Acoustic Problems - Arrow 1

Several comments on noise problems reviewed in Reference 1, are made. A few practical comparisons of fact with estimate are available, but many others are not due to the shortness of the programme.

1. Jet Noise: Comparison with estimates is quite good but afterburning gave smaller noise levels than estimated (Reference 2). Some structure was loosened but no anticipated failures occurred on the sting or control surfaces.

2. Boundary Layer Pseudo-Noise: This phenomenon was reviewed in Reference 1 based on Reference 3 information. No measurements were actually made but a microphone was installed on the side of the intake (18" aft) where panel failure had occurred. Buffeting was probable in this region as well.

3. Oscillating shock wave structures on the intake ramp were shown (Reference 4) to produce no ill effects due to the low frequency. No pilot comments were made concerning shock oscillations over the canopy due to the presence of the intakes.

4. Equipment noise in the cockpit was uncomfortably high due to the turbo compressor in the air conditioning system (Reference 5).

5. References:

1. "Review of Noise Problems on Arrow 1 and 2" 7/Elastics/3, H.F.W. Naylor, February 1958.

2. P&W General Turbine Information Letter 14.

3. "Boundary Layer Induced Noise". UTIA Report 37, H.S. Ribner.

4. "Oscillating Shock Effects on Intake Ramp Structure". Thermoelastics Report P6-S4/4, K. Vriend.

5. "Air Conditioner Noise Measurements". J.W. Wilde, Avro Plant Engineering.