## Appendix A: Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAAF</td>
<td>Association Aéronautique et Astronautique de France: French Aeronautical and Astronautical Association</td>
</tr>
<tr>
<td>ABA</td>
<td>Ammonia boiler assembly</td>
</tr>
<tr>
<td>ACRC</td>
<td>Assured crew return capability</td>
</tr>
<tr>
<td>ACRV</td>
<td>Assured crew return vehicle</td>
</tr>
<tr>
<td>ACS</td>
<td>Altitude control subsystem</td>
</tr>
<tr>
<td>AEG</td>
<td>Allgemeine Elektricitäts-Gesellschaft (German industrial)</td>
</tr>
<tr>
<td>AFITEP</td>
<td>Francophone Project Management Association</td>
</tr>
<tr>
<td>ALFLEX</td>
<td>Automatic landing flight experiment (Japan)</td>
</tr>
<tr>
<td>ALT</td>
<td>Approach and atmospheric landing tests</td>
</tr>
<tr>
<td>AMD</td>
<td>Avions Marcel Dassault</td>
</tr>
<tr>
<td>AOC</td>
<td>Autonomous operating capability</td>
</tr>
<tr>
<td>AOS</td>
<td>Acquisition of signal</td>
</tr>
<tr>
<td>APM</td>
<td>Attached pressurized module (later called CAL and COF)</td>
</tr>
<tr>
<td>APMC</td>
<td>Attached Pressurized Module Centre</td>
</tr>
<tr>
<td>APU</td>
<td>Auxiliary power unit</td>
</tr>
<tr>
<td>AR5 or A5</td>
<td>Ariane 5</td>
</tr>
<tr>
<td>ARCAS</td>
<td>Avion Recalage des Characteristiques Aerodynamiques Subsoniques: Subsonic Aerodynamic Characteristics Calibrating Plane</td>
</tr>
<tr>
<td>ARD</td>
<td>Atmospheric reentry demonstrator</td>
</tr>
<tr>
<td>ARLM</td>
<td>Ariane 5 logistics module</td>
</tr>
<tr>
<td>ARV</td>
<td>Advanced return vehicle</td>
</tr>
<tr>
<td>ASH</td>
<td>Avion spatial Hermes (Hermes spaceplane)</td>
</tr>
<tr>
<td>ASI</td>
<td>Agenzia Spaziale Italiana: Italian Space Agency</td>
</tr>
<tr>
<td>ASSET</td>
<td>Aerothermodynamic/elastic structural systems environmental tests (US Air Force)</td>
</tr>
<tr>
<td>ATCS</td>
<td>Active thermal control subsystem</td>
</tr>
<tr>
<td>ATTAS</td>
<td>Advanced technologies testing aircraft system (DLR)</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<td>--------------</td>
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</tr>
<tr>
<td>ATV</td>
<td>Automated transfer vehicle, originally Ariane transfer vehicle</td>
</tr>
<tr>
<td>AU</td>
<td>Accounting Unit, the internal ESA unit of account, equivalent to the Euro</td>
</tr>
<tr>
<td>AV01/02</td>
<td>Avion: Hermes flight model (FM1/2)</td>
</tr>
<tr>
<td>AVH</td>
<td>l’Association des Vols Habités: Association for Manned Flights</td>
</tr>
<tr>
<td>BAAL</td>
<td>Bâtiment d’Assemblage Avion-Lanceur</td>
</tr>
<tr>
<td>BAe</td>
<td>British Aerospace</td>
</tr>
<tr>
<td>BAF</td>
<td>Batiment d’Assemblage Final (Final Assembly Building)</td>
</tr>
<tr>
<td>BAP</td>
<td>A5/VSH final assembly facilities</td>
</tr>
<tr>
<td>BCE</td>
<td>Equipment control bench</td>
