



[MLKL] -16.45105 167.78245

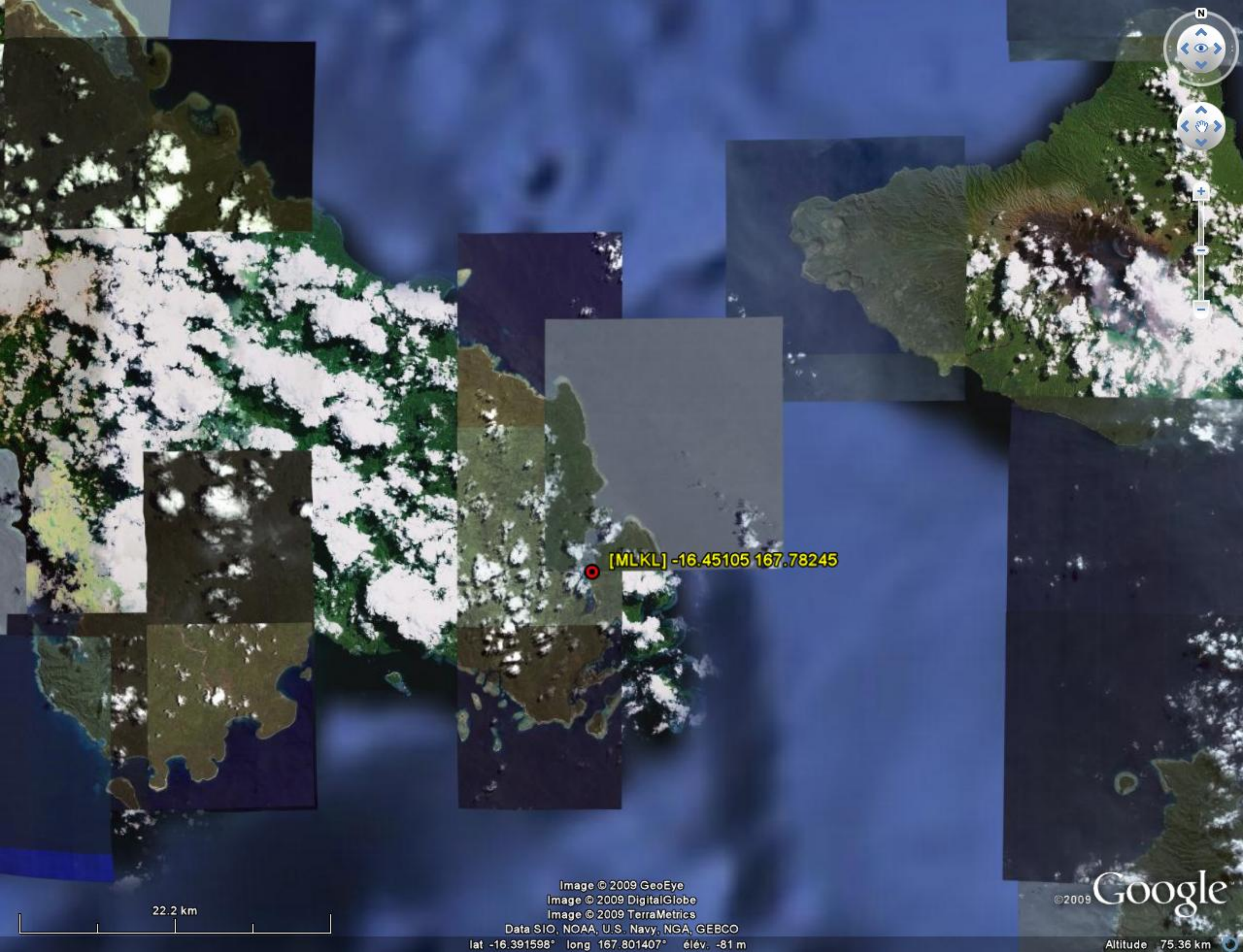
29 km

Image © 2009 GeoEye
Image © 2009 DigitalGlobe
Image © 2009 TerraMetrics

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
lat -16.237493° long 167.529525° élév. 354 m

©2009 Google™

Altitude 95.88 km



22.2 km

Image © 2009 GeoEye
Image © 2009 DigitalGlobe
Image © 2009 TerraMetrics
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
lat -16.391598° long 167.801407° élév. -81 m

©2009 Google

Altitude 75.36 km



[MLKL] -16.45105 167.78245

5.26 km

Image © 2009 GeoEye
Image © 2009 DigitalGlobe
Image © 2009 TerraMetrics

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

lat -16.488690° long 167.792020° élév. 0 m

©2009 Google

Altitude 18.21 km

Dates des images satellite : 5 oct. 2003 - 16 déc. 2005



[MLKL] -16.45105 167.78245

Image © 2009 GeoEye
Image © 2009 DigitalGlobe
Image © 2009 TerraMetrics

©2009 Google

2463 m

Dates des images satellite : 5 oct. 2003 - 16 déc. 2005

lat -16.448196° long 167.784150° élév. 11 m

Altitude 8:50 km



[MLKL] -16.45105 167.78245

Image © 2009 GeoEye
Image © 2009 DigitalGlobe

©2009 Google

292 m

Dates des images satellite : 5 oct. 2003 - 16 déc. 2005

lat -16.45105° long 167.78245° élév. 5 m

Altitude 1.01 km



[MLKL] -16.45105 167.78245

Image © 2009 GeoEye
Image © 2009 DigitalGlobe

©2009 Google

64 m

Date des images satellite : 5 oct. 2003

lat -16.451390° long 167.782834° élév. 19 m

Altitude 219 m

LAMAP MALICOLO VANUATU

Acronyme: MLKL

Lat: 16° 27' S

Latitude: -16.45105

Lon: 167° 46' E

Longitude: 167.78245

Hauteur: 72.32 m

H: 72

IMPORTANT: Point observe avec un trepier

Le point situe a PORT SANDWICH. Du quai au point il y a 3 kms environ, bien connu par les habitants. Le point est scelle dans un bloc en beton au niveau du sol entre la route et la mer dans un champ d ananas. On peut camper pres du site. Prevoir sa nourriture le materiel de camping, et produit a moustique. On peut se loger a la mission Catholique, ou a ST THERESE, petit village chez la famille LITHUNG LUCIEN et ANICETO. Il y a un guest house 500vt la nuit. Il y a un magasin, pain frais, eau electricite le soir. NAKAMAL. TRANSPORT: De l aeroport a ST THERESE 500vt et 400vt pour aller au site. Envoyer un message radio de votre arrivee. IL y a 2 voitures. celle du Cure l autre aux LITHUNG. Telephone de la mission: Telephone de LAMAP : TELEPHONE DES LITHUNG :

UNAVCO

GPS Site Description Log

version 2.0 May, 1991

University Navstar Consortium

PROJECT NAME

Organization's Name

SOUTH WEST PACIFIC 1992

This report should be completed in DETAIL to provide uniformity in data essential to station occupation and GPS experiment planning. It also aids in station recovery and reoccupation. Please provide the requested information.

Station Name: MALAKULA 4-Char ID: MELK Station ID #: ---
Location: PORT SMOULAH, MALAKULA City: LAKAP Country: VANUATU
Site Address (if applicable): /
Reported By: DAVE BORCHAROT Agency: LANOS SA Tel#: 618-2647959

Approximate Geodetic Coordinates GPS Mark Inscription: GPS LMP DRSTOM 20-03-89
Latitude: 16° 27' 03" S Datum: WGS-84 Current Magnetic Declination: 12° E
Longitude: 167° 46' 56" E Source of Position: GPS Rate & Direction of Change: ---
Height: 75.8 m Source of Declination: ---

Topographic Map or Aerial Photo Showing Location

Name: MALAKULA Scale: 1:50,000
Agency: LANOS DEPT VANUATU Date Completed: 1992
Logan Australian Army Corps

Time offset from UTC

Standard: ET-11hrs Daylight
No seasonal time changes observed ☒

Information included in this report (Check all that apply)

- | | |
|--|--|
| ☐ How to Reach the Station & Site Description | ☐ Site Survey & Information /Results |
| ☐ Site Vicinity Sketch | ☐ Photos of all Marks (Label Photos) |
| ☐ Local Map Showing Site Location | ☐ Photos of Station from Reference Points |
| ☐ Ancillary Information Form | ☐ Photos of Landmarks from Station |
| ☐ Horizon Mask Diagram | ☐ Other (Specify) |

Site Ownership/Permission

Who owns the site? ---
Primary Site Contact: DRSTOM, MINORAL RESOURCES
Title: FRANCIS BONDOUX, DOUGLAS CHARLEY
Address: PO BOX 76,
City, State, Zip: PORT VILA, EFATE
Country: VANUATU
Tel#: 2268 Fax: 3276

Explain procedure required to obtain permission to occupy this particular site:

Existing Geodetic Ties

Is this part of an existing Geodetic Network? NOT YET ☐ Yes ☒ No ☐ Unsure
If yes, what type of network is it? ☐ Horizontal ☐ Vertical ☐ 3-D
What agency is responsible for the network? ---
What is the accuracy classification of this network? ---
What other space geodetic systems use this site? ☐ Fixed VLBI ☐ Mobile VLBI ☐ SLR
☒ None ☐ Unsure
What agency is responsible for the other system's operation? ---
Has a survey tie been made to the GPS station? ☐ Yes ☒ No

Comments: LANOS WALSPIE, VANUATU LANOS DEPT, INTENDS TO TIE THE GPS STATION,
AND ITS RECOVERY WORKS, INTO THE VANUATU GEODETIC SYSTEM, IN 1992.

