DOCUMENT HISTORY OF AGENA

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HISTORY OFFICE
CHIEF OF STAFF
SPACE AND MISSILE SYSTEMS ORGANIZATION

DOWNGRADED AT 12 YEAR INTERVALS; NOT AUTOMATICALLY DECLASSIFIED. DOD DIR 5200.10
1. Msg (C/GP3), from Comdr, WDD to Coms, Cite WDDR 3-3-E, 16 Mar 57.
2. Ltr (S/HD), from WDD (WDDR) to MajGen D. J. Keirn, no subj, 8 Apr 57.
4. DF (C/GP3), from MCPTA to MCPI, subj: Weekly Diary -- 4 thru 10 Oct 57, 10 Oct 57.
9. Msg, from Comdr ARDC to Comdr AFFMD, Cite RDZSW 7-4-E, 031945Z.
10. ARPA Order No. 17-59, 4 Sep 58.
11. ARPA Order No. 17-59, Amendment No. 1, 29 Sep 58.
15. WADC Ltr, to Hq ARDC, subj: Model Designation for WS-117L Engine, 9 Jan 59.
16. DF from WDXWS to LBJ, subj: Request for CCN for Contract AF 04(647)-97, 15 Jan 59.
17. Deleted.
19. Msg, from MSD, Sunnyvale to NAC, 21 Jan 59.
20. Ltr from Lockheed Aircraft Corp to Comdr, Hq BMCh, subj: Contract No. AF 04(647)-97, Back-up Photovoltaic ATPU Design, 2 Feb 59.

21. Msg from Comdr, AFEADM to Director, ARPA, 9 Feb 59.


23. Memorandum for LtCol Battle from WDZW, subj: Dual Burn Engine Capability, 6 Mar 59.


25. ARPA Order No. 17-59, Amendment No. 4, 10 Apr 59.

26. ARPA Order No. 17-59, Amendment No. 5, 13 Apr 59.


28. Ltr from Lockheed Aircraft Corp to Comdr, AFEADM, subj: Contract AF 04(647)-97 Solar APA Backup Program, 2 May 59.

29. Msg (C/Gp3) from Lockheed to LBJP E. S. Silberman, subj: Amendments to CCN No. 23, 6 May 59.

30. ARPA Order No. 17-59, Amendment No. 6, 18 May 59.

31. WDZ Memorandum for multiple addresses, subj: ARPA Order 17-59 (as amended), 18 May 59.


33. AFEADM report, subj: Transit II Program Progress Report for May 1959, 8 Jun 59.


35. ARPA Order No. 17-60, Amendment No. 8, Project Code No: as indicated below, 1 Jul 59.

36. ARPA Order No. 96-60, Project Code No. 3600, 1 Jul 59.

41. Msg from Cmdr to AFHM, 7 Aug 59.
43. Ltr from WDZEV to WDZSM (Maj Callan), subj: Minutes of MIDAS PWG Flight Operations Subcommittee, 29 Jun 59, 13 Aug 59.
46. Ltr WDZEA to WDZSD, subj: Discoverer Capsule Batteries, 10 Sep 59.
47. Ltr from WDZEB to WDZET (Capt Van Dusen), subj: SSL Plan 165-41, Study of Attitude Sensors for Space Missions, 17 Sep 59.
48a. MTR from Col Frederic C. E. Oder, subj: Discoverer/SAMOS/MIDAS/COMSAT/AGELA Configurations, 29 Sep 59.
50. Msg from AFHM to Lockheed, Cite WDZS 10-5-E, 5 Oct 59.(C/Up3)
51. Msg, Cite WDZS-10-5-E, 9 Oct 59.
53. ARPA Order No. 96-60, Amendment No. 1, Project Code No. 3600, 15 Oct 59.
54. Ltr (Uncl w/o C/Up3 attch) from WDZEV to WDPOR, subj: Space Programs Status Report, 15 Oct 59, w/1 Atch.
55. Ltr (C/Up3) from WDZEV to WZD (Col Evans), subj: Discoverer, MIDAS, Senos, and Comm Sat (Steer) Configuration and Schedule, 16 Oct 59, w/2 Atch: 1. Chart, Space Systems Progress; 2. 4 charts, Configurations, #1 - 4, 4th chart CONFIDENTIAL, Gp3.

57. Ltr from WDZER to WDZS, subj: Discoverer/Samos/Midas/Comsat/AGENA Configurations, 13 Nov 59.

58. Ltr from WDZS to WDZER, subj: Discoverer/Samos/Midas/Comsat/AGENA Configurations, 17 Nov 59.

59. ARPA Order No. 96-60, Amendment No. 2; Project Code No. 3600, 3 Dec 59.

60. Ltr from AFRMD to AFRMD, subj: Engine Model Designations, 18 Dec 59.


62. Ltr from AFRMD Field Office, WDZEN-6, to Comdr AFRMD, subj: Procedure for Coordination of Discoverer Engineering Approvals, 5 Jan 60, w/1 Atch: Report, subj: Procedure for Coordinating Approvals on Engineering Modifications to Agena Vehicles at Lockheeds Facility at Vandenberg AFB.

63. Ltr from WDZNE to WDZY, subj: Control of Agena Vehicle Changes following AP Acceptance, 19 Jan 60.

64. AFRMD report, (C/Gp3), subj: AGENA Program Progress Report as of 31 Jan 60, 12 Feb 60.

65. Ltr (C/Gp4) from AFRMD to ARDC (RDR), subj: Augmentation of Propulsion Program, 23 Feb 60.

66. Msg, Cite AFDDP 73993, 27 Dec 60.

67. Ltr from Lockheed to AFRMD (WDZRE), subj: Standardization Provisions in the Agena Configurations -- Interim Report, 4 Mar 60.

68. Msg (E/Gp3) from Lockheed to AFRMD, Cite IMED 354768, 8 Mar 60.

69. AFRMD report (C/Gp4), subj: AGENA Program Progress Report as of 29 Feb 60, 8 Mar 60.

70. AFRMD Ltr (Uncl v/o Conf/Gp3 Indorsement) to WDZN, subj: Reliability Testing of Agena Subsystems by Air Force Agencies, 9 Mar 60, w/1st Ind, same subj; 5 Apr 60.

71. Ltr (Uncl v/o C/Gp4 Atch), sg'd D. N. Murphy, Contracting Officer, to Comdr ARDC, subj: NASA Order No. S-4601-C, 22 Mar 60, w/1 Atch: Statement of Task, v/1 (C) Atch, NASA Agena Launch Schedule.