</tr>
<tr>
<td>BCH</td>
<td>Banc de Contrôle Hermes (Hermes Control Bench)</td>
</tr>
<tr>
<td>BCHK</td>
<td>Banc de Contrôle Hermes à Kourou</td>
</tr>
<tr>
<td>BCU</td>
<td>Bâtiment d’intégration des Charges Utiles (Ariane 5)</td>
</tr>
<tr>
<td>BEAP</td>
<td>Banc d’Essai étage A Poudre</td>
</tr>
<tr>
<td>BER</td>
<td>Bit error rate</td>
</tr>
<tr>
<td>BIHE</td>
<td>Bâtiment d’Intégration Hermes en Europe (Hermes Integration Facilities in Europe)</td>
</tr>
<tr>
<td>BIHK</td>
<td>Bâtiment d’Intégration Hermes à Kourou (Hermes Integration Facilities in Kourou)</td>
</tr>
<tr>
<td>BIHO</td>
<td>HRM integration building in Ottobrun</td>
</tr>
<tr>
<td>BIHT</td>
<td>HERMES integration facilities in Toulouse</td>
</tr>
<tr>
<td>BIL</td>
<td>Batiment d’Intégration Lanceur (Launcher integration building)</td>
</tr>
<tr>
<td>BIP</td>
<td>Batiment d’Intégration Propulseurs (Solid booster integration building)</td>
</tr>
<tr>
<td>BIS</td>
<td>Banc d’intégration Système (System integration bench)</td>
</tr>
<tr>
<td>BLA</td>
<td>Base de Lancement Ariane</td>
</tr>
<tr>
<td>BMFT</td>
<td>Bundesministerium für Forschung und Technologie: Federal Ministry of Research and Technology (Germany)</td>
</tr>
<tr>
<td>BIHO</td>
<td>HRM integration building in Ottobrun</td>
</tr>
<tr>
<td>BIHT</td>
<td>HERMES integration facilities in Toulouse</td>
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<td>Base de Lancement Ariane</td>
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<tr>
<td>BMFT</td>
<td>Bundesministerium für Forschung und Technologie: Federal Ministry of Research and Technology (Germany)</td>
</tr>
<tr>
<td>BMI</td>
<td>Bismaleimide</td>
</tr>
<tr>
<td>BNCSR</td>
<td>British National Committee on Space Research</td>
</tr>
<tr>
<td>BNSC</td>
<td>British National Space Centre</td>
</tr>
<tr>
<td>BOR</td>
<td>Bespilotnyi Orbitalnyi Raketoplan: Unmanned orbital rocketplane</td>
</tr>
<tr>
<td>C-C</td>
<td>Carbon-carbon</td>
</tr>
<tr>
<td>CAD/</td>
<td>Computer aided design/computer aided manufacturing</td>
</tr>
<tr>
<td>CAM</td>
<td></td>
</tr>
<tr>
<td>CAL</td>
<td>Columbus Attached Laboratory</td>
</tr>
<tr>
<td>CAPCOM</td>
<td>Spaceplane captain communicator</td>
</tr>
<tr>
<td>CARGUS</td>
<td>Cargo upper stage of the Sänger spaceplane</td>
</tr>
<tr>
<td>CATIA</td>
<td>Computer aided three-dimensional interactive application</td>
</tr>
<tr>
<td>CB</td>
<td>Coherence board</td>
</tr>
<tr>
<td>CCHK</td>
<td>Centre de Contrôle Hermes à Kourou</td>
</tr>
<tr>
<td>CCLK</td>
<td>Centre de Contrôle et de Lancement de Kourou</td>
</tr>
<tr>
<td>CCV</td>
<td>Centre de Contrôle de Vol</td>
</tr>
<tr>
<td>CCVC</td>
<td>HERMES Flight Control Center</td>
</tr>
</tbody>
</table>
Appendix A: Abbreviations and Acronyms

