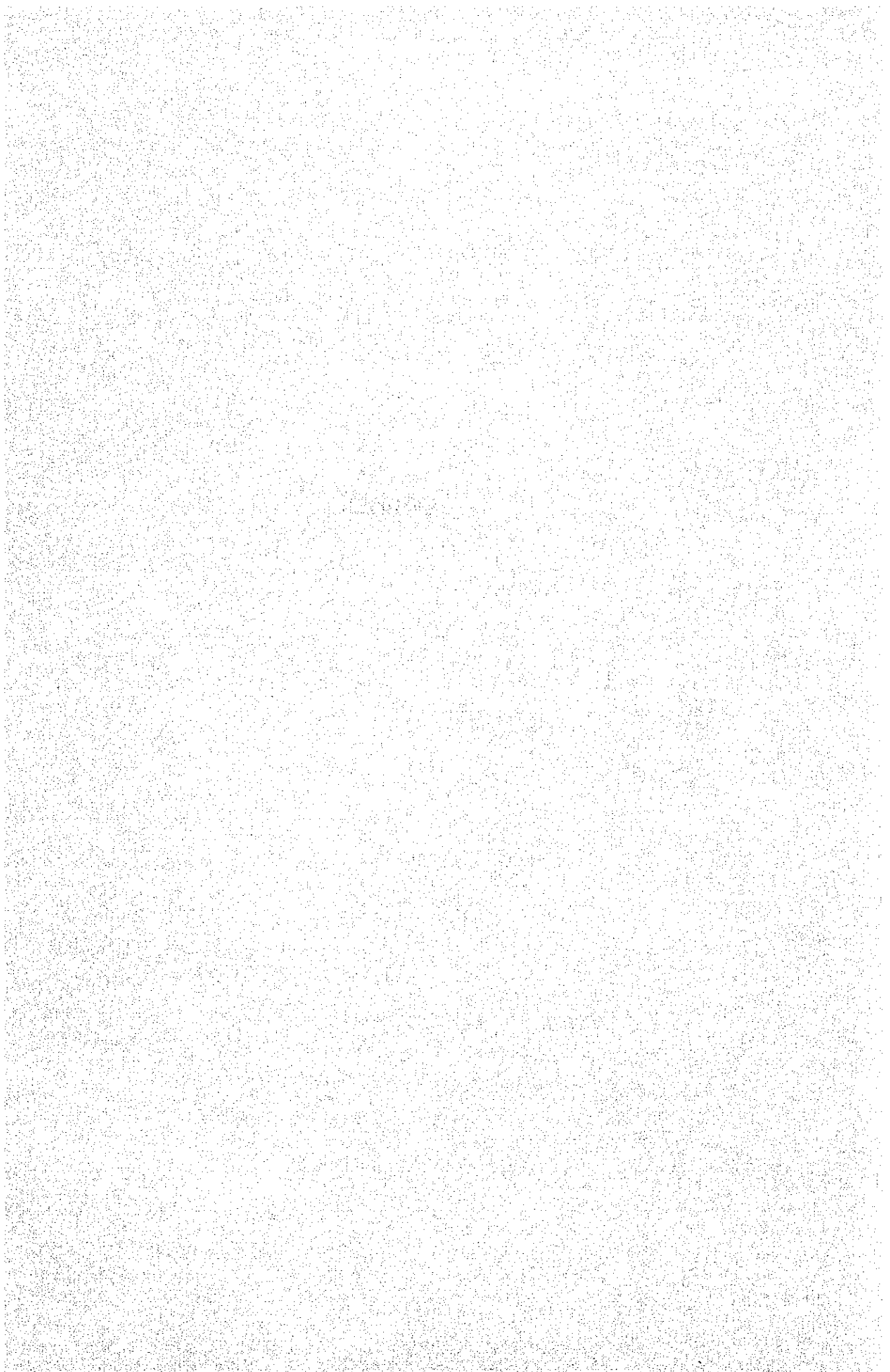


# **ANNEX**



Annex 1 - Basic Design Survey Team Members

(1) No.1 (April 10 through April 24, 1982)

Norio Hattori            Team leader  
(Deputy Director, Aid Policy Div., Economic Coopera-  
tion Bureau, Ministry of Foreign Affairs)

Hideo Kagami            Ocean Resources Specialist  
(Associate professor, Tokyo University)

Kazuhisa Matsuoka      Project Coordinator  
(Japan International Cooperation Agency)

Kozo Yamada            In charge of exploration equipment  
(Pacific Aero Survey Co.)

Saburo Nakanishi      In charge of ship planning  
(Overseas Shipbuilding Cooperation Centre)

Ryoichi Takayama      In charge of engine planning  
(Overseas Shipbuilding Cooperation Centre)

Yoshio Sahara          In charge of operating planning  
(Marine International Cooperation Centre)

(2) No.2 (August 8 through August 14, 1982)

Kaichiro Shimizu      Team leader  
(Japan International Cooperation Agency)

Saburo Nakanishi      In charge of ship planning  
(Overseas Shipbuilding Cooperation Centre)

## Annex 2 - Counterparts of the Project, Philippines Side

Mr. Corpuz	Assistant Director General, National Economic Development Authority
Mr. Caolli	Deputy Minister, Ministry of Natural Resources
Mr. Roque	Assistant Secretary, Ministry of Natural Resources
Mr. Fernandez	Director, Bureau of Mines and Geo-Sciences
Mr. Comsti	Assistant Director, Bureau of Mines and Geo-Sciences, Ministry of Natural Resources
Mr. Teodoro	Chief, Marine Mineral Resources Division
Capt. de Guia	Bureau of Coast & Geodetic Survey, Retired
Mr. Muriel	Supervising Geologist II, Marine Mineral Resources Division
Mr. Martin	Supervising Geologist II, Marine Mineral Resources Division
Mr. Ventura	Director, Bureau of Coast & Geodetic Survey, Ministry of National Defence
Capt. Gler	Bureau of Coast & Geodetic Survey
Capt. Pascual	Bureau of Coast & Geodetic Survey
Capt. Aguilar	Engineer, Bureau of Coast & Geodetic Survey
Mr. Benito	1st class Radio Operator, Bureau of Coast & Geodetic Survey
Mr. Madrid	Chief, Oil and Gas Division, Bureau of Energy Development, Ministry of Energy
Prof. Santos	Department Chairman, Department of Geology & Geography, College of Arts and Science, University of the Philippines
Mr. Rabuy	Head of the Center, Data Processing Center, Bureau of Lands, Ministry of Natural Resources
Mr. Cabanlig	Managing Director, Technology Resources Center, Ministry of Human Settlements
Mr. Villanueva	Head of Project Team, National Computer Center, Office of the President

### Annex 3 - Basic Design Survey Team Schedule

- (1) Apr. 10 (Sat) (1982) Leave Tokyo and arrive in Manila
- Apr. 11 (Sun) Meeting on survey schedule, etc.
- Apr. 12 (Mon) Courtesy call on the National Economic and Development Authority and Ministry of Natural Resources. Meeting at the Japanese Embassy
- Apr. 13 (Tue) Meeting on survey schedule and explanation and discussion of Japan's plan, with BMG
- Apr. 14 (Wed) Briefing on the requested exploration vessel and reviewing the draft of the Minutes with BMG
- Apr. 15 (Thu) Signing of the Minutes  
Investigation on operation matters at BCGS.  
Visiting and investigation of "Sonne", exploration vessel from West Germany.
- Apr. 16 (Fri) Review of the Philippines request items.  
Visit to Manila Office of Metallic Ore Mining Public Cooperation and hearing its operation contents in the Philippines
- Apr. 17 (Sat) Meeting on the survey items
- Apr. 18 (Sun) Arrangement of data
- Apr. 19 (Mon) Visit to the Navotas Fishing Port and consultation with the Fishery Development Authority.  
Visit to "Sardinella", exploration vessel, and investigation of the operation, maintenance and crew arrangement.  
Investigation of facilities and personnel arrangement of Marine Mineral Resources Section.
- Apr. 20 (Tue) Visit to Bataan Shipyard & Engineering Co., Mariveles, and investigation of maintenance and repair facilities.  
Visit to the Oil and Gas Section, Bureau of Energy Development, Ministry of Energy.
- Apr. 21 (Wed) Visit to the Philippines University and investigation of its Geology and Geography Division and computer system.  
Visit and investigation of computer system of the Ministry of Natural Resources.