72. AFRMD (WDZN-1) Ltr to multiple address, subj: Agena Vehicle Captive Test Program, 11 Apr 60.

73. AFRMD Daily Bulletin No. 71, 12 Apr 60.

74. NASA Agena B Program, MSFC and AFRMD Management Relationships, 11 Apr 60.
75. AFEDD report (C/Gp4), AGENA Program Progress Report as of 30 April 1960, 6 May 60.

76. AFBMC ltr (C/Gp4), subj: Assignment of Thor Vehicles to the NASA Agena B Program, 12 May 60.

77. AFBMD ltr (C/Gp4) to Hq ARDC, subj: General Schriever's Appearance before Johnson Committee, 9 June 1960, 2 Jun 60.

78. WDZY-2 ltr to Lockheed Missiles & Space Division, subj: Improvement of Agena Flight Preparation Procedures, 13 Jun 60.

79. WDZ ltr to ARDC (RDG), subj: Management Relations with the NASA Concerning the NASA Agena B Program, 16 Jul 60.

80. WDZ ltr to ARDC (RDCH), subj: NASA Agena B Program, 16 Jul 60.

81. AFBMD (WDZ-16) ltr to WDZD (Col Evans), subj: Agena Checkout Philosophy, 9 Sep 60.

82. WDRA ltr to WDZ-16, subj: Agena Checkout Philosophy, 19 Sep 60.

83. AFBMD (WDSS) ltr (S/Gp3) to ARDC (RDRE), subj: Request for Study--Atlas-Agena's Launch from AMR, 19 Sep 60.

84. AFBMD (WDZ-1) ltr to WDZD (Col Battle), subj: Test Criteria, 22 Sep 60, w/1 Atch, Ltr, IMSD/368772, w/atch.

85. WDZ ltr to WDZ, subj: NASA Agena B Schedule, 8 Nov 60.

86. BMC (LEZJR) ltr to Lockheed Aircraft Corp, subj: Implementation of New Test Philosophy, DISCOVERER Program, Contract AF 04(647)-558, 18 Nov 60.

87. Historical report of the NASA Agena B Program for 1 Jul to 31 Dec 60.

88. Ltr (S/Gp3) sgd Col Paul J. Heran to LEX (Mr. Gibson), subj: Agena Configuration, 3 Jan 61.


91. Msg (C/Gp4) from Hq USAF, cite AFDDSD-MS 78828, 1918182 Jan 61.


93. Ltr from BSC (LEZJR) to Lockheed, subj: Make or Buy Structure Satellite Systems Contracts, 13 Feb 61.
94. MAC (LEX/TH) ltr to multiple address, subj: Procurement Requirements, 14 Feb 61.


96. AFMD (WD2) ltr to WBNV and WED, subj: Responsibilities of the Aerospace Corporation, 23 Feb 61.

97. AFMD (WD2YA) ltr (Uncl w/o C/Gp4 Atch) to Mr. Robert H. Satz, subj: Technical Data on the Agena Vehicle, 24 Feb 61, w/1 Atch: Technical Data.

98. SSD (SSZA) ltr to Lockheed, subj: New Test Philosophy Implementation, By-pass of Vandenberg MAD Building, 16 Jun 61.

99. SSD (SSZA) ltr to All SSZA Subsystem Personnel, subj: Discoverer EVA Approval Procedures, 24 Jul 61.

100. Msg (C/Gp4) from SAFS to SSD, info AFSC and DCAS, Cite SAFS 92454, 092006Z Aug 61.

101. SSD (SSZEN) ltr to SSE (Dr. Rockefeller), subj: Historical Summary, ARDC/AFSC Support of Army/Navy Space NASA Programs, 9 Aug 61.

102. SSD (SSZVR) ltr (Uncl w/o C/Gp4 Atch), to SSE (Dr Rockefeller), subj: Historical Summary, ARDC/AFSC Support of Army Navy Space NASA Programs, 9 Aug 61, w/1 atch

103. Aerospace Corp Ltr to Col H. L. Evans, subj: Standardizing the Agena, 14 Sep 61.

104. SSD (SSZ) ltr to Chiefs of Offices through Branch Level, subj: Development and Utilization of the Agena D, 18 Sep 61.

105. SSD (SSZ) ltr to Aerospace Corp (Mr. Brewer), subj: Standardized Agena, 18 Sep 61.


107. Msg (S/Gp3) from SAFS to SSD, info AFSC and DCAS, Cite SAFS 62264, 062221Z Oct 61.


110. AFSC (SCGN) Ltr (C/Gp4) to Conmr SSD, subj: Standardized Agena and Tidal III, ca 17 Oct 61.


115. AFSSV Ltr (C/Gp4) to AFSC, Subj: Standardized Agens Space Vehicle (Agena D), 26 Oct 61.


117. DAF Memo for Chief of Staff, subj: Standardized Agena, 3 Nov 61, w/1 Atch: Memorandum for Director, DR&E, 31 Oct 61.

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121. Ltr, subj: Organizational Changes and Personnel Reassignments, 13 Nov 61.

122. Ltr to Deputies and Chiefs of Major Staff Offices, subj: Project 662A, 20 Nov 61.

123. Ltr to Deputies and Chiefs of Major Staff Offices, subj: Establishment of Project Office 662A, 20 Nov 61.

124. MFR (Unc1 w/o C/Gp4 Atch), subj: Agena D, 20 Nov 61.

125. Msg from Hq USAF to AFSC, info SSD, Cite AFSEM 90799, 222309Z Nov 61.

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127. AFSC (SCGN) Ltr (C/Gp4) to SSD, subj: Instructions on Standard Agena D Program, 24 Nov 61.

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131. Msg (C/Gp4) from SAC to Lockheed, Sent 30 Nov 61.

132. Msg (S/C:p3) from OSAF to AFSC, info DCA8, cite SAE3 83174, 0422062 Dec 61.

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135. SSD (SSXED) Ltr (C/Gp4) to SSD, subj: Agena D/DM-21 Interface, 18 Dec 61.

136. SSD (SSGD) Ltr to AFSC (Gen Schriever), subj: Instructions on Standard Agena Program, 18 Dec 61, v/1 Atch: Program 662A Management and Operational Plan, v/6 Atch.