Station: MALAKULADate: 8 AUGUST 1992PROJECT NAME
SLW PACIFIC 1992

Summary of On-Site Geodetic				See Code Below Add Comments if Needed			
Agency	Inscription	Approx. Location from Station Dist (m) Azimuth		Mark Type	Condition	Mark Setting	Soil Type

Mark Type: (include all that Apply) J = JPL Rod and Cap R = Steel Rod Only B = Brass Cap P = Other Cap M = Magnetic Material in Point O = Other (Specify)	Condition: (include all that apply) S = Mark solid in soil L = Loose in soil M = Mark is marked U = Mark is Un-marked C = Center point is unreadable N = Center point not well defined O = Other (please specify)	Mark Setting: (include all that apply) P = In poured concrete form or post F = set flush with ground D = In concrete in depression in rock B = Set below ground C = Cemented into drillhole in rock A = Set above ground M = Mounted on metal or pier (Specify) S = In concrete structure, i.e. foundation (specify) O = Other (specify)	Soil Type: A = Alluvium/Soil B = Boulder C = Compact Sed R = Rock outcrop U = Bedrock under soil O = Other (Specify)
--	---	---	---

Comments where necessary on: Mark type, condition, stability and setting. Soil type and condition. Geological setting and any factors that may affect the stability of the mark. (i.e. land slides or erosion). If constructing a monument describe what is underground and construction details. Use sketches and attach additional sheets if necessary.

Site Survey

Has a survey been performed to determine the relative,

3-D locations of the station and reference marks?

☐ Yes☒ No☐ Unsure

If yes, what type of survey was it?

GPS

Conventional

What is the expected/achieved accuracy of the survey?

Date of Survey:

Which agency performed the survey?

Who has the original field notes or data?

Who performed the data reduction and adjustment?

Comments on the site survey:

MOSES KAMSALE, VANUATU LANDS DEPT, HOPES TO TRY
AN UNMARKED INDOOR GPS VANUATU GEODETIC SYSTEM IN 1992.
Attach all available survey information to this report

Station: MALAKULA

Date: 8 AUGUST 1992

PROJECT NAME

SW PACIFIC 1992

Site Access: What type of transportation is needed to gain access to the site (boat, 4WD, 2WD, inaccessible by vehicle, etc)? Please comment on the effort required to reach the site (long hike, assistance needed to carry gear, pack mule). If assistance is needed make recommendations.

LAND AT LAMAP AIRSTRIP. REQUIRE 4WD TO TRAVEL TO LAMAP, THEN SSW TO WHARF AT PORT SANDWICH. EASIEST TO THEN USE BOAT (WITH MOTOR) TO GET TO THE GPS SITE. (APPROX 2 KM BY WATER). THERE IS A TRAIL FROM THE WHARF TO THE GPS SITE, BUT IT IS IN POOR CONDITION. NOT CURRENTLY MAINTAINED.

attach additional sheet if necessary

On-Site Facilities: Discuss any on-site facilities available to support GPS operations. Can the receiver be placed in a building? Is the building safe? How far is the building from the station? Is office or storage space available?

NONE

attach additional sheet if necessary

Power:

Is AC power available on-site?

NONE

☐ Yes

☐ No

Voltage _____ V.

Frequency _____

Hz.

Distance from power source to receiver: _____

Meters

Comment on stability and reliability:

Discuss any special equipment that may be required, describe outlets (sketch if needed) and state any costs if required.

Batteries:

Where can batteries be purchased (try and include several options, comment on type and costs)?

NO WHERE CONVENIENT ON MALAKULA

Where can batteries be charged (try and include several options, and indicate best option)?

AT THE CATHOLIC MISSION IN LAMAP

- DIFFICULT TO GET THE BATTERY TO THERE FROM THE GPS SITE.

Is a generator or solar panels needed at this site?

SOLAR PANELS

☒ Yes

☐ No

Any comments?

SMALL GENERATOR WOULD BE BEST.

SOLAR PANELS, TOGETHER WITH SUITABLE BATTERIES, IS THE ONLY AVAILABLE COMBE
GOOD IDEA TO HAVE A BACKUP SOLAR PANELS AND BATTERIES - NOT MUCH SUN.

Station: MAVAKULA

Date: 8 AUGUST 1992

PROJECT NAME

SW PACIFIC 1992

Equipment Recommendations: List ancillary equipment that may be useful at this site (antenna cable length, tent, etc.)

30m ANTENNA CABLE A WVST.

FROM VANUATU LAND SURVEYS OBTAIN: 2 X12 LITER RAINWATER CONTAINERS,
UTENSIL BOX, GAS COOKING FIRE, SAS LIGHT, BUSH KNIFE.

FOOD GENERALLY AVAILABLE FROM NEARBY VILLAGES, OR LOCAL STORE IN
LEUVIS. PRICES VERY REASONABLE.

PORTABLE PETROL GENERATOR IS GOOD
AS NO SUN - EVEN VISIBLE TO OPERATE

attach additional sheet if necessary

SOLAR PANELS.

Communications: What modes of communications are available at or near the site (telephone, fax, telex, radio, mail, indicate locations)? State the best mode of communication. Make recommendations and give instructions. Supply all relevant numbers or radio frequencies. Access quality, operating hours, frequency of delivery.

RADIO TELEPHONE AT AGRICULTURAL OFFICE, NEAR PORT SANDWICH WHARF.

TELEPHONE AT LAMAP (NOT WORKING).

RADIO AT AIRPORT CONTROL ~~OFFICE~~, AIRPORT CONTROLLER LIVES AT
LAMPA.

attach additional sheet if necessary

Adverse Conditions: Discuss any conditions that could adversely affect operations. Include things like potential sources of multipath, radio frequency interference, cultural or political sensitivities, adverse weather conditions, etc.

SOLAR PANELS ARE THE MOST PRACTICAL OPTION AT THIS SITE.

HOWEVER DURING THE OBSERVATION PERIOD, THE SUN WAS VERY RARELY
VISIBLE, DIFFICULT TO KEEP THE BATTERIES CHARGED.

attach additional sheet if necessary

Other Site Contacts: List all possible persons providing assistance at this site. Include all those visiting the site with you, other local contacts providing assistance, US embassy contacts etc. Indicate roles and include institutions, mailing addresses, telephone and fax numbers, etc. (include yourself)

MR. AMEDE MELEYUNE, LAMAP LOCAL GOVERNMENT COUNCIL SECRETARY
PHONE 3144.

HE IS ORSTOM CONTACT. CLEARS SITE PRIOR TO ARRIVAL (IMPORTANT).

ACTS AS GUARD, TRANSPORT ETC., \$500/T DAY, DETERMINED IN 1990.

attach additional sheet if necessary

Station: MALAKULA Date: 8 AUGUST 1992 PROJECT NAME SWP/PM/EC 1992
Station Name: MALAKULA #Char ID: MLKL Station ID #: ---
Location: PORT SANDWICH, MALAKULA City: LAMAP Country: VANUATU
Site Address (if applicable): ---
Reported By: DAVE BORCHARDT Agency: CMOS SA Talk: (618) 2264328

Verbal Site Description: Describe how to reach the site from an identifiable location such as a city, town, major intersection or landmark. Include street names, distances and direction of travel. Verbally describe the site. Indicate relative locations of all monuments and the monument locations relative to landmarks. Describe each monument (what it is set in, what it is, inscription and condition).

LAND AT LAMAP AIRSTRIP. PRIOR ARRANGEMENT WITH AMEDE MELEYUNE FOR A 4WD PICKUP TO MEET YOU AT AIRSTRIP. CHECK THAT ALL SEM COMES OFF PLANE. 300 VT TO LA MAP. ANOTHER 300 VT TO THE WHARF FROM LA MAP. STOP AT STORE AT LEUVIS. WELL STOCKED AND PRICES REASONABLE. FRESH BREAD EVERY DAY. ICE COLD BEER FOR 180 VT CAN. IF YOU DO NOT HAVE A GENERATOR, MAY WANT TO CALL INTO CATHOLIC MISSION AT LAMAP TO BORROW A 12V CAR BATTERY. SOLAR PANELS RECHARGED WITH CABLE OF SUNSHINE. PLENTY OF GOOD RAINWATER AT TANK AT THE WHARF.

MOTOR BOAT TRANSPORT TO SPS SITE COSTS 1000 VT PER TRIP. ARRANGED BY AMEDE. A 4WD TRUCK TO THE SITE EXISTS, BUT IS NOT MAINTAINED. HALF HOUR AT LOW TIDE (BUTTER) TO THE WHARF FROM SPS SITE. ALSO HALF HOUR TO LAMAP FROM THE WHARF. ARMEDE WILL ACT AS GUIDE AND TRANSPORTER FOR 500 VT PER DAY.

