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.

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.

Pericynthion—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 quanitized 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

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.

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.

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.

Telemetering—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 laterial axis in a coordinate system of axes.

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

ABBREVIATIONS

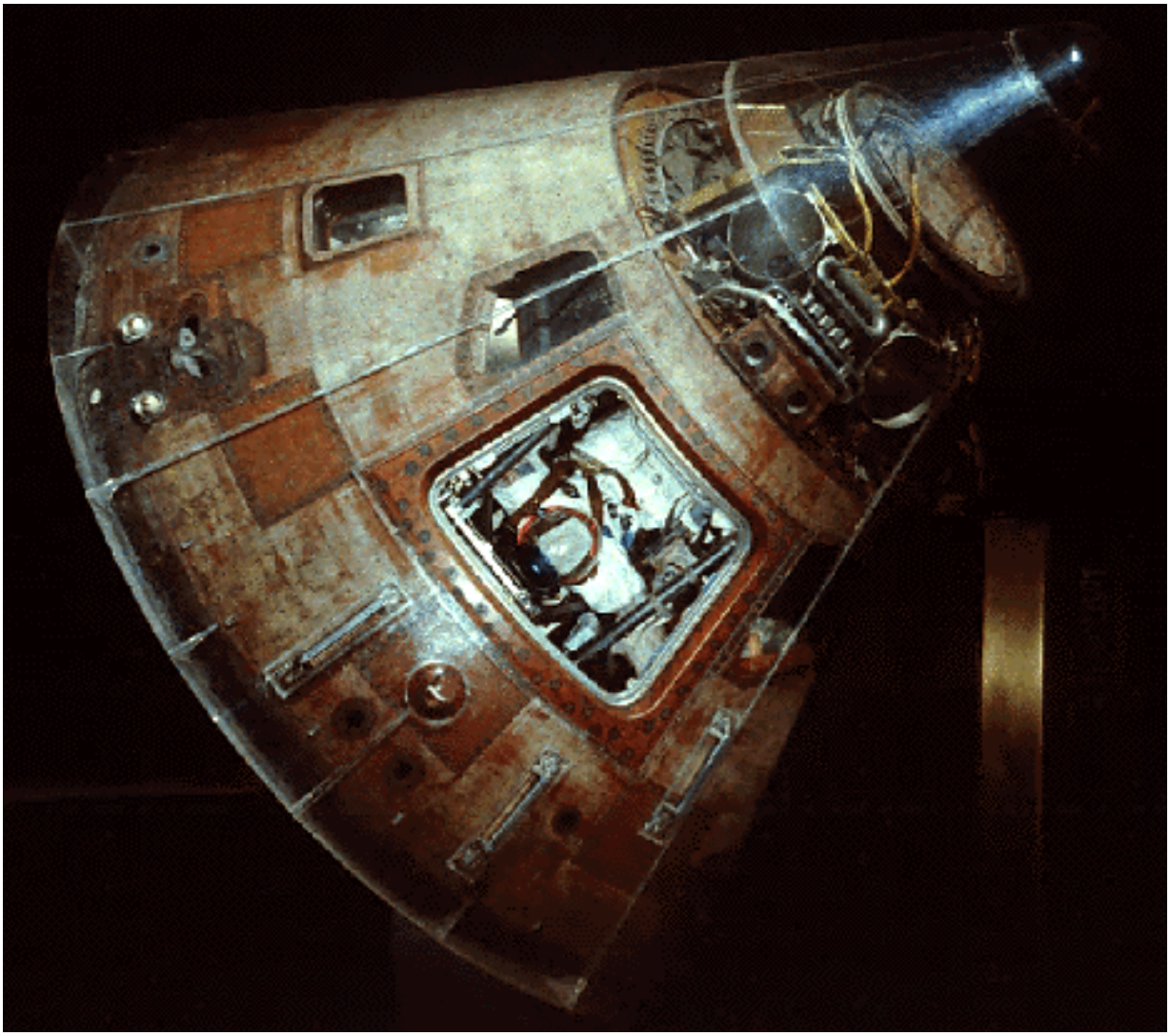
ac	Alternating current
ACCEL	Accelerometer or acceleration
ACE	Acceptance checkout equipment
ACK	Acknowledge
ACP	Audio control panel
ACS	Attitude control subsystem
A/D	Analog to digital
AGC	Automatic gain control
AGE	Aerospace ground equipment
AH	Ampere hour
ALT	Altitude
AM	Amplitude modulation or ammeter
AMPL	Amplifier
ANL	Analog
AOA	Angle of attack
ARS	Attitude reference subsystem
ASCP	Attitude set control panel
ASI	Apollo standard initiator
ATT	Attitude or attenuator
AUTO	Automatic
AUX	Auxiliary
AVC	Automatic volume control
BAT	Battery
BCD	Binary coded decimal
BCN	Beacon
BECO	Booster engine cutoff
BMAG	Body-mounted attitude gyro
BPC	Boost protective cover
bps	Bits per second
BTU	British thermal unit
BU	Backup
BUR	Backup rate
CB	Circuit breaker
CCFT	Controlled current feedback transformer
CCTV	Closed-circuit television
CCW	Counterclockwise