137. Ltr SSX-1 Ltr to SSZ (Lt Col Strathy), subj: Agena D Programming Data, 19 Dec 61.

138. Msg from IMSC, Cite IMSC A071763/62-41/100, 280030Z Dec 61.

139. SSXD Ltr to SSZ, subj: Procurement of Optional Equipment, 28 Dec 61.

140. Msg (C/Gp 4), Cite AFSSV-BQ 90915, 052324Z Jan 62.

141. MFR from SSX, subj: Briefing to Dr. Charyk, 5 Jan 62, (C/Gp4).

142. Ltr (C/Gp4) from SSD (SSKD) to Distribution, subj: Fund Requirements for Program 662A, 11 Jan 62.

143. SSD (SSZD) Ltr to SSXV (Mrs. Arnold), subj: Sole Source Justification for Complexes 75-3 and 75-1, 18 Jan 62.

144. SSD (SSXDA) Ltr (C/Gp4) to SSZXE (Major Lochry), subj: Agena D Performance Data, 18 Jan 62.

145. SSX MFR, 23 Jan 62.


147. SSD (SSXVF) Ltr to SSZD (Maj Moore), subj: Additional Instrumentation on Discoverer Flights, 5 Feb 62.

148. SSXD MFR, subj: Discussions with Mr. O'Green and Staff, 13 Feb 62, 14 Feb 62.

149. SSXA Ltr to SSZ, SSB and SSV, subj: Agena D Advanced Component Improvements, 20 Feb 62.
150. LTR, subj: Staff Visit of MajGen Ritland and Mr. Kelly Johnson, 26 Feb 62.

151. LTR, subj: MajGen O. J. Ritland and Clarence L. Johnson to Gen B. A. Schriever, 27 Feb 62.

152. MSG from AFSC, Cite SCGN-28-2-46, 28 Apr 62.

153. LTR (C/Gp4) from SSKD to SSZ and SS2X, subj: Agena D Weight, 2 Mar 62.

154. LTR (C/Gp3) from SSKD to SSZ, subj: Agena D Delivery Schedule 2 Mar 62.


156. MSG Cite SCGN-7-3-12, 07 Jul 62, 0 Mar 62.

157. Lockheed LTR to AFSSD (SSZ), subj: Comparison of Costs - Agena B vs Agena D, 8 Mar 62.

158. SSD (SSVXE) LTR to SSVR (Maj J. Albert), subj: Study of Thor Agena B Configurations, 12 Mar 62.

159. SSD (SSVXE) LTR to SSVXX, subj: DM-21 Agena D Pad and AGE Modification, 13 Mar 62.

160. SED (SSXD) LTR to SSZ, subj: Contract AF 04(693)-68, Request for Authority to Use Form C Price Re-determination, 22 Jun 62, (C/Gp4).

161. SED (SSXD) LTR to Lockheed, subj: Contract AF 04-695-21 - Incentive Fee Negotiations, 22 Mar 62.


165. SSD (SSS) LTR to BSRP, subj: Requirement for Component Improvement Propulsion Advisory Committee, 2 Apr 62.

166. Negotiated Contract AF 04(695)-21, 6 Apr 62.

167. SSD (SSV) LTR to DC3 (LtGen Estes), subj: Atlas Launches at AIP and BFR, 9 Apr 62, w/1 Atch: Cy ltr from Gen Estes to Gen Ritland, 19 Mar 62, same subject.
163. MFR, subj: Agena D Configuration, 18 Apr 62.


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172. SSD (SSH) Ltr to SSEG (Col Berg), subj: SSH (Agena D) Objectives for FY 63, 30 Apr 62.

173. SSD (SSHD) Ltr to SSK, subj: Contract AF 04(695)-68 - Review of 'Make or Buy' Program Pursuant to DCAS AFPI Supplement 2, 9 May 62.

174. MFR, subj: FY-62 Incremental Funding of the Agena D Contracts, 10 May 62.

175. SSD (SSHD) Ltr to Lockheed, subj: Agena D Optional Equipment, 14 May 62.

176. SSD (SSHD) Ltr to SScM (LtCol Warren), subj: Underfunded Contracts, 14 May 62.

177. MFR, subj: Modernization of Industrial Facilities Bell Aerosystems Company, 16 May 62, w/1 Atch: MFR same subj attd 15 May 62, w/1 Atch, Cy Msg to IACS from Bell, no date.

178. SSD (SSH) Ltr to SSHD (LtCol Blum), subj: Technical Support Contract, 21 May 62.

179. NASA Ltr to Hon Brockway McMillan, ca 21 May 62.


181. Msg (C/Gp4) Cite SSH-1-6-4, 1 Jun 62.

182. Msg Cite SSH-2-6-7, 2 Jun 62 (8/Gp4).

183. SSD (SSH) Ltr to AFFRO (Col Voyles), Lockheed, subj: AFFRO Surveillance of -68 Contract Spares Procurement, 4 Jun 62.

184. Msg from DCASF to SSD, info MSFC, Cite MSFA 12-6-23, 121408Z Jun 62.

185. Ltr (Uncl w/0 6/Gp3 Atch), subj: Request for Information by the Space Technical Objectives Task Group, 13 Jun 62, w/1 Atch: 64388 Summary

187. MFR, subj: Component Improvement Briefing to MajGen Ritland and Dr. Charyk, 25 Jun 62.


189. MFR, subj: Agena D Funding, 28 Jun 62.

190. Msg, Cite MKFA 28-6-61, 2818132 Jun 62

191. SSD (SSHDA) Ltr (C/Gp4) to multiple address, subj: Agena D Optional Equipment Weight Status, 3 Jul 62.

192. SSD (SSVZ0) Ltr to SSHAG, subj: Conversion of AMR Complex 1/4 to an Atlas/Agena Configuration, 5 Jul 62.

193. SSD (SSH) Ltr to multiple address, subj: Agena D Configuration Control, 9 Jul 62.

194. SSD (SSH ltr to multiple address, subj: Configuration Control of Agena D, 11 Jul 62.

195. CEN Status Contract AF 04(695)-21 As of 12 July 1962.

196. SSD (SSZDB Ltr to BSRIT and SSVX, subj: Program Designation Change, 12 Jul 62.

197. SSD (SSH) Ltr (C/Gp4) to SSG-1 (Col Wickland), subj: International Programs, 12 Jul 62.


199. SSD (SSH) Ltr to SSKR (Mr. Montgomery), subj: Preliminary Impact Evaluation of Impending Aerospace Industry Strike on SSD Programs (Reports Control Symbol (RCS) AF-XDL-32, w/1 Atch: Report.


201. SSD (SSHAA) Ltr to Lockheed, subj: Agena Multiple Start Engine Compatibility with DOD Missions, 25 Jul 62.


203. Msg from Douglas Aircraft Co Inc to Lockheed, 1 Aug 62.

204. SSD (SSHCK) to SSH, subj: AF 04(695)-194, Authority for Non-Competitive Negotiated Procurement, 1 Aug 62.

205. Msg from SSD to ARDC, cte SSH 2-8-1, 2 Aug 62.


207. SSD (SSH) Ltr to multiple address, subj: Technical Manuals for Agena B, 10 Aug 62.

208. SSD (SSHCD) Ltr to SSHR (Maj Barnes), subj: Transfer of Agena D Program Management, 13 Aug 62.


210. SSD (SSHCD) Ltr to multiple address, subj: Auto-DRAPE Orientation, 16 Aug 62.


214. Msg from SSD to Lockheed, Cite SSH 27-8-33, 27 Aug 62.


216. SSD (SSHKL) Ltr to multiple address, subj: Authorization for type of Contract; Contract AF 04(695)-198, 7 Sep 62, w/1 attch.