THE SPS SITE IS APPROX 2 KM SOUTH OF THE WHARF AND IS LOCATED BY LARGE OUTCROP OF CORAL. A VNAO SPS DISC IS ON THE CORAL OUTCROP (RECOVERY MARK #1). THE SPS MARK IS IN CONCRETE ON A ROCKY PLATEAU ABOUT 15m ABOVE SEA LEVEL, DIRECTLY UP FROM RM #1. RECOVERY MARK #2 IS AN OLD BRITISH NAVY "RASTER" TRIANGULATION STATION 8.5m FROM RM #1, AT THE BOTTOM OF THE HILL SLOPE. THE BEST CAMP SITE IS EAST OF RM #2, UNDER A SUBTLY CUT TREE. IT IS ABOVE HWY. IT IS PROBABLY MORE CONVENIENT THAN THE SITE 25m ABOVE THE SPS MARK. FRUIT IS OBTAINED FROM THE LOCAL VILLAGE SOUTH OF THE CAMP SITE.

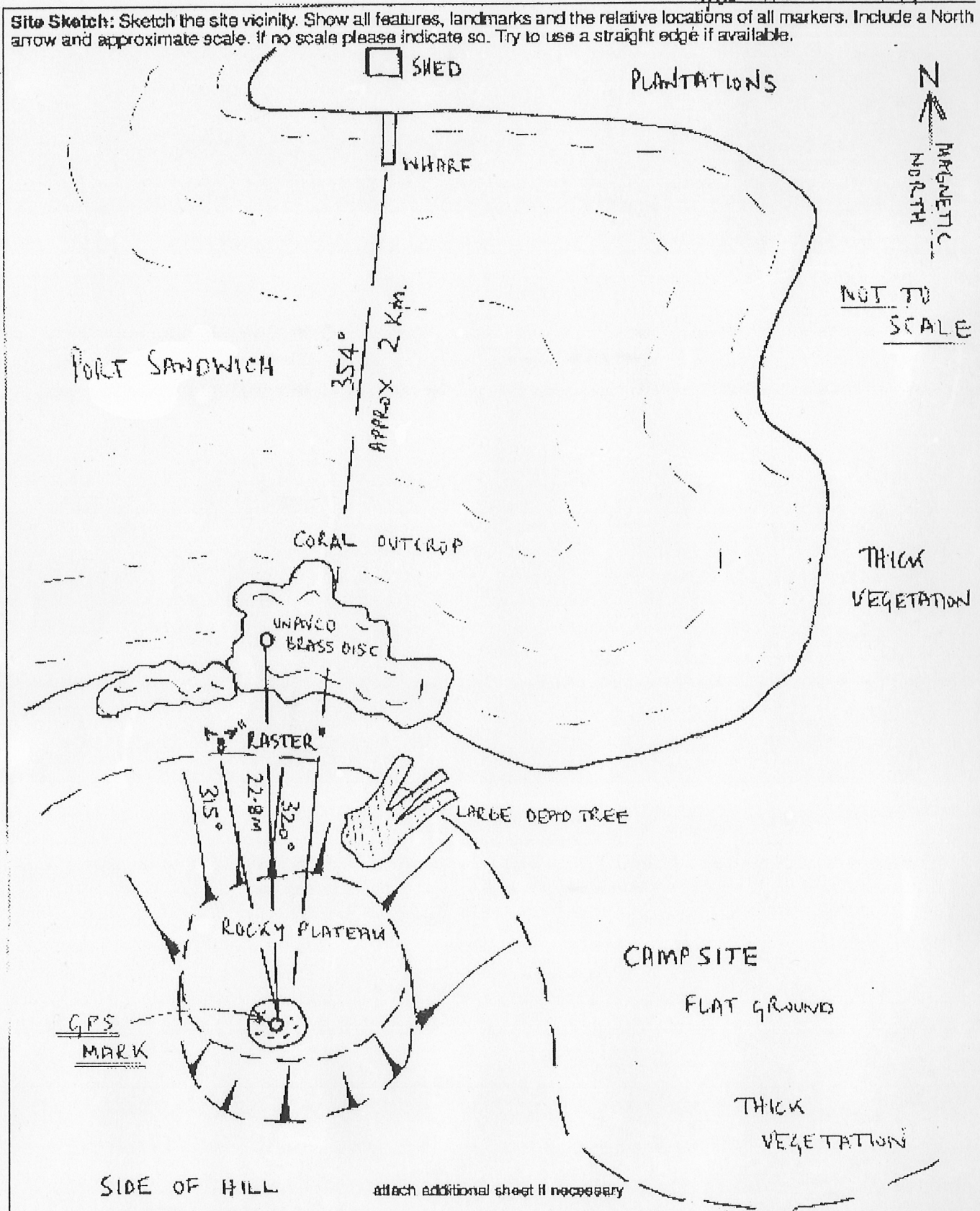
attach additional sheet if necessary

Station: MALAKULA

Date: 8 AUGUST 1992

PROJECT NAME
S/W PACIFIC 1992

Site Sketch: Sketch the site vicinity. Show all features, landmarks and the relative locations of all markers. Include a North arrow and approximate scale. If no scale please indicate so. Try to use a straight edge if available.

