

Acronyms and Abbreviations

ABR	antiorthostatic head-down bedrest	CAMRAS	carbon dioxide and moisture removal amine swing-bed
ACES	advanced crew escape suit	CCSIT	CAMRAS/Constellation Suit Integrated Test
ACVS	AutoTRAC Computer Vision System	CDS	cascade distillation subsystem
AGNC	autonomous guidance, navigation, and control	CDT-2	Cluster Development Test 2
AGS	antigravity suit	CDT-3	Cluster Development Test 3
AE	acoustic emission	CEV	Crew Exploration Vehicle
AIAA	American Institute of Aeronautics and Astronautics	CFU	colony-forming unit
ALHAT	autonomous landing and hazard avoidance technology	CH ₄	methane
ALS	advanced life support	CID	current interrupt device
AMISS	Anomaly Monitoring Inductive Software System	CLPA	camera, light, and pen/tilt unit assembly
AMPEV	airlock manual pressure equalization valve	CM	crew module
AMS	Aerospace Material Specification	CMG	control moment gyroscope
ANITA	ammonia and nitrification analyzer	CMI	cell-mediated immunity
ANOVA	analysis of variance	CO	carbon monoxide
ANSI	American National Standards Institute	CO ₂	carbon dioxide
ANSMET	Antarctic Search for Meteorites	COPV	composite overwrapped pressure vessel
APU	auxiliary propulsion unit	COTS	commercial off-the-shelf
AR	augmented reality	CPAS	CEV Parachute Assembly System
AR&D	automated rendezvous and docking	CPDS	charged particle directional spectrometer
ARC	NASA Ames Research Center	CPOD	crew physiological observation device
ARES	Astromaterials Research and Exploration Science	CPSS	Critical Phase Software System
ASHRAE	American Society of Heating, Refrigeration, and Air-conditioning Engineers	CR	Columbia Resin
ASME	American Society of Mechanical Engineers	CRV	Crew Return Vehicle
ASTM	American Society for Testing and Materials	CSA-CP	compound specific analyzer-combustion products
ATIC	advanced thin ionization calorimeter	CT	computed tomography
ATV	automated transfer vehicle	Cx	Constellation
AWRSDF	Advanced Water Recovery System Development Facility	CxP	Constellation Program
BGA	beta gimbal assembly	D	diameter
BMD	bone mineral density	DA	digital astronaut
C/E	carbon fiber reinforced epoxy matrix	DACS	Data Acquisition and Control System
c.g.	center of gravity	DEM	digital elevation map
C-SPE	colorimetric solid-phase extraction	DMC	Dartmouth-Hitchcock Medical Center
		DNA	deoxyribonucleic acid
		DOD	Department of Defense
		DOE	Department of Energy
		DOF	degree of freedom
		DPD	deoxypyridinoline
		DTED	Draeger®-Tube encapsulation device
		DXA	dual-energy x-ray absorptiometry
		EDS	Earth departure stage
		EDU	engineering development unit

EDX	energy-dispersive x ray	HHAP	Hydrogen Hazard Assessment Protocol
EI	entry interface	HITF	Hypervelocity Impact Technology Facility
EKG	electrocardiogram	HMD	head-mounted display
ELS	Exploration Life Support	HNO ₃	nitric acid
EM	engineering model	HRN	hazard relative navigation
EMU	extravehicular mobility unit	HRP	Human Research Program
EPR	electron paramagnetic resonance	HSE	highly siderophile element
EPS	Electrical Power System	HSRB	Human System Risk Board
ESEM	environmental scanning electron microscopy	HST	Hubble Space Telescope
ESMD	Exploration Systems Mission Directorate	HVAC	heating, ventilation, and air conditioning
ESR&T	Exploration Systems Research and Technology	ICB	Inventions and Contributions Board
ET	external tank	ICF	induction coil feedthrough
ETDP	exploration technology development program	ICP-MS	inductively coupled plasma-mass spectrometry
EU	engineering unit	IDR	Internal Design Review
EUROPA	extensible universal remote operations planning architecture	IMA	International Mineralogical Association
EVA	extravehicular activity	IMS	Inductive Monitoring System
FBC	forward bay cover	INSCOP	intranasal scopolamine
FCOVTB	fuel cell operational verification testbed	IPO	Innovation Partnerships Office
FCR	Flight Control Room	IR	infrared
FCV	flow control valve	ISRU	in-situ resource utilization
FDA	Food and Drug Administration	ISS	International Space Station
FeO	iron oxide	IV	intravehicular
FIG	focused investment group	JEOL	Japan Electron Optics Laboratory
FOD	fiber optic displacement	JPL	NASA Jet Propulsion Laboratory
FOMIS	fiber optic micrometeoroid impact sensor	JSC	Johnson Space Center
FP	floating potential	K/E	Kevlar® fiber reinforced epoxy matrix
FPMU	floating potential measurement unit	KCl	potassium chloride
FRL	flight robotics laboratory	KPH	kilometers per hour
FY	fiscal year	LANCE	lunar attachment node for construction and excavation
Gen-1	Generation 1	LaRC	NASA Langley Research Center
GFE	government-furnished equipment	LB	Lennox broth
GN ₂	gaseous nitrogen	LCCR	Lunar Capability Concept Review
GNC	guidance, navigation, and control	LD ₅₀	median lethal dose
GRC	NASA Glenn Research Center	LEA	launch-entry-abort
Grms	gravity, root mean square	LEED	Leadership in Energy and Environmental Design
H ₂	hydrogen	LEO	low-Earth orbit
H ₂ O	water vapor	LER	Lunar Electric Rover
HAZ	heat affected zone	LET	linear energy transfer
HDA	hazard detection and avoidance	Li(CF) _x	lithium polycarbonmonofluoride
HEPA	high-efficiency particulate air	Li-ion	lithium-ion
		Li-S	lithium-sulfur

