Glossary

**Adhesion**-the frictional grip between wheel and rail.

**Adhesive weight**-the sum of driving wheel loads.

**Air brake**-power braking system with compressed air as the operating medium.

**Alternating current (ac)-**electric current which reverses its direction flow at rapid and regular intervals.

**Alternator**-a machine which converts mechanical energy to electrical energy and generates alternating current.

**Armature**-the rotating part of a direct current electric motor or generator. Contains a number of coils, or windings, which rotate in a magnetic field and are connected to the commutator.

**Axle box**-box shaped housing containing axle bearing.

**Ballast**-material placed between the sleepers and formation of railroad track to distribute the load of passing traffic.

**Catenary**-supporting cable for the contact or conductor wire of an overhead electrification system.

**Circuit breaker**-automatic switch for making and breaking an electrical current.

**Boiler**-steam producing unit. Locomotive type consists essentially of a fire box surrounded by a water space in which the combustion of fuel takes place, and barrel containing the flue tubes surrounded by water.

**Collector Shoe**-metal block in contact with conductor rail for collecting current from third rail electrification system.

**Common carrier**-a transport organization which is not permitted to be selective in the freight accepted for conveyance.

**Consist**-composition or make-up of a train.

**Crank**-device for converting rotary to reciprocating motion or vice versa. Consists of an arm, one end of which is fixed to a shaft and the other free to rotate about the axis of the shaft.

**Diesel**-compression ignition, internal combustion engine.

**Direct current (dc)-**electrical current which flows in one direction continuously.

**Direct drive**-direct mechanical connection between output end of prime mover and driving wheels of locomotive.

**Drive**-transmission of power.

**Dynamic braking**-system of braking utilizing the braking characteristics of engine compression, transmission or traction motors.

**Eccentric**-disc, keyed to axle, whose center does not coincide with that of the axle. It rotates an eccentric strap, to which is attached the eccentric rod, and imparts reciprocating motion for operating the steam distribution valve.

**Exhaust steam**-emission of steam from cylinder after completion of the working stroke.

**Expansion of steam**-increase in volume of steam in the cylinder after the supply has been cut off. The ability to take maximum advantage of the expansive qualities of steam results in economies in the consumption of fuel and water.

**Firebox**-part of a steam locomotive boiler where combustion of fuel takes place.

**Flange**-projecting edge or rim on the periphery of a wheel or rail.

**Frame**-foundation or chassis upon which a locomotive is built.

**Frequency**-number of times a second an alternating current reverses its direction of flow.

**Gas turbine**-rotary internal combustion machine which is driven by gas flow thus causing varied disc(s) mounted on common shaft to turn at high speed.

**Gauge**-the distance between running edges or inner faces of rails of railway track.

**Generator**-electrical machine which changes mechanical energy. Term generally applied to one which produces direct current.

**Grade**-slope or inclination to the horizontal of a railway. Expressed as a percentage of unit rise or fall to the horizontal or slope length.

**Heating surface**-areas of locomotive boiler exposed to heat on one side and available for water evaporation on other.

**Hot box**-an overheated vehicle axlebox bearing resulting from breakdown of lubricating film between bearing and journal.

I**njector**-device for forcing water into the boiler of a steam locomotive; also a device for feeding atomized fuel oil into cylinder or combustion chamber of a diesel engine.

**Journal**-area of shaft or axle supported by a bearing.

**Live rail**-electrical conductor for transmitting power to locomotives or train on third rail electrified lines.

**Motion**-a moving mechanism; the valve gear of a steam locomotive.

**Motor generator set**-electric motor and generator mechanically coupled for the purpose of converting direct current from one voltage to another.

**Multiple unit**-two or more locomotives or powered vehicles coupled together, or in a train, operated by only one driver.

**Narrow gauge**-railway track of less than standard gauge.

**Nose suspended motor**-traction motor mounted on bearings on an axle being drive with a “nose” resiliently fixed to bogie cross member to prevent rotation round axle. Gear on axle is in constant mesh with pinion on armature shaft.