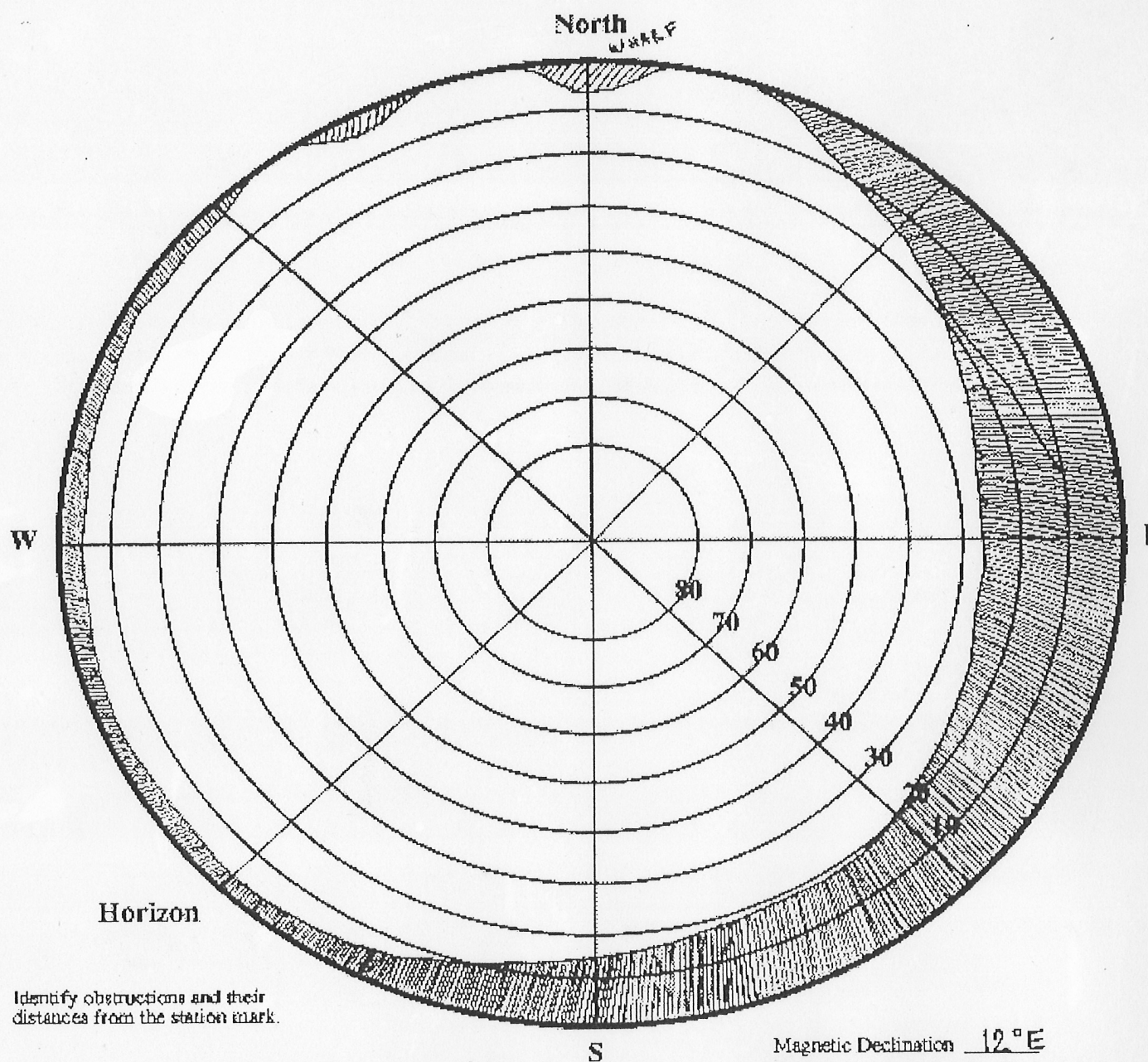


Station: MALAKULA

Date: 8 AUGUST 1992

PROJECT NAME
S/W PACIFIC 1992

GPS Station Horizon Mask

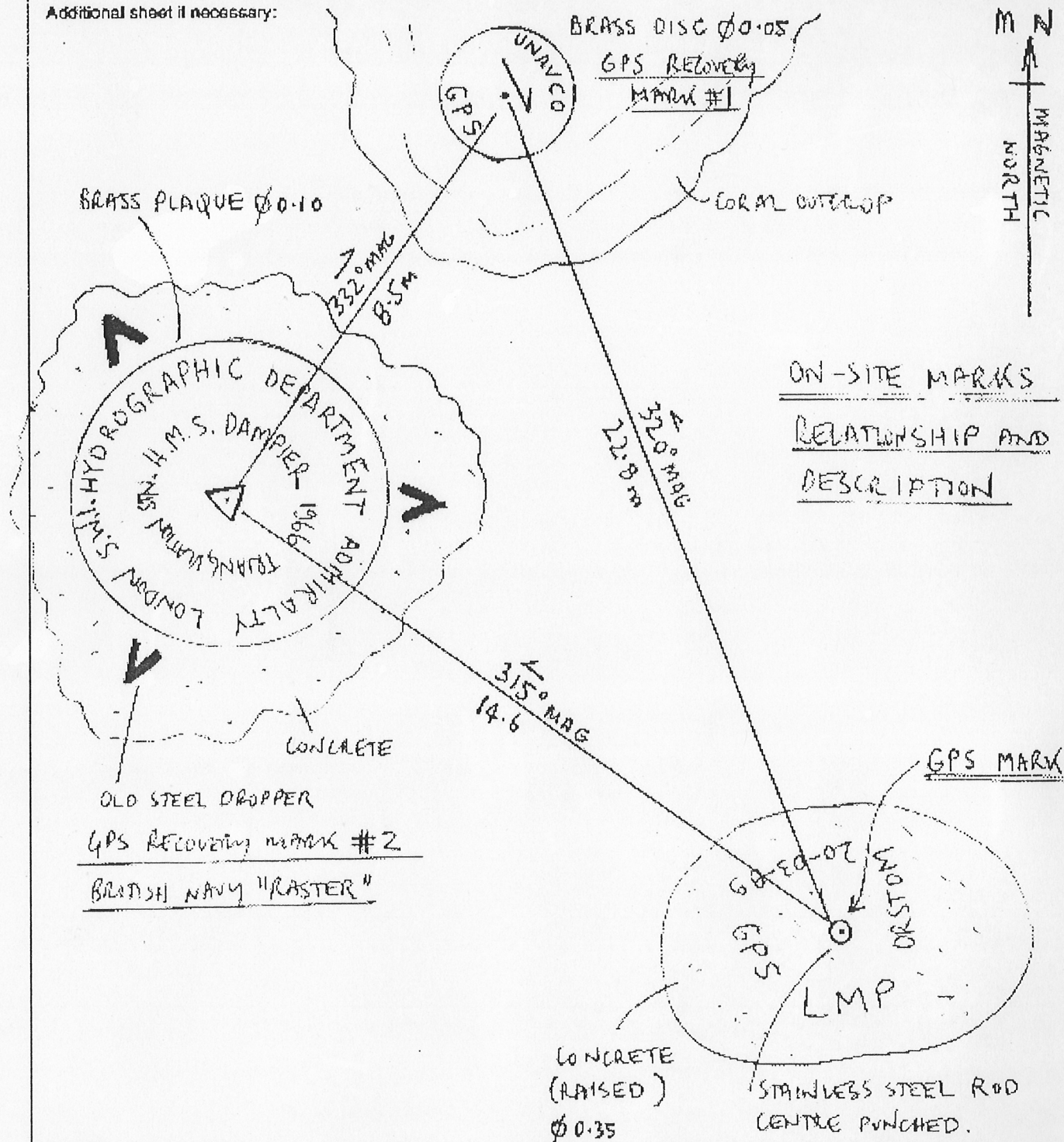


BERLINGS ARE MAGNETIC

Station Name: MALAKULA 4-Char ID: MLKL Station ID #: —
Location: PPT SANDWICH, MALAKULA City: LA MAP Country: VANUATU
Site Address (if applicable): _____
Reported By: DAVE BORCHARDT Agency: LANDS SA Tel#: 618-2264328

Station: MALAKULA Date: 8 AUGUST 1992 PROJECT NAME SW PACIFIC 1992
Station Name: MALAKULA 4-Char ID: MLKL Station ID #:
Location: PORT SANDWICH, MALAKULA City: LAMAP Country: VANUATU
Site Address (if applicable):
Reported By: DAVE BORCHARDT Agency: LANDSSA Tel#: 618 2264328

Additional sheet if necessary:



UNAVCO

GPS Station Description

UN08

University Navstar Consortium

UCAR, Boulder, CO., USA

Station Name: MALAKULA 4-Char ID: MLKL Station ID #: —
 Location: PORT SANDWICH, MALAKULA Country: VANUATU
 Observing Monument Inscription: GPS LAMP ORSTOM 20-03-89 Project: SW Pacific 1992

Approximate Geodetic Coordinates:

Latitude: 16°27'03.9 S Datum WGS-84 Magnetic Declination 12°E
 Longitude: 167°46'56.7 E Source of Position GPS Rate & Direction of Change —
 Height: 75.8 m Source of Declination —

Site Personnel:

Name	Agency
<u>DAVE BURCHARDT</u>	<u>LANDS SA</u>
<u>MOSES KALSALE</u>	<u>LANDS VANUATU</u>
<u>AMEDE MELEYUNE</u>	<u>LAMAP RESIDENT</u>

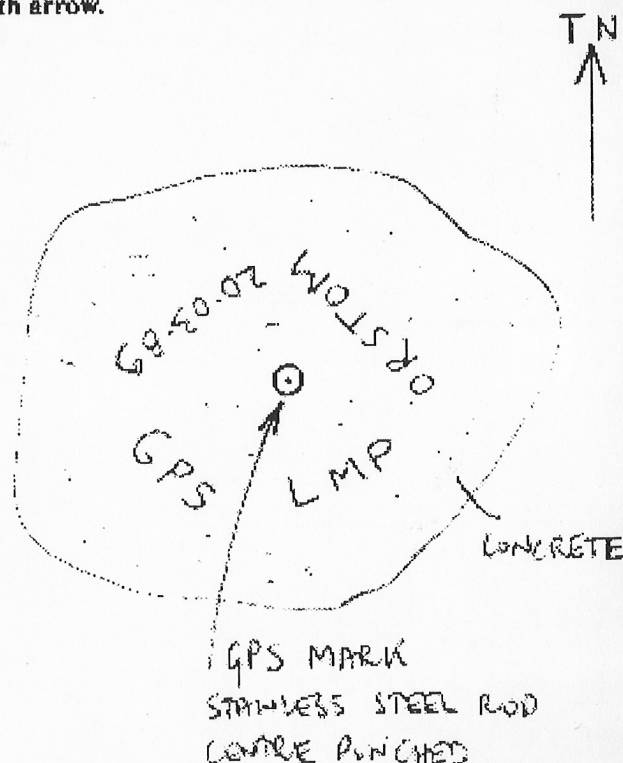
Access Notes:

FROM LAMAP AIRSTRIP, TRAVEL BY
 4WD TO LAMAP, THEN SSW MONY
 TRAIL TO PORT SANDWICH WHARF.
 THEN SOUTH BY BOAT FOR APPROX
 2 KM. THE GPS ON ABOVE A CORAL
 OUTCROP INTO THE BAY. THE GPS
 MARK IS IN CORAL BETWEEN ABOUT 15m
 ABOVE THE WATER LEVEL.

Location Diagram:

SEE ATTACHED SKETCHES.

Rubbing or Photo of Monument: Indicate the exact point that the instrument was centered over and include a North arrow.

Station MLKLUTC Start Date 30 JULY 92 UTC Start Day 212

UNAVCO

GPS Site Description Log

version 2.0 May, 1991

University Navstar Consortium

PROJECT NAME

Organization's Name

SOUTH WEST PACIFIC 1992

This report should be completed in DETAIL to provide uniformity in data essential to station occupation and GPS experiment planning. It also aids in station recovery and reoccupation. Please provide the requested information.

