REPORT ON RAF BRIZE NORTON ENVIRONMENTAL NOISE AND ITS MITIGATION

In 2011, the C130 Hercules Force moved from RAF Lyneham to RAF Brize Norton under an initiative to operate the Air Transport force more efficiently from a single hub. The noise assessment that was conducted to support the move focused on the arrival and departure of the Hercules, rather than the noise generated as a result of maintenance activity. Over the last year, it has become clear that this noise in particular, especially at a time of high operational activity in support of Afghanistan, has affected some local residents and, as a result, the RAF commissioned a survey to better understand the problem so that appropriate mitigation measures could be taken. In the interim, the Station has engaged with those affected within the local community and, where possible, has taken immediate action ahead of the report to limit ground noise.

The publication of the AMEC Technical Report is an important step in establishing a common understanding of the levels of aircraft noise that affect Station and community alike, and it will help to inform decisions that will need to be made on potentially complex solutions.

While the MOD has an exemption from the primary legislation concerning noise, the Environmental Protection Act 1990, for noise emitted from operational and training activities (which would cover engine ground run noise generated at RAF Brize Norton), the MOD, and the RAF in particular, endeavours to act as a good neighbour to local communities and has a comprehensive policy on environmental noise. This requires that MOD activities shall, as far as reasonably practicable, be conducted: ‘so as to minimise the noise generated whilst achieving operational imperatives (including those which are an operational necessity…), to reduce disturbance to local communities including residential areas (both Service and public) together with impacts on domestic animals and wildlife and their habitat.’ We are striving to solve the noise issue in that spirit.

What do the results say?

The Technical Report, which is available on-line, has considerable detail. In essence, it states that:

A Hercules, under its most noisy engine ground run conditions, produces more noise in some of the local villages than would have been experienced from the VC10 aircraft which previously operated from the Hercules maintenance location.

The noise produced by a Hercules is greatest from the front of the aircraft and is most apparent in Black Bourton village.

The noise generated by a Hercules engine ground run has a distinct peak at low frequencies. Whilst higher frequencies may be louder at the source, those higher frequencies attenuate more quickly over distance thereby increasing the prominence of the low frequency tone which can be described as an ‘annoying’, ‘low frequency hum’. However, the noise generated from any activity is highly dependent on meteorological conditions.

1 Joint Service Publication (JSP) 418, MOD Corporate Environmental Protection Manual
The results show that, prior to any mitigation, the measured noise in some local villages exceeds the MOD guideline levels. However, it is important to note that these measurements were taken prior to RAF Brize Norton actively seeking to reduce the effects of noise in the local community.

What have we done so far?

As well as apologising for any distress that the engine noise may have caused to some residents of the local community, we recognised that residents needed an improved way to discuss this issue with the Station and we have improved our engagement through meetings with the Strategic Group, Liaison Group and Local Consultation Working Groups providing a broad basis for engagement up to District Council level. Whilst the Technical Report demonstrates that there is no single solution that can be introduced quickly to completely resolve the issue, we:

Have established a permanent Environment Noise Working Group on the Station to drive forward improvement in both the generation of noise and noise amelioration.

Rigorously scrutinise any need to conduct engine ground runs and only those deemed to be essential to current military operations (eg in Afghanistan) are conducted and must be authorised by a Senior Officer on the Station.

Have identified areas on Station where conducting engine ground runs has less of an impact on local communities and, wherever possible, we tow aircraft to these locations to conduct testing.

What are we doing now?

Just as commissioning the Technical Report enables us jointly to understand the issue now, we need to be able to understand noise in the future and so we plan to install permanent noise monitoring stations. We are also working on understanding meteorological parameters (particularly wind direction and strength) so that we can better decide on where and when ground runs should be conducted; this will hopefully use computer modelling which will benefit from the future continued gathering of noise data. We are investigating whether the re-orientation of aircraft parking will improve the level of noise experienced locally, though we also need to bear in mind the problem of noise exposure for those who live on the Station. In order to move aircraft to minimise the noise generated during engine running, additional manpower and equipment are also being provided. We are investigating how we can undertake regular noise monitoring both at the Station and locally in order to ensure that the measures we put in place are effective. Finally, a review of the Hercules aircraft operating procedures is underway, in conjunction with the manufacturer, to look at methods of reducing wear on aircraft engines and other systems. This is hoped to reduce the maintenance requirement and therefore the overall number of engine ground runs we need to conduct.

What are we working on for the future?

Notwithstanding anything we can achieve with improving aircraft reliability, we cannot remove the need for engine ground runs completely, not least for safety reasons. We are therefore, also investigating the benefit of installed (on wing) and uninstalled (off wing) engine testing facilities within buildings that enclose or form a barrier to the noise. Both options are technically complex, would take an estimated 2 to 3 years to deliver, and we
would have to be sure that the noise reduction achieved, would justify the considerable investment of taxpayers’ money required. Any solution also needs to be future proof and to consider specifically the introduction of the larger A400M Atlas aircraft.

Under current plans the Atlas will operate from RAF Brize Norton and, learning lessons from the Hercules, we are already looking at the noise generated from the aircraft such that we can minimise the impact on our surrounding communities. Atlas noise is similar to that of the Hercules, but, as a modern aircraft, the frequency of ground runs are anticipated to be far fewer than those required for Hercules. Moreover, the current planned location for Atlas engineering is in an area of the Station more remote from local communities. The time until the aircraft enters service will permit a comprehensive approach to be developed into mitigating any noise-related issues.

If it becomes apparent that we are unable to further attenuate the noise at source to tolerable levels, we will offer an acoustic noise insulation package to resident's properties. More details will be placed on the Station website in due course.

Summary

The transfer of Hercules aircraft from RAF Lyneham to RAF Brize Norton has created a change in noise generation, and particularly that associated with engine ground runs. This noise has been examined by an external consultant and although not subject to the Environmental Protection Act (1990), the noise in certain areas does exceed the MOD’s own policy.

In addition to utilising a number of engagement approaches and recognising that there is no ‘silver bullet’, RAF Brize Norton has taken a number of immediate actions to address these concerns. This mitigation has had some positive effect. Further noise measurement is planned and further mitigation activity is under investigation. Additional funds have been committed to mitigation measures and future actions may see this increase. The Atlas aircraft which will be operated from RAF Brize Norton is expected to have a reduced requirement for engine ground runs. Additionally, the aircraft will be operated from a different location on Station and the time available prior to its introduction permits mitigation (including those than can be combined with Hercules noise mitigation) to be put in place.

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