217. SSD (SSH) Ltr to SSZ, subj: Agena D FY-63 Funding Requirements to Support SSZ Program Requirements, 11 Sep 62.

218. SSD (SSH) Ltr to SSZ, subj: Agena D FY-63 Funding Requirements to Support NASA Program Requirements, 11 Sep 62.

219. Msg from SSD to CSAF, Cite SSH-13-9-10, 13 Sep 62.

220. Msg from SSD to AFSC, Cite SSH-13-9-11, 13 Sep 62.

221. SSD (SSHAA) MTR to Capt George W. Watts, 17 Sep 62.

222. SSD (SSH) Ltr to Lockheed, subj: Production of Optional Kits under the -63 Contract, 24 Sep 62.

224. SSD (SSH) Ltr to Lockheed, subj: First Article Configuration Inspection of S-01A/13, 17-19 Sep 62, 23 Sep 62.

225. Msg, Cite SSH 28-2-33, 28 Sep 62.

226. Lockheed Ltr to APFSD (DCCA), subj: Management of the S-01A Program, 1 Oct 62, w/1 Atch: Program Management Paper.

227. 1st Ind (Unc1 w/o C/Op4 Atch), SSD to SSVSP, subj: Liquid Rocket Engine Data, 5 Oct 62, w/1 Atch: Engine Data Chart.

228. SSD (SSHSD) Ltr to Lockheed, subj: Ground Rules for Management of the AC-1 System, 8 Oct 62.

229. Msg, Cite SSH 12-10-23, 12 Oct 62.

230. SSD (SSH) Ltr to SSG, subj: Agena Presentation, 15 Oct 62.


233. Memorandum to SSH (Col Fletcher), subj: S-01A Requirements Based on TAT Boosted Missions, 18 Oct 62.

234. SSD (SSH) Ltr to APPRO (Col Voyles), Lockheed, subj: APPR Logistics Surveillance of Program S-01A, 19 Oct 62.

235. SSD (SSSR) Ltr to SSVZR (Major Albert), subj: Optional Equipment Requirements for S-01A Vehicles, 22 Oct 62.

236. SSD (SSH) Ltr to SSSKK, subj: Sole Source Justification, Contract AF 04(695)-221, 22 Oct 62.


239. SSD (SSSR) Ltr to SSVR, subj: Agena D FY-63 Funding Requirements to Support NASA, 1 Nov 62.

240. SSD (SSH) Ltr to Lockheed, subj: S-01A Vehicle Assignment Philosophy, 2 Nov 62.

241. SSD (SSH) Ltr to Lockheed, subj: Fixed Ullage Rocket Carrier Problem, 8 Nov 62.

242. SSD (SSSKK) Ltr to multiple addresses, subj: Request for Authority to Extend Definitization Data and to Obligate Additional Funds - Letter Contract AF 04(695)-68, Agena D, 14 Nov 62.

244. SSD (SSMBK) Ltr to multiple address, subj: Request Authorization for Letter Contract AF 04(695)-233, 16 Nov 62.

245. SSD (SSMBK) Ltr to 6595 MTN (Col Perry), subj: Umbilical Test Philosophy and Blanket Removal for SLY3/S-01A/Flyload FSV, 26 Nov 62.

246. Msg (C/Gp4), Cite APSSV-KQ 98986, 3021272 Nov 62.

247. SSD (SSC) Ltr to Lockheed, subj: First Article Configuration Inspection of S-01A/19, 6-23 Nov 1962, 12 Dec 62.

248. Historical Data - Jul-Dec 1962 from SSZAR to SSZA, 24 Jan 63.

249. NASA Ltr to Gen B. A. Schriever, 25 Jan 63.


251. Ltr sgd Gen B. A. Schriever to Dr. Robert C. Seamans, Jr., 6 Mar 63.


255. SSD (SSZAC) Ltr to SSZN and SP-206, subj: Configuration Control Management of Program S-01A Booster Vehicles, 19 Jun 63 (S/Gp1).

256. Msg Cite AFRSTD 76993, undated, and Msg Cite MSFA 15-7-22, 1520457 Jul 63.


260. Msg Cite MSFA 7-11-6, 071956Z Nov 63.

262. SSD (SSVAT) Ltr to Hq AFSC (MESFA), subj: Summary of Transferred Agena Programs, 3 Jan 64.


264. SSD (SSVAC) Ltr to SSVA (Col Blum), subj: Erection of Thor-Agena in Front of Building A, 16 Apr 64.

265. SSD (SSVA) Ltr (C/Gp4) to SSEC, subj: Historical Report, 1 January 1964-30 June 1964, 12 Aug 64, v/5 Atch: 1 (U); 2 (C); 3 (U); 4 (C); 5 omitted; 6 (C).

266. SSD (SSG) Ltr (Uncl w/o C/Gp4 Atch) to ARDC (DAESF Maj Gen Ritland), subj: Recent Agena Flight Problems, 12 Nov 64, v/1 Atch: Proposed letter to Sec McMillan from Gen Schriever, v/1 Atch.

267. SSD (SSC) Ltr (Uncl w/o C/Gp4 Atch) to AFSC (Gen Schriever, subj: General Dynamics/Astronautics Proposal to Increase SLV-3/Agena Payload Capability, 27 Nov 64, v/2 Atch; Atch 1 C/Gp4.

268. SSGA Memorandum for Generals Funk and Cooper (FOUO), subj: Request for Authority to Raise Major Agena Subcontractors to Associate Status, 10 Dec 64.

269. SSD (SSK) Ltr (C/Gp4) to AFSC and Hq USAF (in turn), subj: Request for Determination and Findings Pursuant to APFI 3-214, 25 Jan 65.

270. SSD (SSVA) Ltr (C/Gp4) to SSEC, subj: Historical Report, 1 July 1964 - 31 December 1964, 5 Feb 65, v/5 Uncl Atch.


272. SSD (SSSA) MFR, subj: Biosatellite Program -- Call From Col Pickering and Swan of AMD, 9 Mar 65.


274. SSD (SSK) Ltr (C/Gp4) to AFSC and Hq USAF (in turn), subj: Request for Determination and Findings Pursuant to APFI 3-214, 25 May 65.

