Flight Validation of CONDUIT [1] using RASCAL [2]

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Relevant Milestone: CONDUIT Flight Validation (SAFOR #4 Milestone due Sep 01)

Shown: A) CONDUIT is used to design flight control laws. B) RASCAL helicopter performs flight validation of control system design. C) Research Flight Control System (RFCS) hardware used for in-flight validation.

Accomplishment / Relationship to Milestone and ETO:

- The milestone is complete.
- The programmable full-authority Boeing-supplied RFCS needed for flight validation was successfully integrated in the Army/NASA RASCAL UH-60 helicopter and flight qualification was achieved.
- A control system design representative of a small civil helicopter was developed using the CONDUIT design tool, implemented in the RASCAL helicopter using the RFCS, and validated in flight.
- Flight evaluations of the control law design verified that Level 1 Handling Qualities were achieved for flying tasks typical of civil operations.

Future Plans:

- Publish a NASA report and technical conference paper to document 1) the desktop-to-flight design process and 2) the flight test results.

Acronym Definitions:
1. CONDUIT = Control Designer's Unified Interface
2. RASCAL = Rotorcraft Aircrew Systems Concepts Airborne Laboratory

ETO: Safety

Base Rotorcraft Program

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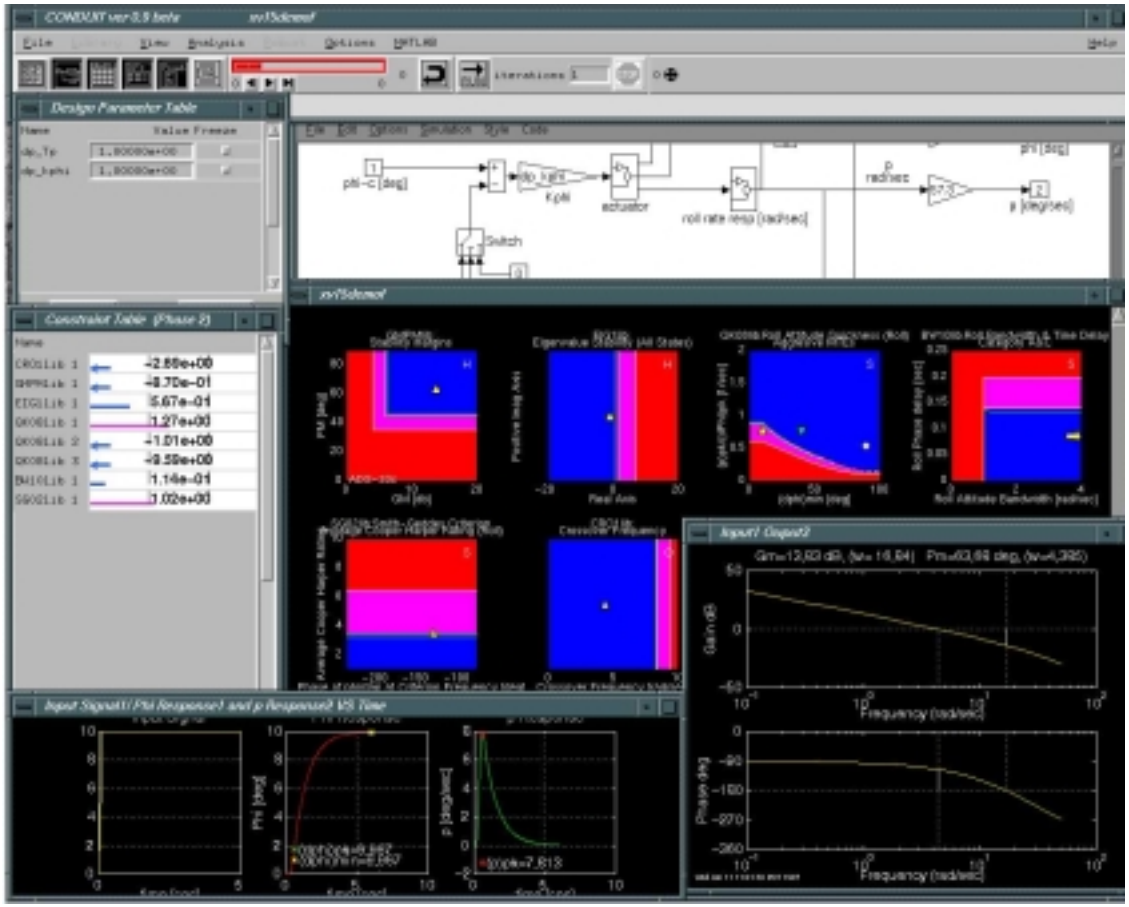
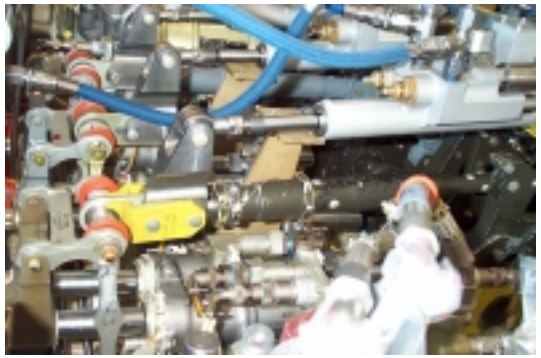


(A) CONDUIT Design Tool

(B) RASCAL engaged in flight testing



(C) RFCS Servos installed in RASCAL