C&D	Controls and displays
CDF	Confined detonating fuse
CDU	Coupling data unit
cfm	Cubic feet per minute
CG	Center of gravity
CHAN	Channel
CKT	Circuit
CL	Centerline
CLM	Core logic module
CM	Command module
CMC	Command module computer
CMD	Command
C/O	Checkout
CO_2	Carbon dioxide
COAS	Crew optical alignment sight
COAX	Coaxial
COI	Contingency orbit insertion
COMM	Communications
COMPR	Compressor
COMPEN	Compensator
COND	Condenser or conditioner
CONT	Control
CPLR	Coupler
CPS	Cycles per second
CRYO	Cryogenic
CSC	Cosecant computing amplifier
CSM	Command and service modules
CSS	Computer subsystem
C&W	Caution and warning subsystem
CW	Clockwise or continuous wave
CTE	Central timing equipment
CWG	Constant wear garment
D/A	Digital to analog
DAC	Digital-to-analog converter
DAP	Digital autopilot
DB	Deadband
db	Decibel
dc	Direct current
DECR	Decrease
DEG	Degree
DEMOD	Demodulate
DET	Detector or digital event timer
DISCR	Discriminator
DRI	Data rate indicator
DSE	Data storage equipment
DSIF	Deep Space Instrumentation Facility
DSKY	Display and keyboard
E	Elevation angle
ECA	Electronic control assembly
ECO	Engine combustion or engine cutoff
ECS	Environmental control subsystem
ECU	Environmental control unit
EDA	Electronic display assembly
EDS	Emergency detection subsystem
ELECT	Electronic
ELS	Earth landing subsystem
ELSC	Earth landing sequence controller
EMER	Emergency
EMI	Electromagnetic interference
EMS	Entry monitor subsystem
EMU	Extravehicular mobility unit
ENC	Encode
ENG	Engine