CCVH Centre de Contrôle en Vol Hermès
CDA Central design authority
CDL 3 Centre De Lancement 3 (Launch Centre 3)
CDR Critical design review
CEAT Centre d’Essais Aérospatiaux de Toulouse: Toulouse Aerospace Test Center
CEL Centre d’Essais des Landes: Landes Test Centre
CEM Crew escape module
CEMES Crew escape module electrical subassembly
CEO Chief Executive Officer
CERN Centre Européen pour la Recherche Nucléaire (France)
CES Cellule d’Essais Statiques (Static test airframe)
CESS Crew escape subsystem
CET Central earth terminal
CEV Centre d’Essais en Vol
CFFL Columbus Free-Flying Laboratory
CFRP Carbon fiber reinforced plastic
CHIG Columbus/Hermes interface group
CIS Commonwealth of Independent States, successor to USSR
CMCC Central Mission Control Centre
CNER Comité National d’Evaluation de la Recherche: National Research Evaluation Committee (France)
CNES Centre National d’Etudes Spatiales (French National Space Research Centre)
COF Columbus orbital facility
CoG Center of gravity
CPCU Centre de Préparation des Charges Utiles
CPF Co-orbiting platform
CPU Central processor unit
CRF Crew rescue facilities
CRMC Communication Resource Management Centre
CRS Crew reception sites
CRV Crew rescue vehicle
CRV Crew return vehicle
CSC Composite support contractor
CSG Centre spatial Guyanais
CST Centre Spatial de Toulouse
CTC Crew training complex
CTV Crew transport vehicle
DARA Deutsche Agentur für Raumfahrtangelegenheiten: German Agency for Space Flight Affairs
DARPA Defense Advanced Research Projects Agency (USA)
DASA Deutsche Aerospace (German industrial)
DEL Docking embedded logic
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>DFVLR</td>
<td>Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt: German Test and Research Institute for Aviation and Space Flight, later DLR</td>
</tr>
<tr>
<td>DG</td>
<td>Director General</td>
</tr>
<tr>
<td>DLR</td>
<td>Deutsche forscherungsanstalt für Luft- und Raumfahrt: German Research Institute for Aviation and Space Flight</td>
</tr>
<tr>
<td>DM</td>
<td>Descent module</td>
</tr>
<tr>
<td>DM</td>
<td>Deutsch Mark: German Mark, currency preceding the Euro</td>
</tr>
<tr>
<td>DoD</td>
<td>Department of Defence (USA)</td>
</tr>
<tr>
<td>DRS</td>
<td>Data relay satellite</td>
</tr>
<tr>
<td>DRS</td>
<td>Data relay system</td>
</tr>
<tr>
<td>DRS-MCC</td>
<td>Data Relay System Mission Control Centre</td>
</tr>
<tr>
<td>DRS-OGC</td>
<td>DRS Operations Control Centre</td>
</tr>
<tr>
<td>DRSS</td>
<td>Data relay satellite system</td>
</tr>
<tr>
<td>DRTM</td>
<td>Data relay and technology mission</td>
</tr>
<tr>
<td>EAC</td>
<td>European Astronaut Centre</td>
</tr>
<tr>
<td>EAP</td>
<td>Etage d'Acceleration a Poudre (Solid Rocket Booster Stage)</td>
</tr>
<tr>
<td>ECLS</td>
<td>Environmental control and life support</td>
</tr>
<tr>
<td>ECLSS</td>
<td>Environmental control and life support system</td>
</tr>
<tr>
<td>EDRSS</td>
<td>European data relay satellite system</td>
</tr>
<tr>
<td>EET</td>
<td>ESA earth terminal</td>
</tr>
<tr>
<td>EGSE</td>
<td>Electrical ground support equipment</td>
</tr>
<tr>
<td>EHS</td>
<td>EuroHermespace</td>
</tr>
<tr>
<td>ELA 3</td>
<td>Ensemble de Lancement Ariane 3 (Ariane Launch Complex 3)</td>
</tr>
<tr>
<td>ELDO</td>
<td>European Launcher Development Organisation</td>
</tr>
<tr>
<td>EMSI</td>
<td>European manned space infrastructure</td>
</tr>
<tr>
<td>EMU</td>
<td>Extra vehicular mobility unit</td>
</tr>
<tr>
<td>EPC</td>
<td>Etage a Propulsion Cryotechnique (Cryotechnical propulsion stage)</td>
</tr>
<tr>
<td>EPCU</td>
<td>Ensemble de Préparation des Charges Utiles (Payload preparation complex)</td>
</tr>
<tr>
<td>EPNER</td>
<td>Ecole de Pilotes et de Navigants d’Essai et de Réception</td>
</tr>
<tr>
<td>EPS</td>
<td>Electrical power subsystem</td>
</tr>
<tr>
<td>EPSI</td>
<td>Ensemble de Préparation et Support Industriel (Space Vehicle Engineering Centre)</td>
</tr>
<tr>
<td>ERA</td>
<td>European robotic arm</td>
</tr>
<tr>
