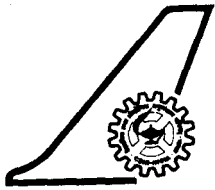


Documentation Sheet



**National
Aerospace
Laboratories**

Classification **RESTRICTED**

No. of copies **8**

Title **Helicopter Handling Qualities Analysis Software Package**

Author/s **Shaik Ismail, Jatinder Singh**

Division **FMCD**

NAL Project No. **D-1-131**

Document No. **PD-FC-0415**

Date of issue **November 2004**

Contents: **Pages 53 Figures 33 Tables 11 References 7**

External Participation ---

Sponsor **Operational Problems and Airworthiness Panel, AR&DB,
New Delhi**

Approval **Head, FMCD:  Group Head: **

Remarks

Keywords **HELI-HQPACK, Helicopter, Rotorcraft, Handling Qualities,
Software Package, Flying Qualities, MIL-H-8501A, ADS-33E,
BO 105, Chetak**

Abstract

This document describes the work done at the FMC Division, NAL, under a grants-in-aid project sanctioned by the Operational Problems and Airworthiness Panel of AR&DB, New Delhi. This project was undertaken by NAL with the main objective of upgrading the helicopter handling qualities evaluation practice in our country to the current standard, ADS-33E, and carrying out further R&D work in the field in collaboration with the Air Force and the industry. A software package named HELI-HQPACK was developed in the format of a GUI based MATLAB Toolbox. The software was validated using the BO 105 helicopter HQ data obtained from DLR, Germany. HELI-HQPACK can be used for the evaluation of quantitative HQ criteria specified in ADS-33E. The salient features and validation of HELI-HQPACK are discussed in a separate document. Several compliance demonstration manoeuvres or MTEs recommended by ADS-33E were carried out using Chetak helicopter in collaboration with the Air Force Test Pilot School, ASTE, Bangalore. The results of the MTE evaluations are discussed in this document, and plans for future work are outlined.