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| **Document Guidelines**   * This document is based on ORBIT’s RIFD user interface, and is intended to aid with data-entry. * Please make every attempt to write text in ***present tense*** where applicable. * To check a box: double click > default value = checked > ok. * **[IDRD]** indicates the field is required for the Increment Definition and Requirements Document Annex 5: Payload Tactical Plan, Table 3.0. * **[nasa.gov]** indicates the field appears on the website <http://www.nasa.gov/iss-science/>. * **[ORBIT Only]** indicates the field is internal to ORBIT database. |

**COMMON DATA**

**For Investigation**

***(Required for All Investigations)***

**Investigation Name [IDRD] [nasa.gov]:** Acronym or short name of the investigation. This does not have to be the same as OpNom.

**Sponsoring Space Agency [IDRD] [nasa.gov]:** Space agency responsible for the implementation of the investigation.

Canadian Space Agency (CSA)

European Space Agency (ESA)

Japan Aerospace Exploration Agency (JAXA)

National Aeronautics and Space Administration (NASA)

Roscosmos

**Sponsoring Organization [nasa.gov]:** *NASA Investigations Only -* Official name of the NASA organization responsible for sponsoring the research for flight.

NASA Research Office - Human Research Program (NASA Research-HRP)

NASA Research Office - Space Life and Physical Sciences (NASA Research-SLPS)

Italian Space Agency (ASI)

NASA Research Office - NASA Education (NASA Research-EDU)

National Laboratory - Department of Defense (NL-DoD)

National Laboratory - Department of Energy (NL-DOE)

National Laboratory - National Institute of Standards and Technology (NL-NIST)

National Laboratory - National Institutes of Health (NL-NIH)

National Laboratory - National Science Foundation (NL-NSF)

National Laboratory - U.S. Agency for International Development (NL-USAID)

National Laboratory - U.S. Department of Agriculture (NL-USDA)

National Laboratory (NL)

National Laboratory Education (NLE)

NASA Research Office - Science Mission Directorate (NASA Research-SMD)

Technology Demonstration Office (TDO)

**PROGRAM SCIENCE**

**Summary Form**

***(Required for All Investigations)***

**Parent Investigation [ORBIT Only]:** Name of the Parent Investigation. A Parent investigation is only used if an investigation is broken down into multiple investigations (children) based on science objectives.

NanoRacks CubeSat Deployer

**Investigation Title [nasa.gov]:** Title of the investigation.

**Category [IDRD] [nasa.gov]:** The investigation is classified within **one** research category.

**Subcategory [nasa.gov]:** The investigation is classified within **one** research subcategory.

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|  | **Biology and Biotechnology** | | |
|  |  | Animal Biology – Invertebrates | Microbiology |
|  |  | Animal Biology – Vertebrates | Microencapsulation |
|  |  | Cellular Biology | Plant Biology |
|  |  | Macromolecular Crystal Growth | Vaccine Development |

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|  | **Earth and Space Science** | | |
|  |  | Astrobiology | Earth Remote Sensing |
|  |  | Astrophysics | Heliophysics |

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|  | **Educational Activities and Outreach** | | |
|  |  | Classroom Versions of ISS Investigations | Educational Demonstrations |
|  |  | Commercial Demonstrations | Engineering Education |
|  |  | Cultural Activities | Student-Developed Investigations |
|  |  | Educational Competitions |  |

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|  | **Human Research** | | |
|  |  | Bone and Muscle Physiology | Human Microbiome |
|  |  | Cardiovascular and Respiratory Systems | Immune System |
|  |  | Crew Healthcare Systems | Integrated Physiology and Nutrition |
|  |  | Dental Health | Nervous and Vestibular Systems |
|  |  | Habitability and Human Factors | Radiation Impacts on Humans |
|  |  | Human Behavior and Performance | Vision |

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|  | **Physical Science** | | |
|  |  | Combustion Science | Fundamental Physics |
|  |  | Complex Fluids | Materials Science |
|  |  | Fluid Physics |  |

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|  | **TBD: To Be Defined Based on Selected Science Objectives** |

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|  | **Technology Development and Demonstration** | | |
|  |  | Air, Water and Surface Monitoring | Power Generation/Distribution Systems |
|  |  | Avionics and Software | Propulsion Systems |
|  |  | Characterizing Experiment Hardware | Radiation Measurements and Shielding |
|  |  | Communications and Navigation | Repair and Fabrication Technologies |
|  |  | EVA Systems | Robotics |
|  |  | Fire Suppression and Detection | Small Satellites and Control Technologies |
|  |  | Food and Clothing Systems | Space Structures |
|  |  | Imaging Technology | Spacecraft and Orbital Environments |
|  |  | Life Support Systems and Habitation | Spacecraft Materials |
|  |  | Microbial Populations in Spacecraft | Thermal Management Systems |
|  |  | Microgravity Environment Measurement |  |

**Research Benefits [nasa.gov]:** Does the research have potential benefits in the following areas? (Choose all that apply.)

Earth Benefits

Scientific Discovery

Space Exploration

**PAO Summary (“Research Objectives” in IDRD) [IDRD] [nasa.gov]:** Short, concise description of the investigation (no more than 3 sentences) summarizing what research is being done and why. Information must be written on an 8th grade level. Information is used in reports for NASA Headquarters, Congress, Crew Briefings and Press Kits.