Station Name: MAKAVULA 4-Char ID: M E K L Station ID #: —
Location: PORT SMOUWEN, VANUATU City: LAMAP Country: VANUATU
Site Address (if applicable): /
Reported By: DAVE BORCHAROT Agency: LANOS SA Tel#: 618-2647959

Approximate Geodetic Coordinates GPS Mark Inscription: GPS LMP DRSTOM 20-03-89
Latitude: 16° 27' 03.9" S Datum: WGS-84 Current Magnetic Declination: 12° E
Longitude: 167° 46' 56.7" E Source of Position: GPS Rate & Direction of Change: —
Height: 75.8 m Source of Declination: —
Topographic Map or Aerial Photo Showing Location
Name: MAKAVULA Scale: 1:50,000 Time offset from UTC
Agency: LANOS DEPT VANUATU Date Compiled: 1992 Standard: ET-11 hrs Daylight
Logan Australian Army Corps No seasonal time changes observed ☒

Information included in this report (Check all that apply)

- | | |
|--|--|
| ☐ How to Reach the Station & Site Description | ☐ Site Survey & Information Results |
| ☐ Site Vicinity Sketch | ☐ Photos of all Marks (Label Photos) |
| ☐ Local Map Showing Site Location | ☐ Photos of Station from Reference Points |
| ☐ Ancillary Information Form | ☐ Photos of Landmarks from Station |
| ☐ Horizon Mask Diagram | ☐ Other (Specify) |

Site Ownership/Permission

Who owns the site? —

Primary Site Contact: DRSTOM, MINORAL ECONOMICS
Title: FRANCIS BONDOUX, DOUGLAS CHARLEY
Address: PO BOX 76

City, State, Zip: PORT VILA, EFATE
Country: VANUATU
Tel#: 2268 Fax: 3276

Explain procedure required to obtain permission to occupy this particular site:

Existing Geodetic Ties

Is this part of an existing Geodetic Network? NOT YET ☐ Yes ☒ No ☐ Unsure
If yes, what type of network is it? ☐ Horizontal ☐ Vertical ☐ 3-D
What agency is responsible for the network? —
What is the accuracy classification of this network? —
What other space geodetic systems use this site? ☐ Fixed VLBI ☐ Mobile VLBI ☐ SLR
☒ None ☐ Unsure
What agency is responsible for the other system's operation? —
Has a survey tie been made to the GPS station? ☐ Yes ☒ No
Comments: LANOS KALSAVE, VANUATU LANOS DEPT, INTENDS TO TIE THE GPS STATION,
AND ITS RECOVERY MARKS, INTO THE VANUATU GEODETIC SYSTEM, IN 1992.

Station: MALA-KULADate: 8 AUGUST 1992PROJECT NAME
SW PACIFIC 1992

Summary of On-Site Geodetic				See Code Below Add Comments if Needed			
Agency	Inscription	Approx. Location from Station Dist (m) Azimuth		Mark Type	Condition	Mark Setting	Soil Type

Mark Type: (include all that Apply) J = JPL Rod and Cap R = Steel Rod Only B = Brass Cap P = Other Cap M = Magnetic Material in Point O = Other (Specify)	Condition: (include all that apply) S = Mark solid in soil L = Loose in soil M = Mark is marked U = Mark is Un-marked C = Center point is unreadable N = Center point not well defined O = Other (please specify)	Mark Setting: (include all that apply) P = In poured concrete form or post F = set flush with ground D = In concrete in depression in rock B = Set below ground C = Cemented into drillhole in rock A = Set above ground M = Mounted on mast or pier (Specify) S = In concrete structure, i.e. foundation (specify) O = Other (specify)	Soil Type: A = Alluvium/Soil B = Boulder C = Compact Sed R = Rock outcrop U = Bedrock under soil O = Other (Specify)
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Comments where necessary on: Mark type, condition, stability and setting. Soil type and condition. Geological setting and any factors that may affect the stability of the mark. (i.e. land slides or erosion). If constructing a monument describe what is underground and construction details. Use sketches and attach additional sheets if necessary.

Site Survey

Has a survey been performed to determine the relative, 3-D locations of the station and reference marks?

☐ Yes ☒ No ☐ Unsure

If yes, what type of survey was it?

GPS ☐ Conventional ☐

What is the expected/achieved accuracy of the survey?

Date of Survey: _____

Which agency performed the survey?

Who has the original field notes or data?

Who performed the data reduction and adjustment?

Comments on the site survey: MOSES KAU SALE, VANUATU LANDS DEPT, HOPES TO TIE
THE VANUATU GEODETIC SYSTEM IN 1992.**Attach all available survey information to this report**

Station: MALAKULA Date: 8 AUGUST 1992 PROJECT NAME S/W PACIFIC 1992

Site Access: What type of transportation is needed to gain access to the site (boat, 4WD, 2WD, inaccessible by vehicle, etc)? Please comment on the effort required to reach the site (long hike, assistance needed to carry gear, pack mule). If assistance is needed make recommendations.

LAND AT LAMAP AIRSTRIP. REQUIRE 4WD TO TRAVEL TO LAMAP, THEN SSW TO WHARF AT PORT SANDWICH. EASIEST TO THEN USE BOAT (WITH MOTOR) TO GET TO THE GPS SITE. (APPROX 2 KM BY WATER). THERE IS A TRUCK FROM THE WHARF TO THE GPS SITE, BUT IT IS IN POOR CONDITION. NOT CURRENTLY MAINTAINED.

attach additional sheet if necessary

On-Site Facilities: Discuss any on-site facilities available to support GPS operations. Can the receiver be placed in a building? Is the building safe? How far is the building from the station? Is office or storage space available?

NONE

attach additional sheet if necessary

Power:

Is AC power available on-site? NONE ☐ Yes ☐ No
Voltage _____ V. Frequency _____ Hz. Distance from power source to receiver: _____ Meters
Comment on stability and reliability:

Discuss any special equipment that may be required, describe outlets (sketch if needed) and state any costs if required.

Batteries:

Where can batteries be purchased (try and include several options, comment on type and costs)?

NO WHERE CONVENIENT ON MALAKULA

Where can batteries be charged (try and include several options, and indicate best option)?

AT THE CATHOLIC MISSION IN LAMAP

- DIFFICULT TO GET THE BATTERY TO THERE FROM THE GPS SITE.

Is a generator or solar panels needed at this site?

Any comments?

SOLAR PANELS ☒ Yes ☐ No
SMALL GENERATOR WOULD BE BEST.

SOLAR PANELS, TOGETHER WITH SUSTAINABLE BATTERIES, IS THE ONLY AVAILABLE COURSE
GOOD IDEA TO HAVE A BACKUP SOLAR PANELS AND BATTERIES - NOT MUCH SUN.

Station: MAMAKULA

Date: 8 AUGUST 1992

PROJECT NAME
SLW PACIFIC 1992

Equipment Recommendations: List ancillary equipment that may be useful at this site (antenna cable length, tent, etc.)

30m ANTENNA CABLE A MUST.

FROM VANUATU LAND SURVEYS OBTAIN: 2 X 12 LITRE RAMMATOR CONTAINERS,
UTENSIL BOX, GAS COOKING FIRE, GAS LIGHT, BUSH KNIFE.

FOOD GENERALLY AVAILABLE FROM NEARBY VILLAGES, OR LOCAL STORE IN
LEUVIS. PRICES VERY REASONABLE.

PORTABLE PETROL GENERATOR IS GOOD
AS NO SUN - EVEN VISIBLE TO OPERATE

attach additional sheet if necessary

SOLAR PANELS.

Communications: What modes of communications are available at or near the site (telephone, fax, telex, radio, mail, indicate locations)? State the best mode of communication. Make recommendations and give instructions. Supply all relevant numbers or radio frequencies. Access quality, operating hours, frequency of delivery.

RADIO TELEPHONE AT AGRICULTURAL OFFICE, NEAR PORT SANDWICH WHARF.

TELEPHONE AT LAMAP (NOT WORKING).

RADIO AT AIRPORT CONTROL ~~OFFICE~~, AIRPORT CONTROLLER LIVES AT
LAMPAH.

attach additional sheet if necessary

Adverse Conditions: Discuss any conditions that could adversely affect operations. Include things like potential sources of multipath, radio frequency interference, cultural or political sensitivities, adverse weather conditions, etc.

SOLAR PANELS ARE THE MOST PRACTICAL OPTION AT THIS SITE.

HOWEVER DURING THE OBSERVATION PERIOD, THE SUN WAS VERY RARELY
VISIBLE, DIFFICULT TO KEEP THE BATTERIES CHARGED.

attach additional sheet if necessary

Other Site Contacts: List all possible persons providing assistance at this site. Include all those visiting the site with you, other local contacts providing assistance, US embassy contacts etc. Indicate roles and include institutions, mailing addresses, telephone and fax numbers, etc. (include yourself)

MR. RMEDE MELEYUNE, LAMAP LOCAL GOVERNMENT COUNCIL SECRETARY
PHONE 3144.

HE IS ORSTOM CONTACT. CLEARS SITE PRIOR TO ARRIVAL (IMPORTANT).
ACTS AS GUARD, TRANSPORTER ETC., \$500/T DAY, DETERMINED IN 1990.

attach additional sheet if necessary

Station: MALAKULA Date: 8 AUGUST 1992 PROJECT NAME SWPAMEIC 1992
Station Name: MALAKULA 4-Char ID: MLKL Station ID #: —
Location: PORT SANDWICH, MALAKULA City: LAMAP Country: VANUATU
Site Address (if applicable): —
Reported By: DAVE BORCHART Agency: LANDS SA Tel#: (618) 2264328

Verbal Site Description: Describe how to reach the site from an identifiable location such as a city, town, major intersection or landmark. Include street names, distances and direction of travel. Verbally describe the site. Indicate relative locations of all monuments and the monument locations relative to landmarks. Describe each monument (what it is set in, what it is, inscription and condition).

