INDIAN ARMY
REQUEST FOR INFORMATION
FOR
MAIN ROTOR BLADES FOR CHEETAH/CHEETAL HELICOPTERS

1. The Indian Army will be procuring Main Rotor Blades for Cheetah/Cheetal helicopters in the near future on Open Tender Enquiry.

2. Request for information (RFI) is invited from Original Equipment Manufacturer OEM / OES /any firms on Main Rotor Blades.

3. The **Qualitative Requirements** for the Main Rotor Blades are attached as Appx.

4. The interested vendors are requested to submit the following :-

(a) Draft technical specification/Literature.
(b) Conformity of having technical knowhow / MoU /Agreement / expertise to manufacture the blades.
(c) Approximate timelines alongwith production capacity to deliver the product if contract is awarded.

5. This RFI will be valid for 30 days from the date of publishing, additional 15 days will be provided for submission of a/m requirements.

6. Firms desirous of participation are requested to submit the requirements as mentioned in Para 4 above to the under mentioned address. The details of the representative, so detailed, for submission of the same be forwarded via email to enable preparation of entry passes. Intimation of changes, if any, will be communicated to those who will respond on the email. For any additional information or clarification, the following may be contacted:-

Master General of Sustenance Branch
MGS (Aviation),
Integrated Headquarter of MoD (Army)
Room No-328, 'C' Wing
Sena Bhawan, New Delhi – 110 010
Tele/Fax : 011-23015142/44
E-mail: spidy-ady@gov.in

RFI FOR MAIN ROTOR BLADES FOR CHEETAH/CHEETAL HELICOPTERS

1. **Introduction**. The Main Rotor Blades presently mounted on Cheetah/Cheetal helicopters of Indian Army were manufactured by M/s Airbus as 85 series. Indian Army is under process of identifying a manufacturer for supply of Main Rotor Blades for all its Cheetah/Cheetal fleet of helicopters.

2. **Helicopter Details**. The Cheetah/Cheetal helicopter dimensions are as shown below:-

