

Mach—(After Ernst Mach, 1858 - 1916, Austrian physicist.) A unit of speed measurement for a moving object equal to the speed of sound in the medium in which the object moves.

Mass—A measure of the quantity of matter in a body.

Mass Ratio—Initial mass of a vehicle at the instant of liftoff divided by the final mass at some point of the powered ascent or at burnout and thrust cutoff.

Mechanical Border—That layer in the atmosphere where air resistance and friction become negligible (from 120 to 140 miles altitude).

Mesosphere—Applied to two different layers on the upper atmosphere: (1) a layer that extends approximately from 19 to 50 miles above the earth's surface; (2) a layer that extends approximately from 250 to 600 miles, lying between the ionosphere and the exosphere.

Metabolism—Chemical and physical processes continuously going on in living organism; assimilated food built up into protoplasm, used, and broken down into waste matter.

Micrometeoroid—Meteoroids less than 1/250th of an inch in diameter.

Miniaturized Data Interleaving System—Where several results are combined to indicate one single result - as in computers; a transistorized version.

Mission Time—Period of time for completing a mission.

Monopropellant—A rocket propellant in which the fuel and oxidizer are premixed ready for immediate use.

Moon—The natural celestial body that orbits as a satellite above the earth, revolving around it about once every 29-1/2 days, reflecting the sun. The moon's mean distance from the earth is about 238,857 miles. The moon's diameter is about 2160 miles and its mass about 1/81 that of earth and the volume about 1/49. Its mean velocity is about 2285 statute miles per hour, its apogee 252,710 miles, perigee 221,463 miles.

Multiplexing—The simultaneous transmission of two or more signals within a single channel. The three

basic methods of multiplexing involve the separation of signals by time division, frequency division, and phase division.

Noise (Radio Transmission)—The noise behind the signal, caused by the signal, but not including the signal; can be man-made or atmospheric.

Nose Cone—The shield that fits over, or is, the nose of an aerospace vehicle.

Nova—A star which undergoes a sudden and enormous increase in brightness; about twenty-five appear every year in our galaxy. Supernova is a star which explodes with a liberation of most of its energy into space.

Null-Circle—Theoretical point in space where gravitational attraction of one planet balances that of another planet. There can be no real null point, circle, or region because the solar system is dynamic; parts of it are always moving in relation to other parts.

Omnidirectional—All-directional, not favoring any one direction (also called nondirectional).

Optical Navigation—Navigation by optical means, as opposed to mathematical methods.

Orbital Curve—One of the tracks on a primary body's surface traced by a satellite that orbits about it several times a day in a direction other than true east or west, each successive track being displaced to the west by an amount equal to the degrees of rotation of the primary body between each orbit.

Oxidizer—In a rocket propellant, a substance such as liquid oxygen or nitric acid that yields oxygen for burning the fuel.

Ozone Layer—Layer in the atmosphere about 20 miles above sea level which strongly absorbs solar ultraviolet radiation.

Ozonosphere—A stratum in the upper atmosphere at an altitude of approximately 40 miles having a relatively high concentration of ozone.

Parabola—A conic section made by a plane intersecting a cone parallel to an element of the cone.

Parabola of Escape—Critical orbit in a central force field; the parabolic orbit is such that a body has escape velocity at every point along it.

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Parallax—The apparent displacement of an object, or the apparent difference in its direction of motion, if viewed from two different points.

Pendulous Accelerometer—A device employed to determine linear acceleration.

Pericyynthion—The point at which a satellite (e.g., a spacecraft) in its orbit is closest to the moon; differs from perilune in that the orbit is earth-originated.

Perigee—The point at which a moon or an artificial satellite in its orbit is closest to the earth

Perilune—The point at which a satellite (e.g., a spacecraft) in its orbit is closest to the moon; differs from pericynthion in that the orbit is moon-originated.

Perihelion—That point on an elliptical orbit around the sun which is nearest to the sun.

