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Safe Transportation Systems for Sustainable Commercial Human Spaceflight / Small Launchers: Concepts and Operations (Part II) (9-D6.2)

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A NEW COMMERCIAL SPACEFLIGHT TRAINING PROGRAM FOR SUBORBITAL AND ORBITAL SPACEFLIGHT

Abstract

After many years of engineering and development, suborbital and orbital commercial spaceflight vehicles are finally expected to enter service in the next year or two. Blue Origin is already flying FAA/AST licensed unmanned commercial suborbital research flights from their private spaceport in west Texas and expect to begin testing their New Shepard vehicle with onboard crews this year. Virgin Galactic should begin powered flight tests on the second SpaceShipTwo in 2018 with commercial suborbital tourism flights potentially beginning in 2019. For orbital commercial spaceflight, SpaceX and Boeing should both begin flight testing and enter initial commercial flight service to the ISS before the close of 2019. These suborbital and orbital vehicle programs now provide a solid business foundation for the development of dedicated commercial spaceflight training programs to enable safe and enjoyable spaceflight experiences for commercial customers. Blue Abyss Ltd. is developing a dedicated spaceflight training facility and associated training curricula in Central Bedfordshire about an hour north of central London. The facility will be located at the former RAF Henlow base as part of a regional development plan for the Oxford – Cambridge Technology Corridor. The Blue Abyss facilities will include the largest indoor pool in the world, larger than the NASA Neutral Buoyancy Laboratory in Houston. The pool will include a unique 50 meter deep shaft for high pressure training for technical diving and ROV work. In addition to enabling Neutral Buoyancy spacesuit training, Blue Abyss will also operate a human centrifuge for high G orientation, training and medical screening of commercial spaceflight crews and customers. Furthermore, Blue Abyss will operate a parabolic flight service to provide weightless familiarization, orientation and spaceflight training. High fidelity cabin mockups and seats will be installed in the parabolic flight aircraft to facilitate realistic, bespoke training experiences . Hypobaric chamber training will also be offered for hypoxia familiarization as well as pressure suit safety and operations services. Once the development of the first facility in the UK is underway, Blue Abyss plans to construct additional facilities in the US, the Middle East, and Asia in order to serve regional energy and space sector needs whilst providing unique experience packages for customers interested in getting a taste of the "Overview Effect" prior to committing to an actual commercial spaceflight. This paper will describe the facilities, training curricula and future aspirations for the Blue Abyss commercial spaceflight training programs.