<td>ERNO</td>
<td>Entwicklungsring Nord (German industrial)</td>
</tr>
<tr>
<td>ERS</td>
<td>Earth resources satellite</td>
</tr>
<tr>
<td>ESA</td>
<td>European Space Agency</td>
</tr>
<tr>
<td>ESOC</td>
<td>European Space Operations Centre</td>
</tr>
<tr>
<td>ESRANGE</td>
<td>European space range (sounding rockets and related research programmes)</td>
</tr>
<tr>
<td>ESRIN</td>
<td>European Space Research Institute</td>
</tr>
<tr>
<td>ESRO</td>
<td>European Space Research Organisation</td>
</tr>
<tr>
<td>ESS</td>
<td>European Space Station</td>
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<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>ESSS</td>
<td>EVA space suit system</td>
</tr>
<tr>
<td>ESTEC</td>
<td>European Space Research and Technology Centre</td>
</tr>
<tr>
<td>ESTRACK</td>
<td>European space tracking and telemetry network</td>
</tr>
<tr>
<td>ETPS</td>
<td>Empire Test Pilot School</td>
</tr>
<tr>
<td>EURECA</td>
<td>European retrievable carrier</td>
</tr>
<tr>
<td>EV</td>
<td>Escape vehicle</td>
</tr>
<tr>
<td>EVA</td>
<td>Extra-vehicular activity</td>
</tr>
<tr>
<td>EXPERT</td>
<td>European experimental re-entry testbed</td>
</tr>
<tr>
<td>FCC</td>
<td>Flight Control Centre</td>
</tr>
<tr>
<td>FCS</td>
<td>Flight control system</td>
</tr>
<tr>
<td>FEI</td>
<td>Flexible external insulation</td>
</tr>
<tr>
<td>FESTIP</td>
<td>Future European Space Transportation Investigation Programme</td>
</tr>
<tr>
<td>FF</td>
<td>French Franc, currency preceding the Euro</td>
</tr>
<tr>
<td>FGMS</td>
<td>Food/galley management section</td>
</tr>
<tr>
<td>FLPP</td>
<td>Future Launchers Preparatory Programme</td>
</tr>
<tr>
<td>FLTTP</td>
<td>Future Launchers Technology Programme</td>
</tr>
<tr>
<td>FM1/2</td>
<td>Flight Model of the Hermes spaceplane</td>
</tr>
<tr>
<td>FMU</td>
<td>Flight management unit</td>
</tr>
<tr>
<td>FQR</td>
<td>Flight qualification review</td>
</tr>
<tr>
<td>FR</td>
<td>Flight readiness review</td>
</tr>
<tr>
<td>GCS</td>
<td>Ground communications system</td>
</tr>
<tr>
<td>GCS</td>
<td>Ground control segment</td>
</tr>
<tr>
<td>GEO</td>
<td>Geostationary orbit</td>
</tr>
<tr>
<td>GFO</td>
<td>Ground facilities for operations</td>
</tr>
<tr>
<td>GNC</td>
<td>Guidance, navigation and control</td>
</tr>
<tr>
<td>GNP</td>
<td>Guidance navigation piloting</td>
</tr>
<tr>
<td>GPS</td>
<td>Global positioning system</td>
</tr>
<tr>
<td>GQR</td>
<td>Ground qualification review</td>
</tr>
<tr>
<td>GSC</td>
<td>Guiana Space Centre (Centre Spatial Guyanais)</td>
</tr>
<tr>
<td>GSOC</td>
<td>German Space Operation Centre</td>
</tr>
<tr>
<td>GUS</td>
<td>Gemeinschaft Unabhängigier Staaten: Commonwealth of Independent States, CIS, successor to USSR</td>
</tr>
<tr>
<td>H001</td>
<td>Hermes’ first, unmanned flight</td>
</tr>
<tr>
<td>H02</td>
<td>Hermes’ second flight, the first manned one</td>
</tr>
<tr>
<td>H03</td>
<td>Hermes’ third flight, the second manned one</td>
</tr>
<tr>
<td>H155</td>
<td>Central (cryogenic) stage of Ariane 5</td>
</tr>
<tr>
<td>HAEC</td>
<td>Historical Archives of the European Community</td>
</tr>
<tr>
<td>HBR</td>
<td>High bit rate</td>
</tr>
<tr>
<td>HCA</td>
<td>Hermes carrier aircraft (Avion Porteur Hermes (APH))</td>
</tr>
<tr>
<td>HCB</td>
<td>Hermes control bench (Banc de Controle Hermes (BCH))</td>
</tr>
<tr>
<td>HCBK</td>
<td>Hermes control bench in Kourou (BCHK)</td>
</tr>
<tr>
<td>HCDS</td>
<td>Hermes – Columbus docking system</td>
</tr>
<tr>
<td>HCGS</td>
<td>Hermes control ground segment</td>
</tr>
<tr>
<td>HDA</td>
<td>Hermes docking assembly</td>
</tr>
</tbody>
</table>
HDE Hermes docking electronics
HDP Hermes Development Programme
HDR High data rate
HEG High enthalpy shock tunnel Göttingen
HERA Hermes robot arm
HESAC Hermes Safety Advisory Committee
HESF Hermes engineering support facility (Ensemble de Preparation et de Support Industriel (EPSI))
HFCC Hermes Flight Control Centre (Centre de Control en Vol Hermes (CCVH))