Photon—Minute particles which form streams to become light rays. These streams theoretically may be harnessed to power a spacecraft.

Photon Engine—A projected species of reaction engine in which thrust is to be obtained from a stream of light rays.

Photosphere—The outermost luminous layer of the sun's gaseous body.

Pitch—The movement of a space vehicle about an axis (Y) that is perpendicular to its longitudinal axis.

Pitchup—A correction movement of a missile in which it assumes a vertical ascent.

Planetoid—A starlike body, one of the numerous small planets nearly all of whose orbits lie between Mars and Jupiter (also called asteroid and minor planet).

Plasmajet—High-temperature jet of electrons and positive ions that has been heated and ionized by the magneto-hydro-dynamic effect of a strong electrical discharge.

Plasma Physics—The science dealing with the study of fully ionized gases.

Premodulation Processor—Part of the communications system; processed data for further use.

Primary—The body around which a satellite orbits.

Propagation—In missile terminology, to describe the manner in which an electromagnetic wave such as a radar signal, timing signal, or ray of light travels from one point to another.

Propellant Utilization System—The automatic electromechanical system that is installed to control precisely the mixture ratio of the liquid propellants, as they are consumed during a firing.

Pseudo-Random Noise—Noise produced by a definitely calculated process, while satisfying one or more of the standard tests for statistical randomness.

Pulse-Code Modulation Telemetry (PCM)—Pulse modulation in which the signal is sampled periodically, and each sample is quantized and transmitted as a digital code.

Pyro Batteries—Batteries used to fire pyrotechnic elements.

Pyro Cartridges—Pyrotechnic cartridges.

Q Band—See radio frequencies.

Q-Ball—A device for measuring the angle of attack of a vehicle.

Radial Beam Extensions—Connecting links between command and service modules.

Radial Velocity—The velocity of approach or recession between two bodies, especially between an observer and a source of radiation in a line connecting the two.

Radio Command—A radio signal to which a guided missile, drone, or the like, responds.

Radio Frequencies—Normally expressed in kilocycles per second at and below 30,000 kc/s, and megacycles per second above this frequency. Frequency subdivisions are: very low frequency (VLF), below 30 kc/s; low-frequency (LF), 30 to 300 kc/s; medium frequency (MF), 300 to 3000 kc/s; high frequency (HF), 3000 to 30,000 kc/s; very high frequency (VHF), 30 to 300 mc/s; ultra high

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frequency (UHF), 300 to 3000 mc/s; super high frequency (SHF), 3000 to 30,000 mc/s; extremely high frequency (EHF), above 30,000 mc/s. During World War II, radio frequency bands were designated by letters (e.g., K band, L band, P band, Q band, S band, V band, and X band). These designations were used originally to maintain military secrecy but currently have no official standing.

Radio Telescope—A radio receiving station for detecting radio waves emitted by celestial bodies or by space probes in space.

Rate Gyro Signals—Signals that indicate the rate of angular motion.

Reaction Engine—An engine or motor that derives thrust by expelling a stream of moving particles to the rear.

Receiver-Decoder—A combination receiver that accepts the signal and then decodes to a given command.

Re-entry—The return of a spacecraft that re-enters the atmosphere after flight above it.

Regenerative Cooling—The cooling of a rocket engine by circulating the fuel or oxidizer fluid in coils about the engine prior to use in the combustion chamber.

Remaining Body—That part of a missile or other vehicle that remains after the separation of a fall-away section or companion body.

Redundant—A second means for accomplishing a given task.

Resolver—(1) A means for resolving a vector into two mutually perpendicular components; (2) A transformer, the coupling between primary and secondary of which can be varied; (3) A small section with a faster access than the remainder of the magnetic-drum memory in a computer.

Reticle Pattern—Pattern established by the crew alignment sight. Used in docking procedure.

Retrofit—To add on or modify.