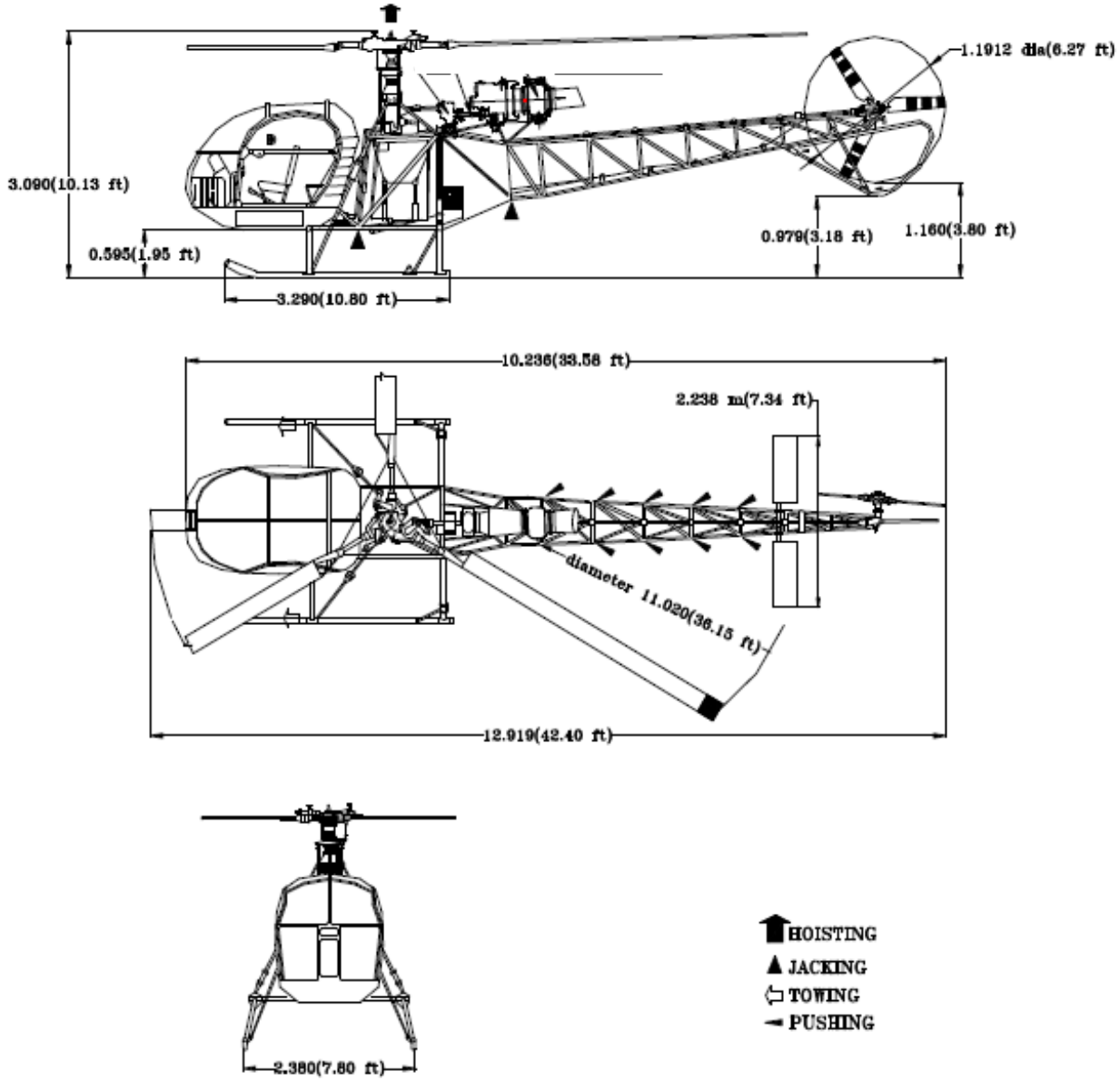


Fig 1 - **Dimensions of Cheetah/Cheetal Helicopter**

3. **Helicopter Performance**. The performance of Cheetah/Cheetal helicopters required with Main Rotor Blades is tabulated below:

S No	Parameter	Cheetah	Cheetal
(a)	Max AUW	1950kg 2300kg (with under slung load)	1950kg 2300kg (with under slung load)
(b)	Service Ceiling	23000ft	
(c)	VNE	113kts	
(d)	Power ON Rotor RPM	353.2	
(e)	Power OFF Rotor RPM	Max 420 Min 270 + 10rpm per 1000m increment above sea level	
(f)	Engine	TurbomecaArtouste IIIB1	Turbomeca TM-333-2M2
(g)	Sideward and Rearward flight	18kts	
(h)	Main rotor vibration limit	0.3 IPS	
(j)	Max Load factor	2g	
(k)	Hover Ceiling Graph	Attached in Appendix A	
(l)	Rate of Climb Graph	Attached in Appendix B	
(m)	Autorotation Graph	Attached in Appendix C	
(n)	H-V Curve	Attached in Appendix D	

4. **Maintainability Requirements**.

(a) The life of Main Rotor Blades must be more than 6000hours.

(b) The Main Rotor Blades should be interchangeable. It should be possible to replace single blade.

(c) The Main Rotor Blades should be easy to inspect. Minor repairs should be possible at unit level. The maintenance activities required to be carried out during periodic servicing should be easy.

(d) Procedure to increase/decrease weights for Rotor Track and Balance (RTB) should be easy.

