

Exercise Keevil : Noise levels of six military helicopters

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ABSTRACT

For a number of years the National Physical Laboratory, supported by the Ministry of Defence, has been developing AIRNOISE, a mathematical model for computing aircraft noise contours. The model is now being extended to include helicopter operations. In order to provide basic source noise data for the model, a special noise trial - Exercise Keevil - has been conducted at RAF Keevil in Wiltshire. One helicopter of each of six types performed a variety of flight operations over an array of microphones. Information on aircraft position and speed were obtained by video tracking techniques. This report describes the trial and presents the results obtained.

Approved on behalf of Chief Executive, NPL,
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1 INTRODUCTION

For a number of years the National Physical Laboratory, supported by the Ministry of Defence has been developing AIRNOISE, a mathematical model for computing aircraft noise contours¹. The model is used by the RAF Institute of Health and Medical Training to determine eligibility for compensation for noise nuisance. Details of the compensation criteria and the background to them have been described by Berry and Weston². NPL is currently working on the extension of the model's capabilities to allow it to be used for helicopter operations at airfields and helicopter landing sites. Although there exist a number of noise databases for a wide range of helicopter types³, they were found to be inappropriate for the helicopter types of primary interest to the Ministry of Defence. It was therefore decided that a new noise trial was required to obtain basic source noise data for use in the AIRNOISE model. This report describes the trial and presents the results obtained. Details of the helicopter noise model itself and of the way the noise measurement database presented in this report is used in the model will be the subject of a separate report.

2 FLIGHT TEST PROGRAMME

The helicopter types used in the trial were Wessex (Mk 1), Puma (Mk 1), Gazelle, Sea King (Mk 4), Lynx (Mk 1) and Chinook CH47C (Mk 1).

The noise trial took place at RAF Kevel. This is an old wartime airfield. The base is disused though the main runways and surrounding airfield are maintained for operational training. It was selected because of its availability for sole use by the trial team and for its relative remoteness from residential areas. The operational aspects of the trial were supported by No. 1 Group RAF Upavon who contributed air traffic control facilities and fire/rescue cover. Figure 1 shows an overall view of the airfield.

On arrival at the airfield each helicopter landed close to the Control Tower, and the crew were briefed on the planned flight programme in order to come to an agreed set of flight operations. The starting point of the briefing was the list of operations shown in Table 1. Typically each aircraft performed a series of standard departures and