Retrograde Impulse—The impulse employed to slow a spacecraft or vehicle by applying a thrust in an

opposite direction from the direction of motion of the spacecraft.

Retrograde Motion—Orbital motion opposite in direction to that normal to spatial bodies within a given system.

Retrorocket—A rocket that gives thrust in a direction opposite to the direction of the object's motion.

Reverse Thrust—Thrust applied to a moving object in a direction opposite to the direction of the object's motion.

Roentgen—A unit used in measuring radiation, as of X rays.

Roll—The movements of a space vehicle about its longitudinal (X) axis.

Rope—Reflectors of electromagnetic radiation consisting of long strips of metal foil.

RP-1 Fuel—Kerosene-like fuel.

S Band—A radio-frequency band of 1550 to 5200 megacycles per second.

Scintillating Counter—An instrument that measures radiation indirectly by counting the light flashes emitted when radiation particles are absorbed into any of several phosphors.

Scrub—To cancel out a scheduled launch either before or during countdown.

Second of Arc—A measure of an angle 1/60th of a minute.

Seeker—A guidance system which moves on energy emanating or reflected from a target or station.

Selenoid—A lunar satellite.

Sensible Atmosphere—That part of the atmosphere that may be felt, i.e., that offers resistance.

Sensor—A sensing element. In a navigational system, that portion which perceives deviations from a reference and converts them into signals.

Sequencer—A mechanical or electronic device that may be set to initiate a series of events and to make the events follow in a given sequence.

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Servos—A short term for servomechanism or servomotors.

Serial Command Words—Specific instructional data to the up-link system.

Shear-Compression Pads—Pads which are sheared during separation of the service and command modules.

Sideband—Two frequencies, located on both sides of the carrier frequency; upper sideband, lower sideband.

Sidereal—A measurement of time. A sidereal day, for example, is the time it takes the earth to make a complete revolution.

Solar Corona—Outer atmospheric shell of the sun.

Solar Noise—Electromagnetic radiation which radiates from the atmosphere of the sun at radio frequencies.

Solenoid—A coil of wire, which, when current flows through it will act as a magnet and tend to pull an iron core that is movable to a central position; used for switching.

Sounding Rocket—A research rocket used to obtain data on the upper atmosphere.

Space Biology—A branch of biology concerned with life as it may come to exist in space.

Space-Fixed Reference—An oriented reference system in space independent of earth phenomena for positioning.

Space Platform—Large satellite with both scientific and military applications, conceived as a habitable base in space.

Space-Time Dilemma—According to Einstein's theory of relativity, time slows down increasingly in systems (e.g., extremely high-performance spacecraft) moving at velocities approaching the speed of light, relative to other systems in space (e.g., the earth). This slowdown is not apparent to the inhabitants of the moving system (the spacecraft) until they return to the redundant system in space from which they started (the earth).

Spatiography—The "geography" of space.

Specific Impulse—A means of determining rocket performance. It is equivalent to the effective exhaust velocity divided by gravity expressed in pounds per second.

Sphygmomanometer—An instrument for measuring arterial blood pressure.

Squib—A small explosive device whose primary function is to produce heat; usually used to achieve ignition in a larger combustible process.

Stabilized Gyro—Normally refers to stabilization to effect coincidence between the vertical axis of the gyro and the vertical established by an earth-seeking pendulum. In another axis, the gyro may be stabilized with respect to the electromagnetic field surrounding the earth, or with the true north direction through appropriate computers.

Stabilized Platform—Major part of an all-inertial guidance system, composed of an assembly of gimbal frames that hold three accelerometers in a fixed position in relation to inertial space. The accelerometers are mounted perpendicular to each other to measure accelerations along the three reference axes. These accelerations can be fed to a computer to determine instantaneous velocity and position in space.

Star Tracker—A telescopic instrument on a missile or other flightborne object that locks onto a celestial body and gives guidance to the missile or other object during flight. A star tracker may be optical or radiometric.

