

This document explains  
common acronyms and  
abbreviations used in  
aerospace and Cougs in  
Space and their meaning

# Acronyms

Common Acronyms and  
Abbreviations and Their  
Meanings

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## 1 List of Acronyms and Abbreviations

The purpose of abbreviations and acronyms is for ease of speaking and writing. The ones listed in section 1.1.1 – 1.1.26 are commonly used in aerospace and are applicable to Cougs in Space

### 1.1.1 A

**ADCS** – Attitude Determination Control System  
System responsible for orienting the satellite in free space

**ALT** – Altitude  
Elevation of the satellite above mean sea level

**AOS** – Acquisition of Signal  
State when radio communication has gained a link to the ground, usually due to the satellite rising in the horizon

**ATT** – Attitude  
Orientation of the satellite relative to the direction of travel

**AWG** – American Wire Gauge  
Standard wire sizes

### 1.1.2 B

**BOM** – Bill of Materials  
List of components for a system

### 1.1.3 C

**CAD** – Computer-Aided Design  
Computer software to aid in the creation, modification, analysis, and optimization of a design

**CDR** – Critical Design Review  
Demonstrates that the maturity of the design is appropriate to support proceeding with full-scale fabrication, assembly, integration, and test. CDR determines that the technical effort is on track to complete the flight and ground system development and mission operations, meeting mission performance requirements within the identified cost and schedule constraints

**CIS** – Cougs in Space  
Washington State University's picosatellite club

**CMF** – Critical Mission Failure  
Failure of a device that prevents completion of the mission

**CMT** – Critical Mission Task

Operation that is integral to the success of the mission

### **1.1.4 D**

**DIA** – Diameter

Length of a straight line passing from one side of a body the other through the center

**DOF** – Degrees of Freedom

The number of independent ways by which a dynamic system can move, without violating any constraint imposed on it

### **1.1.5 E**

**ECS** – Environmental Control System

System responsible for maintaining safe environmental conditions include, but not limited to, temperature and radiation exposure

**EM** – Engineering Model

A replica of the satellite, form, fit and functionally equivalent, used for testing, prototyping, repairing, and iterating before changes are integrated onto the flight unit

**EMI** – Electromagnetic Interference

A disturbance generated by an external source that affects an electrical circuit by electromagnetic induction

**EPS** – Electrical Power System

System responsible for gathering, storing, regulating, and distributing energy and power

**ETA** – Estimated Time of Arrival

The time the satellite is expected to become visible to communication

**ETC** – Estimated Time of Completion

The time the satellite is expected to complete a task

**ETD** – Estimated Time of Departure

The time the satellite is expected to become invisible to communication

### **1.1.6 F**

**FRR** – Flight Readiness Review

Examines tests, demonstrations, analyses, and audits that determine the system's readiness for a safe and successful flight or launch and for subsequent flight operations

Also ensures that all flight and ground hardware, software, personnel, and procedures are operationally ready

**FU** – Flight Unit

The satellite that is launched into space

### 1.1.7 G

#### GND – Ground

Operational center on earth responsible to communicating to the satellite including sending commands and receiving data

Also, Ground Control

Also, zero electric potential from which voltages are measured

#### GNSS – Global Navigation Satellite System

System using a constellation of satellites to allow device to determine their precise location, including USA's GPS, Russia's GLONASS, and European Union's Galileo

### 1.1.8 H

#### HAZMAT – Hazardous Material

State when radio communication has stop functioning, usually due to the satellite setting in the horizon

### 1.1.9 I

#### IFSD – In-Flight Shutdown

State when satellite must shutdown during low power periods

#### IHU – Internal Housekeeping Unit

Processor responsible for organizing communication between systems

Also, the main processor of the satellite

#### IMU – Inertial Measurement Unit

An electronic device that measures the satellite's acceleration, angular rate, and surrounding magnetic field

### 1.1.10 J

### 1.1.11 K

### 1.1.12 L

#### LED – Light Emitting Diode

An electrical component that emits light, at a specified wavelength (color), when energized, commonly used for indication

#### LEO – Low Earth Orbit

An orbit around earth at an altitude less than 2,000 km

#### LKP – Last Known Position

Last confirmed location of the satellite just before LOS

#### LOM – Loss of Mission

State when the mission can no longer be completed usually due to a critical mission failure

**LOS** – Loss of Signal

State when radio communication has lost a link to ground, usually due to the satellite setting in the horizon

**LSB** – Least Significant Bit

The bit in a binary number with the lowest numerical value

### 1.1.13 M

**MLI** – Multi-Layer Insulation

Thermal insulation composed of multiple layers of thin sheets, primarily intended to reduce heat loss by thermal radiation

**MOP** – Mission Operation Plan

A plan that describes all actions regarding the mission when the mission is operational, including, but not limited to, operations planning, flight control, mission data receipt/delivery, tracking and navigation, maintenance and support, spacecraft support and analysis, and mission data processing and achieving

**MRR** – Mission Readiness Review

Examines tests, demonstrations, analyses, and audits that determine the system's readiness for successful completion of the mission

Also ensures that all flight and ground hardware, software, personnel, and procedures are functionally ready

**MSB** – Most Significant Bit

The bit in a binary number with the greatest numerical value

**MSL** – Mean Sea Level

An average level of the surface of earth's oceans

**MST** – Mission Sequence Test

Tests the ground operations and satellite for successful execution of a mission

**MTOF** – Maximum Take-Off Weight

Maximum weight the satellite may be to be launched by the launch provider

### 1.1.14 N

**N/A** – Not Applicable

Indication that information does not apply to a particular case in question

**NWR** – Not Worth Reporting

Indication that information is not significant to record and report

### 1.1.15 O

### 1.1.16 P

PDR – Preliminary Design Review

Demonstrates that the preliminary design meets all system requirements with acceptable risk and within the cost and schedule constraints and establishes the basis for proceeding with detailed design

PFM – Photo Flight Model

A replica of the satellite, exteriorly equivalent, used for photography and demonstrative purposes

PMIC – Power Management Integrate Circuit

Processor responsible for managing the power system

PNR – Point of No Return

Point beyond which one must on one's current course of action because turning back is physically impossible, prohibitively expensive, or dangerous

### 1.1.17 Q

QA – Quality Assurance

A way of preventing mistakes or defects in the satellite

### 1.1.18 R

RCS – Radio Communication System

System responsible for communicating to and from the ground

RBF – Remove Before Flight

Device intended to be removed from the satellite before launch

### 1.1.19 S

SOP – Standard Operating Procedure

Set of step-by-step instructions compiled by an organization to help workers carry out complex routine operations

Also, SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with industry regulations

### 1.1.20 T

TBD – To Be Determined

Placeholder term to indicate details about something have yet to be decided

TBR – To Be Resolved

Placeholder term to indicate an issue about something is yet to be fixed

**TLMY** – Telemetry  
Automated communications process by which measurements and other data are collected at the satellite and transmitted to the ground

### 1.1.21 U

**UHF** – Ultra High Frequency  
Radio frequencies in the range 300MHz to 3GHz

**UTC** – Coordinated Universal Time  
Primary time standard all timing shall be based off of

### 1.1.22 V

**VHF** – Very High Frequency  
Radio frequencies in the range 30MHz to 300MHz

### 1.1.23 W

**WDT** – Watch Dog Timer  
An electronic timer used to detect and recover from computer malfunctions

### 1.1.24 X

### 1.1.25 Y

### 1.1.26 Z