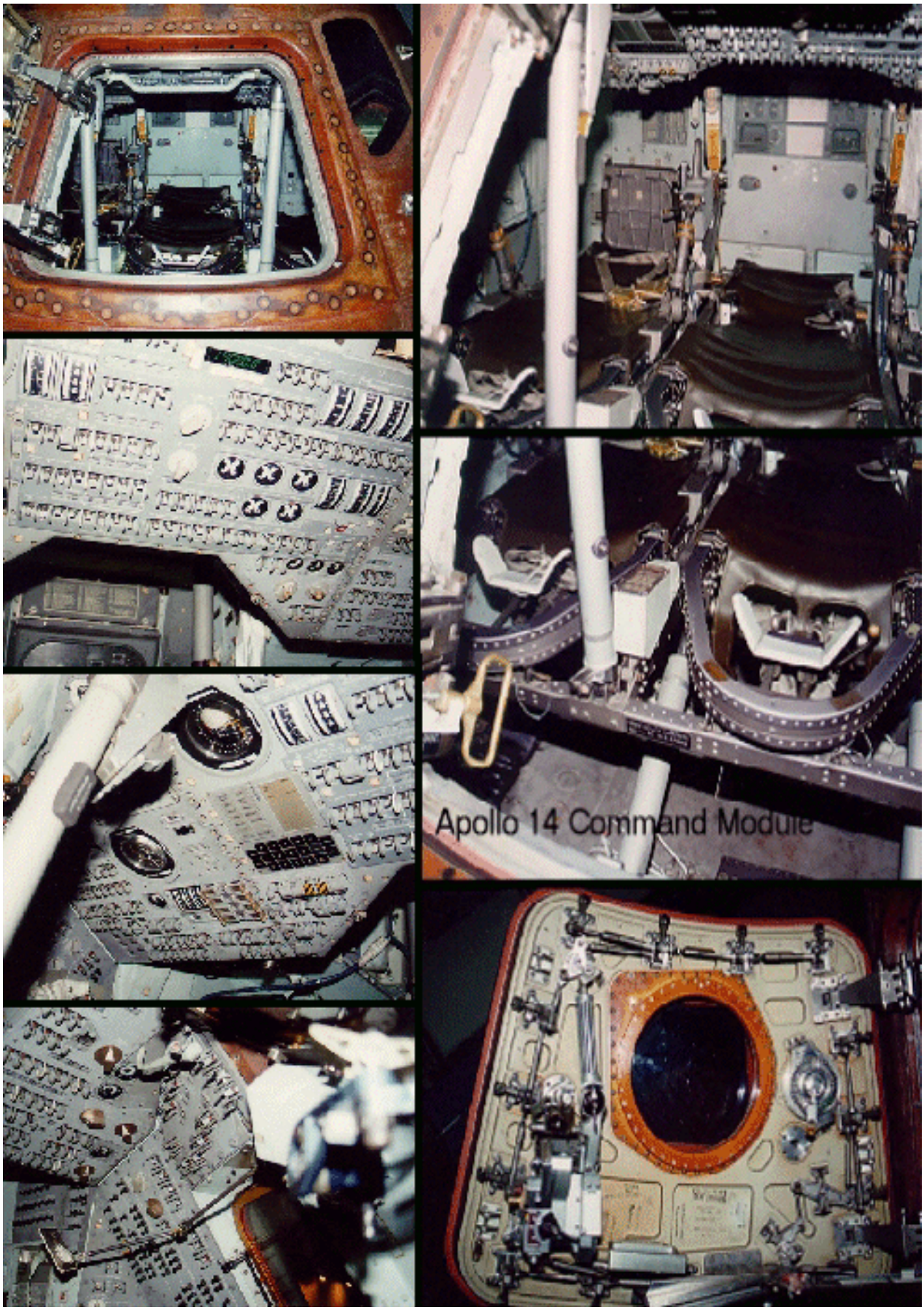
EOS	Emergency oxygen system
E&PL	Entry & post-landing
EPS	Electrical power subsystem
ERR	Error
ETR	Eastern test range
EU	Electronic unit
EVA	Extravehicular activity
FC	Fuel cell
f_c	Center frequency
FCSM	Flight combustion stability monitor
FDAI	Flight director attitude indicator
FDT	Full duplex teletype circuit
F/F	Flip-flop
FHS	Forward heat shield
FLT	Flight
FLSC	Flexible linear shaped charge
FM	Frequency modulation
FOV	Field of vision
FQR	Flight qualification recorder
fs	Full scale
FSK	Frequency shift-keyed
FWD	Forward
G	Gravity
GA	Gyro assembly
gc	Gigacycles
G&C	Guidance and control
GDC	Gyro display coupler
GET	Ground elapsed time
GFE	Government-furnished equipment
GMBL	Gimbal
GN_2	Gaseous nitrogen
GND	Ground
GNCS	Guidance, navigation, and control subsystem
GPI	Gimbal position indicator
GSE	Ground support equipment
GSFC	Goddard Space Flight Center
ha	Apogee altitude
H_2	Hydrogen
He	Helium
HF	High frequency
Hg	Mercury
HGA	High-gain antenna
HI	High
hp	Perigee altitude
HR	Hydrogen relief or hour
HTR	Heater
Hz	Hertz (cycle per second)
IC	Intercom
ICDU	Inertial coupling data unit
IECO	Inboard engine cutoff
IF	Intermediate frequency
IFN	In-flight maintenance
IGA	Inner gimbal angle
IGN	Ignition
IMP	Impulse
IMU	Inertial measurement unit
INCR	Increase
IND	Indicator
INV	Inverter
IPB	Illuminated push button
IPS	Instrumentation power subsystem or inches per second
IRIG	Inertial rate integrating gyro
ISOL	Isolation
ISS	Inertial subsystem
IU	Instrument unit
JETT	Jettison
kbs	Kilobits per second
kc	Kilocycles
kHz	Kilohertz
KOH	Potassium hydroxide
KSC	Kennedy Space Center
kw	Kilowatt
LAT	Latitude
LCC	Launch Control Center
LDEC	Lunar docking events controller
LEA	Launch escape assembly
LEB	Lower equipment bay
LEM	Launch escape motor (also lunar excursion module, old name for lunar module)
LES	Launch escape subsystem
LET	Launch escape tower
LEV	Launch escape vehicle
LF	Low frequency
LH_2	Liquid hydrogen
LHEB	Left-hand equipment bay
LHFEB	Left-hand forward equipment bay
LM	Lunar module
LMK	Landmark
LO	Low
LOR	Lunar orbit rendezvous
LOS	Line of sight, loss of signal
LOX	Liquid oxygen
LSB	Lower sideband
LSC	Linear-shaped charge
LSSC	LM separation sequence controller
LV	Launch vehicle or lift vector
MAN	Manual or manifold
MAX	Maximum
MAXQ	Maximum dynamic pressure
MCC	Mission Control Center