Stationary Orbit—In reference to earth known as a 24-hour orbit; a circular orbit around a planet in the equatorial plane and having a rotational period equal to that of the planet. For earth, the stationary orbit is about 26,000 miles in radius. A body moving in a stable stationary orbit appears fixed in the sky to an observer on the surface of the planet.

Step Rocket—A rocket with two or more stages.

Stratosphere—A calm region of the upper atmosphere characterized by little or no temperature change in altitude.

Sunseeker—Two-axis device actuated by servos and controlled by photocells to keep instruments pointed toward the sun despite rolling or tumbling of an aerospace vehicle in which instruments are carried.

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Subsonic—Speed less than that of sound.

Sustainer Rocket—A rocket engine used as a sustainer, especially on an orbital glider or orbiting spacecraft that dips into the atmosphere at its perigee.

Synergic Curve—A curve plotted for the ascent of an aerospace vehicle determined to give the missile or other vehicle maximum economy in fuel with maximum velocity.

Telemetry—A system for taking measurements within an aerospace vehicle in flight and transmitting them by radio to a ground station.

Thrust Vector—The directional line of thrust of the spacecraft.

Torquing Commands—A command given to the gyros to maintain attitude.

Transceiver—A unit combining the radio or radar transmitter and receiver, such as used in a transponder.

Transducer—A device by means of which energy can be made to flow from one or more transmission systems to other transmission systems.

Transearth Coast—The flight, under no power, between moon and earth.

Transistor—An electronic device that controls an electron current by the conducting properties of germanium or like material.

Translunar Space—That part of space conceived as a spherical layer centered on the earth, with its lower limits at the distance of the orbit of the moon, but extending to several hundred thousands of miles beyond.

Translation—For Apollo, movement of the spacecraft along the X axis acceleration.

Translational Control—A joystick located in the crew compartment to enable the pilot to control flight.

Transponder—A radio transmitter-receiver which transmits identifiable signals automatically when the proper interrogation is received.

Tumbling—An unsatisfactory attitude situation in which a vehicle continues on its flight, but turns end over end about its center of gravity with its longitudinal axis remaining in the plane of flight.

Ullage—The volume in a closed tank or container above the surface of a stored liquid. Also the ratio of this volume to the total volume of the tank.

Ultrasonic—Very high sound waves; not audible to humans.

Umbilical Cord—A cable fitted to a vehicle with a quick-disconnect plug, through which electrical power, oxygen, etc., is transmitted.

Up-Link Data—Telemetry information from the ground.

Van Allen Radiation Belts—Two doughnut-shaped belts of high-energy particles trapped in the earth's magnetic field which surround the earth; first reported by Dr. James A. Van Allen of the University of Iowa.

Vectory Steering—Vernacular for a steering method where one or more thrust chambers are gimbal-mounted so that the thrust force may be tilted in relation to the center of gravity of the spacecraft to produce a turning moment.

Wicking (or Wicking Axis)—Capillary action where fluid travels along a path.

X Axis—A designation for the longitudinal axis in a coordinate system of axes.

Yaw—Displacement of a space vehicle from its vertical (Z) axis.

Y Axis—A designation for the lateral axis in a coordinate system of axes.

Z Axis—A designation for the vertical axis in a coordinate system of axes.