HFCCCK Hermes Flight Control Centre in Kourou (CCHK)
HFS Hermes flight simulator
HGA High gain antenna
HGS Hermes ground segment
HIBE Hermes integration building in Europe (Bâtiment d’Intégration Hermes en Europe (BIHE))
HIBK Hermes integration building at Kourou (=Bâtiment d’Intégration Hermes a Kourou (BIHK))
HLA Hermes launch assembly
HLTF Hermes land transportation facility
HOP Hermes Operations Programme
HOPE H-II orbiting plane (Japan)
HORUS Hypersonic orbital upper stage of the Sänger spaceplane
HOTOL Horizontal take-off and landing, UK spaceplane project
HPA Handling and positioning aid
HPF HRM preparation facility
HPM Hermes propulsion module (MPH)
HPP Hermes Preparatory Programme
HPU Hydraulic power unit
HQ Headquarters
HRM Hermes resource module (Module de Ressources Hermes (MRH))
HSORD Hermes system operations reference description
HSP Hermes spaceplane (Avion Spatial Hermes (ASH))
HSV Hermes space vehicle (Vehicule Spatial Hermes (VSH))
HTA Hermes training aircraft
HTC Hermes Training Centre
HTF Hermes transport facilities
HUD Head-up display
HVS Hermes vehicle system (SVH)
HWMS Human and solid waste management section
HYFLEX Hypersonic flight experiment (Japan)
IABG Industrieanlagen-Betriebsgesellschaft (German industrial)
IAF International Astronautical Federation
ICC Integrated cargo carrier
ICE  Inter connecting element
IM   Identification mock-up (MI)
IMI  Internal multiscreen insulation
IMU  Inertial measurement unit
IOC  Initial operating capability
IOI  In-orbit infrastructure
IOL  Inter-orbit link
IPC  Industrial Policy Committee (ESA)
IRS  Institut für Raumfahrtysteme (Institute for Space Systems) of Stuttgart University
ISS  International Space Station
ISY  International space year (1992)
IVA  Intra-vehicular activity
IXV  Intermediate eXperimental Vehicle
JHONAS Joint Hermes Operations in Neutral buoyancy Assessment Study
L5B  Ariane 5 third stage intended for Hermes’ orbit insertion
LAN  Local area network
LB   Lateral boosters
LBR  Low bit rate
LCD  Liquid crystal display
LDR  Low data rate
LEO  Low earth orbit
LGA  Low gain antenna
LM   Logistics module
LOS  Loss of signal
LOX  Liquid oxygen
LRBA Laboratoire de Recherches Balistiques et Aérodynamiques: Ballistic and Aerodynamic Research Laboratory (France)
LSF  Landing site facilities
LTPP Long Term Preparatory Programme
LV   Launch vehicle
MA   Maquette d’Aménagement (MA1 and MA2)
MAKS Mnogotselevaya Aviatsionnaya-Kosmicheskaya Sistema: Multipurpose aerospace system (Russia)
MAN  Maschinenfabrik Augsburg-Nürnberg (German industrial)
MAROTS Maritime orbital test satellite (ESA)
MAU  Million Accounting Units
MBB  Messerschmitt-Bölkow-Blohm (German industrial)
MCC  Mission Control Centre
MFA  Maquette Functionnel Avion: Space Vehicle Functional Model
MI   Maquette d’Identification (Engineering Model)
MINOS Modules Industriels Orbitaux Spécialisés: Specialized Industrial Orbital Modules or Module Industriel pour Operations Spatiales: Industrial Module for Space Operations
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>MIPS</td>
<td>Million instructions per second</td>
</tr>
<tr>
<td>MLPM</td>
<td>Mini-pressurised logistics module</td>
</tr>
<tr>
<td>MLS</td>
<td>Microwave landing system</td>
</tr>
<tr>
<td>MMH</td>
<td>Mono-methyl hydrazine</td>
</tr>
<tr>
<td>MMI</td>
<td>Man-machine interface</td>
</tr>
<tr>
<td>MODA</td>
<td>Maître d’Œuvre Délégué pour l’Aéronautique (Prime Contractor for Aeronautics)</td>
</tr>
<tr>
<td>MOI</td>
<td>Maître d’Œuvre Industriel (Industry Prime Contractor)</td>
</tr>
<tr>
<td>MON</td>
<td>Mixed oxydes of nitrogen (nitrogen tetroxide)</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of understanding</td>
</tr>
<tr>
<td>MPF</td>
<td>HRM preparation facility</td>
</tr>
<tr>
<td>MPH</td>
<td>Module de Propulsion Hermes: Hermes propulsion module HPM</td>
</tr>
<tr>
<td>MRH</td>
<td>Module de Ressources Hermes: Hermes resource module HRM</td>
</tr>
<tr>
<td>MSCC</td>
