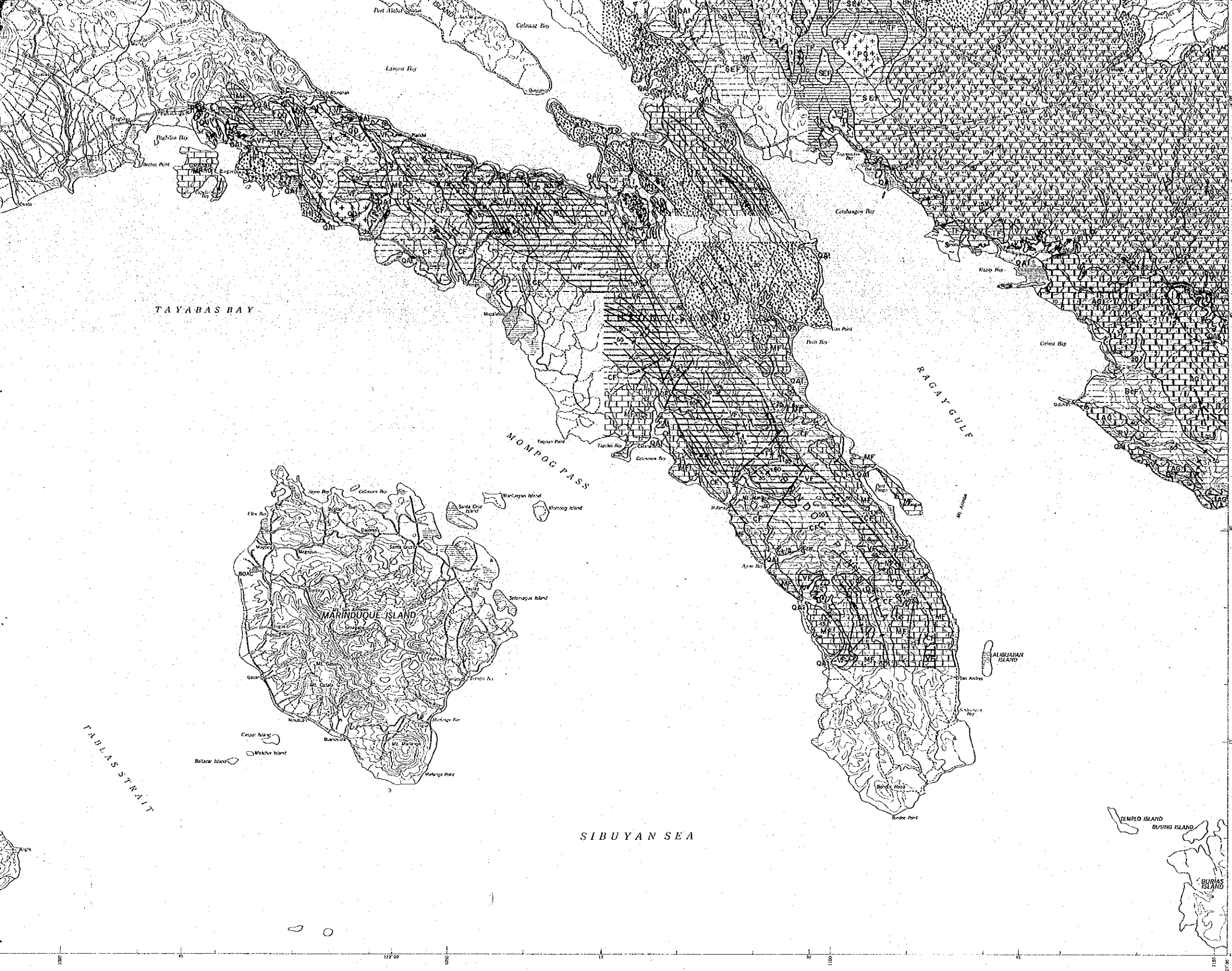
120° 00'  
120° 30'  
121° 00'  
121° 30'  
122° 00'





**LEGEND**

Capital city	● MANILA	Sea surface depth	⋯⋯⋯
City or town	⊙ BATAVIA	Sea surface depth	⋯⋯⋯
City or town	⊙ MALOLOS	Sea surface depth	⋯⋯⋯
City or town	○ Manila	Sea surface depth	⋯⋯⋯
City or town	○ Calapan	Sea surface depth	⋯⋯⋯
City or town	○ Zamboanga	Sea surface depth	⋯⋯⋯
City or town	⊙ Zamboanga	Sea surface depth	⋯⋯⋯
City or town	⊙ Zamboanga	Sea surface depth	⋯⋯⋯
City or town	⊙ Zamboanga	Sea surface depth	⋯⋯⋯
City or town	⊙ Zamboanga	Sea surface depth	⋯⋯⋯



Geological Map of Luzon, Philippines, 1:50,000 Scale, Sheet No. 3541-1. Published by the Philippine Geological Survey, Manila, 1967.