IDENTIFICATION

Department	Position Title	
Industry, Tourism and Investment	Geophysicist	
Position Number	**Community**	**Division/Region**
63-14540	Yellowknife	Northwest Territories Geological Survey / HQ

PURPOSE OF THE POSITION

The Geophysicist provides authoritative public geoscience by designing, funding, procuring, and conducting geophysical surveys and by compiling and enhancing existing geophysical datasets for the Northwest Territories Geological Survey (NTGS). The incumbent plans and manages new geophysical data acquisition programs, extracts and reprocesses geophysical data from industry sources to produce enhanced regional compilations, generates defensible geophysical datasets and interpretations, and translates results for internal and external clients to inform mineral exploration and development as well as the regulatory and land-use planning systems in which the mineral industry operates. Operating in a context of economic constraint and competing policy objectives, the position aligns scientific work with departmental priorities, secures external funding partnerships, ensures scientific integrity, and meets the needs of stakeholders across regulatory and economic development functions.

SCOPE

Located in Yellowknife and reporting to the Manager, Mineral Deposits, the Geophysicist is a professional geoscientist responsible for planning, conducting, and reporting on geophysical survey design, data acquisition, processing and interpretation in support of geological mapping, mineral exploration and terrain characterization within the Northwest Territories Geological Survey (NTGS). The position exercises professional autonomy over technical project design and execution within the policies, guidelines, and priorities established by the Manager and the NTGS.

The resource sector is a foundational contributor to the Northwest Territories' (NWT) economy and socio-economic well-being, with direct and indirect economic impacts that account for up to a third of the territory's Gross Domestic Product. It is essential that these resources are responsibly managed to ensure that northerners receive maximum benefits from the sector while negative impacts are minimized and effectively mitigated. Geoscience data produced by the NTGS underpins this objective: it drives mineral exploration investment, informs land-use

planning and environmental assessment, supports Indigenous Government processes, and sustains broader public-policy priorities for economic sustainability and responsible resource development.

Geophysicist projects are critical to advancing understanding of the NWT's mineral potential. Comprehensive geophysical characterization of the subsurface reduces uncertainty in public and private decision-making and provides a scientific basis upon which industry can plan exploration investments in the NWT. These data also deliver significant economic returns by reducing risk for the private sector and informing the allocation of limited public resources—supporting government decision-making that competes for attention alongside demands for health care, education, and infrastructure. The Geophysicist's work contributes directly to these outcomes by acquiring and interpreting geophysical datasets that underpin geological mapping interpretations, reduce subsurface uncertainty, and support both mineral exploration targeting and infrastructure siting.

The Geophysicist independently plans and leads one to three concurrent geoscience projects, each typically lasting two to five years. Core responsibilities include co-developing project scopes, timelines, and budgets with the Manager; designing and executing ground-based and airborne geophysical surveys (e.g., magnetic, electromagnetic, gravity, radiometric); processing and modelling geophysical data; integrating geophysical interpretations with geological and geochemical datasets; producing and quality-controlling geoscience datasets for public release; and preparing peer-reviewed publications, open-file reports, maps, and presentations that meet NTGS standards for scientific rigour and client utility. The position contributes to securing external funding and supports collaborative arrangements with academic, industry, and governmental partners, including through participation in intergovernmental coordination mechanisms such as the Intergovernmental Geoscience Accord and the Pan-Canadian Geoscience Strategy.

The Geophysicist supports regulatory functions in three capacities. First, the position provides authoritative geoscientific evaluation of work-assessment reports and other legislated submissions that contain geophysical survey data and interpretations, evaluating the technical standards, data quality, and interpretive validity of geophysical information submitted by industry, ensuring that industry submissions meet statutory requirements and providing technical recommendations to those with approval authority. Second, as a proponent of field programs, the position ensures that its own field activities comply with applicable legislation governing safety and conduct of scientific activities, integrating regulatory compliance and stakeholder engagement into project design, permitting, and execution. Third, the geophysical products of the position provide expert information to external regulatory boards and agencies—including those operating under the Mackenzie Valley Resource Management Act—supplying subsurface characterization data that supports geological interpretations informing land-use planning and resource assessment.