**Research Overview [nasa.gov]:** Bulleted list slightly more detailed than the PAO summary, written on the 8th grade level. The Research Overview should highlight why the research is needed, what the research accomplishes, and what the impact of the research is. Information is used in the Research and Planning Working Group (RPWG) Planning process and Crew Briefings.

**Space Applications [nasa.gov]:** Information on how this investigation supports/benefits the space program. If undefined, please state, “The Space Application for this investigation has yet to be identified.”

**Earth Applications [nasa.gov]:** Information on how this investigation supports/benefits people on Earth. If undefined, please state, “The Earth Application for this investigation has yet to be identified.”

**Operations Location:** Indicates where the investigation is performed.

Ascent Only

Descent Only

ISS Internal

ISS External – Attached

ISS External – Deployed

Pre/Postflight

Sortie

**Previous Missions [nasa.gov]:** Missions that the investigation was manifested on, prior to ISS, or related investigations already completed on ISS.

**Summary Form - Additional Information**

**(*Optional for non-US Sponsored Investigations*)**

**Detailed Research Description [nasa.gov]:** Provides a place for a more technical description of the objectives of an investigation aimed at an interdisciplinary scientific audience. Several paragraphs may be used. Technical terminology should be defined to ensure readability. This field may also include a brief description of hardware and any previous names associated with the investigation.

**Research Operational Requirements and Protocols [nasa.gov]:** Brief descriptive overview in paragraph form. Keep to 500 words or less. Include on-orbit operations, requirements and activities used to perform and complete the investigation (number of subjects or observations, spacing of observations, downlink of data, return of samples, etc.).

NanoRacks CubeSats are delivered to the ISS already integrated within a NanoRacks CubeSat Deployer (NRCSD) or NanoRacks DoubleWide Deployer (NRDD). A crew member transfers each NRCSD / NRDD from the launch vehicle to the JEM. Visual inspection for damage to each NRCSD is performed. When CubeSat deployment operations begin, the NRCSD / NRDDs are unpacked, mounted on the JAXA Multi-Purpose Experiment Platform (MPEP) and placed on the JEM airlock slide table for transfer outside the ISS. A crew member operates the JEM Remote Manipulating System (JRMS) – to grapple and position for deployment. CubeSats are deployed when JAXA ground controllers command a specific NRCSD.

**Educational Impact:**

Will this investigation involve students (K-12, Undergraduate, Graduate), teachers, or schools?

Yes  No

**Educational Activities:**

Defines educational activities associated with the investigation and a brief description of student involvement.

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| **Project Funding Type:** *US Investigations Only* - Indicates the primary source of funding. | | |
|  | CASIS Funding | NASA Funding |
|  | Commercial Funding | NASA Station Detailed Test Objective (SDTO) |
|  | US Government Agency (non-NASA) | NASA Supplemental Medical Objective (SMO) |
|  | NASA Detailed Supplementary Objective (DSO) | Nonprofit Organization Funding |

**Grant Number:** *US Investigations Only* If applicable, please provide the grant number.

**Name(s) of any non-NASA institution providing the funding:**

**Contacts**

***(Required for All Investigations)***

**Principal Investigator:** If there are additional Principal Investigators, please copy, paste, and fill in for each Principal Investigator.

* **First Name [nasa.gov]:**
* **Last Name [nasa.gov]:**
* **Credentials (M.D., Ph.D., M.S., etc.) [nasa.gov]:**
* **Email:**
* **Phone [(###) ###-####]:**
* **Business Mailing Address:**
* **Institution Name [nasa.gov]:**
* **Institution Location [nasa.gov]:** City and State or Country of the institution location
* **Institution Type:**

Academia

Government

Industry

Military

Nonprofit

Space Agency

**Co-Investigator/Collaborator:** If there are additional Co-Investigators/Collaborators, please copy, paste, and fill in for each Co-Investigator/Collaborator.

* **First Name [nasa.gov]:**
* **Last Name [nasa.gov]:**
* **Credentials (M.D., Ph.D., M.S., etc.) [nasa.gov]:**
* **Email:**
* **Phone [(###) ###-####]:**
* **Business Mailing Address:**
* **Institution Name [nasa.gov]:**
* **Institution Location [nasa.gov]:** City and State or Country of the institution location
* **Institution Type:**

Academia

Government

Industry

Military

Nonprofit

Space Agency

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| **Person publicly credited as source of this** |  |
| **Information [nasa.gov]:** | **First Name Last Name** |

**Contacts:**

* **Primary Contact responsible for scientific content of this form:**
  + **First Name:**
  + **Last Name:**
  + **Email:**
  + **Phone [(###) ###-####]:**
* **Secondary Contact**:
  + **First Name:**
  + **Last Name:**
  + **Email:**
  + **Phone [(###) ###-####]:**

**Developer(s)**

***(Required for All Investigations)***

**Developer Information [nasa.gov]:** The space center, company or institution where the investigation and hardware are developed, city and state or city and country.

**Websites**

**(*Optional for non-US Sponsored Investigations*)**

**Websites [nasa.gov]:** Listing of websites with information regarding the investigation.

**Related Investigations**

**(*Optional for non-US Sponsored Investigations*)**

**Related Investigations:** Provide Investigation Names for current or past ISS investigations that have similar objectives.

**INCREMENT OPERATIONS**

**General Info**

**Increment Operations**

***(Required for All Investigations)***

**Increment(s) [IDRD] [nasa.gov]:** Increment the investigation is performed on.