ABBREVIATIONS

ac	Alternating current	CO ₂	Carbon dioxide
ACCEL	Accelerometer or acceleration	COAS	Crew optical alignment sight
ACE	Acceptance checkout equipment	COAX	Coaxial
ACK	Acknowledge	COI	Contingency orbit insertion
ACP	Audio control panel	COMM	Communications
ACS	Attitude control subsystem	COMPR	Compressor
A/D	Analog to digital	COMPEN	Compensator
AGC	Automatic gain control	COND	Condenser or conditioner
AGE	Aerospace ground equipment	CONT	Control
AH	Ampere hour	CPLR	Coupler
ALT	Altitude	CPS	Cycles per second
AM	Amplitude modulation or ammeter	CRYO	Cryogenic
AMPL	Amplifier	CSC	Cosecant computing amplifier
ANL	Analog	CSM	Command and service modules
AOA	Angle of attack	CSS	Computer subsystem
ARS	Attitude reference subsystem	C&W	Caution and warning subsystem
ASCP	Attitude set control panel	CW	Clockwise or continuous wave
ASI	Apollo standard initiator	CTE	Central timing equipment
ATT	Attitude or attenuator	CWG	Constant wear garment
AUTO	Automatic		
AUX	Auxiliary	D/A	Digital to analog
AVC	Automatic volume control	DAC	Digital-to-analog converter
		DAP	Digital autopilot
BAT	Battery	DB	Deadband
BCD	Binary coded decimal	db	Decibel
BCN	Beacon	dc	Direct current
BECO	Booster engine cutoff	DECR	Decrease
BMAG	Body-mounted attitude gyro	DEG	Degree
BPC	Boost protective cover	DEMOD	Demodulate
bps	Bits per second	DET	Detector or digital event timer
BTU	British thermal unit	DISCR	Discriminator
BU	Backup	DRI	Data rate indicator
BUR	Backup rate	DSE	Data storage equipment
		DSIF	Deep Space Instrumentation Facility
CB	Circuit breaker	DSKY	Display and keyboard
CCFT	Controlled current feedback transformer		
CCTV	Closed-circuit television	E	Elevation angle
CCW	Counterclockwise	ECA	Electronic control assembly
C&D	Controls and displays	ECO	Engine combustion or engine cutoff
CDF	Confined detonating fuse	ECS	Environmental control subsystem
CDU	Coupling data unit	ECU	Environmental control unit
cfm	Cubic feet per minute	EDA	Electronic display assembly
CG	Center of gravity	EDS	Emergency detection subsystem
CHAN	Channel	ELECT	Electronic
CKT	Circuit	ELS	Earth landing subsystem
CL	Centerline	ELSC	Earth landing sequence controller
CLM	Core logic module	EMER	Emergency
CM	Command module	EMI	Electromagnetic interference
CMC	Command module computer	EMS	Entry monitor subsystem
CMD	Command	EMU	Extravehicular mobility unit
C/O	Checkout	ENC	Encode
		ENG	Engine