MDC	Main display console
MDF	Mild detonating fuse
MED	Medium
MESC	Master events sequence controller
MGA	Middle gimbal angle
mHz	MegaHertz
MIKE	Microphone
mil	1/1000
MIN	Minimum
ML	Moldline
MMH	Monomethylhydrazine
MNA	Main bus A
MNB	Main bus B
MOD	Modulator
MOT	Motor
MS	Motor switch
MSC	Manned Spacecraft Center
MSFC	Marshall Space Flight Center
MSFN	Manned Space Flight Network
MTVC	Manned thrust vector control
mv	Millivolt
mw	Milliwatt
N_2	Nitrogen
NAV	Navigation
NB	Navigation base or narrow band
NEG	Negative
NEUT	Neutral
n.mi.	Nautical mile
NO.	Number
N.O.	Normally open
NON-ESS	Non-essential
NORM	Normal
NRZ	Non-return to zero
NSIF	Near-Space Instrumentation Facility
O_2	Oxygen
OCDU	Optics coupling data unit
OECO	Outboard engine cutoff
OGA	Outer gimbal angle
OH	Hydroxyl ion
O/L-RC	Overload - reverse current
OMNI	Omni-directional
OPT	Optics
OR	Oxygen relief
ORDEAL	Orbit rate drive electronics Apollo LM
OSC	Oscillator
OSS	Optics subsystem
O/V	Overvoltage
OXID	Oxidizer
PA	Power amplifier
PAM	Pulse amplitude modulation
PB	Push button
PCM	Pulse code modulation or pitch control motor
PCVB	Pyro continuity verification box
PDM	Pulse duration modulation
PF	Pulse frequency or powered flight
PGA	Pressure garment assembly
PH	Phase
pH	Hydrogen ion concentration
PIPA	Pulsed integrating pendulous accelerometer
PLBK	Playback
PLSS	Portable life support system
PM	Phase modulation
PMP	Premodulation processor
POS	Positive
POT	Potentiometer
PPM	Parts per million or pulse position modulation
PPS	Pulses per second
PRF	Pulse repetition frequency
PRI	Primary
PRN	Pseudo-random noise
PROP	Propellant
PS	Pressure switch
PSA	Power servo assembly
PSI	Pounds per square inch
PSIA	Pounds per square inch absolute
PSIG	Pounds per square inch gauge
PSK	Phase shift-keyed
PSO	Pad safety officer
PTT	Push to talk
PU	Propellant utilization
PUG	Propellant utilization gauging
PWR	Power
PYRO	Pyrotechnic
R	Range
RAD	Radiation dosage or radiator
RC	Rotation control or range command
RCDR	Recorder
RCS	Reaction control subsystem
RCSC	Reaction control subsystem controller
RCV	Receive
RCVR	Receiver
RECO	Rough engine cutoff
RECT	Rectifier
R&D	Research and development
REG	Regulator
REGEN	Regenerator
REL	Release
REV	Reverse
RF	Radio frequency
RFI	Radio frequency interference
RGA	Rate gyro assembly
RHC	Rotation hand control

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

FINIS




Apollo 14 Command Module