275. SSD (SSLO) Ltr to AFSC (SCO), subj: Request for Organization Change - Gemini Agena Division (SSVAT), 29 Jul 65.


278. SSD (SSV) Ltr to SSQS (U/Gen Martin), subj: Program 206-II Agena Launch Capability Contract, 3 Nov 65.

279. AFSC Ltr sgd Gen B. A. Schriever to SSD (MajGen Funk) and AMDC (BrigGen Gossick), 22 Nov 65.

280. Msg Cite SS3 10125 Nov 65.

281. SSD (SSVA) Ltr (C/Gp4) to SSSK, subj: Historical Report, w/6 Atch: 1. (U); 2. omitted; 3 (U); 4. (U); 5 (C); 6. (U); 7. (C), 8 Feb 66.

282. SSD (SSK) Ltr to AFSC and Hq USAF, subj: Request for Determinations and Findings Pursuant to AFPI 3-214, 8 Jul 66.


284. SSD (SSV) Ltr to SSQS (Gen Martin), subj: Agena Guidance and Control Subsystem Development, 1 Feb 67, (C/Gp3).

285. SSD (SSVA) Ltr (Uncl w/o C/Gp4 Atch 2, 7, 8 & 9) to SSV, subj: Historical Report, 1 Jul 66 to 31 Dec 66, 3 Feb 67.

286. DAF Ltr (C/Gp3) to SSVA, subj: Attitude Control System Configuration, 8 Feb 67.

287. DAF (SP-7B) Ltr to SSVA (Major Bell), subj: Standard Agena Allocation, 13 Feb 67.


289. SSD (SSVAF) Ltr (S/Gp3) to SSEN (Mr. McClellan), subj: Users of Standard Agena Vehicle, 7 Apr 67.

290. SSD (SSVA) Ltr to SSV (COL Hamilton), subj: Improved Agena Development Program, 28 Apr 67.


290b. Msg (C/Gp3), Cite SS3 67-12, 24 May 67.

290c. Msg (C/Gp4), Cite SCSS 22931, 2621112 67, May 67.

291. SSD (SSV) Ltr to SAFSP (Gen Martin), subj: SSD Position on SAFSP Proposal for a New Production Management Concept for Agena, 2 Jun 67.

292. MFR sgd Maj Robert R. Crawford, 7 Jun 67.
293. SSD (SSVA) Ltr (C/Gp3) to SS6S (Gen Martin), subj: Improved Agena Performance Requirements, 12 Jun 67.

294. DAF (SP-2) Ltr (C/Gp3) to multiple address, subj: Improved Agena, 15 Jun 67.


296. DAF (SP-1) Ltr (C/Gp3) to SSG (Gen Cooper), subj: Improved Agena, 23 Jun 67.


299. SAMSO (SMVA) Ltr (Uncl w/o C/Gp4 Atch 5 and 8) to SNV, subj: Historical Report, 27 Jul 67.


303. SAMSO (E G) Ltr (C/Gp4) to SAFSP (Gen Martin), subj: Improved Agena Flight Test, 11 Aug 67.

304. DAF (SP-1) Ltr (C/Gp3) to S63-2 (Gen Cooper), subj: Improved Agena Flight Test, 14 Aug 67.

305. SAMSO (SMV) Ltr to SAFSP (Gen Martin), subj: New Production Management Concept for Agena, 22 Aug 67.

306. DAF (SP-1) Ltr (C/Gp3) to S63-2 (Gen Cooper), subj: Improved Agena, 30 Aug 67.

306a. SAMSO (SM6-2) Ltr (C/Gp3) to SM6S (Gen Martin, subj: Improved Agena, 7 Sep 67.

306b. DAF (SP-1) Ltr (S/Gp3) to S63-2 (Gen Cooper), subj: New Production Management Concept for Agena, 8 Sep 67.


307. MFR sgd LtCol Allen J. Poor, subj: Custom Agena-Briefing to Gen Martin, 19 Sep 67, w/1 Atch: Briefing Charts, subj: Custom Agena.
308. DAF (Sp-2) Ltr to SMS-2 (Gen Cooper), subj: Procurement of Agena for SMSP, 20 Sep 67.


311. DAF Ltr (Uncl w/o S/Gp3 Atch) to (LtCol Wheeler, subj: Agena D Flight Summary, 25 Jan 68, w/1 Atch same subj.

312. DAF Ltr to SMS, subj: Final Agena Historical Report, 1 July - 19 October 1967, 15 Apr 68.

to: SSVA (Col A J Gardner)

Program 110 has decided to incorporate "IACS squared" on Vehicle §23 and to continue use of the present electronics on vehicles §16 through §22. We, therefore, have no requirement for GCI.

This letter classified CONFIDENTIAL because it reveals program configuration.
SP-7B/Capt Weech/3-1925

SUBJECT: Standard Agena Allocation

TO: SSVA (Major Bell)

1. SP-7 requests that all 1121 Standard Agena vehicles presently under procurement be delivered with the current guidance subsystem installed. Due to the high cost of implementing the Guidance Control Electronics, Velocity Cut-Off System and the MIT Inertial Reference Package, this office does not plan to incorporate these systems. Consideration would be given for usage if future program procurements are made.

2. Further request you submit a list showing Standard Agena allocations for Program 846 usage.

CHARLES L. MURPHY, Col, USAF
Deputy Director

Approved for Release: 2017/08/28 C05097006
DEPARTMENT OF THE AIR FORCE  
AIR FORCE ROCKET PROPULSION LABORATORY (AFSC)  
EDWARDS, CALIFORNIA 93523

REPLY TO  
ATTN OF:  
RFG

SUBJECT:  
Advanced Agena Development

TO:  
SSD (SSGV/Col D. V. Miller)  
AF Unit Post Office  
Los Angeles, Calif 90045

1. A few months ago AFRPL entered discussions with Colonel A. Gardner relative to this Laboratory's participation in your Advanced Agena Development Program. Under Colonel Douthett's leadership and with management stimulus from our higher headquarters, we have improved our effectiveness in providing engineering support to AFSC's weapon systems divisions.

2. Use of AFRPL as SSD's "engineering arm" seems to be a natural. An alternate would be to use Aerospace Corporation as your engineering support element. The basic Agena propulsion was developed by the Air Force (including laboratories) and its contractors without using Aerospace. At the time the 6 Dec 1966 letter was prepared (Atch #1), it seemed that the three parties; i.e., SSD, Lockheed and Bell, were in favor of utilizing AFRPL for engineering support.

3. Within the past 6 months we have evidenced significant growth in our support of BSD. Typical of the understanding we establish with BSD on each of their programs we support is the correspondence dated 9 Dec 66 and 16 Dec 66 (Atch #2).

