



IDENTIFICATION

Department	Position Title	
Industry, Tourism & Investment	Geophysicist	
Position Number(s)	Community(s)	Division/Region(s)
63-14540	Yellowknife	NWT Geoscience Office

PURPOSE OF THE POSITION

The Geophysicist identifies, researches, and applies geophysical techniques that provide geoscientific data and interpretations for the Northwest Territories. The incumbent provides geophysical research capacity at the Northwest Territories Geoscience Office and typically works as part of a collaborative, multi-disciplinary research team.

SCOPE

Located in Yellowknife, the Northwest Territories Geoscience Office (NTGO) is a Division of the Department of Industry, Tourism and Investment, Government of the Northwest Territories.

NTGO provides expertise on the geology and mineral and petroleum resources of the Northwest Territories (NWT). It carries out mineral- and energy-related studies and non-renewable resource assessments that support resource exploration, land use and conservation planning, and a variety of other initiatives. NTGO researches, compiles, manages, and makes available a variety of geoscientific data about the NWT surface and subsurface. It also provides geomatics and information technology expertise, and public education and outreach services.

The Geophysicist reports to the Manager, Mineral Deposits and Bedrock Mapping and is broadly responsible for:

- The identification and addressing of geophysical research questions.
- Conducting and coordinating activities related to geophysical data collection, interpretation, and data management.
- Providing leadership in the application of ground and airborne geophysical techniques to geological mapping and interpretation.
- Maintaining current knowledge of geophysical principles, practices, and data management tools.
- Preparing publications, geophysical maps, databases, graphics, and specialist or

- non-specialist presentations.
- Managing geophysical equipment.

The incumbent typically works with NTGO colleagues, staff from other geoscience organizations, and university researchers on specific geoscience research projects. The incumbent also provides technical information and advice to NTGO managers, other government workers, departmental regional offices, industry colleagues, Aboriginal groups, and NWT communities.

The primary role of the Geophysicist is to provide scientific expertise and leadership on the collection and interpretation of geophysical data. The work duties related to this role are conducted both independently and collaboratively. Related outcomes will assist in interpreting the geology and resource potential of the NWT and may ultimately help to guide economic development and other land use activities.

RESPONSIBILITIES

1. Conducts or assists in the identification and resolution of geoscience problems by:

- Defining the geoscience need.
- Gathering/organizing data.
- Researching solutions.
- Providing interpretation and recommendations.

2. Coordinates activities related to geophysical data collection and storage by:

- Understanding client needs.
- Directing or conducting field surveys and office-based projects.
- Preparing technical specifications for geophysical contractors, evaluating proposals, ensuring quality control and quality assurance of contract deliverables and conducting other contract support work.

3. Undertakes field work, including being responsible for:

- Organizing, undertaking and reporting on field research programs, often as the project leader.
- The financial, scientific and logistical management of field program that may be located in remote fly-in locations.
- Contributing to obtaining field support services, e.g. aircraft charters, contribution agreements for research partners.
- Human resource management of field crews of up to 6-8 participants (including summer student hiring).
- Safe conduct of all field operations.
- Leading or participating in pre- and post-fieldwork research activities.
- Fostering ongoing healthy and productive partnerships with external research partners, e.g. university students and professors.

- As required, fully participating in collaborative field research activities organized by other groups, e.g. universities, Geological Survey of Canada.
4. **Provides support on the application of geophysics to geoscience mapping projects (e.g. bedrock, surficial materials, groundwater), and uses geophysical principles and data in order to contribute to geoscience interpretations.**
 5. **Maintains knowledge of geophysical data management principles, practices, and tools in order to provide information and advice to geoscientists and clients.**
 6. **Prepares reports, databases, geophysical maps, and other materials that effectively communicate research findings.**
 7. **Makes presentations that provide scientific information to a variety of audiences (e.g. government, mineral industry, academic, First Nations, general public).**
 8. **Participates in conference-related organizational and information-sharing activities.**
 9. **Maintains geophysical equipment including inventory, assignment of instruments, checking calibrations, and ensuring field readiness.**