Appendix A

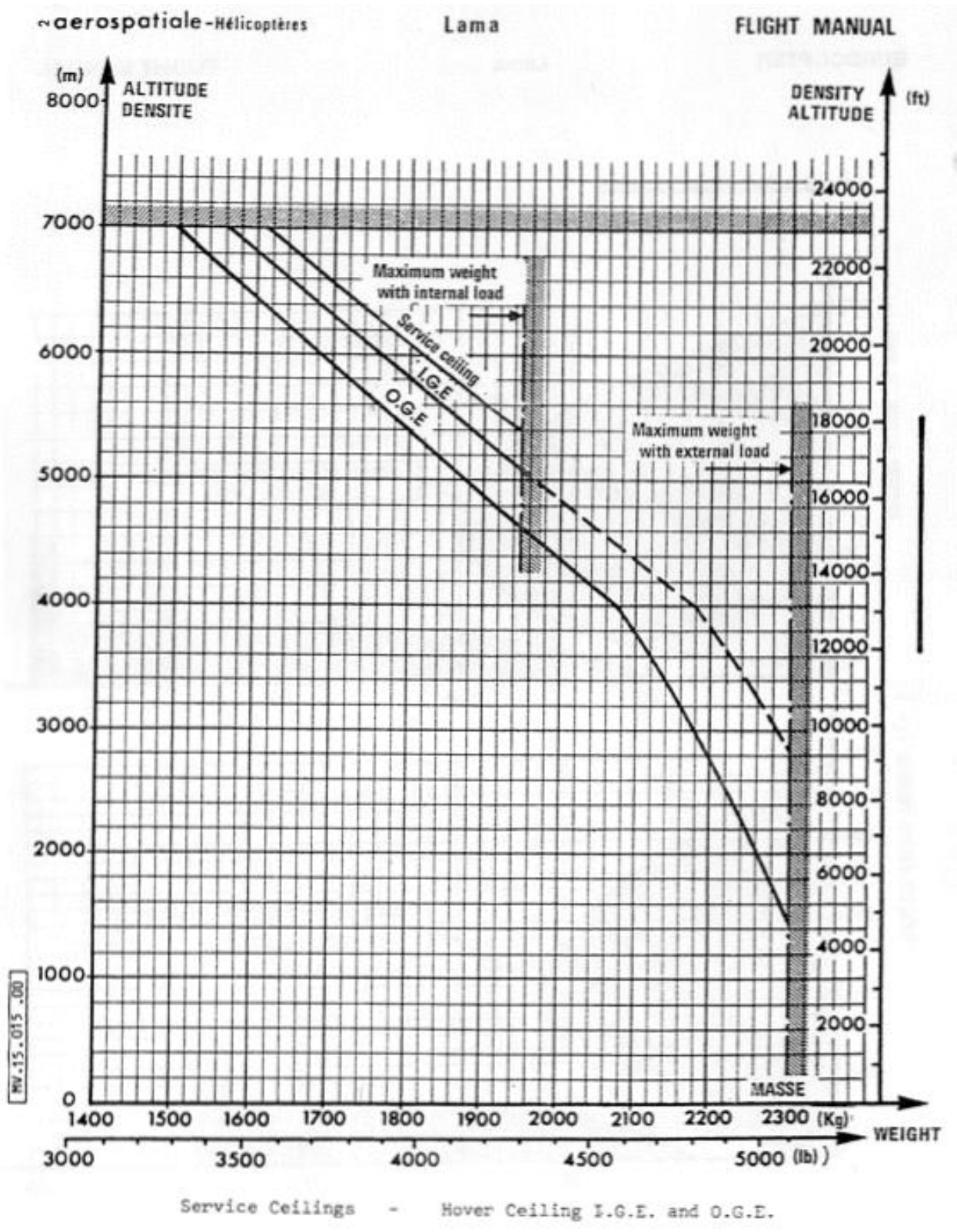
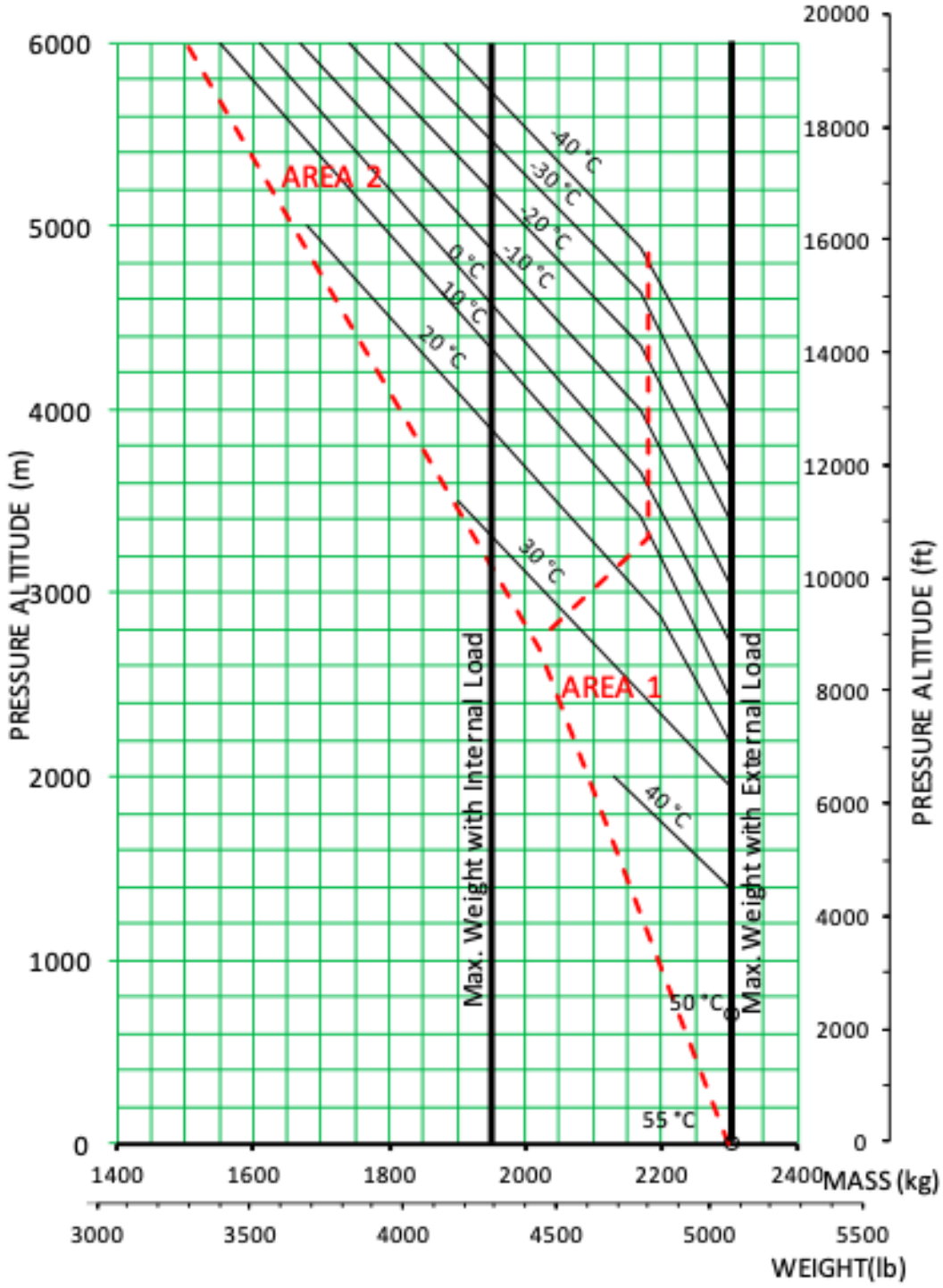