<td>Manned Space Laboratories Control Centre</td>
</tr>
<tr>
<td>MST</td>
<td>Maquette Structurel et Thermique: Structural and thermal model</td>
</tr>
<tr>
<td>MSTP</td>
<td>Manned Space Transportation Programme (ESA)</td>
</tr>
<tr>
<td>MTFF</td>
<td>Man-tended free flyer, later called CFFL</td>
</tr>
<tr>
<td>MTFFC</td>
<td>Man-tended Free Flyer Centre</td>
</tr>
<tr>
<td>NASA</td>
<td>National Aeronautics and Space Administration (U.S.A.)</td>
</tr>
<tr>
<td>NASDA</td>
<td>The National Space Development Agency of Japan</td>
</tr>
<tr>
<td>NASP</td>
<td>National AeroSpace Plane (USA)</td>
</tr>
<tr>
<td>NATO</td>
<td>North Atlantic Treaty Organisation</td>
</tr>
<tr>
<td>NBF</td>
<td>Neutral buoyancy facility (of EVA Training Centre)</td>
</tr>
<tr>
<td>NCC</td>
<td>Network Control Centre</td>
</tr>
<tr>
<td>NLR</td>
<td>Nederlands Lucht- en Ruimtevaartlaboratorium: National Aerospace Laboratory (The Netherlands)</td>
</tr>
<tr>
<td>NMC</td>
<td>Network Management Centre</td>
</tr>
<tr>
<td>OCC</td>
<td>Operations Control Centre</td>
</tr>
<tr>
<td>OFT</td>
<td>Orbital flight test</td>
</tr>
<tr>
<td>ONERA</td>
<td>l’Office National d’Études et de Recherches Aérospatiales: National Office for Aerospace Studies and Research (France)</td>
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<tr>
<td>OP</td>
<td>Orbital plane</td>
</tr>
<tr>
<td>ORU</td>
<td>Orbital replacement unit</td>
</tr>
<tr>
<td>P230</td>
<td>Solid propellant booster of Ariane 5</td>
</tr>
<tr>
<td>PDA</td>
<td>MTFF – Pressurised module docking assembly</td>
</tr>
<tr>
<td>PDR</td>
<td>Preliminary design review</td>
</tr>
<tr>
<td>PHGS</td>
<td>Personal hygiene and galley section</td>
</tr>
<tr>
<td>PI</td>
<td>Polymide</td>
</tr>
<tr>
<td>PIC</td>
<td>Payload Integration Centre</td>
</tr>
<tr>
<td>PLS</td>
<td>Personel launch system (NASA)</td>
</tr>
<tr>
<td>PM</td>
<td>Pressurised module</td>
</tr>
<tr>
<td>POCC</td>
<td>Payload Operation Control Centre</td>
</tr>
<tr>
<td>POEM</td>
<td>Polar Orbiting Earth Observation Mission (ESA)</td>
</tr>
<tr>
<td>PPF</td>
<td>Polar platform</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>PPFCC</td>
<td>Payload Preparation Facilities Control Centre</td>
</tr>
<tr>
<td>PPFU</td>
<td>Payload preparation facilities unit (EPCU)</td>
</tr>
<tr>
<td>PREPHA</td>
<td>Programme de Recherche et Technologie pour la Propulsion Hypersonique Avancée: Research and Technology Programme into Advanced Hypersonic Propulsion (France)</td>
</tr>
<tr>
<td>PRIDE</td>
<td>Programme for a reusable in-orbit demonstrator for Europe (ESA)</td>
</tr>
<tr>
<td>PRIME</td>
<td>Precision recovery including manœuvring entry (US Air Force)</td>
</tr>
<tr>
<td>PRR</td>
<td>Preliminary requirements review</td>
</tr>
<tr>
<td>PTA</td>
<td>Plataforma Solar de Almería: Solar platform of Almería</td>
</tr>
<tr>
<td>PTC</td>
<td>Pilot Training Centre</td>
</tr>
<tr>
<td>PTCS</td>
<td>Passive thermal control subsystem</td>
</tr>
<tr>
<td>PTF</td>
<td>Pilot training facility</td>
</tr>
<tr>
<td>QM</td>
<td>Qualification Mission</td>
</tr>
<tr>
<td>RAMS</td>
<td>Reliability, availability, maintainability and safety</td>
</tr>
<tr>
<td>RDA</td>
<td>MTFF – Resource module docking assembly</td>
</tr>
<tr>
<td>RDP-A</td>
<td>Revue de Définition Préliminaire – Avion (Spaceplane preliminary design review of Phase C1)</td>
</tr>
<tr>
<td>REI</td>
<td>Rigid external insulation</td>
</tr>
<tr>
<td>RFP</td>
<td>Request for proposals</td>
</tr>
<tr>
<td>RFQ</td>
<td>Request for quotation</td>
</tr>
<tr>
<td>RKA</td>
<td>Rossîyskoye kosmicheskoye agentstvo: Russian Space Agency</td>
</tr>
<tr>
<td>RM</td>
<td>Re-entry module (ARV)</td>
</tr>
<tr>
<td>RM</td>
<td>Resource module</td>
</tr>
<tr>
<td>RMS</td>
<td>Remote manipulator system</td>
</tr>
<tr>
<td>RT</td>
<td>Ranging terminal</td>
</tr>
<tr>
<td>RTF</td>
<td>Robotics training facility</td>
</tr>
<tr>
<td>RVD</td>
<td>Rendez-Vous and docking</td>
</tr>
<tr>
<td>SALOON</td>
