

R&D Branch

ROOM NO.

1800

BUILDING

Alcott Hall

REMARKS

*G735*

*EP.*

*Don't believe motor would  
operate as described in P 4.*

*Starting current voltage drop then  
a series resistor would limit starting  
voltage to such a low value that*

FROM:

*Satisfactory starting is doubtful.*  
R&D Laboratory

Believe we should  
look into getting  
a new motor unless  
latter part of P7  
can be worked out  
B/3g

~~SECRET~~

CONFIDENTIAL

DOC 37	REV DATE 20/3/80	BY 37169
ORIG COMP 33	OPI 56	TYPE 2
ORIG CLASS 5	PAGES 1	REV CLASS C
JUST 22	NEXT REV 2010	AUTH: HR 10-2

COMMENTARY ON THE USE OF THE AR-2  
MOTOR IN THE RS-13 RADIO SET

1. The present motor price quotations are based upon fabrication without the gear box which was originally required for the AS-2. Therefore the motor speed and shaft speed is 2080 rpm.
2. Approximately 4:1 gear reduction ratio would be required to reduce the speed of rotation to that required for the existing tape capstan (this figure is 510 rpm based upon information received from OC-O&T this date). Therefore a completely new gear train would be required. It is believed that this would be necessary in any event since the present gear train lacks the proper precision and is excessively noisy.
3. The AR-2 motor is capable of delivering in excess of 1.2 ounce-inches of torque at its present speed of rotation. Not more than 0.5 ounce-inches of torque would be required for the RS-13.
4. The AR-2 motor is not as noisy as the present RS-13 motor. It operates on 6-8 volts DC and this voltage could be derived from the 12 volt primary source with a power loss of approximately one watt.
5. The AR-2 motor is governed and therefore the tape speed could be held constant within plus or minus a couple of percent. This would be a considerable improvement over the present motor.
6. The above comments show that it would be possible to use the AR-2 motor in the new production of 40 RS-13 units. This would reduce the unit cost of the motors for the AR-3 considerably. However, the size of this motor is still such that the cost may be reduced even more by the use of a somewhat larger stock model presently available on a procurement basis, which would provide all the other required characteristics. It is understood that NEMS-Clark did not have sufficient time to scan the market before making the motor selection for the first models. Therefore, it might be justified to take this approach now before making a final decision.
7. Considering this new procurement of 40 RS-13's in a larger sense, the thought has occurred that they might be changed to provide duplex operation in a very efficient manner. For instance, it appears possible to use the same motor to drive the RT-13 tape and the AR-3 tape, thus decreasing the size, weight and complexity of the unit. This idea may not be new but we believe it deserves consideration at this time since it is our understanding that the specifications have not yet been written.

50X1

~~SECRET~~

CONFIDENTIAL