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Contract AF(30-1)-2789
FXM-6725
September 25, 1963

To: Messrs. E. R. Dytko &
G. N. Frazier

From: K. Cooper

Subject: Motor Data for SNAP-50/SPUR
System Studies

cc: Messrs. R. M. Meyer
H. C. Gray
C. C. Bigelow
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SPECIAL REVIEW FINAL DETERMINATION	Reviewers	Class.	Date
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	KA-W	U	1-1-82
Class:	U		

MASTER

Introduction & Summary

The purpose of this memorandum is to provide up-to-date motor data for SNAP-50/SPUR system studies. Motor data contained in this memorandum supersedes all previous motor data for 12,000 rpm, and should be used until such time as additional motor data is available.

The results of an evaluation of available motor data are shown in the curves of weight and power factor versus horsepower contained in this memorandum.

Scaling Procedure

The available motor data at the time of this study was Westinghouse 30 and 60 horsepower data and AiResearch 2.7 horsepower data. Fig. 1, "Motor Weight versus Horsepower", was generated by plotting the available data at constant frequency. The plot of "Power Factor versus Horsepower", Fig. 2, was also obtained by cross plotting the available motor data for constant frequencies.

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G. H. Frazier

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Results:

Fig. 1 shows that motor weight decreases with frequency and horsepower. It is also interesting to note that at low horsepower the weight difference with frequency change is very minor. Fig. 1 and Fig. 2 indicate that a 400 cycle motor would be preferred over a 1,000 cycle motor with respect to power factor and weight.

References

- (1) AiResearch Manufacturing Company SY-5570-R.
- (2) Westinghouse Electric Corporation - D Spec. No. D-709635.

K. Cooper
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Approved: N. W. Walton
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Motor Weight vs. Horsepower

For 400, 600, 800, & 1000 CPS

Note: Additional Motor Data

- (1) Ceramic Liner
- (2) 650 F NAK Coolant
- (3) C-80 Motor Efficiency - All Classes
- (4) 12000 RPM Synchronous Speed
- (5) 1000 F Nominal Hot Spot

Motor Weight - LBS

200

160

120

80

40

0

0

10

20

30

40

50

60

70

80

HP

1000 CPS
800 CPS
600 CPS
400 CPS

Fig. 1
K&E
6725

Power Factor vs. Horsepower For 400, 600, 800, 1000 CPS

Note: Additional Motor Data

- (1) Ceramic Liner
- (2) 650 F NAK Coolant
- (3) 0.80 Motor Efficiency - All Classes
- (4) 12000 RPM Synchronous Speed
- (5) 1000 F Nominal Hot Spot

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