



FLORIDA ATLANTIC UNIVERSITY
AEROSPACE EXPERIMENTAL ASSOCIATION
STANDARD OPERATING PROCEDURES
SOP-1: ACRONYMS

DEFINITION: Common Acronyms and Abbreviations and Their Meanings

PURPOSE: This document explains common acronyms and abbreviations used in the aerospace industry and hence, the Aerospace Experimental Association, and their definitions.

May 2020

Certified by: STAN/EVAL

CURRENT PUBLICATION

Stefano Ciccolella

Previous editions are void. This document is to be kept up to date and added to as required for communication effectiveness. Submitting requests to adapt or make an addition to this document must be sent up through the proper Chain of Command to the Standards and Evaluations lead. Once updated, this document must be re-certified by appropriate certification leaders (STAN/EVAL) and the date must be refreshed to reflect the re-certification process completion. The format is to maintain Microsoft Word and be uploaded as a pdf file only. This SOP applies to all members within the Aerospace Experimental Association at Florida Atlantic University. This document is internal; no copyright required nor is infringement intended. If an issue arises, contact axafau@gmail.com addressing your concern and we will get back to you as soon as possible. Stay up to date on all AXA events and projects by going to <https://www.axafau.com> or our [Facebook page](#).



REVISIONS

May 2020- Document created and authorized for internal publication.

Chapter 1

LIST OF ABBREVIATIONS AND ACRONYMS

1.1. Alpha

- 1.1.1. **ADCS** – Attitude Determination Control System
Subsystem responsible for orienting the satellite in free space
- 1.1.2. **ALT** – Altitude
Elevation of the satellite above mean sea level
- 1.1.3. **ATT** – Attitude
Orientation of the satellite relative to the direction of travel

1.2. Bravo

- 1.2.1. **BATT** – Batter
An electrical energy storage device that uses electrochemical reactions

1.3. Charlie

- 1.3.1. **CAD** – Computer-Aided Design
Computer software to aid in the creation, modification, analysis, and optimization of a design
- 1.3.2. **CBDR** – Critical Board Design Review
A type of CDR, that focuses on the layout of circuitry. Almost always requires PCB CAD and associated documentation on the board.
- 1.3.3. **CCDR** – Critical Circuits Design Review
A type of CDR, that focuses on the design and implementation of circuitry. Almost always requires a schematic and associated documentation on the schematic
- 1.3.4. **C&DH** – Command and Data Handling
Subsystem that performs the following responsibilities and comprised of the IHU and a solid-state recorder
 - Manages all forms of data on the satellite
 - Carries out commands ordered by the ground
 - Prepares data sent to and interprets data from the ground
 - Collects and processes information about all subsystems and payloads
 - Keeps and distributes the satellite's time

- Autonomously monitors and responds to a wide range of onboard problems that might occur

1.3.5. **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

1.3.6. **CMF** – Critical Mission Failure

Failure of a device that prevents completion of the mission

1.3.7. **CMT** – Critical Mission Task

Operation that is integral to the success of the mission

1.3.8. **Comms** – Communication System

Subsystem responsible for communicating between the satellite and the ground

1.3.9. **CONOPS** – Concept of Operations (ConOps)

A description of the characteristics of a system from a user's perspective, similar to use cases. Answers "what I do with this system?"

1.4. *Delta*

1.4.1. **DIA** – Diameter

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

1.4.2. **DOF** – Degrees of Freedom

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

1.5. *Echo*

1.5.1. **ECS** – Environmental Control System

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

1.5.2. **EPS** – Electrical Power System

Subsystem responsible for accumulating energy, regulating voltage, and distributing power

1.5.3. **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

1.5.4. **EMI** – Electromagnetic Interference

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

- 1.5.5. **ETA** – Estimated Time of Arrival
The time the satellite is expected to become visible to communication
- 1.5.6. **ETC** – Estimated Time of Completion
The time the satellite is expected to complete a task
- 1.5.7. **ETD** – Estimated Time of Departure
The time the satellite is expected to become invisible to communication

1.6. Foxtrot

- 1.6.1. **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
- 1.6.2. **FU** – Flight Unit
The satellite that is launched into space

1.7. Golf

- 1.7.1. **GND** – Ground
Operational center on Earth responsible for communicating to the satellite including sending commands and receiving data
- 1.7.2. **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
- 1.7.3. **GUI** – Graphical User Interface
A type of user interface that allows users to interact with a system using graphical icons and visual indicators

1.8. Hotel

- 1.8.1. **HAZMAT** – Hazardous Material
Any matter that is considered dangerous to the human body