The Geophysicist collaborates with colleagues within and between NTGS work units, mentors junior staff and students engaged in field programs, and contributes to a safe, supportive, and

inclusive workplace. The position may provide day-to-day technical guidance to field assistants and project students but does not hold formal supervisory authority over professional staff. The position ensures that field operations adhere to health-and-safety plans and safe work practices appropriate for remote northern environments.

The position maintains an active professional profile through publication in peer-reviewed journals and geological survey publications, presentation at national and international geology conferences, participation in collaborative geophysical research networks, and professional registration as a geoscientist, contributing to the credibility and reputation of government science in the NWT.

NTGS geoscientists are core contributors to the annual Yellowknife Geoscience Forum and play a central role in shaping the credibility of the conference's technical program. They provide authoritative geoscience knowledge, present current research, and help translate technical findings into information that is directly useful for exploration companies, Indigenous governments, regulators, educators, and northern communities. Their participation ensures the Forum, the NWT's largest annual conference, remains grounded in the realities of northern priorities—supporting responsible resource development, improved land-use decision-making, and a stronger shared understanding of the NWT's mineral potential. The Geophysicist may also represent the NTGS at national and international technical and intergovernmental forums relevant to their area of expertise and participates in the broader land and resource management regime grounded in settled land-claim and self-government agreements, particularly as these address land-use planning, environmental assessment, and economic measures under land claims.

Overall, the Geophysicist's portfolio combines scientific excellence with applied service delivery, regulatory support, and collaborative partnership to advance responsible resource development, sustain economic opportunity, support land-use decisions, and maintain the long-term credibility of government geoscience in the Northwest Territories.

RESPONSIBILITIES

1. **Designs, procures, and conducts geophysical surveys, and compiles and enhances existing geophysical datasets to advance understanding of the subsurface geophysical framework of the NWT.**
    - Designs and executes new airborne and ground geophysical surveys by identifying priority areas, developing technical specifications, and overseeing data acquisition, processing, and interpretation to produce authoritative geophysical products for public release.

- Secures external funding for geophysical surveys by developing technically sound proposals and maintaining productive relationships with co-funding partners, including federal agencies and other geological surveys, ensuring survey programs are positioned within territorial and national geoscience priorities.
- Systematically extracts, reprocesses, and enhances geophysical data from industry assessment and representation work reports, producing regional compilations and derivative products that add public value beyond the original submissions.
- Integrates geophysical datasets with geological, geochemical, and remote sensing information to develop interpretive products that support mineral deposit characterization, regional geological framework studies, and resource assessments conducted by NTGS geoscientists and external users.
- Publishes geophysical results as NTGS Open File/Open Report products, contributes to peer-reviewed literature, and maintains scientific integrity by ensuring all products are defensible, reproducible, and meet accepted geophysical standards.

2. Provides geophysical expertise to support the administration of geoscience-related provisions of mineral resource legislation.

- Reviews the geophysical content of assessment and representation work reports and other prescribed submissions when assigned by the Assessment Geologist, evaluating survey design, data quality, processing methodology, and interpretation adequacy, and communicating technical findings and recommendations to the Manager or designated authority.
- Contributes geophysical expertise to developing technical standards and guidelines for geophysical data submission under the NWT Mineral Resource Act (MRA) and NWT Mining Regulations, including specifications for digital data formats, metadata requirements, and minimum survey quality standards.
- Supports the transition from the NWT Mining Regulations to the Mineral Resources Act by contributing to internal processes, proponent guidance, and training materials related to geophysical data submission and review requirements.

3. Translates, communicates, and applies geophysical knowledge and data products to support mineral exploration, resource assessment, and public decision-making.

- Provides authoritative geophysical advice and interpretation to NTGS colleagues, mineral exploration and mining companies, Indigenous governments and organizations, co-management bodies, other GNWT departments, and the public, making highly technical geophysical data accessible to non-specialist audiences.

