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Canada's National Research Council Institute for Aerospace Research Study of the Falcon 20

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Presented by Capture 3D and the NRC

The National Research Council's Institute for Aerospace Research - Aerodynamics Laboratory represents an international proving ground for design, instrumentation, model creation, and computational and theoretical aerodynamics. In order to build a Computational Fluid Dynamics (CFD) model of an airplane and relate it to wind tunnel experiments, the NRC reverse engineers full-size aircraft to create CAD models

The project goals are to produce three dimensional geometry of the Falcon-20 parabolic flight aircraft for Computational Fluid Dynamics studies. By combining photogrammetry and optical scanning technology, the National Research Council (NRC) was able to improve quality, meet time constraints, acquire more reliable data, and increase confidence in downstream results over previous methods used for similar projects.

The NRC's previous measuring processes were time-consuming (10-15 days) and results were difficult to work with. Data was sparse, offset from the surface, and required time consuming interpretation. For the Falcon 20 parabolic flight aircraft project time and data constraints forced the NRC to find a faster way to produce better results. The NRC required data representative of the actual surface, dense enough to capture complex blended surfaces, and the ability to capture multiple "in-flight" positions of the flaps and rudder. In addition, the process had to be done in only 3 days.

This presentation will discuss the objective of the project, the process used, the challenges with the technology used, how the challenges were overcome and the results of the project.



Scan result using Photogrammetry White Light scanning technique.