1.9. India

- 1.9.1. **IFJR** – In-Flight JTAG Reprogrammer
Processor in charge of updating every programmable processor
- 1.9.2. **IFSD** – In-Flight Shutdown
State when satellite must shutdown during low power periods
- 1.9.3. **IHU** – Internal Housekeeping Unit

Processor responsible for operating the C&DH and communicating with the solid-state recorder, see C&DH for a list of responsibilities. Also, the main processor of the satellite

1.9.4. **IMU** – Inertial Measurement Unit

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

1.10. Juliet

1.11. Kilo

1.12. Lima

1.12.1. **LED** – Light Emitting Diode

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

1.12.2. **LEO** – Low Earth Orbit

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

1.12.3. **LKP** – Last Known Position

Last confirmed location of the satellite just before LOS

1.12.4. **LOM** – Loss of Mission

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

1.12.5. **LOS** – Loss of Signal

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

1.13. Mike

1.13.1. **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

1.13.2. **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

1.13.3. **MSL** – Mean Sea Level

An average level of the surface of earth's oceans

1.13.4. **MST** – Mission Sequence Test

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

1.13.5. **MTOF** – Maximum Take-Off Weight

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

1.14. November

- 1.14.1. **N/A** – Not Applicable
Indication that information does not apply to a particular case in question
- 1.14.2. **NWR** – Not Worth Reporting
Indication that information is not significant to record and report

1.15. Oscar**1.16. Papa**

- 1.16.1. **PCB** – Printed Circuit Board
A board that mechanically supports and electrically connects electrical components together using conductive traces, pads, and other features etched from a layer of copper adhered to a non-conductive substrate
- 1.16.2. **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
- 1.16.3. **PFM** – Photo Flight Model
A replica of the satellite, exteriorly equivalent, used for photography and demonstrative purposes
- 1.16.4. **PMIC** – Power Management Integrate Circuit
Processor responsible for managing the EPS
- 1.16.5. **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
- 1.16.6. **PWM** – Pulse Width Modulation
An electrical signal modulation that varies the duty cycle of an AC source in order to vary the average DC voltage

1.17. Quebec

- 1.17.1. **QA** – Quality Assurance
A way of preventing mistakes or defects in the satellite

1.18. Romeo

- 1.18.1. **RBF** – Remove Before Flight
Device intended to be removed from the satellite before launch
- 1.18.2. **RF** – Radio Frequency
A band of frequencies from 20kHz (end of audio) to 300GHz (start of infrared).
The signal can either be alternating electrical current or electromagnetic radiation

1.19. Sierra

- 1.19.1. **SMT** – Surface Mount Technology (SMD)
A mounting mechanism where an electrical component is placed on the surface of the PCB, in contrast to THT. A device that uses SMT is called a surface mount device (SMD)
- 1.19.2. **SOP** – Standard Operating Procedure
Set of step-by-step instructions compiled by an organization to help workers carry out complex routine operations. SOPs aim to achieve efficiency, quality output and uniformity of performance, while reducing miscommunication and failure to comply with industry regulations
- 1.19.3. **SRR** – System Requirements Review
Review of the system requirements to ensure they have been completely and properly identified. It ensures that the system can proceed into initial systems development and that all system and performance requirements are defined and testable, and are consistent with cost, schedule, risk, technology readiness, and other system constraints

1.20. Tango

- 1.20.1. **TBD** – To Be Determined
Placeholder term to indicate details about something have yet to be decided
- 1.20.2. **TBR** – To Be Resolved
Placeholder term to indicate an issue about something is yet to be fixed
- 1.20.3. **THT** – Through Hole Technology
A mounting mechanism where an electrical component uses leads that are inserted into holes on the PCB, in contrast to SMT
- 1.20.4. **TLMY** – Telemetry
Automated communications process by which measurements and other data are collected at the satellite and transmitted to the ground. Commonly includes various key health statistics
- 1.20.5. **TRL** – Technology Readiness Level
A codified process of moving along in a satellite mission, outlined by NASA

1.21. Uniform

- 1.21.1. **UHF** – Ultra High Frequency
Radio frequencies in the range 300MHz to 3GHz
- 1.21.2. **UTC** – Universal Coordinated Time
The time standard the satellite time is based off

1.22. Victor

- 1.22.1. **VHF** – Very High Frequency

Radio frequencies in the range of 30MHz to 300MHz

1.23. Whiskey

1.23.1. WBS – Work Breakdown Structure

A hierarchal structure that splits a project into individual components or sub-projects until the end of each branch is a single or list of single deliverables

1.23.2. WDT – Watch Dog Timer

An electronic timer used to detect and recover from computer malfunctions.

1.24. X-Ray

1.25. Yankee

1.26. Zulu