- Provides geophysical input to environmental assessments, land use planning processes, and regulatory proceedings where subsurface geophysical information is relevant to decision-making.
- Presents geophysical research findings and data products at scientific conferences, industry forums, community meetings, and stakeholder workshops, and contributes geophysical content to NTGS communications and outreach materials.
- Guides industry and external stakeholders on geophysical survey design, data collection standards, and interpretation approaches to support effective mineral exploration in the NWT.
- Engages with Indigenous governments and community organizations on matters related to geophysical survey programs within their traditional territories, ensuring engagement is respectful, timely, and consistent with obligations under land claim and self-government agreements and aligned with the GNWT's implementation of the United Nations Declaration on the Rights of Indigenous People.

4. **Manages survey contracts, project-level resources, geophysical data systems, and field operations to support effective geophysical program delivery.**
   - Participates in the full procurement cycle for geophysical survey contracts including: technical specification development, RFP preparation, proposal evaluation, contractor selection, deliverable review, and quality assurance, in compliance with GNWT procurement requirements and in consultation with procurement shared services.
   - Manages the NTGS geophysical data repository, specialized processing software, and associated metadata systems, ensuring data quality, accessibility, long-term preservation, and consistency with emerging geoscience data standards under the MRA.
   - Plans and manages field logistics for ground geophysical surveys and oversees contractor field operations for airborne surveys, including safety, schedule monitoring, and on-site or remote quality control of data acquisition.
   - Manages project-level budgets, tracks expenditures against approved work plans, administers contribution agreements with co-funding partners, and provides financial reports to the Manager.
   - Maintains project files, survey metadata, raw and processed data archives, and associated records in accordance with GNWT information management policies, ensuring the long-term integrity and retrievability of geophysical program outputs.

5. **Contributes geophysical expertise to NTGS, departmental, and intergovernmental initiatives to support alignment of programs with policy objectives and collaborative management frameworks.**

   - Participates in NTGS planning processes, contributing geophysical expertise to multi-year survey strategies, setting priorities for data acquisition and compilation, and identifying collaboration opportunities with other geological surveys and funding agencies.
   - Represents the NTGS on technical working groups, committees, or advisory bodies related to geophysical survey standards, national geoscience data infrastructure, and interjurisdictional survey coordination (e.g., GSC, provincial/territorial survey partnerships), as assigned by the Manager.
   - Contributes geophysical input to departmental and interdepartmental initiatives where subsurface geophysical information is relevant — including critical minerals strategies, infrastructure corridor planning, and land use planning exercises.
   - Maintains awareness of evolving policy priorities, land claim obligations, and governance frameworks that affect NTGS geophysical programs, and incorporates this awareness into survey planning and stakeholder engagement.
   - Contributes to a collaborative, inclusive, and supportive working environment within the NTGS.

WORKING CONDITIONS

Physical Demands

Office work involves minimal physical demands.

Fieldwork involves sustained physical exertion over extended periods, including hiking over rough and uneven terrain for full workdays while carrying field equipment and geological samples (with individual loads up to 25 kg) for 8 hours a day. Field operations also require participation in physically demanding logistical activities typical of remote camps, such as equipment handling, camp setup, loading and unloading vehicles, boats and aircraft. The physical demands are experienced daily during field deployments, which may extend several consecutive weeks.

Environmental Conditions

Normal office environment for most of the year, with periodic extended field deployments of up to approximately eight weeks annually in remote locations.

During fieldwork, the incumbent is regularly exposed to uncontrolled outdoor environments and occupational hazards inherent to remote operations including: rapid and adverse changing

weather; uneven terrain; aviation-supported, off-road and/or marine travel; wildlife and other safety risks. These conditions are experienced daily during field deployments.

Sensory Demands
Normal office environment outside of the field season.

Field work requires sustained vigilance, situational awareness, and a heightened state of alertness to the safety of the team and operations in dynamic, potentially hazardous environments. Workdays may be extended requiring continues monitoring of environmental and operational conditions. The incumbent is subject to impacts associated with long hours of field work (e.g. fatigue). These demands are present throughout field assignments.