4. Recently we have proposed a method for assessing the effectiveness of laboratories. Three copies of this proposal report are attached. You will note that the proposal promotes further "coupling" between laboratories and the systems divisions. You will find laboratory effectiveness being measured largely by the impact that laboratories can bring into Air Force weapon systems. Not only are you the target of our technology product, but you also validate the worth of any technology.

5. We remain interested in supporting your development of the advanced Agena, and wish to conclude a degree of formality much the same as we have been doing with BSD. In the event that SSD has other plans in mind, we would appreciate being advised.

D. H. Ross  
Deputy Director

3 Atch  
1. Ltr, RPRC, 6 Dec 66  
2. Ltr, BSPF, 9 Dec 66 and RFG, 16 Dec 66  
3. Report, "Proposal for Assessment of Lab Effectivity" (3 cys)
SSEH (Mr. McClellan)

1. Following are the programs supported by the Standard Agena vehicle during the periods indicated.

1962 - 162, 698BBK
1963 - 162, 698BBK, 206, 638
1964 - 698BBK, 162, 206, 241, 638, Mariner
1965 - 241, 206, 770, Snapshot, Vela, OGO-C, Gemini
1966 - 206, 241, 770, Gemini, OAO, 461, Pageos, 206II, Lunar Orbiter, ATS

WILLIAM R. BELL, Maj USAF
Chief, Program Control Div.
Agena Program Office

1967
SSV (Col Hamilton)

1. On 20 April, I discussed the outline of my briefings (intended for Secretary Flax) with Col Diehl, Hq USAF and Lt Col Saavedra, Hq AFSC. I then gave the briefings to the Hq USAF Space Panel chaired by Col Frank Mitchie. There were no significant comments.

2. On 21 April, I briefed Assistant Secretary of the Air Force for R&D, Dr. Flax, on the Improved Agena Program. Mr. Ross, Col Diehl and Lt Col Saavedra were also present. Discussions with Secretary Flax centered mainly around the present effort to establish complementary subsystems for the Improved Agena and schedule/costs estimates. He affirmed the significance of the schedule and the importance of good funds estimates.

3. Also on 21 April, I briefed Mr. John Kirk and Mr. Howard Barfield, DDR&E. Discussion covered the following main points:
   
   a. Recommendation that an incentive plan take into account performance and schedule in addition to cost.
   
   b. The possible use of the vehicle on a Titan IIIC booster.
   
   c. The resolution of plans for appropriate complementary subsystems.

In a discussion between Mr. Kirk and Col Diehl, it was made clear that DDR&E does not have further action items at this time. Hq USAF will take all necessary action to program funds and to monitor progress of the program through normal channels. It was agreed that upon receipt of the necessary funds, SSD will proceed with Phase II of the program as outlined. I was told that the required FY 67 funds are immediately available and that action is underway to provide the FY 68 funds.
4. I wish to reiterate several points which I have made to you and to General Cooper in the past. At the present time, the Agena Program Office is not manned adequately to provide the necessary assurance of good schedule and cost control management which is required to complete this program in keeping with the briefings made on 21 April. Due to the pressure of other activities, we cannot assure timely and adequate procurement action for the Phase II procurement, especially with regard to the formulation and negotiation of the recommended incentive plan. The failure of this office to receive adequate manning is complicated with other major management objectives at this time. Some of the more significant items are:

a. The resolution of the Contract -939 problems which are precluding negotiation activity.

b. The resolution of -5077 Contract problems which are related to the -939 Contract.

c. The half-completed configuration management program clean-up which I started when I first was assigned as Agena Program Director and which retains its importance relative to present and future programs.

d. The development of adequate component/vehicle interface controls.

e. The establishment of an orderly system of overall management reports and meetings between this office and the contractors.

f. Effective and timely technical evaluations to support various procurement actions for subsystems, studies, and vehicles.

g. The establishment of adequate system program office long-range planning and analyses of methods, costs and technical development efforts, in keeping with good management techniques. Poorly accomplished items at this time lead to down the road complications which result in further intensification of the manpower problem.

I have been involved in system program office management since 1956 on five major programs. I have seen the results of failure to act on organizational and manning problems as well as the results of timely action. It is my opinion that if no action is taken at this time to
increase the present level of manning in the Agena Program Office, that the Improved Agena Program is headed toward overrun and behind schedule status. We lack the capability to do the management job that is required of this program which for development purposes alone will expand about 35 million dollars in the next two years. In addition within six months, we must have defined and taken contractual action for flight hardware to support operating requirements. The complications of inadequate manning and the resultant need for me to devote my time to too much fire-fighting and too little general management have impaired my capability to accomplish my job in the manner and depth that are necessary.

ALFRED J. GARDNER, Col, USAF
Program Director, Agena
Deputy for Launch Vehicles
1 May 1967 Briefing, Report of Special Board on Agena Procurement. SAFSP briefing to Agena personnel outlines requirement to procure "Peculiarized Agenas."

REPORT OF SPECIAL BOARD ON AGENA PROCUREMENT

SAFSP

1 MAY 67
OBJECTIVE OF REVIEW

DETERMINE BEST COURSE OF ACTION FOR
PROCURING PECULIARIZED AGEMAS FOR
SAFSP PROJECTS

CONFIGURATION FOR INITIAL AGEMA PROCUREMENT

SUBSEQUENT MODIFICATIONS TO CONVERT TO PROJECT MISSIONS
BACKGROUND

AGENA STANDARDIZATION

1961

TO PROVIDE

EASY VEHICLE FOR MANY USING PROGRAMS

IMPROVED RELIABILITY

REDUCED COST

FIXED PRICE PROCUREMENT

PRODUCTION APPROVAL PROCEDURES REGULARIZED

1964

VANCE MEMO TO SAFS: PROGRAMMING AND FUNDING FOR SPACE LAUNCH VEHICLES

HQ USAF MAINTAINS RECORD OF FIRM ORDERS AND PLANNED REQUIREMENTS

DDR & E APPROVES PRODUCTION TO MEET FIRM ORDERS

OSD APPORTIONS FUNDS TO USING PROGRAMS TO FINANCE PRODUCTION

DDR & E APPROVES CHANGES

CERTAIN COMPONENTS PROCURED GFE

1965

BELL ENGINES AND VELOCITY METER

BARNES HORIZON SENSOR

DOWNGRADED AT 12 YEAR

INTERVALS. NOT AUTOMATICALLY

DECLASSIFIED. CCD DIR 5200.10

SECRET

Approved for Release: 2017/08/28 C05097006
### AGENA USERS

<table>
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<tr>
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<th>SAFSP</th>
<th>SSD</th>
<th>NASA</th>
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<td>AGENA A</td>
<td>27</td>
<td>25</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>AGENA B</td>
<td>79</td>
<td>53</td>
<td>8</td>
<td>18 (16%)</td>
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<tr>
<td><strong>NON-STANDARD SUB-TOTAL</strong></td>
<td>106</td>
<td>78 (74%)</td>
<td>10 (10%)</td>
<td>18 (16%)</td>
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<td>12</td>
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<td>194 (1963-1965)</td>
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<td>451 (1964-1965)</td>
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<td>41</td>
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<td>722 (1965-1967)</td>
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<td>939 (FEB 67 - NOV 68)</td>
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<td>0077 (DEC 68 - DEC 69)</td>
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<td>19</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>STANDARD SUB-TOTAL</strong></td>
<td>238</td>
<td>206.36%</td>
<td>13 (6%)</td>
<td>19 (8%)</td>
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</tbody>
</table>

