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%	The symbol for percent.
°	The symbol for degrees.
°C	The symbol for degrees Celsius.
>	The symbol for greater than.
<	The symbol for less than.
±	The symbol for plus or minus.
φ	The symbol for porosity.
2-D	The abbreviation for two-dimensional.
3-D	The abbreviation for three-dimensional.
a	The metric symbol for year.
<b>abandonment</b>	The act of permanently stopping operations, discontinuing service, removing facilities and restoring land to a productive state.
<b>Aboriginal person</b>	Any Indian, Inuit or Métis person who was born in the Northwest Territories or who is descended from an Aboriginal person born in the Northwest Territories.
<b>access road</b>	A temporary, permanent or winter road that provides access to a facility, camp site, borrow site, barge landing site or a pipeline right-of-way and that is not open to the public.
<b>adfreezing</b>	The process by which one object adheres to another by the binding action of ice.
<b>AERT</b>	The abbreviation for area emergency response team.
<b>airstrip</b>	A strip of ground suitable for the takeoff and landing of aircraft.
<b>all-weather road</b>	A paved or unpaved, i.e., gravel, road that is open to traffic all year.
<b>ambient conditions</b>	The pressure, temperature and humidity of the medium surrounding an object, usually referring to room temperature and atmospheric pressure conditions.

## GLOSSARY

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<b>anchor fields</b>	The three natural gas fields, Taglu, Niglintgak and Parsons Lake, whose production will provide the initial volume of gas shipped in the Mackenzie Valley pipeline.
<b>ANSI</b>	The abbreviation for American National Standards Institute.
<b>anticline</b>	Rock layers folded in the shape of an arch, in which the strata slope down from the crest. Anticlines sometimes trap oil and gas.
<b>API</b>	The abbreviation for American Petroleum Institute.
<b>ASME</b>	The abbreviation for American Society of Mechanical Engineers.
<b>ASTM</b>	The abbreviation for American Society for Testing and Materials.
<b>bb/d</b>	The abbreviation for barrels per day.
<b>Bcf</b>	The abbreviation for billion cubic feet.
<b>blowdown</b>	The act of emptying or depressurizing material in a vessel or pipeline.
<b>blowout preventer stack</b>	The assembly of well control equipment, including preventers, spools, valves and nipples, connected to the top of the wellhead.
<b>BOP</b>	The abbreviation for blowout preventer.
<b>borrow material</b>	Earth material, such as gravel or sand, that is taken from one location to be used as fill at another location.
<b>borrow site</b>	An area that could be excavated to provide material, such as gravel or sand, to be used, where required, by the project.
<b>bottomhole</b>	The lowest or deepest part of a well.
<b>C<sub>1</sub></b>	The chemical formula for methane.
<b>C<sub>2</sub></b>	The chemical formula for ethane.
<b>C<sub>3</sub></b>	The chemical formula for propane.
<b>C<sub>4</sub></b>	The chemical formula for butane.
<b>C<sub>5</sub></b>	The chemical formula for pentane.
<b>C<sub>6+</sub></b>	The chemical formula for hexane plus.
<b>C-Band</b>	A telecommunication frequency range allocated by the International Telecommunications Union (ITU) for use by satellites in geostationary orbit above the equator.