Acronyms and Abbreviations

continued

LIDAR	light intensification detection and ranging	NSF	National Science Foundation
LiF	lithium fluoride	NSI	NASA standard initiator
LIDAR	light intensification detection and ranging	NSS	NASA Safety Standard
LIDS	Low-impact Docking System	NTO	nitrogen tetroxide
LIME	low-Fe, Mn-enriched	NTX	N-telopeptide
LM	Lockheed Martin Space Systems Company	O ₂	oxygen
LMA	Lockheed Martin Astronautics	OCA	orbital communications adapter
LR	load ratio	OCAMS	OCA Mirroring System
LRES	lunar regolith environment simulator	OD	outside diameter
LTER	Long Term Ecological Research	ORBITEC	Orbital Technologies Corporation
LVAD	low-velocity air drop	ORU	orbital replacement unit
mAE	modal AE	OSP	orbital space plane
MCA	major constituent analyzer	P-T	pressure and temperature
MCC	Mission Control Center	PA-1	Pad Abort-1
MDT-3	Main Development Test 3	PAMELA	payload for antimatter exploration and light-nuclei astrophysics
MET	mission elapsed time	PCTFE	polychlorotrifluoroethylene
Metox	metal oxide	Pd	palladium
MIST	Mobile Information System	PDI	powered descent initiation
MIT	Massachusetts Institute of Technology	PE	phenylephrine
MMH	monomethylhydrazine	PEMFC	proton exchange membrane fuel cell
MMOD	micrometeoroid/orbital debris	PICA	phenolic impregnated carbon ablator
MMSE	micrometeoroid and lunar secondary ejecta	PILOT	precursor ISRU lunar oxygen test bed
MnSi	magnesium silicide	PIM	Plasma Interaction Model
MOC	maximum oxygen concentration	PK	pharmacokinetics
MOD	Mission Operations Directorate	PLSS	Portable Life Support System
MOX	maximum oxygen concentration	PLV	pulsed laser vaporization
MPH	monopropellant hydrazine	PPE	personal protective equipment
MPS	Main Propulsion System	ppm	parts per million
MPSR	Multipurpose Support Room	PRE	pre-reversal enhancement
MSFC	NASA Marshall Space Flight Center	PSI	Physical Sciences Inc.
MSL	Mars Science Laboratory	PTC	positive temperature coefficient
N ₂ H ₄	hydrazine	PTV	parachute test vehicle
NBL	Neutral Buoyancy Laboratory	PVDF	polyvinylidene-fluoride
NDE	nondestructive evaluation	QCT	quantitative computed tomography
NEEMO	NASA Extreme Environment Mission Operations	RCA	rapid cycle amine
NESC	NASA Engineering Safety Center	RESOLVE	regolith and environment science and oxygen and lunar volatile extraction
NFIR	Natural Feature Image Recognition	RHTL	Remote Hypervelocity Test Laboratory
NH ₃	ammonia	RNA	ribonucleic acid
NORCAT	Northern Centre for Advanced Technology Inc.	RO	reverse osmosis
NPT	national pipe thread	RRO	rotating reverse osmosis
		SACE	Solar Array Constraint Engine
		SARJ	solar alpha rotary joint

SBIR	Small Business Innovative Research	THP	thermoelectric heat pump
SBTT	Small Business Technology Transfer	TiO	titanium dioxide
SCM	soft capture mechanism	TLD	thermoluminescent dosimetry
SD	standard deviation	TOCA	total organic carbon analyzer
SDTS	Six-DOF Dynamic Test System	TPS	Thermal Protection System
SEH	Space Exposed Hardware	TRIPS	Thermal Radiation Impact Protection System
SLI	Space Launch Initiative		
SLSD	Space Life Sciences Directorate	TRL	technology readiness level
SM4	Servicing Mission 4	TRN	terrain relative navigation
SMART-1	Small Missions for Advanced Research in Technology-1	UDMH	unsymmetrical dimethylhydrazine
		UFORP	UDMH fuel/oxidizer reaction products
SMS	space motion sickness	UT	ultrasound testing
SNP	sodium nitroprusside	UTS	ultimate tensile strength
SPDM	special-purpose dexterous manipulator	UV	ultraviolet
SRB	solid rocket booster	UV-Vis-NIR	ultraviolet-visible-near infrared
SSC	space station computer	VER	variable electronic regulator
SSM	stepped stress method	VNS	visual navigation sensor
STDEV	standard deviation	VO ₂	oxygen uptake
STEM	science, technology, engineering, and mathematics	VOA	volatile organic analyzer
		VPU	video processing unit
STP	Sensor Technology Project	VZV	varicella-zoster virus
SU	sensor unit	WEST-P	Water Egress and Survival Trainer-Prototype
SWCN	single-wall carbon nanotube		
SWME	suit water membrane evaporator	WLE	wing leading edge
2D	two-dimensional	WLEIDS	Wing Leading Edge Impact Detection System
3D	three-dimensional		
TAMU	Texas A&M University	WSTF	NASA White Sands Test Facility
TC	thermocouple	Y-PCA	Y-shaped primer chamber assembly
TCM	trajectory correction maneuver	YPR	yaw, pitch, and roll
TEI	trans-Earth injection	ZPP	zirconium potassium perchlorate
TEM	transmission electron microscope	ZrO ₂	zirconium oxide
TEPC	tissue-equivalent proportional counter		
TFIDF	term frequency inverse document frequency		