Fig 2 – **Hover Ceiling IGE and OGE Graph of Cheetah Helicopter**

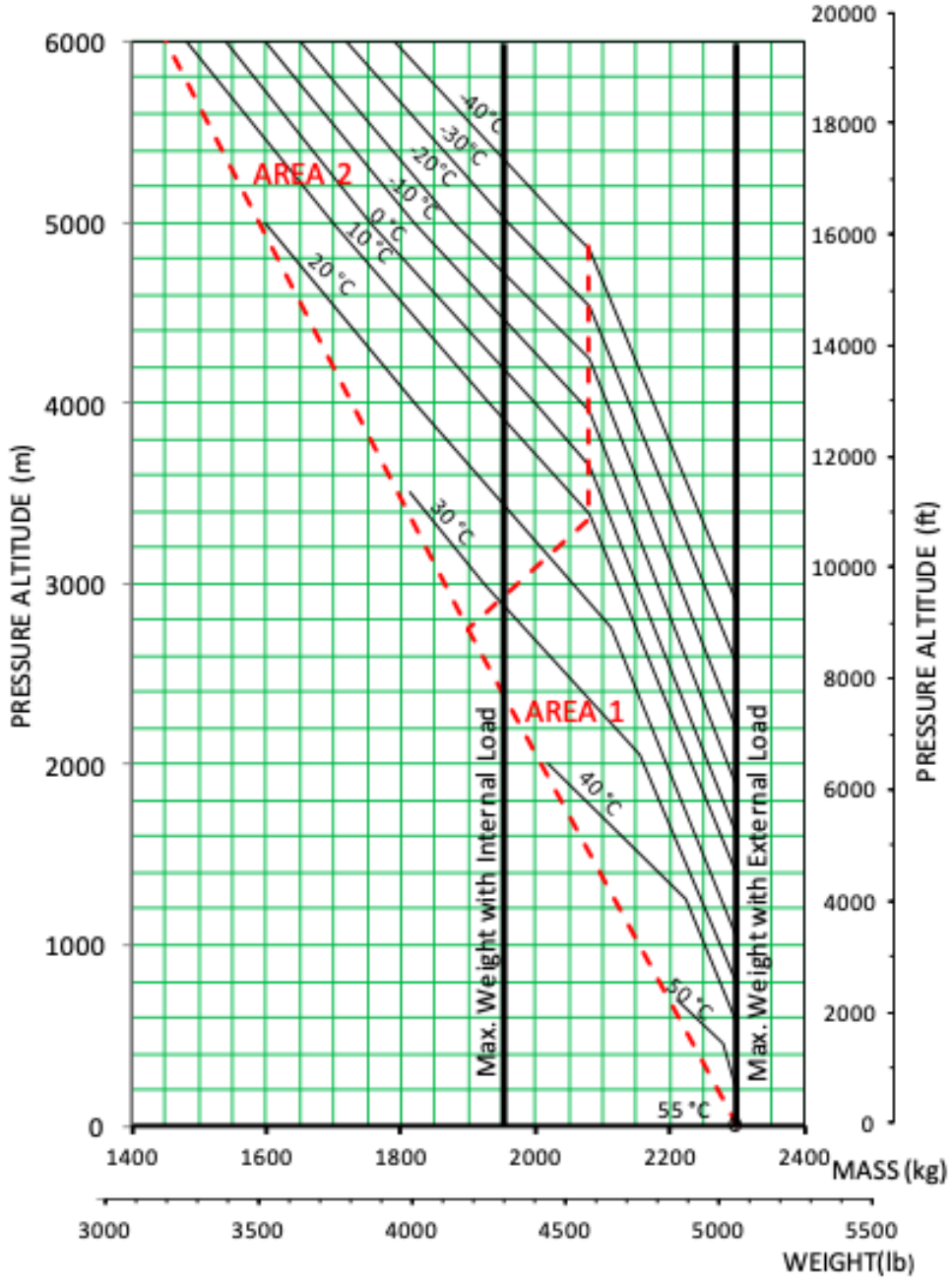


AREA 1 = PITCH LAW W ≤ 442 KW

AREA 2 = MAXIMUM PITCH Dθ = 1

Note: The actual performance of the Helicopter at altitudes < 3km and OAT >10°C may exceed the flight manual values. In order to ensure safety, the user needs to maintain the weight capabilities as per the flight manual.

Fig 3 – **Hover Ceiling IGE Graph of Cheetal Helicopter**



AREA 1 = PITCH LAW W ≤ 442 KW
AREA 2 = MAXIMUM PITCH Dθ = 1

Note: The actual performance of the Helicopter at altitudes < 3km and OAT >10°C may exceed the flight manual values. In order to ensure safety, the user needs to maintain the weight capabilities as per the flight manual.