## GLOSSARY

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<b>carbonate</b>	A sedimentary rock composed primarily of calcium carbonate (calcite) or calcium and magnesium carbonate (dolomite).
<b>casing string</b>	The entire length of all the casing joints run in a well.
<b>CEAA</b>	The abbreviation for <i>Canadian Environmental Assessment Act</i> . Also, the abbreviation for the Canadian Environmental Assessment Agency.
<b>centroid</b>	The point whose coordinates are the mean values of the corresponding coordinates of points in a given set.
<b>chert</b>	A variety of silica with a microcrystalline structure.
<b>Class G cement</b>	The abbreviation for API Class G oil well cement.
<b>cm</b>	The metric symbol for centimetre.
<b>CO<sub>2</sub></b>	The chemical formula for carbon dioxide.
<b>COGOA</b>	The abbreviation for the <i>Canada Oil and Gas Operations Act</i> .
<b>combustion turbine</b>	A heat engine that converts the energy of fuel into work by using compressed, hot gas as the working medium, and that usually delivers its mechanical output through a rotating shaft. Also known as a <i>gas turbine</i> .
<b>commissioning</b>	The act of charging a system and conducting tests to ensure that the system functions safely before start-up.
<b>continuous permafrost</b>	A category of permafrost where more than 90% of all ground is frozen. Permafrost distribution along the Mackenzie Valley varies from extensive and continuous in the north to discontinuous and sporadic in the south.
<b>Cooperation Plan</b>	The abbreviation for the <i>Cooperation Plan for the Environmental Impact Assessment and Regulatory Review of a Northern Gas Pipeline Project through the Northwest Territories</i> .
<b>Cretaceous</b>	The geological period between about 144 and 65 million years before present.
<b>CSA</b>	The abbreviation for Canadian Standards Association.
<b>custody transfer</b>	The process of changing ownership of, or responsibility for, quantities of gas, petroleum or petroleum products.
<b>custody transfer meter</b>	A flow meter that measures the minimum and maximum flow rates, operating pressures and temperatures of a pipeline's contents at the point of custody transfer. Any losses or gains resulting from inaccurate measurement of a custody-transfer meter are the responsibility of the pipeline company.

## GLOSSARY

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<b>DCS</b>	The abbreviation for distributed control system.
<b>decommissioning</b>	The act of taking a processing plant or facility out of service and isolating equipment to prepare for routine maintenance work, suspending or abandoning.
<b>delta</b>	An alluvial deposit, usually triangular, at the mouth of a river, stream or tidal inlet.
<b>detailed engineering</b>	The phase in a project that involves creating equipment specifications, detailed construction drawings and related engineering documents.
<b>development plan</b>	A plan relating to a proposed development of a pool or field according to Section 5.1 of the <i>Canada Oil and Gas Operations Act</i> .
<b>dew point</b>	The temperature at which a liquid, e.g., water vapour, at a specified pressure, begins to condense from gas.
<b>directional drilling</b>	A drilling method in which the wellbore intentionally deviates from the vertical.
<b>discontinuous permafrost</b>	A category of permafrost where some of the underlying ground is unfrozen. Permafrost distribution along the Mackenzie Valley varies from extensive and continuous in the north to discontinuous and sporadic in the south.
<b>dock</b>	A berth or wharf, or an artificially enclosed body of water, for loading and unloading ships and barges.
<b>downhole</b>	Pertaining to the wellbore.
<b>DPA</b>	The abbreviation for development plan application.
<b>DST</b>	The abbreviation for drill stem test.
<b>EIS</b>	The abbreviation for Environmental Impact Statement.
<b>EM<sup>power</sup></b>	A proprietary reservoir simulator, trademarked by ExxonMobil Upstream Research Company.
<b>Eocene Reindeer Delta</b>	A delta deposited as part of the Reindeer Sequence of sediments during the Eocene Epoch (55 to 38 million years ago).
<b>EPA-NWT</b>	The abbreviation for Electrical Protection Act of the Northwest Territories.
<b>EPC</b>	The abbreviation for engineering, procurement and construction.
<b>ESD</b>	The abbreviation for emergency shutdown.