Mental Demands
Ongoing management of multiple concurrent responsibilities including scientific leadership, regulatory oversight, human and financial resource management and stakeholder engagement, often under time constraints.

During field deployments, the incumbent assumes continuous responsibility for scientific decision-making, logistical coordination, and staff safety, requiring real-time judgment under conditions of uncertainty and risk. The incumbent is also subject to substantial disruption of family life. These demands are experienced daily during field assignments, which may extend for a couple of months.

The incumbent is also responsible for the timely delivery of reports and results, presenting research or work plans to scientific peers, collaborators, community groups, etc. and attending geoscience meetings in Southern Canada two to four times per year.

KNOWLEDGE, SKILLS AND ABILITIES

- 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.
- Knowledge of current geophysical academic research and method or technology developments.
- Analytical, organizational, and evaluation skills to implement or interpret regional-scale geophysical projects.
- Knowledge of geophysical software including software for geophysical data processing, database applications, visualization and data verification software, and modeling and numerical methods software.

- Knowledge of modern geoscience data systems, GIS, databases, analytical tools, and digital information delivery platforms sufficient to support data stewardship and dissemination.
- Knowledge of the legal, ethical, and professional obligations of a registered professional geoscientist (P.Geo.), including standards of independence, impartiality, and evidence-based decision making.
- Knowledge of federal and territorial legislation, regulations, and policy frameworks governing mineral exploration, mining, and field-based research and operations, and the role of geoscience within regulatory systems.
- Knowledge of how scientific evidence informs government policy, regulatory decision-making, and public interest outcomes.
- Knowledge of the balance between scientific independence and the organizational mandate of public geoscience dissemination.
- Knowledge of intergovernmental roles, responsibilities, and collaboration mechanisms under geoscience accords and related agreements.
- Working knowledge of human resource and financial frameworks sufficient to support compliant procurement, contracting, and reporting for assigned activities.
- Knowledge of health, safety, and risk management principles related to remote field operations, including ensuring appropriate training, planning, and mitigation measures.
- Knowledge of standard office and project management tools required to deliver complex programs and reporting obligations.
- Data management skills to organize, archive, and disseminate large volumes of geological information.
- Field skills grounded in best practices in safety management and geoscience research.
- Skills in scientific writing, peer review, and quality assurance to ensure authoritative, defensible public-sector geoscience outputs.
- Interpersonal and relationship-building skills to establish and maintain effective working relationships with Indigenous Governments and Organizations, industry, academia, other governments, and internal stakeholders.
- Demonstrated skills in geophysical surveys, writing and reviewing geoscience technical reports and publications, collaborating effectively with research teams, and presenting the results of their original scientific work to colleagues and stakeholders.
- Ability to develop sound geological interpretations by incorporating geological knowledge, field and laboratory data, and reference materials.
- Ability to co-develop, execute, and report on geoscience projects within budget and on schedule.
- Ability to anticipate emerging issues, opportunities, and risks affecting geoscience programs and to adapt strategies accordingly.
- Ability to mentor and develop junior scientists and students, including coaching in field methods, data management, and scientific communication and writing techniques.
- Ability to work independently and in collaboration with others in a team.

- Ability to foster a collaborative, respectful, and inclusive workplace that values teamwork, and knowledge sharing, while maintaining high scientific and ethical standards.
- Ability to facilitate and participate in solution-focused meetings and workshops.
- Ability to leverage external and intergovernmental partnerships and funding sources to deliver cost-effective geoscience programs.
- Ability to communicate complex scientific concepts, evidence, and uncertainty clearly and credibly to a range of audiences, including senior decision-makers, regulators, scientific peers, Indigenous Organizations, and non-technical audiences.
- Ability to translate scientific programs and results into information, tools, and practices applicable across disciplines and policy domains.
- Ability to commit to actively upholding and consistently practicing personal diversity, inclusion and cultural awareness, as well as safety and sensitivity approaches in the workplace.

Typically, the above qualifications would be attained by:

A Master of Science degree in Geophysics and three years of work experience in industry, academia, or a government agency in a related capacity.

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

Equivalent combinations of education and experience will be considered.

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

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