LAND AT LAMAP AIRSTRIP. PRIOR ARRANGEMENT WITH AMEDE MELEYUNE FOR A 4WD PICKUP TO MEET YOU AT AIRSTRIP. CHECK THAT ALL SEM COMES OFF PLANE. 300VT TO LA MAP. ANOTHER 300VT TO THE WHARF FROM LA MAP. STOP AT STORE AT LEUVIS. WELL STOCKED AND PRICES REASONABLE. FRESH BAKED EVERY DAY. ICE COLD BEER FOR 180VT CAN. IF YOU DO NOT HAVE A GENERATOR, MAY WANT TO CALL INTO CATHOLIC MISSION AT LAMAP TO BORROW A 12V CAR BATTERY. SOLAR PANELS RECHARGED WITH CABLE OF SUNSHINE. PLENTY OF GOOD RAINWATER AT TANK AT THE WHARF. MOTOR BOAT TRANSPORT TO SPS SITE COSTS 1000 VT PER TRIP. ARRANGED BY AMEDE. A 4WD TRUCK TO THE SITE EXISTS, BUT IS NOT MAINTAINED. HALF HOUR AT LOW TIDE (BUTER) TO THE WHARF FROM SPS SITE. ALSO HALF HOUR TO LAMAP FROM THE WHARF. ARMEDE WILL ACT AS GUIDE AND TRANSPORTER FOR 500VT PER DAY.

THE SPS SITE IS APPROX 2 KM SOUTH OF THE WHARF AND IS LOCATED BY LARGE OUTCROP OF CORAL. A VNAO SPS DISC IS ON THE CORAL OUTCROP (RECOVERY MARK #1). THE SPS MARK IS IN CONCRETE ON A ROCKY PLATEAU ABOUT 15m ABOVE SEA LEVEL, DIRECTLY UP FROM RM #1. RECOVERY MARK #2 IS AN OLD BRITISH NAVY "RASTER" TRIANGULATION STATION 8.5m FROM RM #1, AT THE BOTTOM OF THE HILL SLOPE. THE BEST CAMP SITE IS EAST OF RM #2, UNDER A SATURDAY CUT TREE. IT IS ABOVE HWY. IT IS PROBABLY MORE CONVENIENT THAN THE SITE 25m ABOVE THE SPS MARK. FRUIT IS OBTAINED FROM THE LOCAL VILLAGE SOUTH OF THE CAMP SITE.

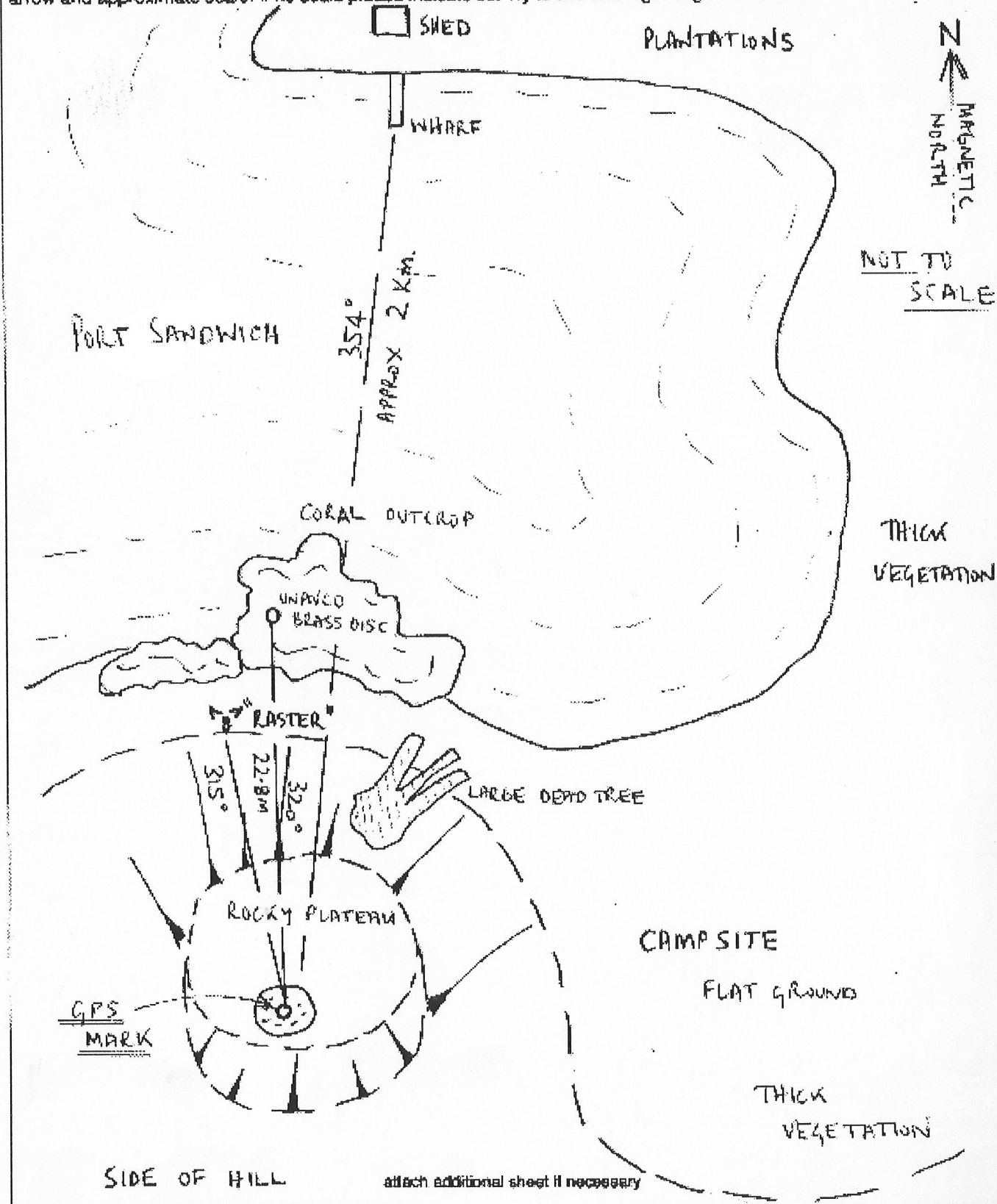
attach additional sheet if necessary

Station: MALAKULA

Date: 8 AUGUST 1992

PROJECT NAME
SIW PACIFIC 1992

Site Sketch: Sketch the site vicinity. Show all features, landmarks and the relative locations of all markers. Include a North arrow and approximate scale. If no scale please indicate so. Try to use a straight edge if available.

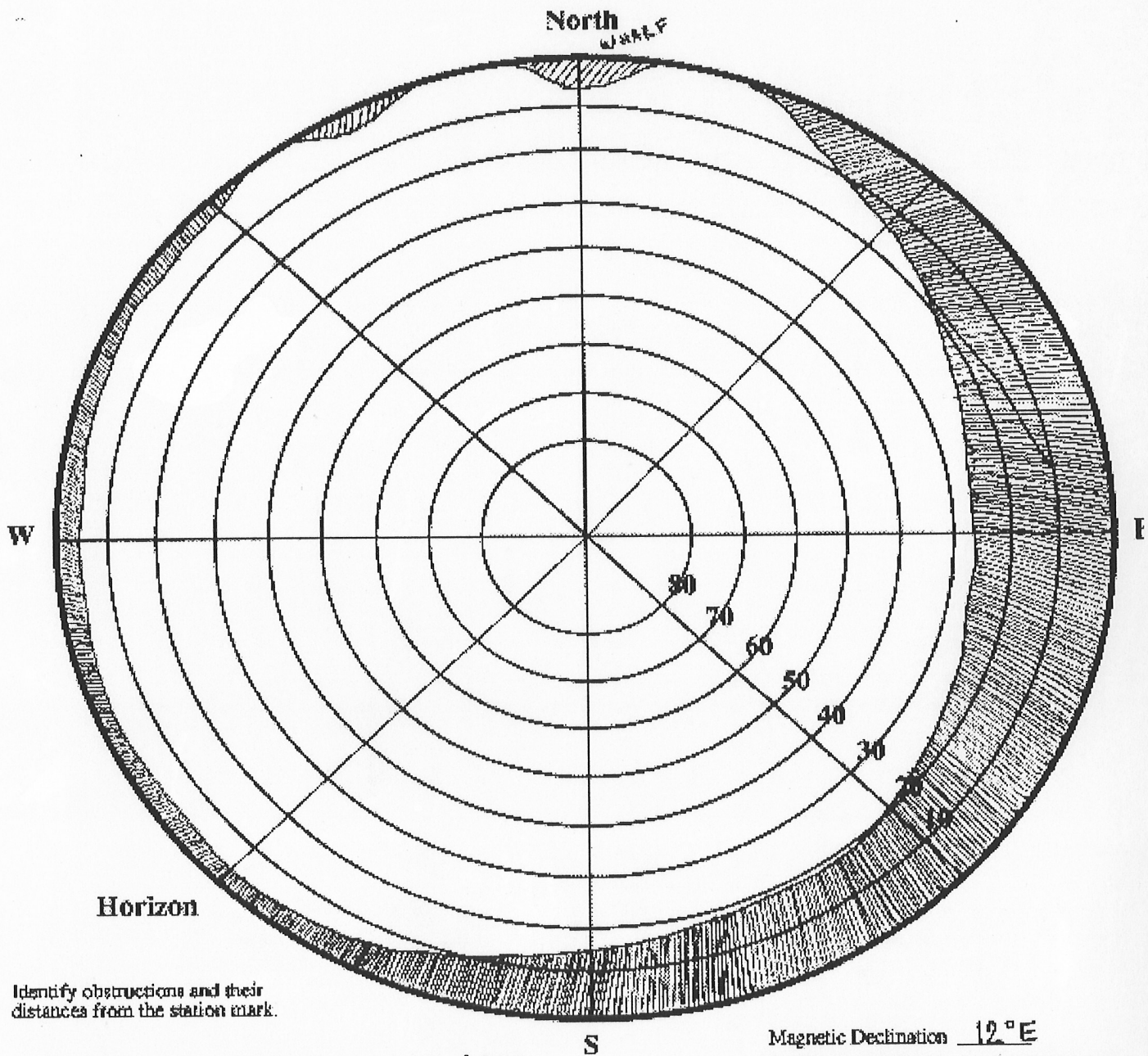


Station: MALAKULA

Date: 8 August 1992

PROJECT NAME
S/W PACIFIC 1992

GPS Station Horizon Mask



Identify obstructions and their distances from the station mark.