## GLOSSARY

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<b>expected ultimate recovery</b>	The total production of gas predicted from the reservoir simulation model.
<b>Firm Service Transportation Agreement</b>	A contractual agreement that provides for the delivery of natural gas up to a specific maximum daily quantity. The shipper must pay a monthly demand charge, regardless of the volumes transported, and a commodity charge for the volumes actually transported.
<b>flare stack</b>	A chimney used to dispose of surplus hydrocarbon gases by igniting them in the atmosphere.
<b>flash drum</b>	A vessel in which volatile liquids are vaporized, by either heat or vacuum.
<b>fluvial</b>	Relating to, or produced by, the action of a stream or river.
<b>footprint</b>	The size and shape of an area that is disturbed.
<b>FTD</b>	The abbreviation for final total depth.
<b>gas pipeline</b>	The proposed gas pipeline that would extend from the Inuvik area facility, parallel to the NGL pipeline along the Mackenzie River to Norman Wells, and continue south to connect to an extension of the NGTL Alberta system south of the Northwest Territories–Alberta boundary. Also known as the <i>Mackenzie Valley pipeline</i> .
<b>gas turbine</b>	A heat engine that converts the energy of fuel into work by using compressed, hot gas as the working medium, and that usually delivers its mechanical output through a rotating shaft. Also known as a <i>combustion turbine</i> .
<b>gathering system</b>	A system of pipelines and related facilities that include four gathering pipelines, the Inuvik area facility, the NGL pipeline and related facilities, such as valves, pig launchers and receivers.
<b>Geostationary Orbit Satellite network</b>	A network of communications satellites positioned around the earth 35,786 km above the equator. The satellites remain at the same location in the sky relative to a position on earth so that an earth station antenna, once it is aimed at a geostationary satellite, does not have to follow the satellite across the sky.
<b>geotechnical</b>	Pertaining to the application of scientific methods and engineering principles to civil engineering problems, by acquiring, interpreting and using knowledge of materials of the earth's crust.
<b>geothermal</b>	Pertaining to heat within the earth.
<b>Gm<sup>3</sup></b>	The metric symbol for billion cubic metres.
<b>GNWT</b>	The abbreviation for Government of the Northwest Territories.

## GLOSSARY

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<b>granular material</b>	Material deposits that have a granulated surface or structure, such as gravel.
<b>GST</b>	The abbreviation for goods and services tax.
<b>H<sub>2</sub>S</b>	The chemical formula for hydrogen sulphide.
<b>HAZOP</b>	The acronym for hazard and operability review.
<b>HVAC</b>	The abbreviation for heating, ventilation and air conditioning.
<b>hydrate, gas</b>	A mixture of water and gas that forms a solid plug in a gas pipeline under certain conditions.
<b>hydraulics</b>	The branch of science and technology concerned with the mechanics of fluids, especially liquids.
<b>ice road</b>	A secondary road made of compact snow or ice, often ploughed over a frozen lake or ground, and that is impassable in the summer. Also known as a <i>winter road</i> .
<b>IEEE</b>	The abbreviation for Institute of Electrical and Electronic Engineers.
<b>IFR</b>	The abbreviation for instrument flight regulations.
<b>illite</b>	The name of a common group of clay minerals.
<b>INAC</b>	The abbreviation for Indian and Northern Affairs Canada.
<b>infrastructure</b>	Basic facilities, such as transportation, communications, electric power supplies and buildings, that enable an organization, project or community to function.
<b>inlet separator</b>	A vessel designed to receive commingled fluids produced from production wells and to separate them by gravity into their constituent components of raw gas, natural gas liquids and water.
<b>Inuvialuit Final Agreement</b>	Agreements to clarify the rights of Aboriginal groups to land and resources, negotiated in a way that facilitates their economic growth and self-sufficiency. Such claims are negotiated in areas where Aboriginal title has not been dealt with by treaty or other legal methods.
<b>Inuvik area facility</b>	The facility near Inuvik that processes and separates gas and NGLs delivered from the gathering pipelines and that directs the processed streams to the NGL and gas pipelines.
<b>IOE</b>	The abbreviation for Imperial Oil Enterprises.
<b>ITP</b>	The abbreviation for Inspection and Test Plan.