- Apr. 22 (Thu) Visit and investigation of "Atyimba", exploration vessel.  
Visit and investigation of computer systems of the Ministry  
of Human Settlement and National Computer Center.  
Final meeting with BMG.
- Apr. 23 (Fri) Meeting at the Japanese Embassy to report investigation  
results.
- Apr. 24 (Sat) Departure from Manila and return to Tokyo

The survey team could work very smoothly since the Director of BMG (Bureau of Mines and Geo-Science) arranged experts of exploration and vessels to cooperate with the team. The progress was immediately reported to the President after closing the Minutes, and in the final meeting of April 22, the survey team was informed that the President himself had a great deal of interest in the progress.

(2) Study Team Schedule for the purpose of submitting and explaining the Draft Report of Basic Design Study.

Aug. 8 (Sun) Leave Tokyo and arrive in Manila

Aug. 9 (Mon) Courtesy call on the National Economic and Development Authority and Ministry of Natural Resources.

Aug. 10 (Tue) Meeting on explanation and discussion of the Draft Report with BMG

Aug. 11 (Wed) Meeting with BMG

Aug. 12 (Thu) Drawing up the draft of the Minutes with BMG

Aug. 13 (Fri) Signing of the Minutes-Meeting at the Japanese Embassy and JICA in Manila

Aug. 14 (Sat) Departure from Manila and return to Tokyo

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial reporting and compliance with regulatory requirements. The text notes that incomplete or inconsistent records can lead to significant legal and financial consequences for the organization.

2. The second section addresses the challenges associated with data management in a rapidly changing digital landscape. It highlights the need for robust security protocols to protect sensitive information from cyber threats and unauthorized access. Additionally, it discusses the importance of data integrity and the implementation of backup and recovery strategies to ensure business continuity in the event of a data loss.

3. The third part of the document focuses on the role of technology in streamlining operations and improving efficiency. It explores various digital tools and platforms that can be leveraged to automate repetitive tasks, reduce human error, and enhance collaboration among team members. The text also touches upon the importance of staying updated with the latest technological advancements to maintain a competitive edge in the market.

4. The final section discusses the importance of continuous learning and professional development for the workforce. It suggests that organizations should invest in training and development programs to equip their employees with the necessary skills and knowledge to thrive in a dynamic environment. This includes both technical skills and soft skills, such as communication and problem-solving abilities.



Annex 4 - Minutes

No.1

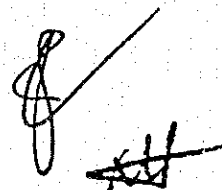
PHILIPPINES: OFFSHORE MINERAL EXPLORATION VESSEL  
PROJECT

MINUTES OF DISCUSSIONS

In response to the request by the Government of the Republic of the Philippines (GOP), a Mission dispatched by the Government of Japan (GOJ) through the Japan International Cooperation Agency (JICA) visited the Philippines from 10th to 24th April in 1982 to carry out the Basic Design Study (the Study) on the OFFSHORE MINERAL EXPLORATION VESSEL PROJECT (the Project).

The Mission had a series of discussions and exchanged views with the officials of the Ministry of Natural Resources (MNR), the Bureau of Mines and Geo-Sciences (BMG) of MNR, the Bureau of Coast and Geodetic Survey of the Ministry of National Defense (BCGS) and the National Economic and Development Authority (NEDA).

Both parties agreed to recommend to their respective Governments to review the result of discussions attached to



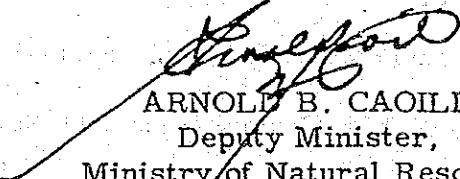
Philippines: Offshore Mineral  
Exploration Vessel Project  
15 April 1982  
Page 2/.....

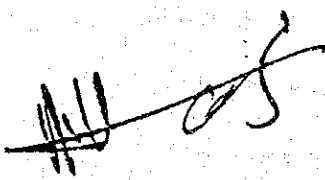
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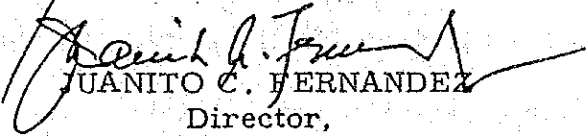
this minutes as "Major Points of Understanding" toward the  
realization of the Project.

---

15th April, 1982

  
ARNOLD B. CAOILI  
Deputy Minister,  
Ministry of Natural Resources

  
NORIO HATTORI  
Leader,  
JICA Mission

  
JUANITO C. FERNANDEZ  
Director,  
Bureau of Mines and Geo-Sciences

MAJOR POINTS OF UNDERSTANDING.

1. Outline of the Project.

1-1 Objectives.

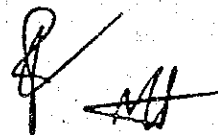
The Project will be carried out with the following objectives:

- 1) To study the geological and structural setting of offshore areas and identify the minerals and mineral deposits therein;
- 2) To identify and delineate the sediments and sedimentary deposits in offshore areas and evaluate its potential and economic mineral deposits; and
- 3) To provide fundamental geological information of the offshore areas.

1-2 Outputs.

The Project will have the following outputs:

- 1) Seismic interpretation, bathymetry, magnetics and sediment distribution maps at a scale of



1:100,000 or 1:250,000; and

2) Reports of marine geological studies.

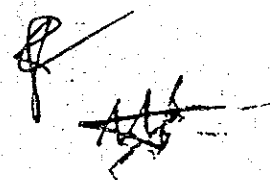
1-3 Activities.

Activities and agencies involved in the implementation of the Project is shown in ANNEX I.

1-4 Facilities necessary for the Project.

Facilities necessary for the Project consist of the following:

- 1) A Survey Vessel with Equipment;
- 2) A Pier, a Warehouse and other Shore Facilities for the Survey Vessel;
- 3) Computer Facilities for Data Processing;
- 4) Laboratories for Data Compilation, Analysis and Interpretation;
- 5) Laboratories for Petrographic, Paleontological, Metallurgical and Chemical Analyses;
- 6) Rooms for Storage of Reference Samples and Tapes;



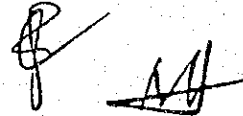
- 7) Printing Facilities for the Preparation of Maps and Documents; and
- 8) Office for Operation and Management of the Survey Vessel.

2. Basic Design of the Survey Vessel.

JICA undertakes the Basic Design Study in line with the Inception Report submitted and basic specification of the Survey Vessel and equipment as shown in ANNEX II.

3. Executing Agency for the Project.

BMG will be the executing agency of the Project and will assign the Chief of the Marine Mineral Resources Division (MMRD) as a Project Manager responsible for all activities in the implementation of the Project such as maintenance and operation of the Survey Vessel, selection of qualified personnel, and other related tasks. The project manager will be under the direct supervision and control of the Director of BMG.



4. Contribution of GOP to the Project.

4-1 Pier and Warehouse.

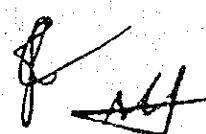
GOP shall construct a pier with water supply, electricity, telephone and mooring facilities, and a warehouse for storage of equipment and materials and shall be made available <sup>the</sup> at time of delivery of the survey vessel.

The basic idea of the modalities of accommodation is shown in the memorandum from the Assistant Secretary of MNR to the Director of BMG, as shown in ANNEX III.

The GOJ shall be informed of the detailed modalities of accommodation (including the location of the pier) through the Japanese Embassy in Manila by the time of the submission of the Draft Final Report of the Study.

4-2 Computer Facilities for Data Processing.

BMG shall have an agreement with the Bureau



of Lands of MNR or the Technology Resource Center  
to utilize computer facilities on time sharing basis.

- 4-3 Laboratories for Data Compilation, Analysis and  
Interpretation.

BMG shall provide laboratories for data com-  
pilation, analysis and interpretation.