**Overhead**-catenary and contact wire of a suspended electrical distribution system.

**Pantograph**-link between overhead contact system and power circuit of an electric locomotive. Simplest form is spring loaded pivoted diamond frame with copper or carbon contact strip.

**Pony truck**-two-wheel pivoted truck to assist the guidance of a locomotive around curves.

**Rack railway**-system used on mountain railways (and occasionally elsewhere) where gradients exist to steep for the normal adhesion between wheel and rail to effective. A pinion on the locomotive engages in a rack fixed to the track. The rack can consist of either of a longitudinal series of steel teeth or rungs of gear-tooth profile fixed to side members like the rungs of a ladder.

**Railcar**-self-propelled passenger-carrying vehicle.

**Rapid transit**-system for high speed urban mass transport.

**Rectifier**-a device for converting alternating current to direct current.

**Regenerative brake**-electrical braking system whereby the traction motors of direct current electric locomotives work as generators and feed electrical energy back into supply system.

**Relay**-remotely controlled electromagnetic witch for low electrical currents.

**Roller bearing**-hardened steel cylinders located in a cage which revolve in contact with inner and outer races.

**Roundhouse**-locomotive shed in which the stabling tracks radiate from a turntable.

**Safety valve**-directly connected to the steam space of all boilers and set to operate automatically at a pre-determined pressure to release excess steam.

**Semiconductor**-material used in electric traction rectifiers, whose electrical resistance depends on the direction of the applied voltage. Germanium and silicon are typical examples.

**Series-parallel connection**-method of connecting traction motors whereby individual motors are connected in series to form groups and each group then connected in parallel.

**Series motor**-direct current electrical machine with ideal traction characteristics. Produces a high torque when the vehicle is started and as the load increases the speed drops.

**Single-phase**-single alternating electric current. One phase of three phase supply.

**Slip**-loss of adhesion between driving wheel and rail causing wheels to spin.

**Smoke box**-extension to barrel at front end of a locomotive boiler housing the main steam pipes to cylinders, blast pipe, blower ring and chimney.

**Supercharge**-supply air to the inlet valves of a diesel engine at above atmospheric pressure.

**Superheating**-increasing the temperature and volume of steam after leaving the boiler barrel by application of additional heat.

**Suspension**-connecting system, including springs, between vehicle wheel and body, designed to give best possible riding qualities by keeping un-sprung weights to a minimum and reducing shock loadings on track.

**Tank locomotive**-one which carries its fuel and water supplies on its own main frames.

**Third rail**-non-running rail carrying electrical current to electric locomotive or train.

**Three-phase**-simultaneous supply or use of three electrical currents of same voltage, each differing by a third in frequency cycle.

**Tire**-steel band forming periphery of a wheel, on which the flange and tread profile is formed.

**Train-pipe**-continuous air or vacuum brake pipe, with flexible connections between vehicles, through which operation of the train brake is controlled.

**Transformer**-device which by electromagnetic induction coverts one voltage of alternating current to another.

**Turbo-charger**-turbine, driven by the flow of exhaust gasses from a diesel engine coupled to a rotary compressor which supplies air at above atmospheric pressure to the engine- inlet valves.

**Vacuum brake**-braking system with atmospheric air pressure as operating medium.

**Valve gear**-mechanism which controls the operation of steam distribution valve in the steam chest of a locomotive cylinder. Stephenson, Walschaert, Baker and Southern are the valve gears most commonly seen.

**Vigilance device**-ensures the continued vigilance or alertness of the driver by requiring him to make a positive action at frequent intervals. Failure to do results in power being cut off and the brakes applied.

Glossary of North American Locomotives

Reference

*The Illustrated Encyclopedia of North American Locomotives*, Brian Hollingsworth (New York: Crescent Books, 1984)