## GLOSSARY

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<b>Joint Review Panel</b>	A panel established according to the Agreement for an Environmental Impact Review of the Mackenzie Gas Project.
<b>k</b>	The symbol for permeability.
<b>kaolinite</b>	A common clay mineral formed during the chemical breakdown of feldspar minerals.
<b>kg/kg mole</b>	An expression of the molecular weight of a substance.
<b>kg/m<sup>3</sup></b>	The metric symbol for kilograms per cubic metre.
<b>km</b>	The metric symbol for kilometre.
<b>kPa</b>	The metric symbol for kilopascal.
<b>L-Band</b>	A telecommunication frequency range allocated by the International Telecommunications Union (ITU) for use by satellites in low earth orbit (about 800 km from the surface of the earth).
<b>lateral, pipeline</b>	A gathering pipeline that connects the production area facilities to the Inuvik area facility.
<b>laydown area</b>	An area for placing pipe or tubing in a horizontal position on a pipe rack, or for storing other construction materials temporarily.
<b>litharenite</b>	A variety of sandstone that contains abundant rock fragment grains.
<b>lock-down hanger</b>	A device for suspending casing or tubing in a well, which has a mechanism to prevent upward movement.
<b>logistics</b>	The activities associated with procuring, maintaining and transporting materials, equipment and personnel.
<b>low earth orbit satellite</b>	A satellite whose orbit is about 800 km from the surface of the earth.
<b>Mackenzie Valley pipeline</b>	The proposed gas pipeline that would extend from the Inuvik area facility, parallel to the NGL pipeline along the Mackenzie River to Norman Wells, and continue south to connect to an extension of the NGTL Alberta system south of the Northwest Territories–Alberta boundary. Also known as the <i>gas pipeline</i> .
<b>m<sup>3</sup></b>	The metric symbol for cubic metres.
<b>m<sup>3</sup>/d</b>	The metric symbol for cubic metres per day.
<b>MD</b>	The abbreviation for measured depth.
<b>mD</b>	The abbreviation for millidarcy.

## GLOSSARY

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<b>metasandstone</b>	Sandstone that has undergone metamorphism.
<b>metashale</b>	A shale that has undergone the earliest stages of metamorphism.
<b>mitigate</b>	To cause to become less harsh or hostile.
<b>mitigation</b>	The elimination, reduction or control of a project's adverse effects, including restitution for any damage caused to the environment by such effects through avoidance, replacement, restoration, compensation or other means.
<b>mm/a</b>	The metric symbol for millimetres per year.
<b>Mm<sup>3</sup></b>	The metric symbol for millions of cubic metres.
<b>Mm<sup>3</sup>/d</b>	The metric symbol for millions of cubic metres per day.
<b>MNR</b>	The abbreviation for Mackenzie Northern Railway.
<b>MOC</b>	The abbreviation for management of change.
<b>mol%</b>	The abbreviation for mole percent.
<b>mole</b>	The base unit of an amount of a pure substance in the International System of Units that contains the same number of elementary entities as there are atoms in exactly 12 grams of the isotope carbon 12.
<b>molecular sieve</b>	A synthetic zeolite, packaged in bead or pellet form, used in recovering contaminants or impurities from liquid and vapour product streams by selected adsorption, and as a catalyst.
<b>molecular sieve dehydration process</b>	A process to remove water from gas by passing the gas through a unit containing a molecular sieve material.
<b>Monte Carlo simulation</b>	A statistical method of using the random sampling of numbers to estimate the solution to a numerical problem.
<b>MPa</b>	The metric symbol for megapascal.
<b>Mscf/d</b>	The abbreviation for million standard cubic feet per day.
<b>msec</b>	The abbreviation for millisecond.
<b>mSS</b>	The abbreviation for metres subsea.
<b>MW</b>	The abbreviation for megawatt.
<b>N<sub>2</sub></b>	The chemical formula for nitrogen.

