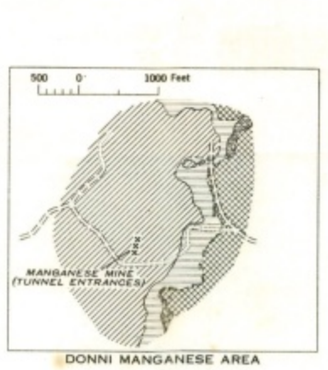
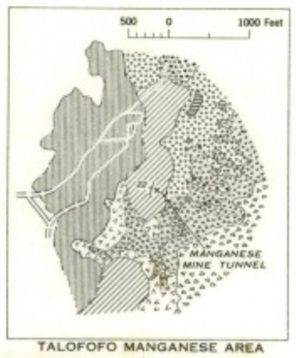
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

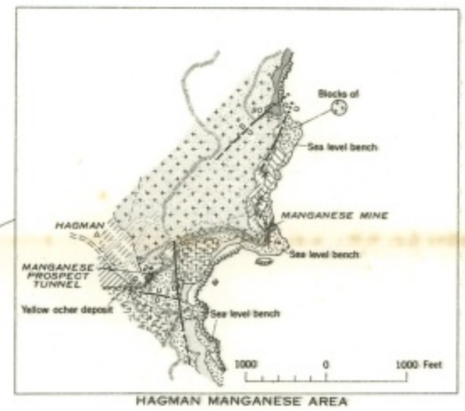


DONNI MANGANESE AREA

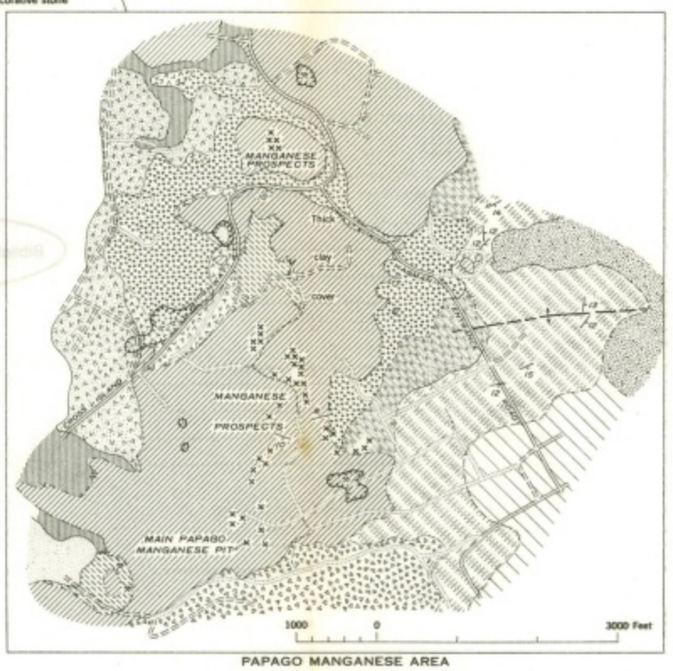


TALOFOFO MANGANESE AREA

ACHUGAU MANGANESE AREA



HAGMAN MANGANESE AREA



PAPAGO MANGANESE AREA

Areas in which lateric ferruginous crusts and boxworks occur. Possible source for poor quality iron ore

Loosely consolidated quartz-rich terrace sand cemented with hematite

Limesand

Limesand and calcareous gravel

Achugau "bauxite" sample site at center of manganese workings

Sample of clay soil and parent material from Donni sandstone member of Tagpochau limestone taken here

Quartz-rich calcareous sand with rhyolite particles. Sand is 60 to 80 percent quartz

Loosely consolidated quartz-rich granule sands in Densinyama formation

Quartz-rich calcareous sand with magnetite grains. Sand is ±50 percent quartz

Calcareous sand with magnetite, quartz, and volcanic rock fragments. Quartz less than 10 percent

Quartz-rich terrace sands cemented with yellowish-brown hydrous iron oxide

Limesand and calcareous gravel

Hard massive inequigranular limestone. Probably suitable for building and decorative stone

South Densinyama ridge "bauxite" sample site

Limesand

Limesand

Limesand

Limesand

Limesand and calcareous gravel

Well to poorly consolidated andesitic conglomerate and sandstone. Possible source for relatively fresh volcanic sand and gravel. Shaded area is most promising locality

Hard, massive, inequigranular limestone. Probably suitable for building and decorative stone

Massive fine-grained andesite lava flow. Probably suitable for building and decorative stone. Fresh rock exposed in tunnels. Possible quarry sites circled

Limesand

Plastic clays probably suitable for ceramic work. Most favorable site circled. Area outlined is deepest and most accessible on Saipan, but only one of many areas where possible ceramic clays occur

Limesand and calcareous gravel

Limesand and calcareous gravel

Naftan manganese locality

½ 0 2 Miles

EXPLANATION

- Existing organic reefs
- Present beach deposits
- Coarse slump rubble of steep coastal areas
- Clay wash of closed depressions
- Landslide deposit
- Offset residual and gravity-slumped limestone blocks
- Post-Mariana terrace deposits
- *Halimeda*-rich facies
- Massive facies
- Rubbly facies
- Thick residual clay, mainly over strata of Mariana limestone
- Upper beds of older terrace deposits
- Lower beds of older terrace deposits
- Inequigranular facies
- Rubbly facies
- Marly facies
- Tuffaceous facies
- Transitional facies
- Machegit conglomerate member
- Donni sandstone member
- Thick residual clay, mainly over strata of Tagpochau limestone
- White limestone
- Impure limestone and calcareous conglomerate
- Andesitic conglomerate and tuffaceous sandstone containing little or no quartz
- Andesitic conglomerate and tuffaceous sandstone containing much quartz
- Andesitic breccia
- Andesitic conglomerate and tuffaceous sandstone
- Separate belt of interbedded andesite flow rock and tuff
- Andesitic breccia and tuff
- Dacitic tuff
- Vitrophyre breccia
- Massive dacite flow rock

Recent / Pleistocene and Recent / Pleistocene / Pliocene or Pleistocene → QUATERNARY

Mariana limestone; Older terrace deposits → TERTIARY OR QUATERNARY

Miocene: Tagpochau limestone; Matansa limestone; Densinyama formation

Eocene: Hagman formation; Sankakuyama formation

Eocene? → TERTIARY

- 70 Manganese vein, showing dip
- Manganese veinlets
- Manganese ore concentrate stockpile
- Contact, dashed where approximately located
- Stratigraphic contact
- U, D; 70 Fault, showing dip; dashed where inferred; dotted where concealed. U, upthrown side; D, downthrown side
- 80 Vertical fault
- Anticline, showing trace of axial plane; dashed where approximately located
- 40 Strike and dip of beds
- 20 Strike and dip of foliation
- Manganese prospect; small pits, trenches, cuts, and tunnels
- Quarry
- Opencut
- Triangulation station

2°2' TRUE NORTH / MAGNETIC NORTH

Prepared by R. G. Schmidt and P. E. Cloud, Jr., in part utilizing data provided by H. W. Burke

MAP OF THE ECONOMIC GEOLOGY OF SAIPAN, MARIANA ISLANDS

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