Government of
Northwest Territories

IDENTIFICATION

Department	Position Title	
Industry, Tourism and Investment	Mineral Deposits Geologist	
Position Number	**Community**	**Division/Region**
63-7167	Yellowknife	NWT Geological Survey/HQ

PURPOSE OF THE POSITION

The Mineral Deposits Geologist conducts scientific research and acts as a knowledge centre for expert advice to industry and other stakeholders on the geology and mineral deposits of the Northwest Territories (NWT). By conducting geological research and providing expert information and advice to government clients and others, the incumbent promotes the exploration for and development of NWT mineral resources.

SCOPE

Located in Yellowknife, the Northwest Territories Geological Survey (NTGS) is a division of the Department of Industry, Tourism and Investment, Government of Northwest Territories (GNWT). NTGS provides expertise on the mineral and petroleum resources of the NWT. It carries out mineral and energy potential studies and non-renewable resource assessments in support of land use planning, land claim processes, and conservation initiatives. NTGS also conducts environmental geoscience research, compiles, manages and makes available a variety of geoscientific data, and provides public education and outreach services.

Reporting to the Manager, Mineral Deposits and Bedrock Mapping, the Mineral Deposits Geologist initiates, plans and implements research projects and develops new techniques, models and methods that contribute to the understanding of Precambrian and Phanerozoic metallogeny in the NWT. This requires the ability to integrate a modern knowledge of ore-forming processes with a thorough understanding of crust-forming processes and events such as volcanism, sedimentation, metamorphism and deformation.

Two of the key functions of the incumbent are to (i) develop and lead economic geology research programs as the GNWT's mineral deposits expert, and (ii) expand the scope of NTGS bedrock mapping projects by contributing metallogenic components to these projects.

Contributions may include geochemical and petrologic studies, structural analysis, detailed petrography and regional tectonic syntheses in order to assess mineral potential and define regional metallotects.

The incumbent receives assignments from the Manager that are broad in nature, and works with research collaborators, where applicable, to define work methodology, project content and timelines. Projects for assigned areas may run concurrently. Senior and administrative staff at the NTGS are available to provide advice and direction for the duration of projects. Regular discussions and collaborations with other NTGS staff members, Geological Survey of Canada (GSC) scientists, and the exploration and mining industries are required to ensure a constant critical review of work underway and a high technical quality of completed work.

Projects are prioritized according to geologic domains that have been identified as having a need for improved public geoscience knowledge. This is typically done within the context of commodities and deposit types of current interest to industry and prospectors, but can also reflect inputs and ideas from other sources.

A key requirement of the Mineral Deposits Geologist is to develop and maintain effective communications with others that leads to open, collaborative and well-informed project planning and implementation. Academic and intergovernmental cooperation and integration of expertise is encouraged to maximize project outcomes and impacts and to avoid research overlaps and conflicts. An academic level of excellence and high technical and professional standards apply to all facets of the position. Interim and final project reports must be completed in a form suitable for scientific peer review and public release. The incumbent's independent and collaborative research projects and the outcomes of this work should ultimately enhance NWT mineral exploration, development and related employment, and help to sustain resource-based communities.

RESPONSIBILITIES

1. **Contributes to the understanding of NWT metallogeny by conducting independent research, including:**
   - Initiating, planning and implementing research projects following the broad direction of the Director, NWT Geological Survey and the Manager, Mineral Deposits and Bedrock Mapping, and with advice from NTGS staff and other individuals and organizations as appropriate.
   - Assembling all available geological, geophysical, geochemical and remotely sensed data, including data on known mineral deposits and occurrences in priority areas in order to define a work plan that will fill the knowledge gaps required to develop a metallogenic "blueprint."
   - Designing and conducting field and laboratory scientific studies to upgrade data, information and knowledge of the NWT's mineral wealth in relation to mineral deposit- and crust-forming processes. These studies involve both independent research and/or cooperative investigations with other institutions, government agencies, or contractors who provide specialized geological techniques.

- Organizing, undertaking and reporting on field research programs, often as the project leader. This involves responsibility for (i) financial, scientific and logistical management of field programs which are often located in remote fly-in locations; (ii) contributing to obtaining field support services (e.g. aircraft charters, contributions agreements for research partners, etc.); (iii) human resource management of field crews, numbering up to 6-8 participants and typically including summer students, and; (iv) the safe conduct and efficient management of all field operations.
- Leading or participating in pre- and post-fieldwork research activities and fostering ongoing healthy and productive partnerships with external research partners. The incumbent may also participate in collaborative field research activities organized by other groups (e.g., universities, GSC).
- Ensuring that field crew members are appropriately trained and supervised during field work, especially junior staff and summer students.
- Interpreting and evaluating project proposals and research results and making recommendations for changes or further study, if any.
- Providing information and advice to community residents, prospectors, the academic community and companies on areas mapped or studied by the employee and on related general geological matters.
- Coordinating projects with other NTGS and GSC geoscience programs in order to ensure efficient use of logistical and research resources.

2. **Integrates metallogenic studies into ongoing and proposed research programs in order to contribute towards larger collaborative research projects, including:**
   - Interfacing with NTGS staff and colleagues from other agencies. Ensuring efficient and safe operations in remote areas and the training/supervision of junior staff where required.
   - Supervising graduate and undergraduate student research projects as required, in conjunction with university staff.
   - Interpreting and evaluating results of research and development projects and making recommendations for further study, if any, to the project team and to NTGS management.
   - Assisting the project leader in providing information, advice and instruction to geological engineers, geologists and prospectors, community residents, other researchers and company personnel on the areas mapped or studied by the employee and on related general geological matters.