- 4-4 Laboratories for Petrographic, Paleontological,  
Metallurgical and Chemical Analyses.

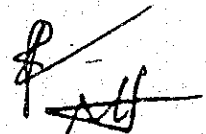
Petrographic, paleontological, metallurgical and  
chemical analyses of all collected samples shall be  
undertaken by using the facilities in the corresponding  
laboratories of the BMG, in particular the PETROLAB.

- 4-5 Rooms for the Storage of Reference Samples and Tapes.

Storage rooms for reference samples and tapes  
shall be provided in the MMRD.

- 4-6 Printing Facilities for the Preparation of Geological  
Maps and Documents.

Printing and preparation of geological and  
geophysical maps and documents will be arranged by



BMG with agencies that have map and document printing facilities.

4-7 Office for the Operation of the Survey Vessel


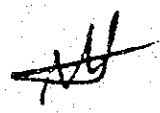
BMG shall provide an office for the survey vessel operation.

4-8 Financial Arrangement of the Project.

Cost estimates in the construction of a pier and a warehouse, maintenance and operation of the survey vessel, operation of data processing, compilation and interpretation, preparation of maps and documents, etc., will be made in the Study in close cooperation with BMG. These costs shall be borne by GOP.

4-9 Manpower Recruitment.

BMG shall assign well-qualified scientists from within and other sources. BCGS shall provide the crew members. The proposed personnel are shown in ANNEX IV.

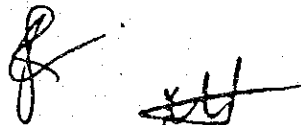


5. Requested GOJ's Contribution to the Project.

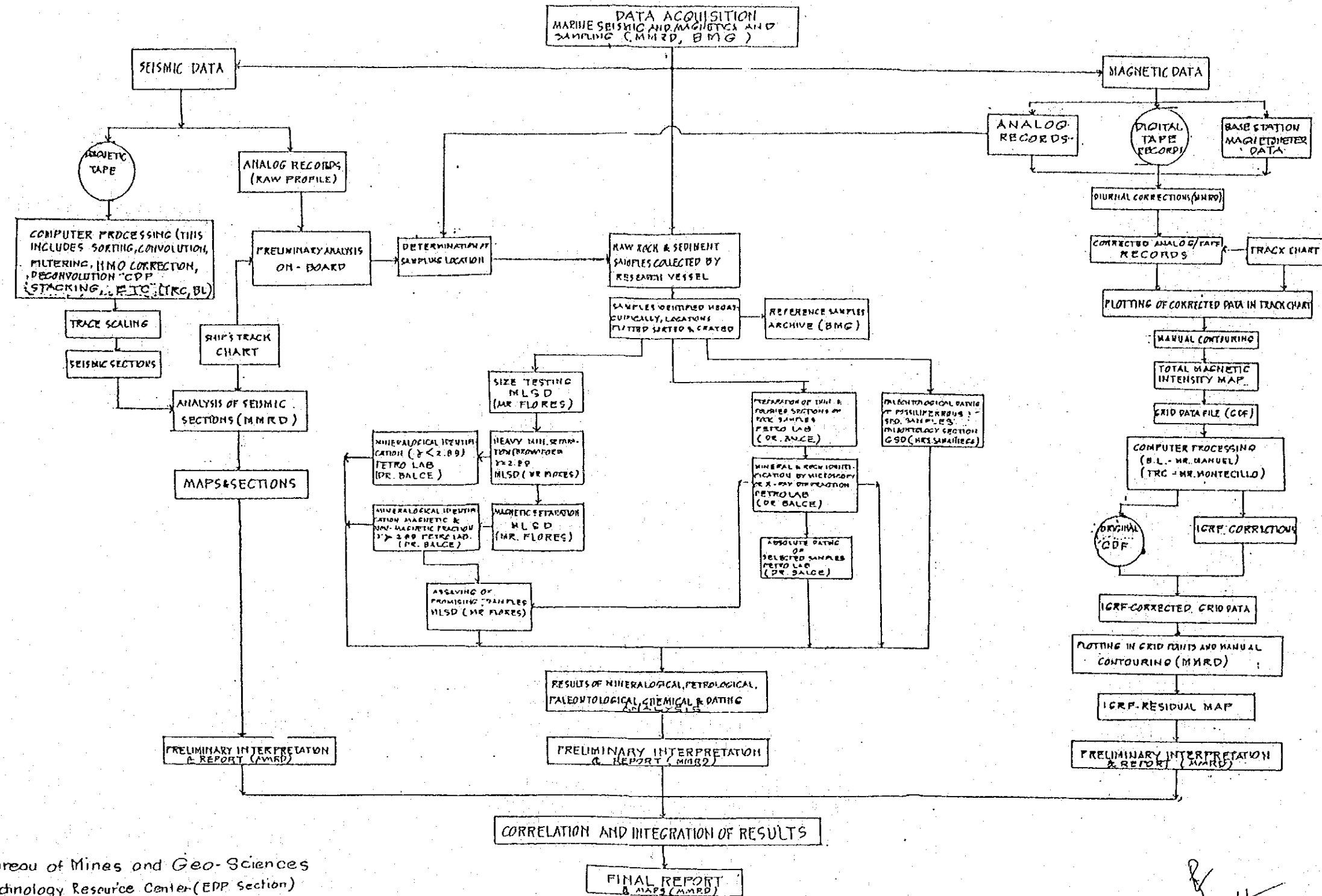
GOP requested the GOJ to finance for the consulting services and the construction of the Survey Vessel with equipment under the grant aid program of the GOJ.

Requested specification of the survey vessel and equipment are shown in ANNEX II.

\*\*\*\*\*

Two handwritten signatures in black ink. The first signature is on the left, and the second signature is on the right, partially overlapping the first.

# FLOW DIAGRAM OF OFFSHORE MINERAL EXPLORATION DATA AND SAMPLES PROCESSING, ANALYSIS AND INTERPRETATION

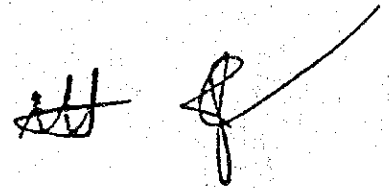


- BMG - Bureau of Mines and Geo-Sciences
- TRC - Technology Resource Center (EPP Section)
- BL - Bureau of Lands (EPP Section)
- MMRD - Marine Mineral Resources Division of BMG
- MLSD - Metallurgical Laboratory Services Division of BMG
- PETRO LAB. Petrological, Mineralogical & Geochronological Services Laboratory of BMG
- GSD - Geological Survey Division of BMG



ANNEX II

SPECIFICATIONS  
OF  
OFFSHORE MINERAL EXPLORATION VESSEL



Type of ship                      The vessel to be designed and constructed as single screw, single rudder, twin diesel engine driven, long r'cle deck type offshore mineral exploration vessel, and to be engaged in research at the sea of not more than 200ms depth within 200 nautical miles economic zone of the Republic of the Philippines.

Classification                      American Bureau of Shipping (A.B.S.)  
✠ A1 (E) and ✠ AMS.

Applied rule                      Philippine Merchant Marine Rules and Regulations as applicable to government survey vessel and Rules and Regulations of the Classification Society.

Flag                                      The Republic of the Philippines

Principal dimensions

Length, overall		abt. 53.5 m
Length, b.p.		45.00 m
Breadth, moulded		10.00 m
Depth, moulded		4.80 m
Designed fully loaded draught, moulded		3.60 m
Gross tonnage (By Japanese measurement rule)	abt.	500 tons
Deadweight at designed fully loaded draught 3.6 m	abt.	280 metric tons
Complement	Officer	9
	Crew	12
	Scientist	9
	Guest	1

---

Total on board 31 persons

Tank capacity

Fuel oil tanks (100% full)	abt. 190 m3
Drinking water tanks (100% full)	abt. 35 m3
Fresh water tanks (100% full)	abt. 25 m3
Water ballast tank (100% full)	abt. 15 m3
Lubricating oil tank (100% full)	abt. 2 m3

Speed and endurance

Trial speed at maximum continuous output of main engines, at about 20% deadweight condition with clean bottom in calm weather and smooth deep sea. 12.0 knots

Service speed on the designed fully loaded draught of 3.60 m. at 90 % MCR of main engines with 15 % sea margin.

abt. 11 knots

Endurance based on total fuel oil tank capacity and ship's speed of 11 knots.

abt. 7,500  
nautical miles

Propelling system

The propelling system to consist of two (2) main diesel engines, one reduction gear and one shafting system.