Fig 4 – **Hover Ceiling OGE Graph of Cheetal Helicopter**

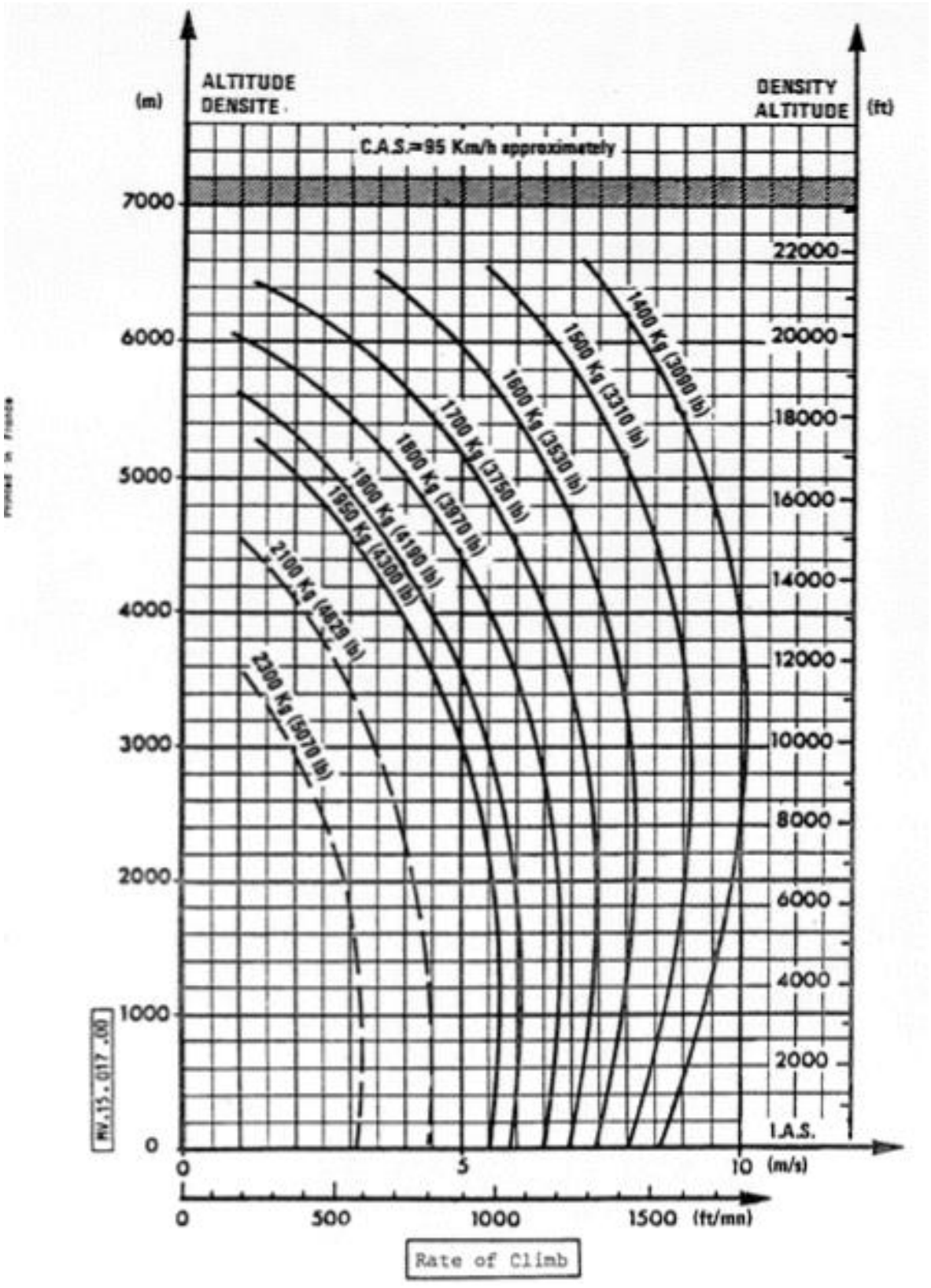


