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ON THE FEASIBILITY OF LANDING THE DREAM CHASER SPACE VEHICLE IN SOUTH AFRICA

Abstract

The Dream Chaser is a space vehicle currently under development by the Sierra Nevada Corporation (SNC) for purposes of carrying humans and cargo to low Earth orbit. In 2016, the United Nations entered into an agreement with SNC to fly the experimental payloads on the Dream Chaser. The collaborative UNOONSA-SNC Dream Chaser mission will be approximately two to three weeks in duration, with the Dream Chaser orbiting Earth at an altitude of 500km with an inclination of 0-35. This will be the first space mission dedicated to the attaining the Sustainable Development Goals.

In this investigation the South African space and aerospace industry is placed in focus for the purpose of studying the feasibility of landing the Dream Chaser Space vehicle on South African soil. The research dictated possibly having to establish a dual use airport/spaceport recognised by the South African Space Council under broader supportive legislation of the UNOOSA treaties and their regulatory guidelines. Elements addressed in this investigation range from facilities such as the air force bases and airports to workshops and laboratories through to Dream Chaser specific requirements and specifications, right down to civil aviation requirements. This dissertation will assess all available infrastructure and supporting entities that will facilitate the safe landing of the Dream Chaser in South Africa. Possible site visits and interviews may be required at a later stage.

This investigation prefaced plans to submit a landing proposal for the Dream Chaser requested in a CFI published by UNOOSA for landing sites outside of USA. The window has subsequently closed for proposals however the research is still highly relevant to the further development of the South African space industry. This report is the first major step in researching and documenting the potential landing any reusable space vehicle in South Africa, it therefore aims to make a case for South Africa as a suitable and attractive landing destination not just for the Dream Chaser but for accompanying scientists and researches from all over the world involved in the mission.