## GLOSSARY

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<b>natural gas</b>	A compressible mixture of hydrocarbons with a low specific gravity that occurs naturally in a gaseous form.
<b>natural gas liquids</b>	Hydrocarbons that are gaseous in the reservoir, but that will separate out in liquid form at the pressures and temperatures at which separators normally operate. The liquids consist of varying proportions of butane, propane, pentane and heavier fractions, with little or no methane or ethane.
<b>NBCC</b>	The abbreviation for the National Building Code of Canada.
<b>NEB</b>	The abbreviation for National Energy Board.
<b>NGL</b>	The abbreviation for natural gas liquid.
<b>NGTL</b>	The abbreviation for NOVA Gas Transmission Ltd.
<b>NPS</b>	The abbreviation for nominal pipe size.
<b>NTG</b>	The abbreviation for net-to-gross.
<b>ob</b>	The abbreviation for overburden.
<b>OGIP</b>	The abbreviation for original gas-in-place.
<b>permafrost</b>	Perennially frozen ground, occurring wherever the temperature remains below 0°C for several years.
<b>PETREL</b>	An industry geological modelling software package.
<b>phyllite</b>	A fine-grained, low-grade metamorphic rock that is aluminium rich and has a well-developed planar alignment of platy minerals.
<b>pig</b>	An in-line scraper, i.e., brush, blade cutter or swab, that is forced through a pipeline by fluid pressure. The pig is used to remove scale, sand, water and other foreign matter from the interior surfaces of the pipe.
<b>pigging</b>	The act of pushing a pig through a pipeline to physically clean deposits from the inner surface of the pipeline, to remove liquids or to conduct internal inspections of the pipeline.
<b>pigging facilities</b>	Facilities for launching and receiving pigs.
<b>PIP</b>	The abbreviation for Preliminary Information Package.
<b>polished bore receptable</b>	A device made up in the casing string into which the bottom of the tubing string is placed or landed.
<b>PPA</b>	The abbreviation for project permit application.
<b>ppm</b>	The abbreviation for parts per million.

## GLOSSARY

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<b>ppmw</b>	The abbreviation for parts per million by weight.
<b>Precedent Agreement</b>	A conditional agreement between the shipper and the transporter that outlines the conditions leading the parties to enter into a Firm Service Transportation Agreement, once the conditions have been satisfied.
<b>proponent</b>	The organization, Imperial Oil Resources Limited, that is undertaking the Taglu field development.
<b>Proterozoic metasediment</b>	A sedimentary rock from the Proterozoic Period that has undergone the earliest stages of metamorphism.
<b>psi</b>	The abbreviation for pounds per square inch.
<b>psig</b>	The abbreviation for pounds per square inch gauge.
<b>PSTM</b>	The abbreviation for pre-stack time migration.
<b>PVT</b>	The abbreviation for pressure, volume and temperature.
<b>Q1</b>	The abbreviation for the first quarter of the year (January 1 to March 31).
<b>Q2</b>	The abbreviation for the second quarter of the year (April 1 to June 30).
<b>Q3</b>	The abbreviation for the third quarter of the year (July 1 to September 30).
<b>Q4</b>	The abbreviation for the fourth quarter of the year (October 1 to December 31).
<b>RAM</b>	The abbreviation for reliability, availability and maintainability.
<b>raw gas</b>	Unprocessed gas or the inlet gas to a plant.
<b>receipt meter stations</b>	A measuring meter and its accessories situated at an entry point to a pipeline.
<b>reclamation</b>	The process of re-establishing a disturbed site to a former or other productive use, not necessarily to the same condition that existed before disturbance. The land capability may be at a level different, i.e., lower or higher, than that which existed before the disturbance, depending on the goal of the process. Reclamation includes the management of a contaminated site and revegetation, where necessary. Reclamation is not considered complete until the goals for reclamation have been achieved.
<b>recompletion</b>	After the initial completion of a well, the action and techniques of re-entering the well and redoing or repairing the original completion to restore the well's productivity.
<b>reservoir</b>	A subsurface, porous, permeable rock body containing a natural accumulation of oil or gas, or both.