Main engine:	diesel engine	2 sets
	Maximum continuous output; Not less than 600 PS	
	Revolution	; Not more than 900 rpm
Reduction gear:	Non-reversible reduction gear	1 set
	Maximum transmitting output; Not less than 1,200 PS	
Propeller:	4 or 3 bladed controllable pitch type	1 set
	Propeller revolution; abt. 320 rpm	

Engine and propeller control system:

Control of start-stop of main diesel engines to be made at engine side in engine room.

Control of revolution of main diesel engines to be made at engine side in engine room and also to be remote control from the engine watch room and wheelhouse.

Control of reduction gear clutch on-off to be made at gear side in engine room and at engine watch room, and also clutch off to be remote control from wheelhouse.

Propeller pitch to be controlled from wheelhouse, engine watch room and at oil distribution box in engine room.

#### Electric Generator Plant

Main generator: Diesel engine driven 2 sets  
Abt. 140 KW, 445V, A.C., 60HZ, 3 $\phi$ , 1,200rpm

Main generator prime mover: Diesel engine 2 sets  
Abt. 220 PS x 1,200 rpm

Emergency/port generator: Diesel engine driven 1 set  
Abt. 30 KW, 445V, A.C., 60HZ, 3 $\phi$ ,  
1,800 rpm

Emergency/port generator: Diesel engine  
prime mover Abt. 50 PS x 1,800 rpm

Fresh water generator: Vacuum type 1 set  
Max. 2.5 ton/day

Precision electric power supply: 1 set

#### Deck machinery

Steering gear 1 set  
Type: Electro-hydraulic rum type  
two (2) pump units, one (1)  
to act as a stand-by

Windlass 1 set  
Type: Electric driven type  
two (2) gypsy wheel  
two (2) warping head

Mooring capstan 1 set  
Type: Electro-hydraulic driven vertical shaft  
One (1) warping head type

Bow thruster 1 set  
Type: Electric driven, controllable pitch  
propeller type

Deck crane 1 set  
Type: Hydraulic driven, slewing and luffing  
type

Hydraulic power unit 1 set  
For capstan, deck crane, sampling winch  
(Notes: Each machinery not to be operated  
simultaneously)

Life saving equipment

- 3 - Life rafts for 16 persons
- 51 - Life jacket
- 8 - Life buoys
- 6 - Rocket signals
- 12 - Parachute signals
- 4 - Self-igniting lights
- 3 - Self activating smoke signals
- 1 - Life line throwing apparatus

Fire fighting equipment

CO2 fire extinguishing system for engine room  
Fire hydrant system for accommodation space.

Electric interior communication equipment

- 1 set - Common battery telephone
- 1 set - Automatic telephone
- 1 set - Engine order telegraph (Lamp type)
- 1 set - Electric propeller shaft tachometer
- 1 set - Clock
- 1 set - Public addressor
- 1 set - Rudder angle indicator



Electric nautical equipment

- 1 set - Gyro compass and auto pilot
- 1 set - Navigation echo sounder
- 1 set - Radar (relative motion)
- 1 set - Radio direction finder
- 1 set - Electro magnetic log
- 1 set - Magnetic compass
- 1 set - Wind speed & direction meter

Radio equipment

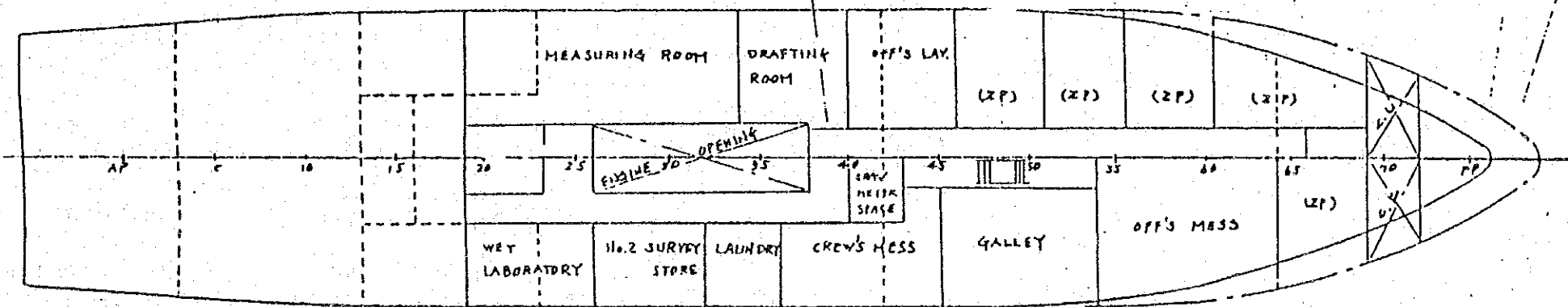
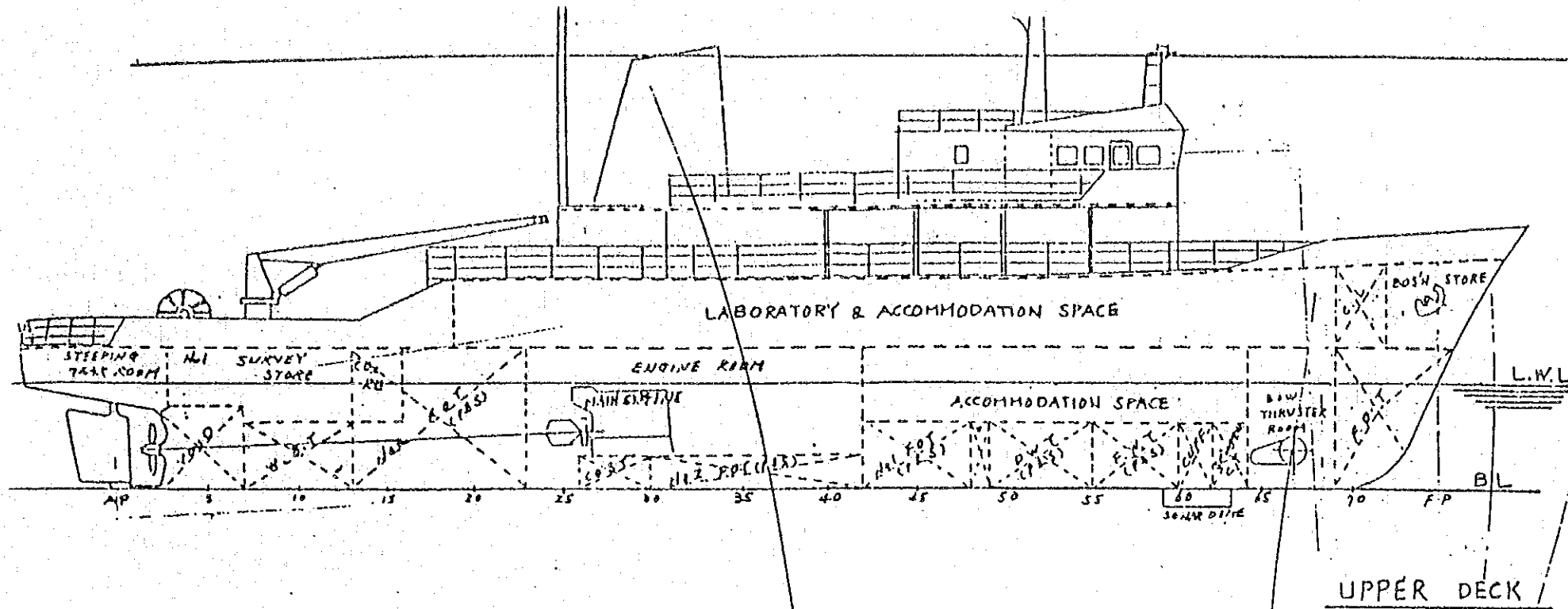
- 1 set - S.S.B. radio telephone
- 1 set - V.H.F. radio telephone
- 1 set - Portable radio apparatus for emergency use
- 4 sets - Survey boat V.H.F. transceiver

