Defence Materiel Organisation

Netherlands Ministry of Defence

Directorate of Projects & Procurement
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To: Gripen International
SE - 58 188 Linköping
Sweden
Attn.: Mr. M. Lewis-Olsson

Date: 22 January 2009
Our reference: DPTV VW VP/2009002072
Subject: RNLAF F-16 Replacement

Dear Magnus,

On 7 November 2008 the Netherlands Defence Materiel Organization (DMO) requested Gripen International to provide the currently available fly over aircraft noise (LAmax characteristics) of the Gripen NG, fitted with the F414 Engine. Although we explained that the Comparative Analysis did not comprise the noise characteristics, we indicated it was our ambition to make an effort to collect relevant information in order to inform Parliament accordingly.

On 21 November 2008 we received a report on the noise measurements on the Gripen Demo conducted in November 2008. The report has been studied by DMO and the National Aerospace Laboratory (NLR). A conclusion was reached that the information provided by Gripen International is not sufficient to carry out noise contour calculations.

We therefore would like to request additional information on the aircraft noise characteristics of the Gripen NG, as described in the annex to this letter. This information should be made available before 1 April 2009, in time for an analysis to be performed by NLR, the results of which should be available to Parliament before its deliberations next April. If necessary, DMO is willing to provide Gripen International with a detailed noise measurement plan. Of course, it is imperative that these characteristics are mutually consistent with the information as provided in sections C, D and E of the responses to the Questionnaire.

Yours faithfully,

B. van Lent

Please quote date, our reference and subject when replying.

LF 17300/eng. 1e druk

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ANNEX

Aircraft Noise Measurements

When comparing the noise impact of two different types of aircraft, it is important to measure the noise and aircraft flight performance data with a similar accuracy and method.

This requires a comparable data set with respect to the flown profiles and corresponding power settings, speeds, altitudes etc. Furthermore a comparable noise measurement set-up, a comparable analysis and calculation of the noise are required. With the provided levels we also need a description of the acoustical ground properties and information on the meteorological conditions (wind speed, direction, temperature, humidity and atmospheric pressure [refresh rate of 1 Hz] during the measurements (at the ground and at 300 ft altitude at the location of the measurements) at the noise measurement site where the microphones are placed.

The take off, landing and cruise profiles and weight for a Gripen NG with external stores (2 fuel tanks including fuel, launchers, weapon pylons, targeting pod and jammer) must be available. This configuration must be used for the measurement of noise.
For the take-off and landing profiles the following information is required: position, altitude, time, speed and power setting for take-off, flyover and approach.

The noise recordings are required:

- below the aircraft, measured with a microphone on a hard ground plate and a microphone at a 4 ft pole,
- at both sides of the flight path: at distances of 125ft, 250ft, 500 ft, 1000ft, 2000ft and 4000ft from the centreline with a microphone at a 4ft pole,
- at 1000ft from the centreline at both sides with a microphone at 125 ft and 250 ft AGL.

The noise data format is raw data (sample rate min 100kHz, 24 bits) from recordings of noise. The aircraft performance data must have a refresh rate of 10Hz.

In the Netherlands the LAmax is being used for calculating the noise contours in the vicinity of airbases. The LAmax is the A-weighted maximum sound level. This maximum sound level is determined by integrating the Sound Pressure Level with a period of 1 second. In type I sound level meters this is known as the option "slow". From the raw data the LAmax levels will be derived by NLR. With the flight performance data/flight profiles data and the LAmax data, NLR can calculate the noise contours.

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The following procedures are an example for a data set:

1. Horizontal fly-over at 1000 ft with a constant speed of 230 knots
2. Horizontal fly-over at 1000 ft with a constant speed of 275 knots
3. Horizontal fly-over at 1000 ft with a constant speed of 330 knots
4. Horizontal fly-over at 1000 ft in full AB, with a speed of 275 knots
5. Horizontal fly-over at 1000 ft in mil power, with a speed of 275 knots
6. Horizontal fly-over at 1000 ft in 90% mil power, with a speed of 275 knots
7. Horizontal fly-over at 1000 ft in 75% mil power, with a speed of 275 knots
8. Horizontal fly-over at 1000 ft in 50% mil power, with a speed of 275 knots
9. Horizontal fly-over at 1000 ft in cruise, wheels up
10. Horizonal fly-over at 1000 ft in cruise, wheels down
11. Horizontal fly-over at 1000 ft in approach configuration
12. Simulated Take-off at 1000 ft in MIL power
13. Simulated Take-off at 1000 ft in AB.

This data set must be representative for the speed, altitude and power settings during the take-off, landing and cruise near a military airbase.