Height above marker that horizon was mapped from: 1340

Magnetic Declination 12°E

Declination applied to this figure? ☐ Yes
☒ No

BEARINGS ARE MAGNETIC

Station Name: MALAKULA

4-Char ID: MLKL

Station ID #: —

Location: POINT SANDWICH, MALAKULA

City: LAMAP

Country: VANUATU

Site Address (if applicable):

Reported By: DAVE BORCHARDT

Agency: LANDS SA

Tel#: 618-2264328

Additional sheet if necessary.

BRASS DISC Ø0.05
GPS RECOVERY MARK #1
UNAVCO GPS

BRASS PLAQUE Ø0.10
H.M.S. DAMPIER 1966
HYDROGRAPHIC DEPARTMENT
LONDON S.M. HYDROGRAPHIC DEPARTMENT
ADMIRALTY
TONGKATON
LONDON
CONCRETE

GPS MARK
LMP
DRSTON
STAINLESS STEEL ROD CENTRE PUNCHED.

CONCRETE (RAISED) Ø0.35

Distances and Bearings:
8.5m 332° MAG
22.8m 320° MAG
14.6m 315° MAG

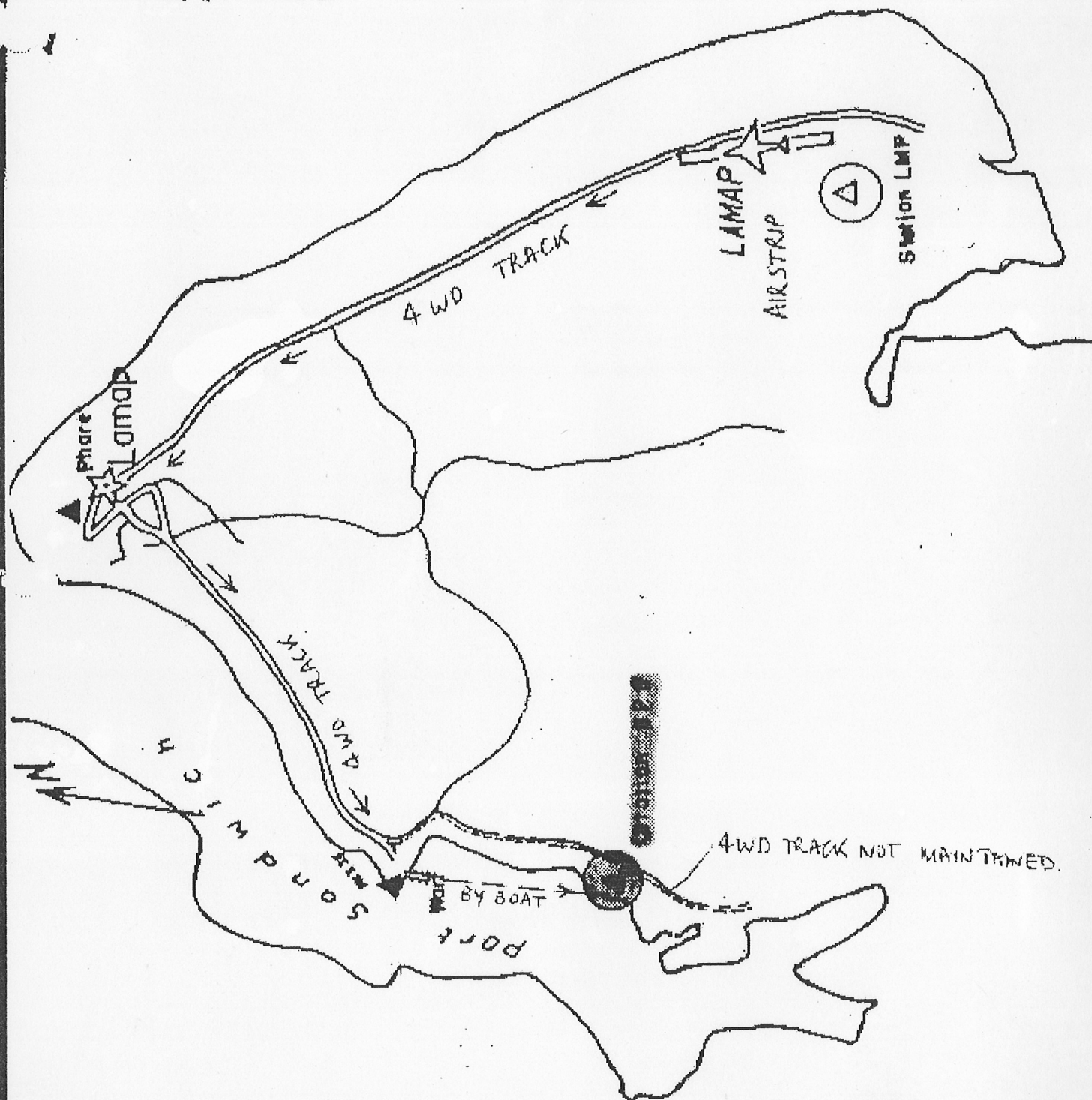
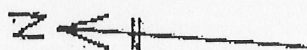
CORAL OUTCROP

MAGNETIC NORTH

ON-SITE MARKS
RELATIONSHIP AND
DESCRIPTION

OLD STEEL DROPPER
GPS RECOVERY MARK #2
BRITISH NAVY "RASTER"

VANUATU



IRUNLA KULA



MALAKULA SPS SITE, VANUATA

TO: GRAEME BLICK, UNAVCO
FROM: MOSES KALSALE
DATE: 8 AUGUST 1992
SUBJECT: EXTRA EQUIPMENT RECOMMENDED FOR THE
SPS SITE AT LAWAP, MALAKULA.

1. 1 SMALL GENERATOR
2. 1 BUSH KNIFE
3. 2 X 12 LITRE WATER CONTAINERS
4. 1 UTENSIL BOX WITH ONE GAS BURNER
5. 1 THERMOITE MATTRESS
6. 1 FOLDING CHAIR
7. 1 FOLDING TABLE
8. 1, 3m x 4m FLY
9. 20m ROPE
10. 1 VHF RADIO
11. 1 X 12V FLUORESCENT LIGHT

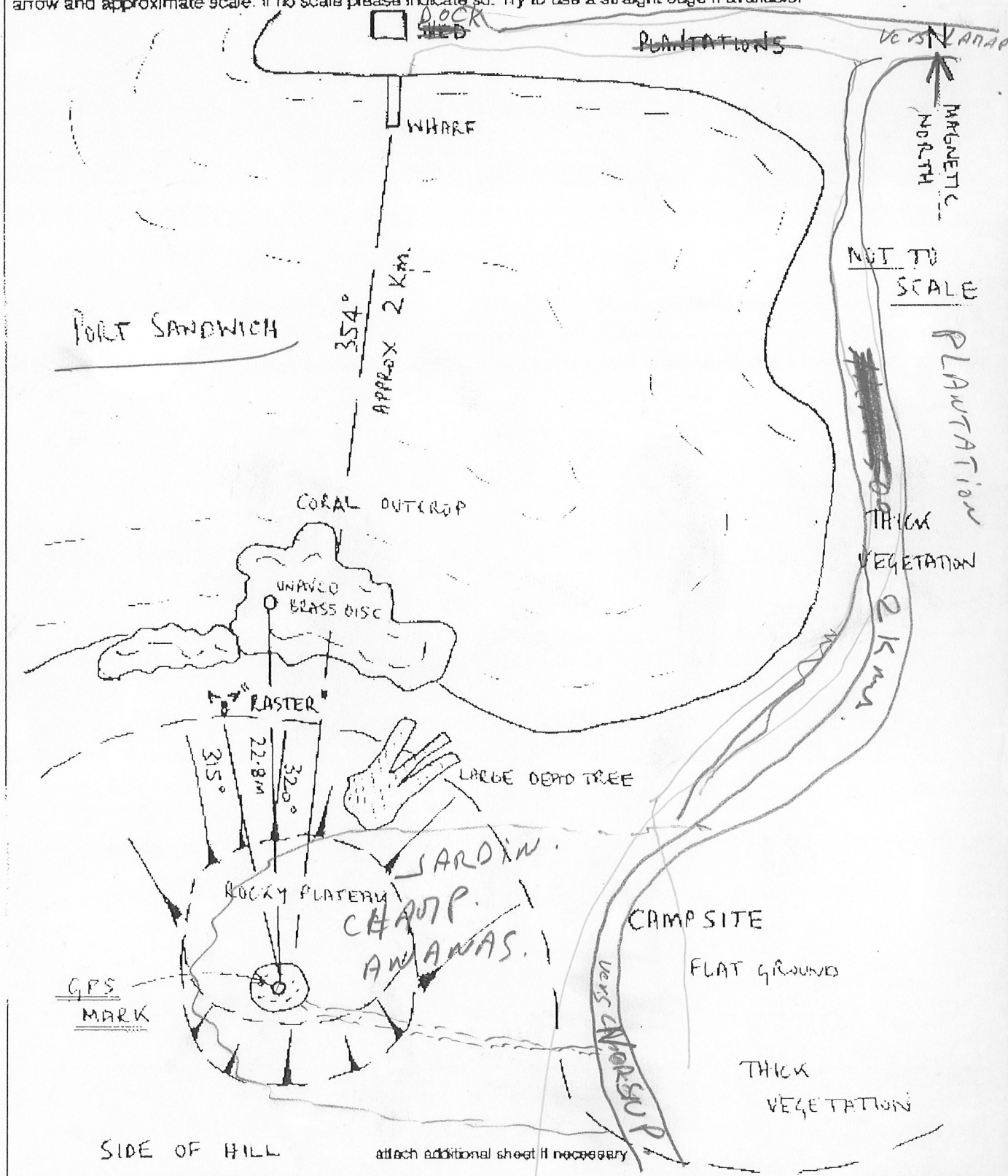
MOST OF THE ABOVE ARE AVAILABLE FROM
THE DEPARTMENT OF LAND SURVEYS
PORT VILA, VANUATU.