Survey equipment

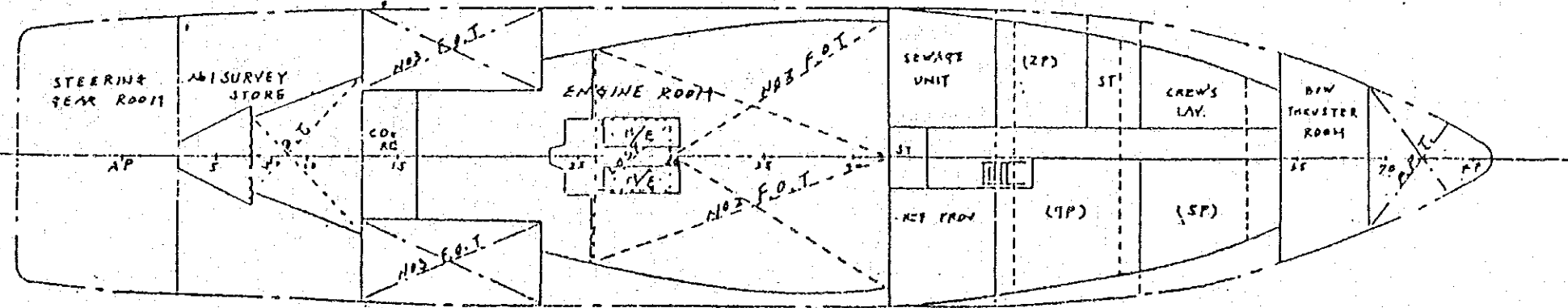
- 1 - Survey echo sounder  
12 KHz & 30 KHz transducer, recorder  
Measuring range: 0~200m, 0~8,000m
- 1 - Doppler sonar  
Bottom tracking range: up to 400m  
Speed range: -5~+36 knots longitudinally  
-10~+10 knots transversely  
Transmission frequency: 98~104 KHz
- 1 - Navigation satellite system  
NNSS receiver, antenna  
Receiving frequency: 150 MHz and 400 MHz
- 1 - Electronic position fixing system  
Operating range: 40 nautical miles, line of sight  
3 Slaves
- 1 - Integrated navigation/data acquisition system
- 1 - Landing/Survey boat with davit  
abt. 5m length
- 1 - Service boat for 6 persons
- 1 - Inflatable rubber boat  
abt. 4m length

Multichannel seismic reflection system

- 1 - 80 cu in water gun and 2 - 15 cu in water guns
- 1 - Water gun control and firing system
- 2 - Air compressors (electric motor driven 40 ft<sup>3</sup>/min at free air x 1500 psi)
- 1 - Streamer (50 m active section x 12, 30m stretch section x 3 and etc. total length approx. 830m, 24 channels)
- 1 - Amplifier and control system with recorder
- 2 - Magnetic tape consoles
- 1 - Proton magnetometer
  - Sensor
  - Recorder
  - Electronics console
  - Towing Cable (200m x 20 <sup>m</sup>/m  $\phi$ ) with cable winch
- 6 - Scuba diving gear
- 1 - Bottom sampler
  - 2 - Piston core sampler
  - 2 - Gravity core sampler
- 1 - Sampling winch for handling core samplers at the sea top to 200 m depth (1000m x 6 <sup>m</sup>/m  $\phi$ ) with gallows
- 1 - Hydrographic winch and davit (3,000m x 3 <sup>m</sup>/m  $\phi$ )



TANK TOP



PRINCIPAL PARTICULARS

LENGTH (O.A)	APX. 53'5"
LENGTH (B.P)	45'00"
BREADTH (M <sup>LD</sup> )	10'00"
DEPTH (M <sup>LD</sup> )	4'80"
DESIGNED LOAD DRAUGHT (M <sup>LD</sup> )	3'60"
DEAD WEIGHT	200T
GROSS TONNAGE	APX. 500T
(BY JAPANESE MEASUREMENT RULE)	
SPEED (TRIAL)	12 KTS
COMPLEMENT	TOTAL ON BOARD 31 P

FLOOR AREA OF LABDRATORY

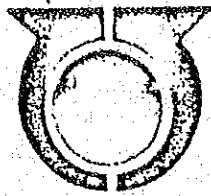
MEASURING ROOM	APX. 30 M <sup>2</sup>
DRAFTING ROOM	APX. 12 M <sup>2</sup>
WET LABORATORY	APX. 12 M <sup>2</sup>
NAVIGATION ROOM	APX. 6 M <sup>2</sup>
No. 2 SURVEY STORE	APX. 9 M <sup>2</sup>
TOTAL	69 M <sup>2</sup>

FLOOR AREA OF CREW'S ACCOMMODATION

MASTER class/person	APX. 12 M <sup>2</sup>
OFFICER class / -	APX. 53 M <sup>2</sup>
RATING class / ..	APX. 25 M <sup>2</sup>



ANNEX IV



Republic of the Philippines

MINISTRY OF  
NATURAL RESOURCES

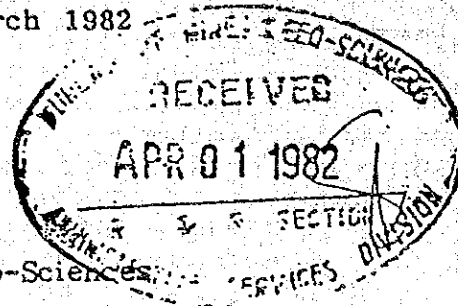
25 March 1982

MEMORANDUM

TO : Juanito C. Fernandez  
Director  
Bureau of Mines and Geo-Sciences

FROM : Antonio Y. Capay  
Assistant Secretary

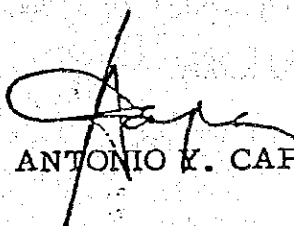
SUBJECT : Request for a Permanent Berthing Location  
for the Geophysical/Geological Survey Vessel

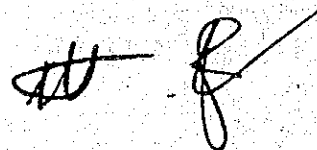


Please be informed that the Philippine Fisheries Development Authority (PFDA) can accommodate the geophysical/geological survey vessel at its Navotas Fish Port and Fish Market (NFPFU) complex. Regular berthing space for the vessel will be designated accordingly, however, the party concerned should observe the payment of the corresponding fees as provided for in the harbor rules and regulation.

Attached is the Memorandum of Atty. Benito Q. Bengzon, General Manager of PFDA dated 17 March 1982 regarding this matter.

For your appropriate action.

  
ANTONIO Y. CAPAY



82-215

Republic of the Philippines  
Ministry of Natural Resources



PHILIPPINE FISH  
MARKETING AUTHORITY  
7th & 8th Fl. FPSTA Bldg.  
Beneve St., Quason City  
Metro Manila, Philippines  
P.O. Box AC 610 Quason City  
Telephone Number 62-16-23

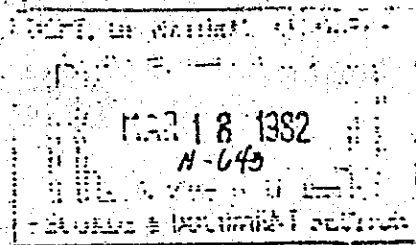
17 March 1982

MEMORANDUM

F O R : Antonio Y. Capay  
Assistant Secretary  
Ministry of Natural Resources

F R O M : General Manager, PFDA

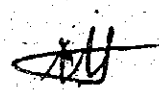
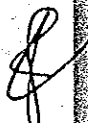
SUBJECT : Request for a Permanent Berthing Location for  
the Geophysical/Geological Survey Vessel



In connection with your memorandum dated 09 March 1982, please be informed that the geophysical/geological survey vessel requested by the Philippine Government thru the Grant-in-Aid from the Government of Japan can be accommodated at the Navotas Fish Port and Fish Market (NFPFM) complex. A regular berthing space for the vessel will be designated accordingly. It is however, requested that the party concerned should observe the payment of the corresponding fees as provided for in our harbor rules and regulations.