Fig 5 – **Rate of ClimbGraph of Cheetah Helicopter**

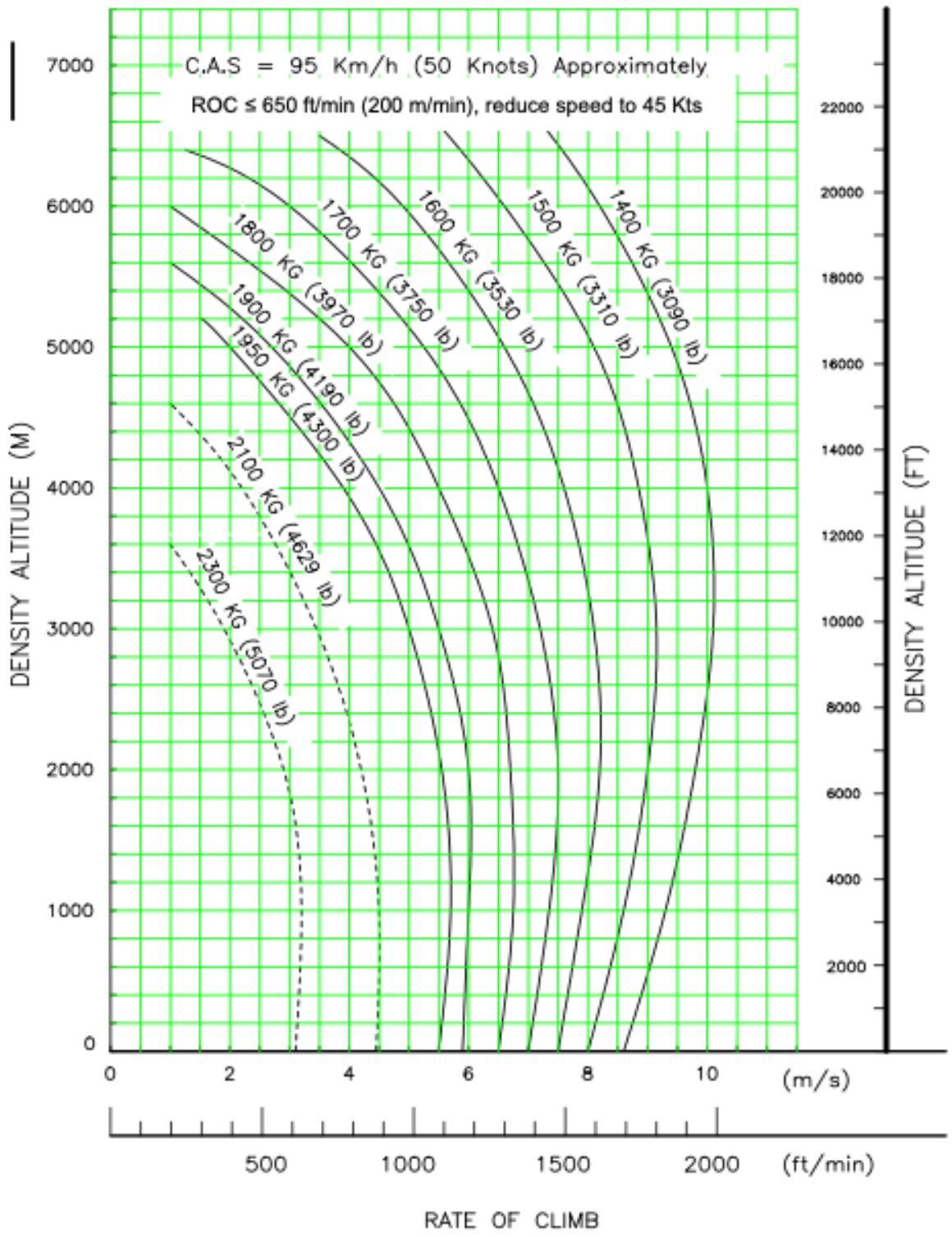