## GLOSSARY

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<b>resources</b>	Those quantities of petroleum estimated on a given date to be potentially recoverable from known accumulations, but that are not currently considered to be commercially recoverable.
<b>RFT</b>	The abbreviation for repeat formation test.
<b>rho</b>	The Greek letter ( $\rho$ ) that symbolizes the bulk density of rock.
<b>Richards Sequence</b>	An associated group of sediments deposited in the Beaufort–Mackenzie region during the Late Eocene Epoch.
<b>right-of-way</b>	The right of passage or of crossing over someone else’s land. Also, an easement in lands belonging to others that is obtained by agreement or lawful appropriation for public or private use.
<b>routine core analysis</b>	A method of measuring porosity and permeability with air at standard conditions.
<b>saddle spill</b>	A low point defining the maximum fluid fill limit of a structural closure.
<b>sand screen</b>	A pipe hung in the well casing that is perforated and arranged with a wire wrapping to reduce the entry of sand particles into the wellbore.
<b>SCADA</b>	The abbreviation for supervisory control and data acquisition.
<b>SCAL</b>	The abbreviation for special core analysis.
<b>Scheuerle trailer</b>	A low bed, self-elevating transporter with many wheels to reduce ground pressure, used to move process equipment.
<b>schist</b>	A medium- to coarse-grained metamorphic rock composed dominantly of mica minerals arranged with subparallel orientation.
<b>SCSSSV</b>	The abbreviation for surface-controlled subsurface safety valve.
<b>SDL</b>	The abbreviation for Significant Discovery Licence.
<b>Sg</b>	The abbreviation for gas saturation.
<b>SG</b>	The abbreviation for specific gravity.
<b>shutdown</b>	The act of stopping work temporarily or stopping a machine or piece of equipment in operation.
<b>Significant Discovery Licence</b>	A licence, issued under the provisions of the <i>Canada Petroleum Resources Act</i> , that allows the licence holder to explore, drill and test for petroleum and to develop frontier lands to produce petroleum.
<b>skin value</b>	A ratio of the pressure drop in the damaged or stimulated region around a wellbore compared with the pressure drop in the undamaged area.

## GLOSSARY

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<b>smectite</b>	A variety of green clay mineral.
<b>special core analysis</b>	An analysis of a core sample involving the determination of electrical properties, and capillary pressure and relative permeability values.
<b>spurious trip</b>	A shutdown in operations initiated by a false reading of an ESD device.
<b>SSSV</b>	The abbreviation for subsurface safety valve.
<b>start-up</b>	The act of starting up new machinery or equipment after commissioning, or re-starting machinery or equipment after a temporary shutdown or decommissioning.
<b>suction scrubber</b>	A vessel situated at the inlet of a compressor or other equipment, through which fluids are passed to remove entrained liquids or solids at a given location.
<b>sweet natural gas</b>	Gas that has no more than the maximum sulphur content, as defined by the specifications for the sales gas from a plant or by a legal body.
<b><math>S_{w(irr)}</math></b>	The abbreviation for irreducible water saturation.
<b>syncline</b>	A fold in rocks in which the strata dip inward from both sides toward the axis. The opposite of an anticline.
<b>Tcf</b>	The abbreviation for trillion cubic feet.
<b>TDG</b>	The abbreviation for transportation of dangerous goods.
<b>topography</b>	The configuration of a surface, including its relief and natural and artificial features.
<b>topseal</b>	An overlying impermeable zone, which seals a hydrocarbon accumulation.
<b>tubing</b>	Relatively small-diameter pipe that is run into a well to serve as a conduit for the passage of oil and gas to the surface.
<b>TVD</b>	The abbreviation for true vertical depth.
<b>TWT</b>	The abbreviation for two-way time.
<b>UPS</b>	The abbreviation for uninterruptible power supply.
<b><math>V_0</math>k method</b>	A method of converting seismic travel times to depth using a starting velocity, $V_0$ , and a mathematical function, $k$ , that defines the rate of velocity change with increasing depth.
<b>VHF</b>	The abbreviation for very high frequency.
<b><math>V_{sh}</math></b>	The abbreviation for shale volume.

## GLOSSARY

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<b>wellbore</b>	The hole drilled by the bit in a well.
<b>wind rose</b>	A depiction of wind speed and direction statistics over a period of time at a given location.
<b>winter road</b>	A secondary road made of compact snow or ice, often ploughed over a frozen lake or ground, and that is impassable in the summer. Also known as an <i>ice road</i> .
<b>wireline</b>	A slender, small diameter, rod-like or thread-like piece of metal that is used for lowering special tools, such as perforating guns, into a well.
<b>workover</b>	One or more of a variety of remedial operations performed on a producing oil or gas well, to try to increase production.

## GLOSSARY

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