For your consideration.

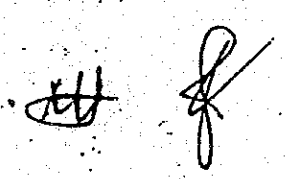
  
BENITO BENGZON

PROPOSED PERSONNELS OF THE PROJECTA. Personnel of the Marine Mineral Resources Division, Bureau of Mines and Geo-Sciences who will be assigned to board the survey vessel on rotation basis and their qualifications

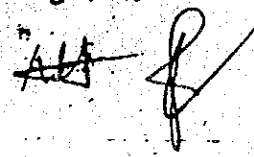
1. Carlos F. Teodoro --- Chief, Marine Mineral Resources Division  
B.S. Mining Engineering; Registered Geologist; Graduate Course in Geophysics (U.S.A.); Training in Geophysical Exploration (USGS), Interpretation of Aeromagnetic Data (Geological Survey of Federal Republic of Germany) and Interpretation of Geophysical Data (Society of Exploration Geophysics, Singapore); Participant in Remote Sensing Seminar (EROS Data Center, Sioux Falls, South Dakota, USA), Remote Sensing Workshop (USGS) and International conferences sponsored by CCOP and other UN agencies.
2. Salvador G. Martin --- Supervising Geologist II  
B.S. Geology; Research Fellow in Tectonics and Geodynamics of the Oceans (Universite de Bretagne Occidental, France); Diploma in Photogeology (ITC, Holland); Study Tour, Laboratory Facilities Serving the Offshore Industry (Norway).
3. Dominador A. Muriel --- Supervising Geologist II  
B.S. Mining Engineering; Registered Geologist, Post graduate training in Geology (Institute of Applied Geology, U.P.), Landsat Imagery Interpretation (EROS Data Center, Sioux Falls, South Dakota, USA) and Aeromagnetic Data Interpretation (GSJ, Japan).
4. Panfilo O. Montero --- Supervising Geologist I  
B.S. Mining Engineering; Registered Geologist; Post Graduate training in Geology (Institute of Applied Geology, U.P.); Diploma in Photogeology (ITC, Holland); Training in Landsat Imagery Interpretation (USGS, Flagstaff, Arizona, USA); Participant, Workshops/Seminars in Remote Sensing (Philippines, Thailand and Russia).
5. Angel A. Bravo --- Supervising Geologist I  
B.S. Geology, Post Graduate Training in Mineral Exploration (Japan) and in Quaternary Geology (Indonesia, sponsored by CCOP); Participant, Marine Seismic and Magnetic Survey in Leyte Gulf-Dinagat Sound (CCOP and BMG) and M.S. SONNE Mission in Sulu Sea of the Federal Institute for Geosciences and Natural Resources of the Federal Republic of Germany; Training in Basic FORTRAN Computer Programming (UP).

6. Leonardo Kalinisan - Sr. Mining Engineer  
B.S. Mining Engineering; Training in Computer Programming and Aeromagnetic Data Interpretation (Japan); Post Graduate Training in Geophysics leading to Masters Degree (Australia).
7. Octavio C. Daclison - Sr. Geophysicist  
B.S. Mining Engineering; Registered Geologist; Training in Mineral Exploration Employing Geochemical and Geophysical Techniques (Australia); Participant, Geological and Geophysical Offshore Prospecting on board Hakurei Maru including Data Analysis and Interpretation (Japan).
8. Edgardo V. Gonzales - Sr. Geologist  
B.S. Geology; Participant, Group Training in Offshore Prospecting (Japan), Marine Seismic and Magnetic Survey in Leyte Gulf-Dinagat Sound (BMG, CCOP).
9. Neoman dela Cruz - Sr. Geologist  
B.S. Mining Engineering; B.S. Geology; Participant, Group Training in Offshore Prospecting (Japan), Marine Seismic and Magnetic Survey in Leyte Gulf-Dinagat Sound (BMG-CCOP).
10. Jose R. Bustamante - Sr. Geologist  
B.S. Geology; Participant, Group Training Course in Offshore Prospecting (Japan)
11. Eduardo R. Nuevo - Sr. Geologist  
B.S. Geology, Post Graduate Studies in Marine Geology (Scripps Institution of Oceanography, USA); Participant, Marine Geological/Geophysical Survey in the Marianas on board the R/V Thomas Washington.
12. Macario del Rosario - Geophysicist  
B.S. Mining Engineering; Basic FORTRAN Training (U.P.); Participant, Group Training Course in Offshore Prospecting (Japan), and Marine Seismic and Magnetic Survey in Leyte Gulf-Dinagat Sound (BMG-CCOP).
13. Alexander M. Lacanilao - Geophysicist  
B.S. Mining Engineering; Research Fellow in Regional Tectonics in Southeast Asia Based on Aeromagnetic Data Processing and Interpretation.

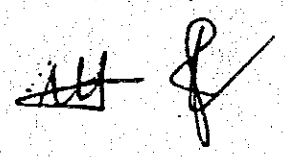




14. Wilfredo T. Icaay - Geophysicist  
B.S. Mining Engineering; Training in Basic FORTRAN Computer Programming (U.P.).
15. Reynaldo L. Villela - Geologist  
B.S. Geology; Participant; Group Training Course in Offshore Prospecting (Japan); Training in Basic FORTRAN Computer Programming (U.P.).
16. Leonardo C. Madayag - Geologist  
B.S. Geology; Participant, Workshop in Shallow Seismic Refraction Technique (CCOP) and in Marine Seismic and Magnetic Survey in Leyte Gulf-Dinagat Sound (BMG, CCOP).
17. Anselmo Abungan - Geologist  
B.S. Geology; Training, Photointerpretation (U.P.); Training in Basic FORTRAN Computer Programming (U.P.).
18. Danilo M. Octaviano - Geologist  
B.S. Geology; Participant, Marine Seismic and Magnetic Survey in Leyte Gulf-Dinagat Sound (BMG-CCOP).
19. Reuben M. Raval - Geologist  
B.S. Geology, Participant, Marine Seismic and Magnetic Survey in Leyte Gulf-Dinagat Sound (BMG, CCOP).
20. Meliton delos Santos - Geologist  
B.S. Geology
21. Cesar Cabrera - Geologist  
B.S. Geology; Participant, Workshop in Remote Sensing (CCOP).
22. Gerardo G. Abarquez - Geologist  
B.S. Geology
23. Eduardo Alforte - Geologist  
B.S. Geology
24. Herminio G. Tañiqui - Geodetic Engineer  
Associate in Geodetic Engineering
25. Rodolfo A. Bautista - Computer II  
3rd Year B.S. Civil Engineering; Training in Basic FORTRAN Computer Programming (UP).



26. Honorio Cabanban - Electronic Technician  
B.S. Electronic Engineering; Participant,  
Marine Seismic and Magnetic Survey in  
Leyte Gulf-Dinagat Sound (BMG, CCOP).
27. Enrico B. Zuño - Electronic Technician  
Certificate in Electronics Technology
28. Saturnino Camangonan - Cartographer I  
Architectural Drafting; 2nd year B.S.  
Architecture
29. Arthur Cayamanda - Cartographer I  
Certificate in Drafting Technology
30. Ramon Macabuhay - Geologic Aide  
B.S. Geology
31. Godofredo Tolentino - Geologic Aide
32. Elmer Amo - Geologic Aide  
Private Pilot Certificate



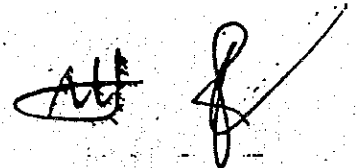
B. The following members of the technical staff of the Geological Survey Division of the Bureau of Mines and Geo-Sciences and the Petrolaboratories donated by the Japanese Government will undertake paleontological, petrological, geochronological and paleomagnetic studies of samples.