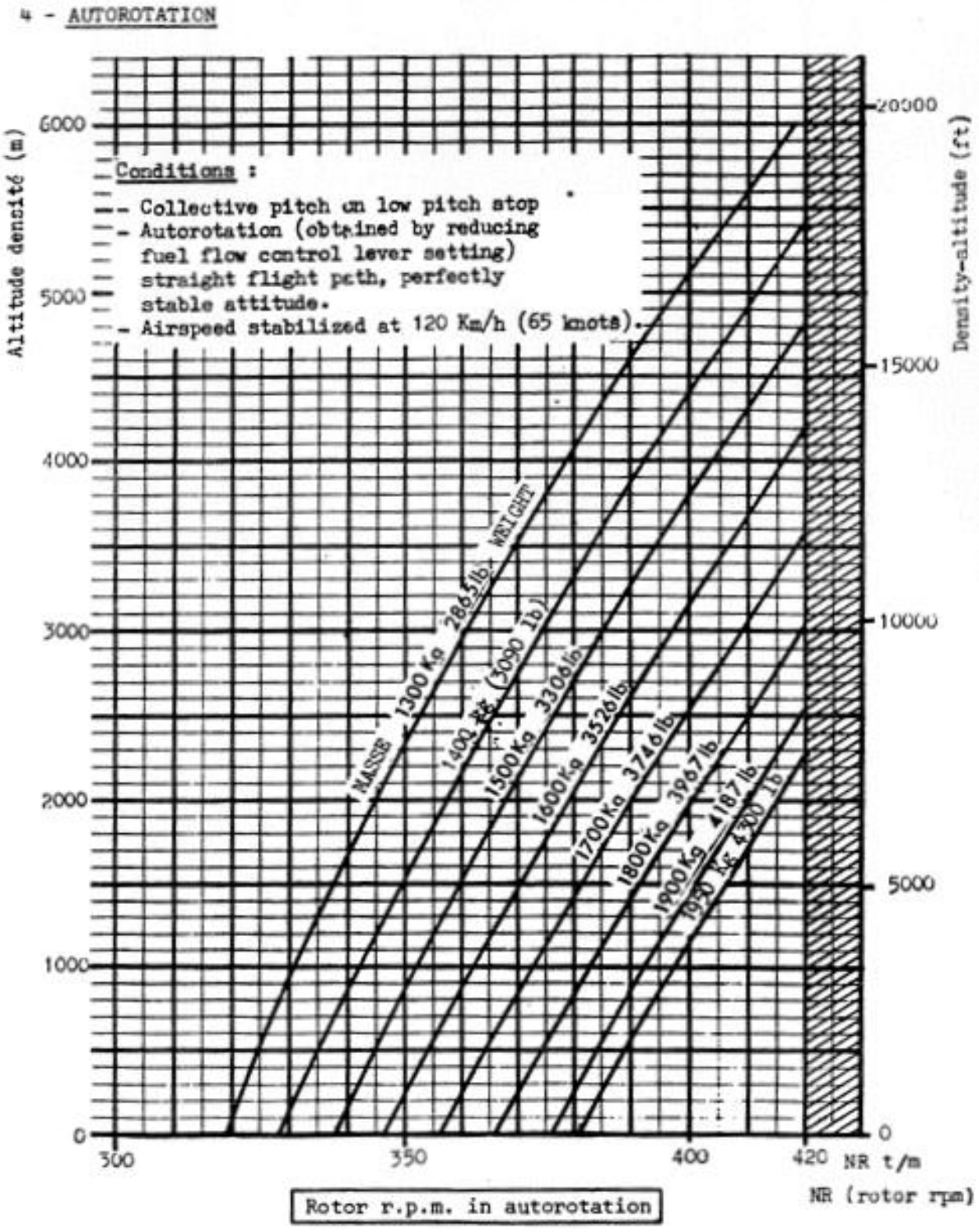
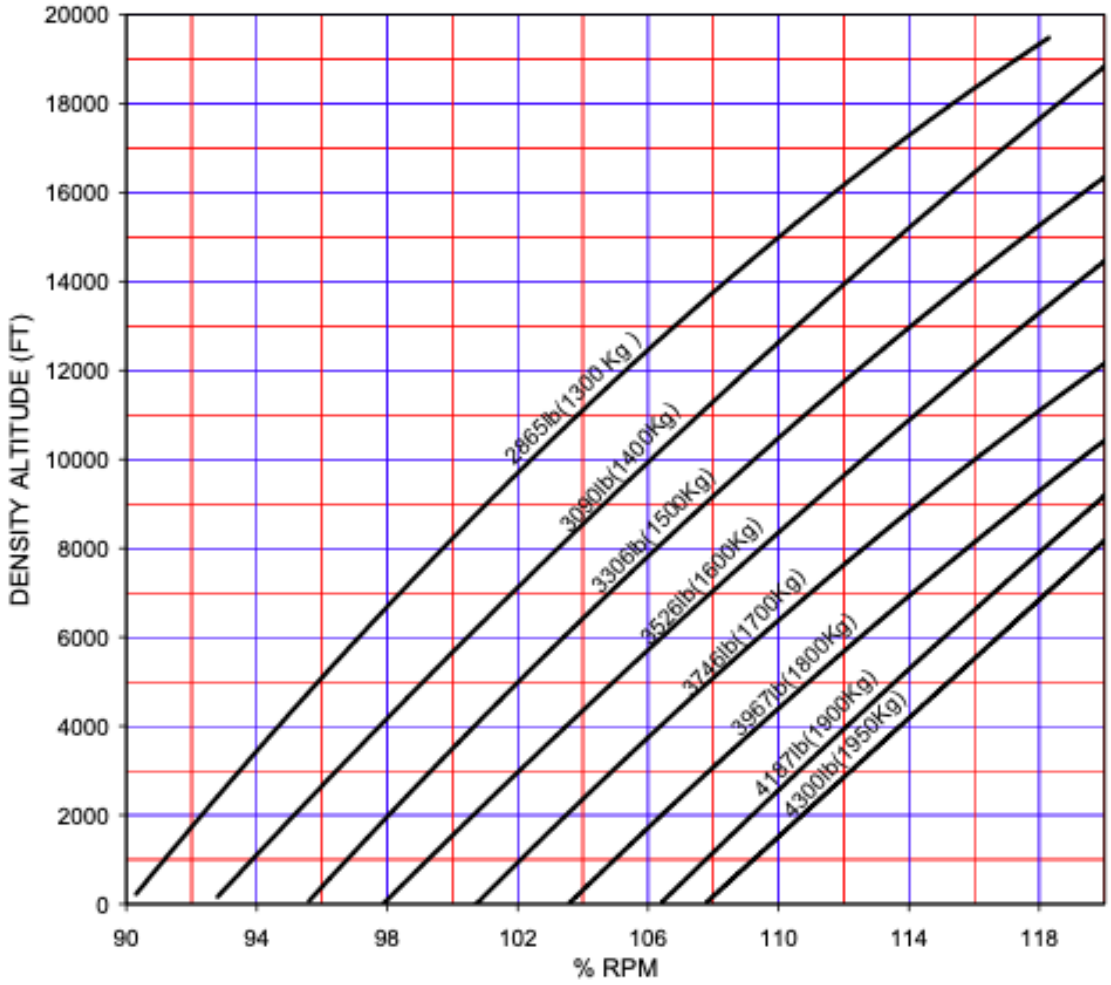


