

HYDROLOGY TRAINING COURSE  
ON SURFACE WATER AND  
GROUNDWATER (II), SUVA, FIJI,  
2005.

COUNTRY PRESENTATION

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# **Introduction**

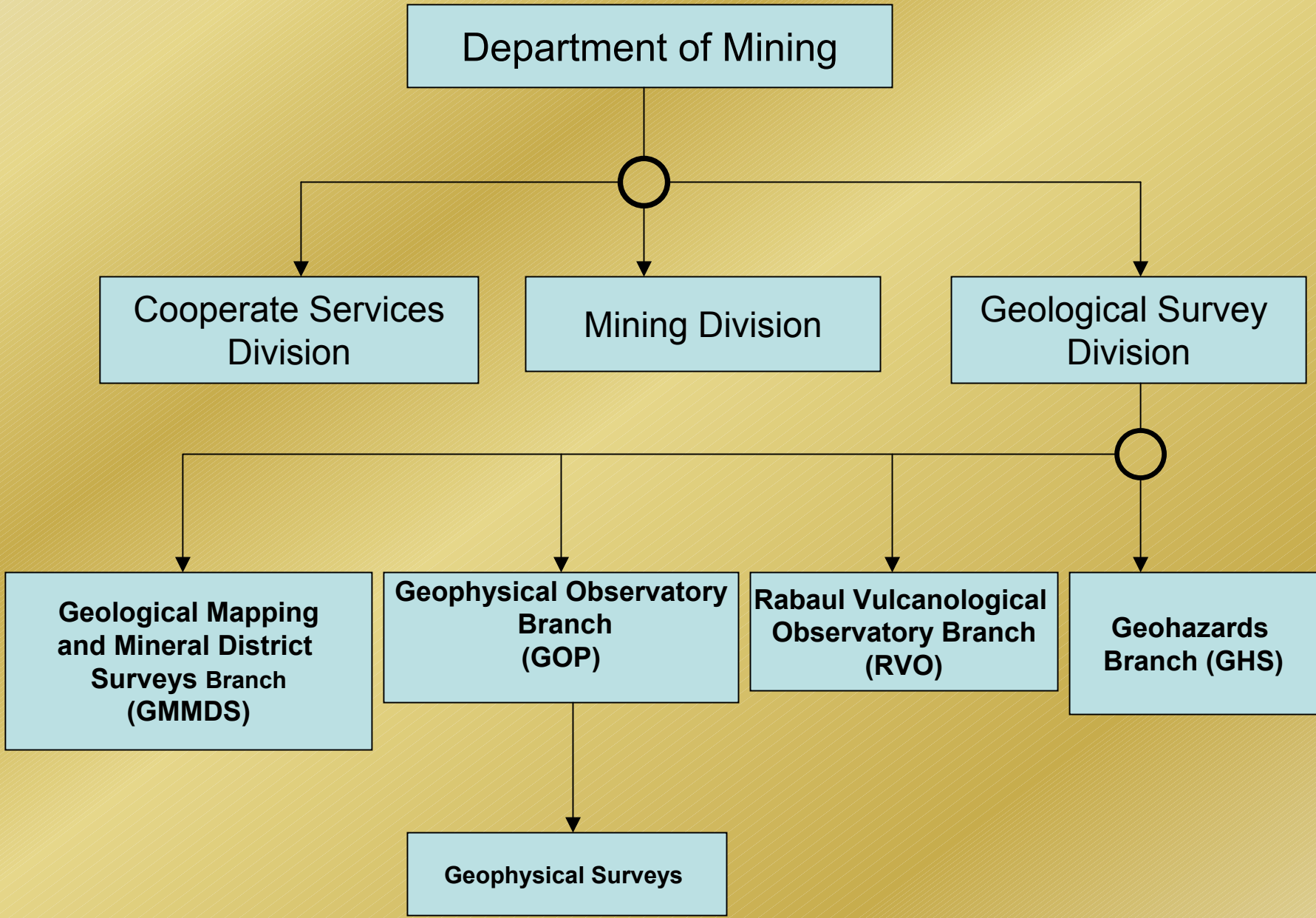
- **Presentation:**

- 1. Structure of the Geological Survey of Papua New Guinea as a Division of the Department of Mining and the Geophysics Section.**

- 2. Geophysical Observatory - Staff and Sections.**

- 3. Geophysical Surveys conducted in Groundwater Investigations.**

- 4. Hydrology Surveys Section**



Department of Mining

Cooperate Services  
Division

Mining Division

Geological Survey  
Division

**Geological Mapping  
and Mineral District  
Surveys Branch  
(GMMDS)**

**Geophysical Observatory  
Branch  
(GOP)**

**Rabaul Vulcanological  
Observatory Branch  
(RVO)**

**Geohazards  
Branch (GHS)**

**Geophysical Surveys**

# Staff and Sections

The Geophysical Observatory comprises of:

## Geophysical Observatory

Assistant Director

Secretary/KBO

Chief Seismologist

Geophysicist

General Laborer

## Geophysics Surveys Section

Principal Geophysicist

Geophysicist

# Geophysical surveys conducted in Groundwater Investigations

- The section uses electrical methods in Groundwater investigations
- The prime objective is to detect and determine depth to an aquifer.
- Electrical method used is the resistivity method which uses the electrical properties of rocks and rock materials to determine the different structural layers beneath the ground surface

- The section makes use of what is called the half – Schlumberger Array.

This technique employs the use of four point electrodes; two potential electrodes and two current electrodes.

The electrodes are placed symmetrically along what is called a resistivity spread with reference to a central point.

The current electrodes are placed at fixed positions on the inside of the spread while the potential electrodes are placed systematically on the outside at pre-calculated positions along the spread.

Current is passed into the Ground through the current electrodes and is measured by the potential electrodes.

The depth variation is determined from a log-log graph with the resistivity data on the abscissa against the half-current electrode spacing, alias, the half – Schlumberger Array.

Modeling is carried out on an Interpex RESIX-IP version 2.0 resistivity software program which runs in MS-DOS.



# Hydrology Surveys Section

- The Geophysics Surveys Section and the Hydrological Surveys Section of the GHS Branch are the two main sections that carry out water investigations.
- The Hydrology Surveys Section provides:
  - specifications for the drilling of water boreholes.
  - supervision for the drilling and pump testing of water boreholes.

- preparation of borehole location maps
- maintaining and upgrading the Hydrogeology Database.
- providing advice and information to government departments, consultants, drilling companies and the general public on groundwater related matters.
- acquisition of water borehole information.

The section also stores information on:

- Location borehole constructions
- Borehole log (Lithological)
- Water Quality
- Pump test information

This information is stored in MS-ACCESS

# Software programs available for:

## Pump test:

- AqFesolv
- Starpoint Software
- UN Groundwater Software
- Waterloo Hydrological Test Pro

## Water Quality:

- SolomiaQ
- UN Groundwater Software
- Waterloo Hydrological Water Quality