<u>Name</u>	<u>Qualification</u>	<u>Position</u>
1. Guillermo R. Balce	B.S. Geology, M.S. Geology D.Sc. Economic Geology (Japan)	Supv. Geologist II
2. George Bacuta	B.S. Geology, M.S. in Ophiolite Petrology	Supv. Geologist I
3. Lilian Rollan	B.S. Geology, Studying for M.S. Petrology (Australia)	Geologist
4. Maria Elveta C. Comsti	B.S. Geology M.S. Petrology (Australia)	Geologist
5. Cesar Samaniego	B.S. Geology Electron Probe Micro Analyzer Cepma Specialist	Geologist
6. Conrado Miranda	B.S. Geology Petrolab Specialist	Geologist
7. Catherine de Leon	B.S. Geology Training in Petrography (Germany)	Geologist
8. Olivia G. Bernardo	B.S. Geology Training in Petrology	Geologist
9. Asuncion Aguirre	B.S. Geology Training in Petrography	Geologist
10. Cynthia de Jesus	B.S. Geology Training in Petrography	Geologist
11. Belasanta Ferre	B.S. Geology	Geologist
12. Teofilo Abrasano, Jr.	B.S. Geology Studying: S.Sc. in Economic Geology	Geologist

13. Roberto Pabalan	B.S. Geology Pursuing D.Sc. in Economic Geology	Geologist
14. R.M. Samaniego	B.S. Zoology (UP)	Supervising Geologist (Paleontology)
15. Pacita P. David	B.S. Zoology (UP) Post Graduate in Vienna	Sr. Paleontologist
16. Paz D. Santiago	B.S. Zoology (UP)	Sr. Paleontologist
17. E.A. Espiritu	B.S. Zoology (UP)	
18. P.M. Alcantara	B.S. Geology (MIT) M.S. Geology Tsukuba, Japan	Sr. Geologist
19. E.A. Amiscaray	B.S. Geology (MIT)	Paleontologist
20. A. Y. Puzon	B.S. Geology (UP) Post graduate training in Germany	Paleontologist
21. F. P. Tumanda	B.S. Geology (UP)	Paleontologist
22. T. O. Maac	B.S. Geology (MIT)	Paleontologist
23. M. Agaler	B.S. Geology (MIT)	Paleontologist

C. The following members of the Metallurgical and Laboratory Services Division will undertake chemical analysis of samples and conduct metallurgical studies on the separation of the valuable minerals:

<u>Name</u>	<u>Qualification</u>	<u>Position</u>
1. Edwin B. Santelices	B.S. Met. Eng'g.	Metallurgist
2. Lolita G. Broces	B.S. Chemistry	Mineral Analyst
3. Edelmira T. Sanga	B.S. Chemistry	Chemist
4. Jose-P. Arzadon	4th Yr. Ind. Eng'g.	Chemical Lab. Aide
5. Barbara B.S. Ibon	Student B.S. Chemistry	Chemical Lab. Aide



D. The following officers and crew of the Bureau of Coast and Geodetic Survey will man the vessel.

Deck Officers

1. Captain - Ceferino Pascual, Captain B.S. Civil Engineer
2. Chief Mate- Renato B. Fier, Comdr. B.S. Electrical Eng'g
3. 2nd Mate- Jose Galo P. Isada, Jr. Lieut. B.S. Civil Eng'g.
4. 3rd Mate- Enrique A. Macaspac Lieut B.S. Civil Eng'g.
5. Chief Radio Operator - Basiliso Pebenito, Radio Operator graduate course and radio technician

Engine Officers

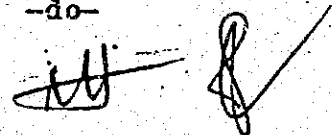
1. Chief Engr.- Feliciano Y. Aguirre B.S. Mechanical Eng'g.
2. 2nd Mar Engine- Jorge Caneto High School Graduate
3. 3rd Mar Engine- Rogelio Ocampo -do-
4. 3rd Mar Engine- Teodoro Vidallo -do-

Deck Crew

1. Chief Qm - Renato Pamating High School Graduate
2. Chief Bon - Eugenio Terencio -do-
3. Quarter Master- Rogelio Solis -do-
4. Seaman - Domingo Cortun -do-
5. Seaman - Apolonio Literano -do-

Engine Crew

1. Mar Engineman - Vicente Penado -do-
2. Mar Engineman - Armando Sayong -do-

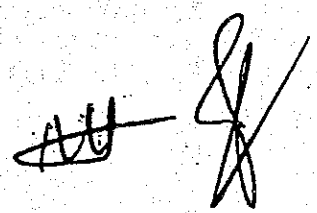


- 3. Mar Engineman - Antonio Pajarillaga High School graduate
- 4. Electrician - Alvin Alim -do-
- 5. Machinist - Ruben Denaga -do-

Steward

- 1. Chief Steward - Apolinar Donor -do-
- 2. Asst. Steward - Rolando Indoc -do-

All the officers and crew have at least ten years experiences on board the survey vessels of the Bureau of Coast and Geodetic Survey. All the deck officers are Engineering degree holders. Some are graduates of Oceanography and Hydrography.

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MINUTES OF DISCUSSION  
ON  
THE DRAFT REPORT OF THE BASIC DESIGN STUDY  
ON THE CONSTRUCTION PROJECT OF OFFSHORE MINERAL  
EXPLORATION VESSEL

The government of Japan has sent, through Japan International Cooperation Agency (JICA), a Basic Design Study Team to the Philippines from 8th to 14th, August 1982 for the purpose of submitting and explaining the Draft Report of Basic Design Study (Report) on the construction project of offshore mineral exploration vessel.

The team held meetings with the staff concerned of the Bureau of Mines and Geo-Sciences to explain and discuss the report. As a result of the discussion, both parties have agreed as follows:

1. The report principally satisfied the Philippine side.
2. Both parties confirmed each other on the following points:

1) Computer of Seismic Reflection System

One (1) computer system having dual functions of data acquisition and data processing shall be provided instead of two (2) computer systems, each having respective single function.

It is understood that for seismic data acquisition and data processing are not conducted simultaneously on board.

2) Survey Winch

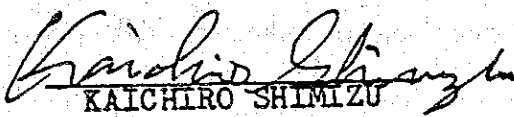
One (1) sampling winch (up to 200 m depth) for handling core samplers with the same function and

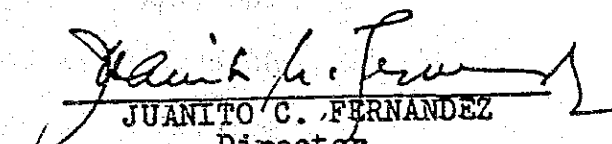
capacity (3,000 m x 9 m/m  $\emptyset$ ) of a hydrographic winch shall be provided in place of one (1) sampling winch (1,000 m x 9m/m  $\emptyset$ ) and one (1) hydrographic winch and davit (3,000 m x 3 m/m  $\emptyset$ ).

3. Following additional equipment and machines are necessary to be provided.

- 1) Lubricating Oil Purifier (1 set)
- 2) Inflatable Rubber Boat (1 set)
- 3) Lathe Machine (1 set)
- 4) Electric and Gas Welder (each 1 set)