**NOTE:** SAFSP IS SOLE KNOWN USER OF AGENAS YET TO BE BUILT.
CURRENT CONCEPT

STANDARD AGENA

PROCURED ON SSD FPI CONTRACT
PRODUCED IN TWO MODELS
MODEL 1191 FOR PROJECT S46
MODEL 1007 FOR ALL OTHER USERS
ACCEPTED BY SSD AS COMPLETELY ASSEMBLED AND
SYSTEM TESTED VEHICLE

PECULIARIZATION

PROCURED ON SEPARATE SAFSP CONTRACTS FOR EACH USING PROJECT
TAKE DELIVERY OF STANDARD AGENA
EXTENSIVE DISASSEMBLY —
REMOVE MANY COMPONENTS —
SOME NOT USED AT ALL - RETURNED FOR CREDIT
SOME MODIFIED EXTENSIVELY
PROCURE PROJECT-PECULIAR COMPONENTS
RE-ASSEMBLY
SYSTEM TEST

DOWNGRADED AT 12 YEAR
INTERVALS; NOT AUTOMATICALLY
DECLASSIFIED. DOD DII E200.10
**CURRENT STANDARD AGENA ELEMENTS**

(ARBITRARILY SELECTED BY BOARD)

<table>
<thead>
<tr>
<th>MODEL 1001</th>
<th>GUIDANCE SYSTEM 13</th>
<th>PROPEL TANKS 1</th>
<th>STRUCTURE 3</th>
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<tr>
<td>AGENA</td>
<td>TM SYSTEM 14</td>
<td>MISCELLANEOUS 4</td>
<td>ENGINE SYSTEM 8</td>
</tr>
<tr>
<td></td>
<td>SEQUENCE TIMER 1</td>
<td></td>
<td>PNEUMATICS 6</td>
</tr>
<tr>
<td>95</td>
<td>POWER CONV. &amp; DISTR. SYSTEM 4</td>
<td></td>
<td>MISCELLANEOUS 9</td>
</tr>
<tr>
<td></td>
<td>PYROTECHNICS 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROPEL. PRESS. SYSTEM 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HARNESS 22</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| ARVED 70   | UPA KIT 6           | LHB MOD KIT 12 |
| 1997       | BTI. ADAPT. KIT 8   | AUX N2 TANK KIT 4 |
| TO MAKE    | HIS PREGNANT SQ. KIT 2 | PROPEL. DUMP KIT 5 |
| 1191       | AUX FM TM ADAPT KIT 6 | SINGLE START KIT 4 |
| AGENA      | TM XMTR ADAPT KIT 1 | TURBINE IGNITER ASSY 1 |
|            | BLANK COMM PANEL KIT 1 | ENG. COME AUX. STRU. KIT 1 |
| 70         | S-BAND & EA/DEC ADAPT KIT 3 | SAFE/ARM PLUG KIT 1 |
|            | MISCELLANEOUS 3     | BOOSTER ADAPTER KIT 16 |
# CURRENT PECULIARIZATION SUMMARY

<table>
<thead>
<tr>
<th>ELEMENTS IN MODEL 1007</th>
<th>CHANGES BY PROJECT</th>
<th>848</th>
<th>110</th>
<th>770</th>
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<tr>
<td><strong>FORWARD SECTION</strong></td>
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<tr>
<td>04</td>
<td>REMOVE</td>
<td>35</td>
<td>30</td>
<td>48</td>
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<tr>
<td>122</td>
<td>REMOVE</td>
<td>74</td>
<td>118</td>
<td>56</td>
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<tr>
<td><strong>MID SECTION</strong></td>
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<td>05</td>
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<td>1</td>
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<td>122</td>
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<td>9</td>
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<td>3</td>
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<td><strong>AFT SECTION</strong></td>
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<td>26</td>
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<tr>
<td><strong>TOTALS</strong></td>
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<td>95</td>
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<td>39</td>
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<tr>
<td>104</td>
<td>REMOVE</td>
<td>216</td>
<td>208</td>
<td>133</td>
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**DOWNGRADED AT 12 YEAR INTERVALS; NOT AUTOMATICALLY DECLASSIFIED. DO NOT DISSEminate.**

Approved for Release: 2017/08/28 C05097006
# CURRENT PRODUCTION MANHOURS

(IN THOUSANDS)

<table>
<thead>
<tr>
<th>STANDARD AGENDA</th>
<th>FAB &amp; ASSY.</th>
<th>SYSTEM TEST</th>
<th>INTEG &amp; FLT. SPT.</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEL 1007</td>
<td>19.9</td>
<td>5.5</td>
<td>-</td>
<td>25.4</td>
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<tr>
<td>MODEL 1191</td>
<td>20.7</td>
<td>5.5</td>
<td>-</td>
<td>26.2</td>
</tr>
</tbody>
</table>

| PECULIARIZATION | PROJECT | 896 | 55.4 | 12.5 | 26.3 | 94.2 |
|                 |         | 110 | 57.6 | 32.0 | 73.0 | 162.6 |
|                 |         | 770 | 132.0| 59.0 | 33.0 | 224.0 |

| GRAND TOTALS    | 896      | 120.4 |
|                 | 110      | 188.0 |
|                 | 770      | 249.4 |

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# CURRENT UNIT COSTS

($ MILLIONS)

**STANDARD AZEHA**
**LMSC VEHICLE, SPARES & OPTIONAL KITS:**

<table>
<thead>
<tr>
<th>Material</th>
<th>2975</th>
</tr>
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<tbody>
<tr>
<td>Labor &amp; O'head</td>
<td>3325</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>630</td>
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</tbody>
</table>

**GFE ITEMS:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell Engine</td>
<td>140</td>
</tr>
<tr>
<td>Bell Velocity Meter</td>
<td>770</td>
</tr>
<tr>
<td>Barnes Horizon Sensor</td>
<td>825</td>
</tr>
<tr>
<td><strong>COST TO SSD:</strong></td>
<td>630</td>
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</table>