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EOS	Emergency oxygen system	IF	Intermediate frequency
E&PL	Entry & post-landing	IFN	In-flight maintenance
EPS	Electrical power subsystem	IGA	Inner gimballed angle
ERR	Error	IGN	Ignition
ETR	Eastern test range	IMP	Impulse
EU	Electronic unit	IMU	Inertial measurement unit
EVA	Extravehicular activity	INCR	Increase
FC	Fuel cell	IND	Indicator
f_c	Center frequency	INV	Inverter
FCSM	Flight combustion stability monitor	IPB	Illuminated push button
FDAI	Flight director attitude indicator	IPS	Instrumentation power subsystem or inches per second
FDT	Full duplex teletype circuit	IRIG	Inertial rate integrating gyro
F/F	Flip-flop	ISOL	Isolation
FHS	Forward heat shield	ISS	Inertial subsystem
FLT	Flight	IU	Instrument unit
FLSC	Flexible linear shaped charge	JETT	Jettison
FM	Frequency modulation	kbs	Kilobits per second
FOV	Field of vision	kc	Kilocycles
FQR	Flight qualification recorder	kHz	Kilohertz
fs	Full scale	KOH	Potassium hydroxide
FSK	Frequency shift-keyed	KSC	Kennedy Space Center
FWD	Forward	kw	Kilowatt
G	Gravity	LAT	Latitude
GA	Gyro assembly	LCC	Launch Control Center
gc	Gigacycles	LDEC	Lunar docking events controller
G&C	Guidance and control	LEA	Launch escape assembly
GDC	Gyro display coupler	LEB	Lower equipment bay
GET	Ground elapsed time	LEM	Launch escape motor (also lunar excursion module, old name for lunar module)
GFE	Government-furnished equipment	LES	Launch escape subsystem
GMBL	Gimbal	LET	Launch escape tower
GN ₂	Gaseous nitrogen	LEV	Launch escape vehicle
GND	Ground	LF	Low frequency
GNCS	Guidance, navigation, and control subsystem	LH ₂	Liquid hydrogen
GPI	Gimbal position indicator	LHEB	Left-hand equipment bay
GSE	Ground support equipment	LHFEB	Left-hand forward equipment bay
GSFC	Goddard Space Flight Center	LM	Lunar module
ha	Apogee altitude	LMK	Landmark
H ₂	Hydrogen	LO	Low
He	Helium	LOR	Lunar orbit rendezvous
HF	High frequency	LOS	Line of sight, loss of signal
Hg	Mercury	LOX	Liquid oxygen
HGA	High-gain antenna	LSB	Lower sideband
HI	High	LSC	Linear-shaped charge
hp	Perigee altitude	LSSC	LM separation sequence controller
HR	Hydrogen relief or hour	LV	Launch vehicle or lift vector
HTR	Heater	MAN	Manual or manifold
Hz	Hertz (cycle per second)	MAX	Maximum
IC	Intercom	MAXQ	Maximum dynamic pressure
ICDU	Inertial coupling data unit	MCC	Mission Control Center
IECO	Inboard engine cutoff		

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MDC	Main display console	PCM	Pulse code modulation or pitch control motor
MDF	Mild detonating fuse	PCVB	Pyro continuity verification box
MED	Medium	PDM	Pulse duration modulation
MESC	Master events sequence controller	PF	Pulse frequency or powered flight
MGA	Middle gimbal angle	PGA	Pressure garment assembly
mHz	MegaHertz	PH	Phase
MIKE	Microphone	pH	Hydrogen ion concentration
mil	1/1000	PIPA	Pulsed integrating pendulous accelerometer
MIN	Minimum		
ML	Moldline	PLBK	Playback
MMH	Monomethylhydrazine	PLSS	Portable life support system
MNA	Main bus A	PM	Phase modulation
MNB	Main bus B	PMP	Premodulation processor
MOD	Modulator	POS	Positive
MOT	Motor	POT	Potentiometer
MS	Motor switch	PPM	Parts per million or pulse position modulation
MSC	Manned Spacecraft Center	PPS	Pulses per second
MSFC	Marshall Space Flight Center	PRF	Pulse repetition frequency
MSFN	Manned Space Flight Network	PRI	Primary
MTVC	Manned thrust vector control	PRN	Pseudo-random noise
mv	Millivolt	PROP	Propellant
mw	Milliwatt	PS	Pressure switch
N ₂	Nitrogen	PSA	Power servo assembly
NAV	Navigation	PSI	Pounds per square inch
NB	Navigation base or narrow band	PSIA	Pounds per square inch absolute
NEG	Negative	PSIG	Pounds per square inch gauge
NEUT	Neutral	PSK	Phase shift-keyed
n.mi.	Nautical mile	PSO	Pad safety officer
NO.	Number	PTT	Push to talk
N.O.	Normally open	PU	Propellant utilization
NON-ESS	Non-essential	PUG	Propellant utilization gauging
NORM	Normal	PWR	Power
NRZ	Non-return to zero	PYRO	Pyrotechnic
NSIF	Near-Space Instrumentation Facility		
O ₂	Oxygen	R	Range
OCDU	Optics coupling data unit	RAD	Radiation dosage or radiator
OECO	Outboard engine cutoff	RC	Rotation control or range command
OGA	Outer gimbal angle	RCDR	Recorder
OH	Hydroxyl ion	RCS	Reaction control subsystem
O/L-RC	Overload - reverse current	RCSC	Reaction control subsystem controller
OMNI	Omni-directional	RCV	Receive
OPT	Optics	RCVR	Receiver
OR	Oxygen relief	RECO	Rough engine cutoff
ORDEAL	Orbit rate drive electronics Apollo LM	RECT	Rectifier
OSC	Oscillator	R&D	Research and development
OSS	Optics subsystem	REG	Regulator
O/V	Overvoltage	REGEN	Regenerator
OXID	Oxidizer	REL	Release
		REV	Reverse
PA	Power amplifier	RF	Radio frequency
PAM	Pulse amplitude modulation	RFI	Radio frequency interference
PB	Push button	RGA	Rate gyro assembly
		RHC	Rotation hand control

