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# Interim report on Development of Radar Optic F.C.I.

Jan 5 Feb. 26

1. Work done in this period can be roughly broken down into two efforts:

a. Construction of a high <sup>accuracy</sup> ~~resolution~~ <sup>scoring</sup> ~~scoring~~ system, <sup>designated Model #3</sup> capable of large numbers of <sup>time</sup> ~~longitudinally~~ ~~distance~~ spaced missiles ~~similar~~ ~~to~~ comparable to NOTS rockets. ~~Construction~~ Design of this unit is complete and construction is approx. 25% complete. Construction has been ~~so~~ painfully slow through difficulties in obtaining supplies and often times compromises were ~~made~~ necessary in ~~off~~ order to proceed at all. Work has not been started on the primary time base

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for lack of forks ordered over 6 months ago. In order to complete this unit permission to modify <sup>drastically</sup> a substantial amount of equipment must be obtained.

B. ~~Testing &~~ Development of a system capable of scoring GAR series missiles. Before <sup>design or</sup> construction can actually begin <sup>the</sup> two fundamental questions ~~must be resolved. Could~~ ~~sufficient~~ of sufficient radar return from the missiles ~~and~~ for tracking and sufficient optical resolution had to be ~~resol~~ resolved. It now appears that ~~the problems can be~~ associated no insurmountable problems are involved and that radar optic scoring is possible for this missiles. Hughes aircraft <sup>has</sup> ~~have~~ been obtaining ~~fast~~ photographs from the firing aircraft using no special techniques with ~~the monoch normal fi~~ class A films, 6" lens and ~~the~~ B & H. Cymos.

Even under these conditions, rockets with  
 flares were recorded <sup>from the firing aircraft</sup> ~~sufficiently~~ with sufficient  
 quality to permit assessment if crossovers  
~~at~~ times <sup>had been</sup> ~~were~~ available. At present it is

planned to use 70 mm. 50 f.p.s.  
 cameras, with 12" <sup>or longer lens</sup> ~~lens~~, and infrared  
 film. It may be necessary to provide  
~~small simulated targets (S-27 etc) with~~  
~~a flare or fire under controlled~~ <sup>light</sup> conditions  
~~with small simulated targets (S-27 etc)~~  
 or possibly use pyrotechnic flares with <sup>on the target</sup>  
 small simulated targets such as the S-27  
 glider. ~~Other than~~ Under these conditions  
 optical resolution should be sufficient.

The question of sufficient radar return is  
 presently being studied by using 5" HIVAR  
 rockets fired at ranges corresponding to  
 employment ranges for the GAR- From  
 the ~~8 sorties flown~~ 8 firings made

thus far ~~radar~~ <sup>it appears radar</sup> return will be sufficient. With  
 the G-40 radar locked on an 86-F firing  
 5" HVAR at ~~many~~ varying distances the  
 rocket could easily be seen until it fell  
 out of the antenna beam. ~~This was~~ Firing  
 were made at varying ranges up to three  
 miles maximum with the rockets ~~at~~ <sup>still</sup>  
 this point being easily discernible. With  
 the antenna in ~~last~~ hand control ~~Capt.~~  
 the R.O. was able to track ~~a projectile~~  
~~and~~ single rockets fired ~~to~~ at a distance  
 1.5 miles into the altitude line 4 miles  
 away. Although much more testing is needed  
~~until~~ before a ~~final~~ working design is  
 completed it ~~is~~ now appears that an  
 design arrangement such as that in  
 Fig 1. would be <sup>sufficient</sup> practical.

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There is still a great ~~many~~ point deal of work to be done ~~on~~ before a prototype can be designed. It is planned to continue the series of HVAR firings and ~~other~~ perfect as far as possible the work at this base ~~and~~ without resorting to actual firings ~~until~~ except for other than for final tests. Fig 2 illustrates the present testing arrangement. G94C 970 equipped with a test A scope and two modified tip tanks containing various camera and lens arrangements is used to chase an F6 F-86 firing HVAR at ranges corresponding to operational ranges of the Falcon. A portion of the firings are are free i.e. ~~without~~ without targets, while other will be made against a parachuted reflector and flare.

2. The supply situation has deteriorated into a sad ~~situation~~ affair ~~the~~ during the past two months. The Tech supply has been reasonable in action, and D and C ~~will~~ is also

reasonable if I personally 'bird ~~the~~ dog' <sup>requisitions</sup> the individual ~~items~~ constantly. Deadline dates and priorities apparently have no meaning. Supply areas between Tech Supply and Procurement is one vast morass which no amount prodding can move. Typical of this ~~is~~ are two items; one a precision fork ~~ordered so~~ & ordered on priority taking over 6 months to get off the base (this item has yet to be received), ~~while~~ another some hi voltage power supplies air freighted in and remaining undelivered for a week despite frantic calls. These items were obtained only by resorting to the base supply officer. If I had no duties other than obtaining supplies, ~~so~~ by ~~devious~~ means ~~the~~ a fair amount could supply situation would exist. This however is not possible. Approximately one third of my time which should have gone into design and supervision of this project has been