KNOWLEDGE, SKILLS AND ABILITIES

- Thorough, modern knowledge of geophysics and its application to geological mapping, mineral and petroleum potential evaluations, and studies of groundwater, surficial materials, and permafrost.
- Demonstrated knowledge of regional airborne geophysical techniques.
- Experience in conducting ground geophysical surveys.
- Experience in manipulating, reprocessing, and reinterpreting geophysical datasets.
- Demonstrated ability to organize, interpret, and synthesize project-related geoscience data and to develop interpretations and hypotheses by integrating diverse geoscience datasets.
- Knowledge of basic geological principles and terminology.
- Thorough knowledge of scientific research principles and practices.
- Knowledge of current geophysical academic research and method or technology developments.
- Knowledge of current geophysical priorities and issues in the mineral and petroleum industries.
- Analytical, organizational, and evaluation skills to implement or interpret regional-scale geophysical projects.
- Ability to produce scientific reports of high technical quality suitable for publishing in external scientific journals or through the NTGO publication process.

- Knowledge of geophysical software and hardware including software for geophysical data processing, GIS software, database applications, spreadsheet and word processing programs, visualization and data verification software, and modeling and numerical methods software.
- Ability to provide verbal, visual, and written information at an appropriate level to the full range of NTGO client groups.
- Proven interpersonal and team work skills to perform effectively on multidisciplinary and inter-jurisdictional teams
- Supervisory skills to oversee contractors, casual staff, and field assistants.
- Field research skills appropriate to geophysical data collection.
- Basic techniques of wilderness survival, first aid, aircraft safety, water craft and land vehicle operation and firearms operation in order to ensure safety and well-being of field crews and successful undertaking of field activities.
- Planning, time management, and problem-solving skills to organize and lead geophysical projects and multidisciplinary teams under sometimes challenging conditions.
- Knowledge of the legal and ethical obligations of the geological profession.
- Knowledge of the *Financial Administration Manual* will be required in order to award contracts and monitor funds designated for geoscience research
- Ability to work effectively both independently and with others on a project team or working group.

Typically, the above qualifications would be attained by:

These knowledge, skills, and abilities are typically obtained by completion of a Master of Science degree in Geophysics and a minimum of three years' work experience in industry, academia, or a government geoscience agency.

The incumbent must be eligible for registration in the NWT and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) as a Professional Geologist.

WORKING CONDITIONS

(Working Conditions identify the *unusual and unavoidable*, externally imposed conditions under which the work must be performed and which create hardship for the incumbent.)

Physical Demands

Normal office environment for most of the time.

Fieldwork is physically taxing and the logistics of accommodation in the field (sleeping arrangements, travel arrangements, meals, etc.) can be demanding.

Field activities may be conducted from isolated camps. Camp quality is variable but can include overcrowding, dirty, dusty or wet conditions, exposure to insects, and extreme weather conditions.

Travel by fixed-wing or rotary aircraft, road vehicles, and boats results in noise, confinement, fatigue, risk to life, and may take place in poor weather conditions.

Field activities present the risk of slips and falls, transportation-related accidents, animal attacks, drowning, burns, impacts, equipment failure, and environmental hazards associated with bad weather and rough terrain. Injury can result from the actions and decisions of other workers. Insect bites, fatigue, and minor injuries (cuts, abrasions, sore muscles) are common. Serious incidents are rare but unpredictable and can result in illness, serious injury, or death.

Environmental Conditions

Normal office environment for most of the time.

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Sensory Demands

Normal office environment outside of field season.

Field work requires a state of heightened alertness to ensure a safe working environment.

Mental Demands

Multiple concurrent and conflicting tasks, leading to conflicting work priorities and time pressures. Field activities can include periods of prolonged isolation with one or more individuals, which may lead to mild or moderate psychological discomfort.

ADDITIONAL REQUIREMENTS

Position Security (check one)

- No criminal records check required
- Position of Trust – criminal records check required
- Highly sensitive position – requires verification of identity and a criminal records check