August 13, 1982

  
KAICHIRO SHIMIZU  
Team Leader  
The Japanese Survey Team

  
JUANITO C. FERNANDEZ  
Director  
Bureau of Mines and Geo-Sciences



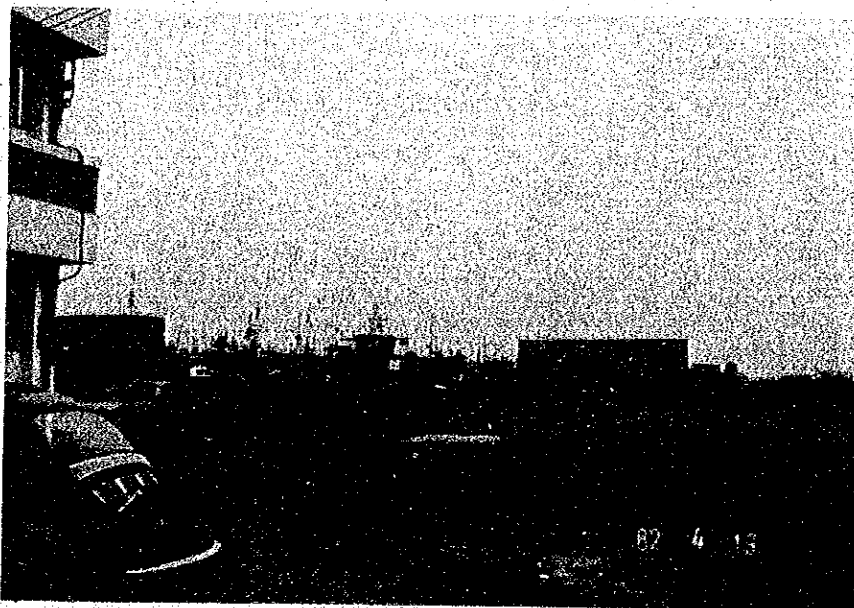


Annex 5 - Reference Photographs



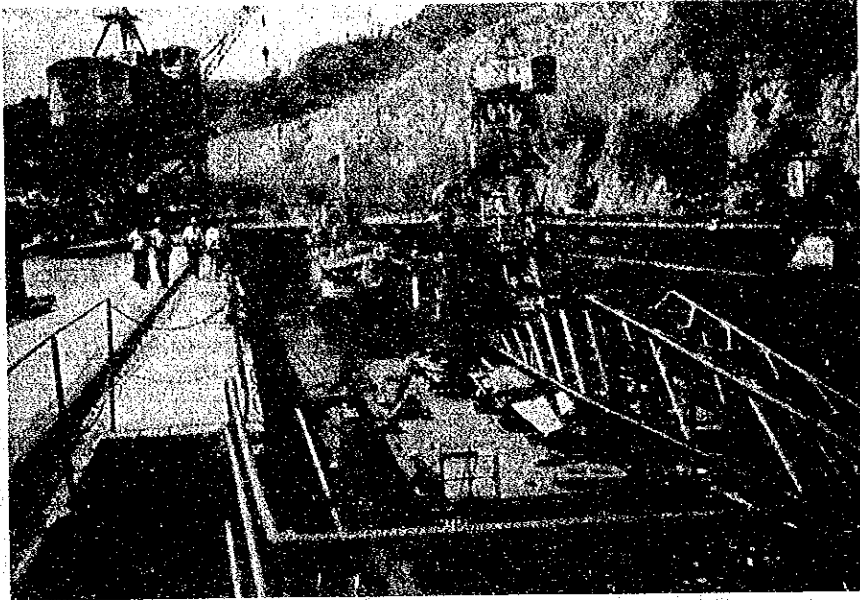
Navotas Fishing Port

No. 3 Pier, Looking its Root from Head.  
(Proposed mooring site for the survey vessel)

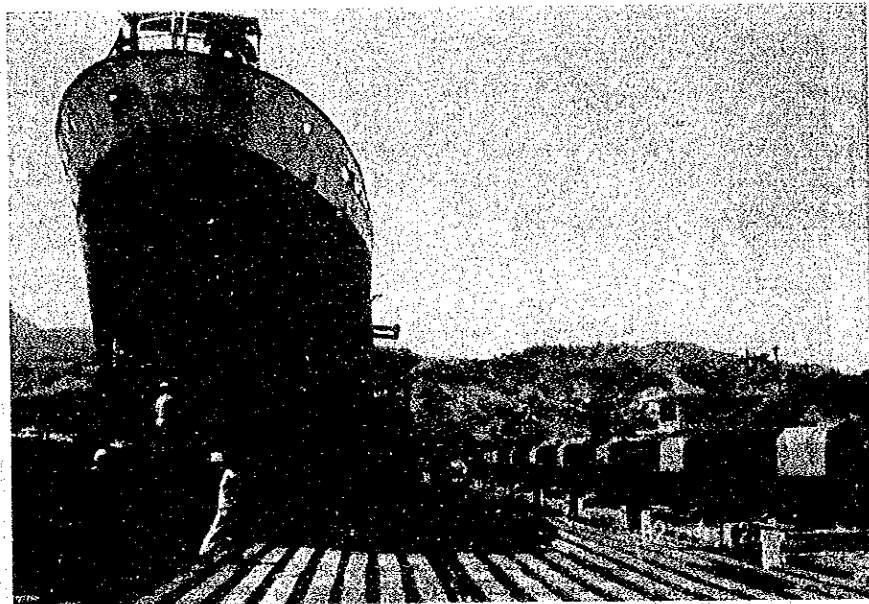


Navotas Fishing Port

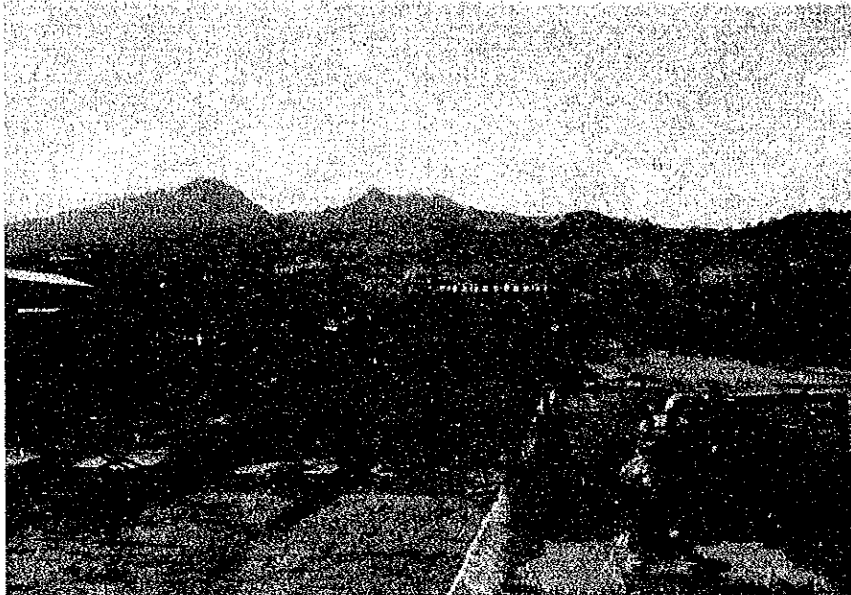
Future Commercial Area at the Root of Piers  
(Proposed site for a warehouse for the survey vessel)



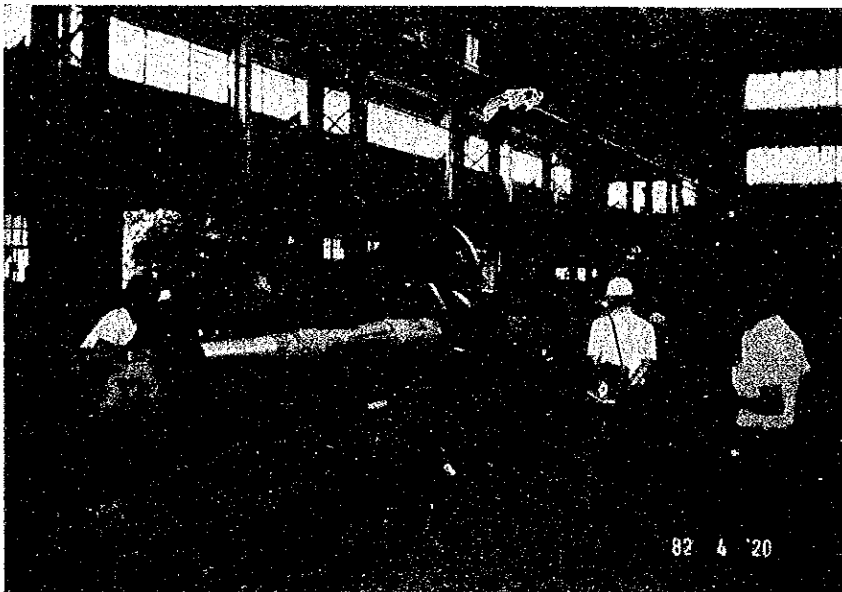
Graving Dock  
Bataan Shipyard & Eng. Co.



Syncrolift Drydock  
Bataan Shipyard & Eng. Co.



Slipway  
Bataan Shipyard & Eng. Co.



Machine Shop  
Bataan Shipyard & Eng. Co.