Fig 6 – **Rate of Climb Graph of Cheetal Helicopter**



NOTE : For temperatures below - 10°C, reduce speed by 5 r.p.m.
2°C decrement
Ex. : 1500 kg, Hd = 3000 m (9500 ft.), O.A.T. -10°C = 385 r.p.m.
1500 kg, Hd = 3000 m (9500 ft.), O.A.T. -14°C = 375 r.p.m.

Fig 7 – **AutorotationGraph of Cheetah Helicopter**



ROTOR RPM (%) IN AUTOROTATION

CONDITION :-	NOTE :-
- COLLECTIVE PITCH ON LOW PITCH STOP - STRAIGHT FLIGHT PATH, PERFECTLY STABLE ATTITUDE - AIRSPEED STABILIZED AT 120 KMPH (65 KNOTS)	FOR TEMPERATURE BELOW -10˚C, REDUCE ROTOR RPM BY 1.4 % (5 RPM) FOR EVERY 2˚C DECREMENT. EX : 1500 Kg, Hd = 3000 M (9500 FT) O.A.T -10˚C = 109% O.A.T -14˚C = 106.5%

Fig 8 – **Autorotation Graph of Cheetal Helicopter**

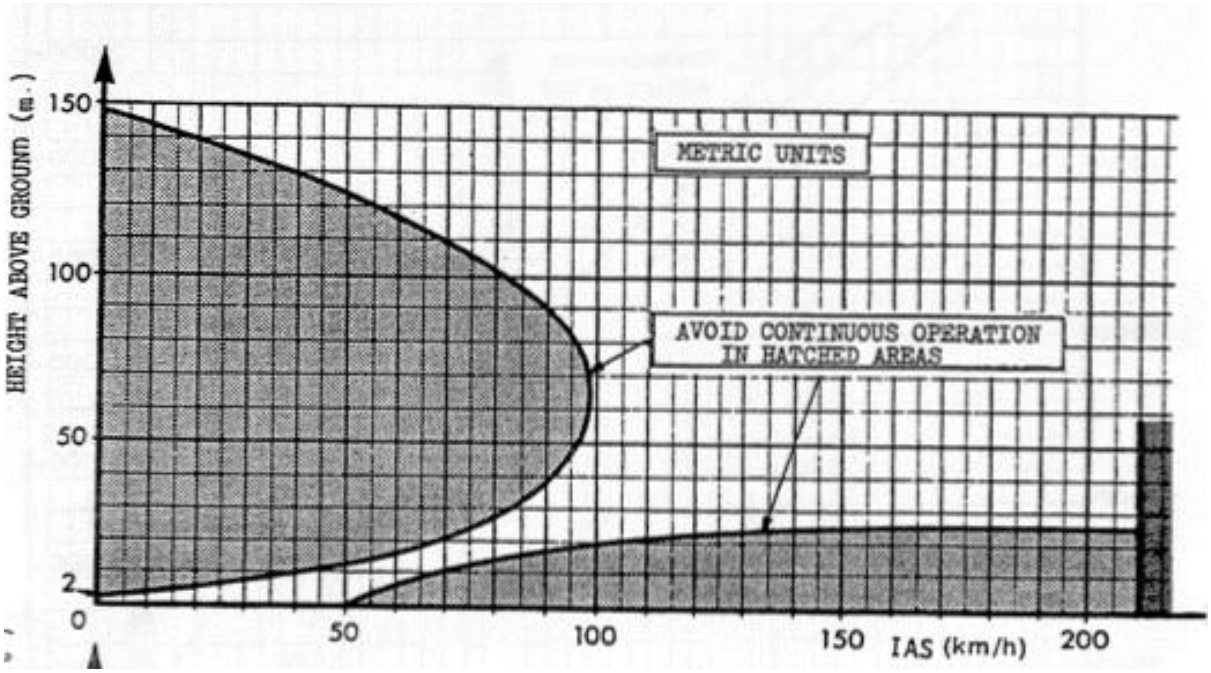


Fig 9 – **Height-Velocity Curve of Cheetah Helicopter**

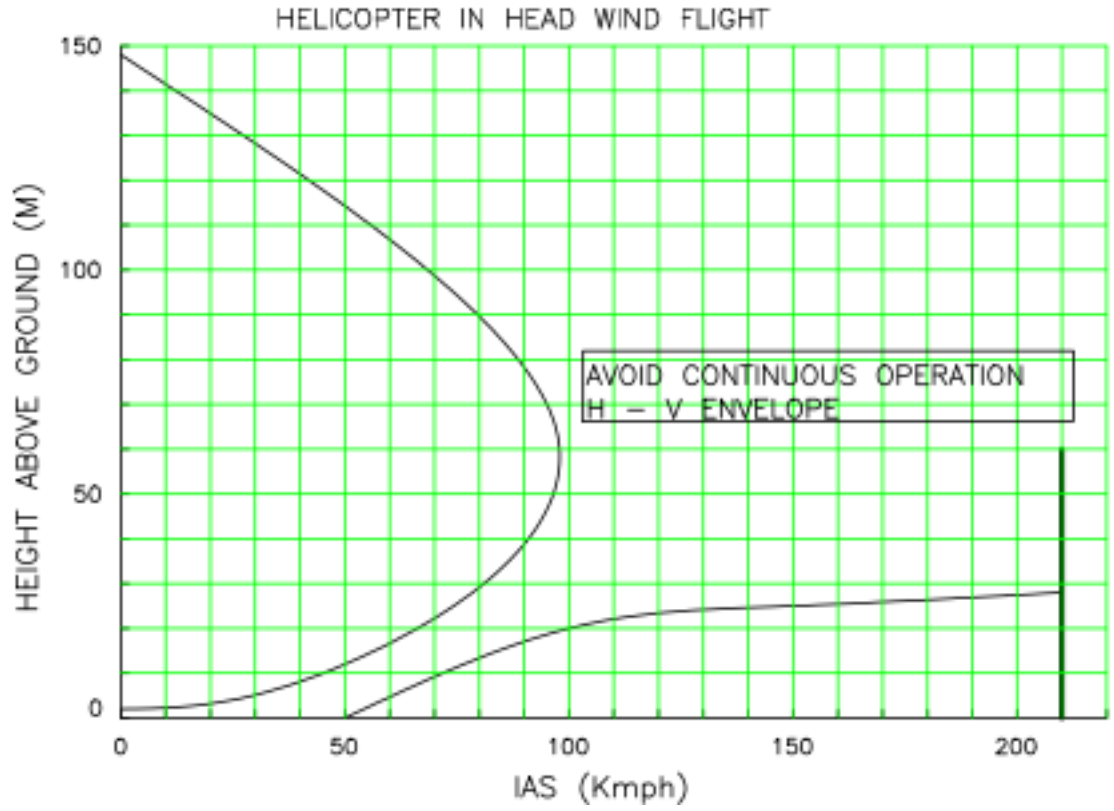


Fig 10 – **Height-Velocity Curve of Cheetal Helicopter**