<td>Study of accommodation logistics on board</td>
</tr>
<tr>
<td>SAR</td>
<td>Search and rescue</td>
</tr>
<tr>
<td>SARSAT</td>
<td>Search and rescue satellite</td>
</tr>
<tr>
<td>SC</td>
<td>Spacecraft</td>
</tr>
<tr>
<td>SCR</td>
<td>System concept review</td>
</tr>
<tr>
<td>SDHO</td>
<td>Systeme de Distribution Hydrogene et Oxygene (Hydrogen and oxygen distribution system)</td>
</tr>
<tr>
<td>SEREB</td>
<td>Société pour l’Etude et la Realisation d’Engins Balistiques: Society for study and realization of ballistic devices (France)</td>
</tr>
<tr>
<td>SHEFEX</td>
<td>Sharp edge flight experiment (DLR)</td>
</tr>
<tr>
<td>SIBP</td>
<td>System integration bench (Banc d’Integration Systeme (BIS))</td>
</tr>
<tr>
<td>SiC</td>
<td>Silicon-carbide</td>
</tr>
<tr>
<td>SIMOUN</td>
<td>Systeme d’Investigation pour Materiaux Optimised sur Navette: Investigation system for materials optimised for shuttle (France)</td>
</tr>
<tr>
<td>SLAB</td>
<td>Spaceplane launcher assembly building (BAAL)</td>
</tr>
<tr>
<td>SNIAS</td>
<td>Société Nationale Industrielle Aérospatiale (France)</td>
</tr>
<tr>
<td>SOAR</td>
<td>Sub orbital aircraft reusable</td>
</tr>
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SOFT SubOrbital Test flight: later Single-Orbit Test flight (X-2000)
SOLARIS Station Orbitale Laboratoire Automatique de Rendez vous et d’Interventions Spatiales: Automatic Orbital Laboratory Station for Rendezvous and Space Operations (CNES)
SPAS Shuttle pallet satellite
SPFDB Super plastic formed diffusion bonded
SPOT Satellite Pour l’Observation de la Terre: Satellite for the observation of the earth (CNES)
SRB Solid rocket booster
SRS (Hermes) Space rescue system
SSF Space station freedom
SSTO Single stage to orbit
STAR Satellite Technologique d’Application et de Relais: Technology application and relay satellite
STEAMS Study towards European autonomous manned spaceflight
STS Space transportation system (NASA’s Space Shuttle)
SWSA Solid waste storage assembly
TAL Transatlantic (Transocean) abort landing
TAS Transporteur AéroSpatial: AeroSpace transporter (Dassault)
TCS Thermal control system
TDLiCr Thoria dispersion-strengthened Nickel Chromium
TDRS Tracking and data relay satellite (NASA)
TDRSS Tracking and data relay satellite system
TPS Thermal protection system
TsAGI Tsentralniy Aerogidrodinamicheskiy Institut: Central Aerohydrodynamic Institute (Russia)
TsNIIMash Tsentralnyi Nauchno-Issledovatelskiy Institut Mashinostroeniya: Central Research Institute of Machine Building (Russia)
TSTO Two stage to orbit
TsUP Tsentr Upravleniya Polyotomiy: Flight Control Centre (Moscow)
TT&C Tracking, tele-monitoring and control
UCM Unpressurised cargo module (ARV)
UET User earth terminal
UHF Ultra-high frequency
UK United Kingdom
USA United States of America
USAF United States Air Force
USC User Support Centre
USOC User Support and Operations Centre
USSR Union of Soviet Socialist Republics
VEB Vehicle equipment bay (Ariane)
VEH Vehicle d’Essay Hypersonique: Hypersonic test vehicle
VEHRA Véhicule Hypersonique Réutilisable Aéroporté: Reusable airborne hypersonic vehicle (Dassault)
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>VERAS</td>
<td>Véhicule Expérimental de Recherches Aérothermodynamiques et Structurales: Experimental vehicle for aero thermal dynamic and structural research</td>
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<td>VSH</td>
<td>Véhicule Spatial Hermes: Hermes space vehicle (HSV)</td>
</tr>
<tr>
<td>VSH</td>
<td>Véhicule Suborbital Habité: Manned suborbital vehicle (Dassault)</td>
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<tr>
<td>VSM</td>
<td>Versatile service module (of the ARV)</td>
</tr>
<tr>
<td>YES</td>
<td>Yankee escape system</td>
</tr>
<tr>
<td>ZL</td>
<td>Zone de Lancement: Launch Pad</td>
</tr>
<tr>
<td>ZOE</td>
<td>Zone of exclusion</td>
</tr>
<tr>
<td>ZP</td>
<td>Zone de Préparation: Preparation area</td>
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## Appendix B

