

# Report on KC-135 Reduced Gravity Flights for Flight Experiment Development of the WONDER Payload (Flights: May 2002)

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## Introduction

Two specific issues were to be addressed with reduced gravity tests on the KC-135 in Houston. The tests were to take place on May 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup>. Successful tests were performed on May 5<sup>th</sup> and 6<sup>th</sup>, but mechanical problems with the KC-135 plane prevented flight on a third day. One item tested included a series of scaled down versions of the substrate modules designed for the PTIM as part of WONDER. These modules were flooded with dyed water to allow observation of fluid dynamics in zero gravity. Another test included the phase separation design incorporated into the PTIM. An air and water mixture was pumped into the phase separation device and the liquid output of the device was monitored for air bubbles. Each test was incorporated with a fixture provided by Texas A&M and a glovebox provided by Johnson Space Center (See Figure 1). This fixture is manifested to fly again in July, 2002. Additional WONDER tests may be performed on those flights.

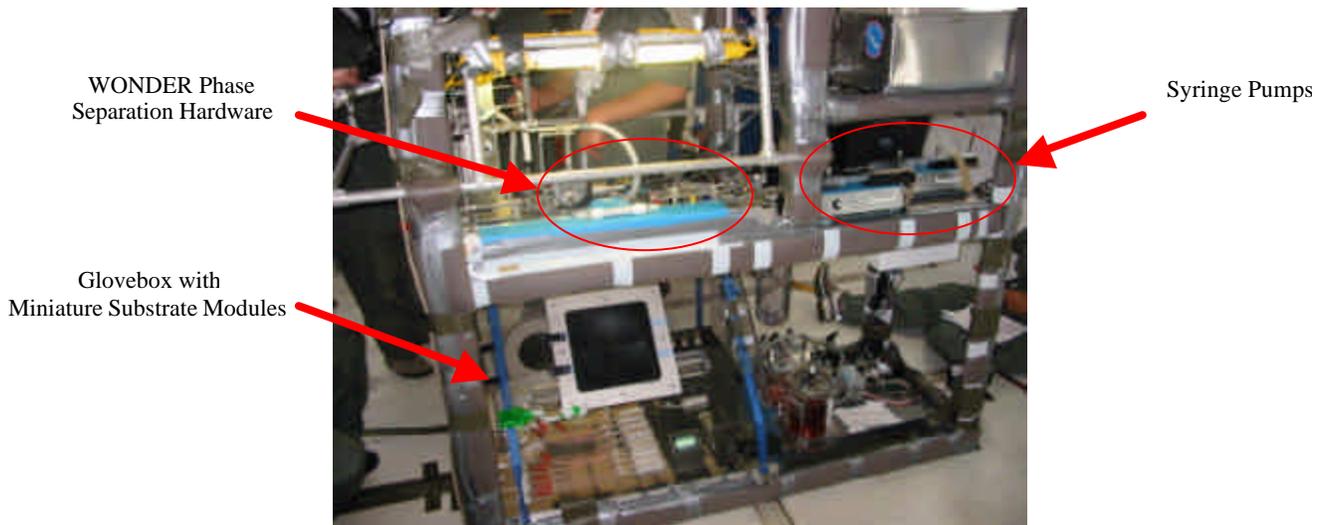


Figure 1 - Texas A&M Test Fixture with Glovebox and Phase Separation Hardware Installed

<b>Video of KC-135 Setup:</b>	 KC-135 WONDER Setup.WMV
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