Station: MALAKULA

Date: 8 AUGUST 1992

PROJECT NAME
SW PACIFIC 1992

Site Sketch: Sketch the site vicinity. Show all features, landmarks and the relative locations of all markers. Include a North arrow and approximate scale. If no scale please indicate so. Try to use a straight edge if available.



UNAVCO

GPS Station Description

UNØ8

University Navstar Consortium

UCAR, Boulder, CO., USA

Station Name: MALAKULA 4-Char ID: MLKL Station ID #: —
 Location: PORT SANDWICH, MALAKULA Country: VANUATU
 Observing Monument Inscription: GPS LAMP ORSTOM 20-03-89 Project: SW Pacific 1992

Approximate Geodetic Coordinates:

Latitude: 16°27'03.9 S Datum WGS-84 Magnetic Declination 12° E
 Longitude: 167°46'56.7 E Source of Position GPS Rate & Direction of Change —
 Height: 75.8 m Source of Declination —

Site Personnel:

Name	Agency
<u>DAVE BORCHARDT</u>	<u>LANDS SA</u>
<u>MOSES KALSAL</u>	<u>LANDS VANUATU</u>
<u>AMEDE MELEYUNE</u>	<u>LAMAP RESIDENT</u>

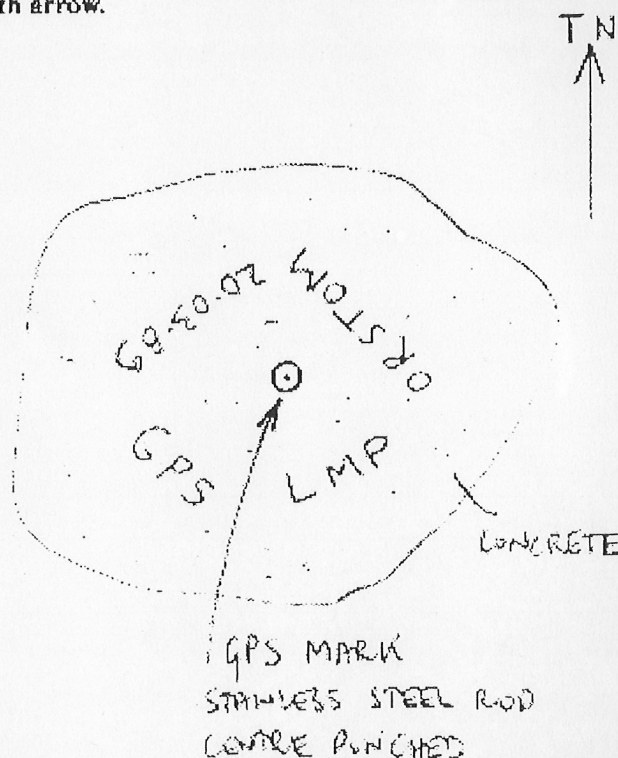
Access Notes:

FROM LAMAP AIRSTRIP, TRAVEL BY
 4WD TO LAMAP, THEN SSW ALONG
 TRAIL TO PORT SANDWICH WHARF.
 THEN SOUTH BY BOAT FOR APPROX
 2 KM. THE GPS ON ABOVE A CORAL
 OUTCROP INTO THE BAY. THE GPS
 MARK IS IN CORAL BETWEEN ABOUT 15m
 ABOVE THE WATER LEVEL.

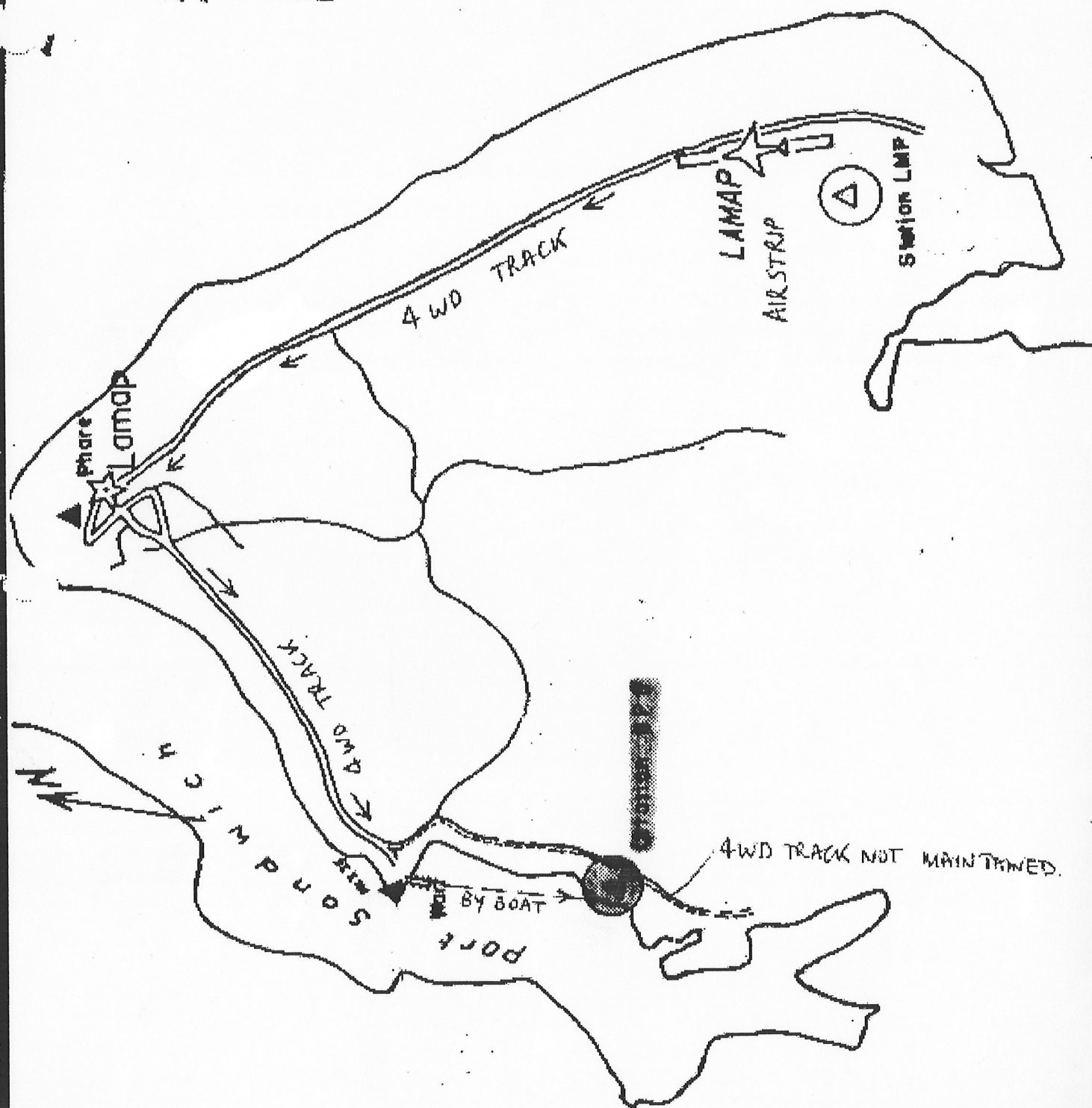
Location Diagram:

SEE ATTACHED SKETCHES.

Rubbing or Photo of Monument: Indicate the exact point that the instrument was centered over and include a North arrow.

Station MLKLUTC Start Date 30 JULY 92 UTC Start Day 212

VANUATU



MALAKULA SPS SITE, VANUATA

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MOST OF THE ABOVE ARE AVAILABLE FROM
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PORT VILA, VANUATU.