3. **Prepares final maps and reports for publication to ensure that information is made available to stakeholders in an effective and efficient manner by:**
   - Preparing and editing reports, maps and GIS-based datasets as needed to meet project requirements and deadlines.
   - Compiling industry assessment files and other government sources of information for areas of interest.
   - Preparing monthly progress reports for the Manager, Mineral Deposits and Bedrock Mapping.

- Preparing annual maps and progress reports for the Manager, Mineral Deposits and Bedrock Mapping.
- Assembling information for audio-visual presentations.
- Authoring or co-authoring reports that are suitable for publication in scientific journals.
- Presenting progress reports and results of work conducted at the Yellowknife Geoscience Forum, other meetings and conferences, and to indigenous and community organizations, as required.

4. **Assists the Manager, Mineral Deposits and Bedrock Mapping in maximizing the public understanding and economic impact of NTGS geoscience activities by:**
   - Developing research ideas and other initiatives that have a high potential to encourage or sustain NWT economic activity.
   - Preparing information and support documents for senior managers, the department's Minerals and Petroleum Resources Division and similar groups.
   - Assisting with NTGS work planning to ensure that approved objectives and budgets are met in an effective manner consistent with the operational policies and procedures of the GNWT and the stated values and principles of the NTGS.

WORKING CONDITIONS

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 performed from camps in isolated locations. 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 and boats results in noise, confinement, risk to life, and may take place in poor weather. Field activities continually present the risk of animal or insect attacks, and occasionally the risk of drowning, rock falls, vehicle accidents, explosions and environmental hazards related to bad weather and rough terrain. 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

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Sensory Demands

Normal office environment outside of field season.

Fieldwork requires a state of heightened alertness to ensure a safe working environment for the team.

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 fewer individuals, which may lead to mild or moderate psychological discomfort.

KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of the inter-relationship of ore-forming and crustal processes on regional scales suitable for the development of models that explain the spatial distribution of mineral deposits within defined geological domains such as sedimentary basins and volcanic and orogenic belts.
- Knowledge of field and laboratory studies to upgrade data, information and knowledge of the NWT's mineral wealth in relation to mineral deposit and crust-forming processes.
- Knowledge of the evolution of the Precambrian Shield and Phanerozoic platform rocks of the NWT.
- Knowledge of metallogeny and mineral deposit geology including, but not limited to the principal mineral deposit types in the NWT (i.e., diamonds, orogenic gold, volcanogenic massive sulphides, SEDEX, iron oxide-copper-gold, carbonate-hosted lead-zinc, and magmatic nickel-copper-PGE).
- Knowledge of integrating mineral deposit studies with geological mapping, geochemistry, geophysics and remote sensing datasets in a GIS format.
- Knowledge of regional geological mapping.
- Knowledge of basic techniques of wilderness survival, first aid, aircraft safety, watercraft and land vehicle operation and firearms operation in order to ensure safety and well-being of field crews and successful execution of field activities in remote areas.
- Financial management knowledge is required to monitor program budgets and ensure funds are allocated in accordance to GWNT financial administration rules.

- Knowledge of the use and careful handling of computers and specialized geological equipment in the field.
- Organizational and logistical skills to effectively plan, coordinate and manage field- and office-based geoscience projects.
- Time management and organizational skills to manage several projects concurrently.
- Interpersonal skills to effectively work as part of a project team.
- Written and verbal communication skills to interface with Federal, Provincial and Territorial agencies in order to develop regional geoscience projects that minimize overlap and maximize cooperation in achieving common goals.
- Written communication skills required to draft reports, author or coauthor papers for scientific journals, prepare presentations and to convey information.
- Must be able to effectively communicate with a wide range of client and stakeholder groups.
- Supervisory skills to oversee contractors and casual staff.
- Scientific editorial and peer review skills.
- Ability to integrate current knowledge of ore-forming processes with crust-forming/modifying processes such as volcanism, sedimentation, metamorphism and deformation.
- Ability to integrate mineral deposit research priorities with ongoing and proposed mapping projects in order to contribute towards complimentary and linked final research products.
- Ability to work effectively within a large, multi-disciplinary team.
- Ability to supervise, motivate, guide and communicate with subordinates, consultants, research teams and contractors.
- Ability to distribute the results of research in the public domain through reports, GIS-based maps, scientific presentations and refereed journal papers at regional, national and international levels.

Typically, the above qualifications would be attained by:

Completion of a Master's Degree in Earth Sciences with a specialization in Economic Geology and three (3) years of work experience in bedrock geological mapping, mineral deposit studies and related activities.

ADDITIONAL REQUIREMENTS

The incumbent must become eligible for, register, and maintain membership in the NWT and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) as a Professional Geoscientist (P.Geo.).

The incumbent must be eligible for and maintain a valid firearms Possession and Acquisition License.

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

French Language (check one if applicable)

☐ French required (must identify required level below)
Level required for this Designated Position is:
ORAL EXPRESSION AND COMPREHENSION
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
READING COMPREHENSION:
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
WRITING SKILLS:
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
☒ French preferred

Indigenous Language: Select Language

☐ Required
☐ Preferred