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RHEB	Right-hand equipment bay	TLC	Translunar coast
RHFEB	Right-hand forward equipment bay	TLI	Translunar injection
RJD	Reaction jet driver	TLM	Telemetry
RJ/EC	Reaction jet and engine control	TMG	Thermal meteoroid garment
RMS	Root mean square	TRAC	Telescope precision angle counter
RNG	Range	T/R	Transmit-receive
RNDZ	Rendezvous	TRNFR	Transfer
ROT	Rotation	TTE	Time to event
RRT	Rendezvous radar transponder	TV	Thrust vector or television
RSI	Roll stability indicator	TVC	Thrust vector control
RSO	Range safety officer	TVSA	Thrust vector position servo amplifier
RTC	Real-time command	TWR	Tower
RTTV	Real-time television	TWT	Traveling wave tube
RUPT	Interrupt		
RZ	Return to zero	UCD	Urine collection device
		UDL	Up-data link
S/C	Spacecraft	UDMH	Unsymmetrical dimethyl hydrazine
SCE	Signal conditioning equipment	UHF	Ultra high frequency
SCI	Scientific	UPTL	Up-link telemetry
SCO	Subcarrier oscillator	USBE	Unified S-band equipment
SCS	Stabilization and control subsystem	U/V	Undervoltage
SCT	Scanning telescope		
SEC	Second or secondary	V	Voice, volt, or velocity
SECO	S-IVB (third stage) engine cutoff	VAC	Volts alternating current
SECS	Sequential events control subsystem	Vc	Circular velocity
SENS	Sensitivity	VCO	Voltage-controlled oscillator
SEP	Separation or spacecraft electronic package	VDC	Volts direct current
		VGP	Vehicle ground point
SEQ	Sequencer	VHF	Very high frequency
SIG	Signal	VHF/AM	Very high frequency/audio modulated
SLA	Spacecraft-LM adapter	VM	Voltmeter or measured velocity
SLOS	Star line of sight	VO	Initial velocity
SM	Service module	VOL	Volume
SMJC	Service module jettison controller	VOX	Voice-operated relay
SNSR	Sensor	VSWR	Voltage standing wave ratio
SOV	Shutoff valve		
SPEC	Specification	W/G	Water-glycol
SPS	Service propulsion subsystem or samples per second	WMS	Waste management system
		WPM	Words per minute
SSB	Single sideband	WTR	Western test range
STBY	Standby		
SW	Switch	X _C	Command module station
SXT	Sextant	XCVR	Transceiver
SYNC	Synchronization	XDUCER	Transducer
TB	Talkback indicator	XFMR	Transformer
TC	Translation control	XMIT	Transmit
T/C	Telecommunications subsystem	XMTR	Transmitter
T/D	Time delay	XPONDER	Transponder
TEC	Transearth coast	X _S	Service module station
TEI	Transearth injection		
TEMP	Temperature	ZN	Zinc
TFL	Time from launch		
THC	Translation hand control	ΔP	Differential pressure
TIGN	Time of ignition	ΔV	Differential velocity
TJM	Tower jettison motor	φ	Phase

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