8. ADDITIONAL INFORMATION ABOUT FLIGHT SIMULATOR QUALIFICATION FOR NEW OR DERIVATIVE HELICOPTERS

a. Typically, a helicopter manufacturer's approved final data for performance, handling qualities, systems or avionics is not available until well after a new or derivative helicopter has entered service. However, flight crew training and certification often begins several months prior to the entry of the first helicopter into service. Consequently, it may be necessary to use preliminary data provided by the helicopter manufacturer for interim qualification of flight simulators.

b. In these cases, the NSPM may accept certain partially validated preliminary helicopter and systems data, and early release (''red label'') avionics data in order to permit the necessary program schedule for training, certification, and service introduction.

c. Simulator sponsors seeking qualification based on preliminary data should consult the NSPM to make special arrangements for using preliminary data for flight simulator qualification. The sponsor should also consult the helicopter and flight simulator manufacturers to develop a data plan and flight simulator qualification plan.

d. The procedure to be followed to gain NSPM acceptance of preliminary data will vary from case to case and between helicopter manufacturers. Each helicopter manufacturer's new helicopter development and test program is designed to suit the needs of the particular project and may not contain the same events or sequence of events as another manufacturer's program or even the same manufacturer's program for a different helicopter. Therefore, there cannot be a prescribed invariable procedure for acceptance of preliminary data; instead there should be a statement describing the final sequence of events, data sources, and validation procedures agreed by the simulator sponsor, the helicopter manufacturer, the flight simulator manufacturer, and the NSPM.

NOTE: A description of helicopter manufacturer-provided data needed for flight simulator modeling and validation is to be found in the ''Royal Aeronautical Society Data Package Requirements for Design and Performance Evaluation of Rotary Wing Synthetic Training Devices.''

e. The preliminary data should be the manufacturer's best representation of the helicopter, with assurance that the final data will not deviate significantly from the preliminary estimates. Data derived from these predictive or preliminary techniques should be validated by available sources including, at least, the following:

(1) Manufacturer's engineering report. The report should explain the predictive method used and illustrate past success of the method on similar projects. For example, the manufacturer could show the application of the method to an earlier helicopter model or predict the characteristics of an earlier model and compare the results to final data for that model.

(2) Early flight test results. This data is often derived from helicopter certification tests and should be used to maximum advantage for early flight simulator validation. Certain critical tests that would normally be done early in the helicopter certification program should be included to validate essential pilot training and certification maneuvers. These tests include cases where a pilot is expected to cope with a helicopter failure mode or an engine failure. The early data available will depend on the helicopter manufacturer's flight test program design and may not be the same in each case. The flight test program of the helicopter manufacturer should include provisions for generation of very early flight tests results for flight simulator validation.

f. The use of preliminary data is not indefinite. The helicopter manufacturer's final data should be available within 12 months after the helicopter first entry into service or as agreed by the NSPM, the simulator sponsor, and the helicopter manufacturer. When applying for interim qualification using preliminary data, the simulator sponsor and the NSPM should agree on the update program. This includes specifying that the final data update will be installed in the flight simulator within a period of 12 months following the final data release, unless special conditions exist and a different schedule is acceptable. The flight simulator performance and handling validation would then be based on data derived from flight tests. Initial helicopter systems data should be updated after engineering tests. Final helicopter systems data should also be used for flight simulator programming and validation.

g. Flight simulator avionics should stay essentially in step with helicopter avionics (hardware and software) updates. The permitted time lapse between helicopter and flight simulator updates should be minimal. It may depend on the magnitude of the update and whether the QTG and pilot training and certification are affected. Differences in helicopter and flight simulator avionics versions and the resulting effects on flight simulator qualification should be agreed between the simulator sponsor and the NSPM. Consultation with the flight simulator manufacturer is desirable throughout the qualification process.

h. The following describes an example of the design data and sources that might be used in the development of an interim qualification plan.

(1) The plan should consist of the development of a QTG based upon a mix of flight test and engineering simulation data. For