### ESA conversion rates for one Accounting Unit 1985–1993

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<td>Belgian Franc</td>
<td>45.54890</td>
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<td>43.01460</td>
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<td>43.38600</td>
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<td>German Mark</td>
<td>2.23481</td>
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<td>Dutch Guilder</td>
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<td>2.33433</td>
<td>2.31754</td>
<td>2.31468</td>
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<td>Spanish Peseta</td>
<td>126.30300</td>
<td>128.02100</td>
<td>137.41000</td>
<td>144.06200</td>
<td>137.35000</td>
<td>132.63400</td>
<td>127.10500</td>
<td>128.15700</td>
<td>129.01800</td>
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<td>Swiss Franc</td>
<td>1.86169</td>
<td>1.88425</td>
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<td>1.72000</td>
<td>1.72839</td>
<td>1.78878</td>
<td>1.74249</td>
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<td>UK Pound</td>
<td>0.59249</td>
<td>0.57227</td>
<td>0.63797</td>
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<td>0.67406</td>
<td>0.71503</td>
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<tr>
<td>US Dollar</td>
<td>0.81586</td>
<td>0.73291</td>
<td>0.96161</td>
<td>1.14093</td>
<td>1.18424</td>
<td>1.04685</td>
<td>1.22289</td>
<td>1.15134</td>
<td>1.30324</td>
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*Source: ESA*
Appendix C: Greek Mythology Sources of Names in the Hermes and Related Programmes

Arcas

Son of Zeus and Callisto. Callisto was a nymph in the retinue of the goddess Artemis. As she would not be with anyone but ARTEMIS, Zeus cunningly disguised himself as Artemis and seduced Callisto.

Ariane (Ariadne)

Daughter of MINOS, King of Crete, and his queen Pasiphaë, daughter of Helios. She is mostly associated with mazes and labyrinths, due to her involvement in the myths of the Minotaur and Theseus. Her father put her in charge of the labyrinth where sacrifices were made as part of reparations; however, she would later help Theseus in overcoming the Minotaur and saving the would-be sacrificial victims. In other stories, she became the bride of the god Dionysus.

Artemis

Often described as the daughter of Zeus and Leto, and the twin sister of Apollo. She was the Hellenic goddess of the hunt, wild animals, wilderness, childbirth, virginity and protector of young girls, bringing and relieving disease in women; she often was depicted as a huntress carrying a bow and arrows. In later Hellenistic times, she even assumed the ancient role of Eileithyia in aiding childbirth.
Castor and Pollux

Twin brothers, together known as the Dioskouri. Their mother was Leda, but Castor was the mortal son of Tyndareus, the king of Sparta, and Pollux the divine son of Zeus, who seduced Leda in the guise of a swan. Though accounts of their birth are varied, they are sometimes said to have been born from an egg, along with their twin sisters HELEN of Troy and Clytemnestra.

When Castor was killed, Pollux asked Zeus to let him share his own immortality with his twin to keep them together, and they were transformed into the constellation Gemini. The pair was regarded as the patrons of sailors, to whom they appeared as St. Elmo’s fire, and were also associated with horsemanship.

Helen

Helen of Troy, also known as Helen of Sparta, was the daughter of Zeus and Leda, and was a sister of CASTOR, POLLUX, and Clytemnestra. In Greek myths, she was considered to be the most beautiful woman in the world, a representation of ideal beauty. By marriage she was Queen of Laconia, a province within Homeric Greece, the wife of King Menelaus. Her abduction by Paris, Prince of Troy, brought about the Trojan War.

Hera

Hera was the wife and one of three sisters of Zeus in the Olympian pantheon of Greek mythology and religion. Her chief function was as the goddess of women and marriage.

Hermes

Second youngest of the Olympian gods, son of Zeus and the Pleiad MAIA. Hermes was a god of transitions and boundaries. He was quick and cunning, and moved freely between the worlds of the mortal and divine, as emissary and messenger of the gods, intercessor between mortals and the divine, and conductor of souls into the afterlife. He was protector and patron of travelers, herdsmen, thieves, orators and wit, literature and poets, athletics and sports, invention and trade. In some myths he was a trickster, and outwitted other gods for his own satisfaction or the sake of humankind. His attributes and symbols include the herma, the rooster and the tortoise, purse or pouch, winged sandals, winged cap,
and his main symbol was the herald’s staff, the Greek kerykeion or Latin caduceus which consisted of two snakes wrapped around a winged staff.

**Maia**

One of the Pleiades and the mother of HERMES: daughter of Atlas and Pleione the Oceanid, and was the eldest of the seven Pleiades. They were born on Mount Cyllene in Arcadia, and were sometimes called mountain nymphs, oreads; Simonides of Ceos sang of “mountain Maia” (Maia oureias) “of the lovely black eyes.” Because they were daughters of Atlas, they were also called the Atlantides.

**Minos**

First King of Crete, son of Zeus and Europa. Every 9 years, he made King Aegeus pick seven young boys and seven young girls to be sent to Daedalus’ creation, the labyrinth, to be eaten by the Minotaur. After his death, Minos became a judge of the dead in the underworld. By his wife, Pasiphaë (or Crete), he fathered ARIADNE, Androgeus, Deucalion, Phaedra, Glaucus, Catreus, Acacallis and Xenodice.
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