**ENGINEERING CHANGES & POST FLIGHT ANALYSIS**

<table>
<thead>
<tr>
<th>Cost to Users</th>
<th>250</th>
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<tbody>
<tr>
<td><strong>Total Cost to Users</strong></td>
<td>1100</td>
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</tbody>
</table>

**TOTAL COST TO SAFSP**

(Ecludes cost of payload integration and flight support)

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>640</td>
<td>883</td>
</tr>
<tr>
<td>110</td>
<td>1165</td>
</tr>
<tr>
<td>770</td>
<td>2674</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1983</td>
</tr>
</tbody>
</table>

| 2215 | 2255 |
|      |      |
| 3774 |      |
|      |      |

**50X1**

*Downgraded at 12 year intervals; not automatically declassified. DOD Directive 3200.10*
CURRENT CONFIGURATION CONTROL

STANDARD AGENDA

375-SERIES PROCEDURES

CLASS I CHANGES - AGENA SPD CCB
(SAFSP MEMBERSHIP)

CLASS II CHANGES - AFPRO CCB
(LMSC MEMBERSHIP)

DETAILED DOCUMENTATION

PECULIARIZED VEHICLE

CONFIGURATION MANAGEMENT PLAN

DIRECT CHANNEL LMSC - SAFSP

APPROVAL BY SAFSP PROJECT DIRECTOR

MINIMUM DOCUMENTATION

SECRET
CURRENT LOGISTICS SUPPORT

SSD CONTRACT

LMSC MAINTAINS INVENTORY OF SPARES

AFPRO DETERMINES:
  ISSUE OF SPARES
  FLIGHT WORTHINESS
  DISPOSITION OF ITEMS

MATERIEL REVIEW BOARD
HEADED BY AFPRO

DETERMINES:
  FLIGHT WORTHINESS
  DISPOSITION
ALTERNATIVES CONSIDERED

BY ROYD

1. NO CHANGE

2. ELIMINATE ONLY THE STANDARD AGENA SYSTEM TEST

3. SSD BUY MOST COMPONENTS & SUB-ASSEMBLIES FROM LMSC, WITH THESE ITEMS CFE: ENGINE, VELOCITY METER, HORIZON SENSOR, G/I GUIDANCE, UNIVAC COMPUTER

SAFSP BUY ONLY ASSEMBLY, SYSTEM TEST, INTEGRATION & FLIGHT SUPPORT

3½. SAME AS 3, EXCEPT PLACE SSD FUNCTIONS IN NEW SAFSP OFFICE

4. DISCONTINUE STANDARD CONCEPT
SAFSP BUY PECULIARIZED AGENAS FROM SCRATCH
BOARD REJECTED ALTERNATIVES 1, 1½ & 2

1. NO ASSEMBLED STANDARD AGENA IS READILY USABLE BY SARSP
   DISASSEMBLY
   REMOVAL
   MODIFICATION
   ADDITION
   HIGHLY PROJECT PECULIAR

2. REJECTION OF ALTERNATIVE NO. 2 (IMPROVED AGENA) DOES NOT REJECT
   IMPROVED COMPONENTS PER SE

3. 316 SERIES CONFIGURATION CONTROL TOO DETAILED FOR OUR
   DISSIMILAR PROJECTS
### COMPARISON
OF THREE REMAINING ALTERNATIVES WITH CURRENT SITUATION

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CURRENT</th>
<th>ESTIMATES BY BOARD ONLY</th>
<th>NO 3</th>
<th>NO 3 1/2</th>
<th>NO 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCEPT</td>
<td>SSD BUS ASSEMBLED AND TESTED AGMA. SAFSP PECULIARIZES EXTENSIVELY.</td>
<td>SAFSP BUYS COMPONENTS SAFSP ASSEMBLES AND TESTS</td>
<td>SAFSP BUYS COMPONENTS SAFSP ASSEMBLES AND TESTS</td>
<td>SAFSP PROJECT OFFICE BUYS COMPLETE SAFSP PROJECT OFFICE ASSEMBLES AND TESTS</td>
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</tr>
</tbody>
</table>

### TOTAL MANHOURS (THOUSANDS)

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>846</th>
<th>120.4</th>
<th>102.0</th>
<th>SAME AS NO. 3</th>
<th>116.7</th>
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<td>110</td>
<td>188.0</td>
<td>173.6</td>
<td>187.8</td>
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<td>175.5</td>
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<td>770</td>
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### TOTAL UNIT COST (MILLIONS)

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<th>SAME AS NO. 3</th>
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## COMPARISON (CONTINUED)

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**TOTAL MANPOWER IN ORGANIZATIONS CONSIDERED**

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<tr>
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<td>SAFSP</td>
<td>202</td>
<td>212</td>
<td>221</td>
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**TOTAL** | 4358 | 4135 | 4102 | 3802 |

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DOWNGRADED AT 12 YEAR INTERVAL: NOT JUSTIFCATION DECLASSIFIED NO LONGER SECRET

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Approved for Release: 2017/08/28 C05097006
## COMPARISON (CONTINUED)

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<td>STANDARD-375</td>
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<td>ALL INTERNAL SAFRD</td>
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<tr>
<td>770 (4 FLTS)</td>
<td>100%</td>
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**AT LEAST AS GOOD IN OTHER ALTERNATIVES**

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<tr>
<th>PRODUCTION APPROVAL</th>
<th>STANDARD-DOR&amp;E PECULIAR-SAFRD</th>
<th>COMPONENTS-DOR&amp;E SAFRD</th>
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<td>PECHULIAR VEHICLE SAFRD</td>
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CONCLUSIONS

1. An assembled and tested standard Agena is not a cost-effective base on which to build vehicles peculiarized for SAFSP.

2. The most cost-effective base is production of components and sub-assemblies only.

3. The most cost-effective method of producing SAFSP vehicles is to assemble and system test them over.

4. The procurement of items such as engines and horizon sensors on a OPE basis is inconsistent with SAFSP performance incentives.

5. 375 series configuration control is too detailed for application to SAFSP peculiarized vehicles or their components.

6. SAFSP is in a better position than the AFPRO to determine whether an item from the spares inventory is flight-worthy.

7. Production of components and sub-assemblies in lieu of a complete standard Agena does not inhibit potential (non-SAFSP) Agena customers.

8. There is no significant difference among the alternatives considered in the areas of budgeting, production planning, or SAFSP capability to maintain reserve systems.

9. Reliability of peculiarized Agenas would be at least as good under the five alternative changed concepts as under the current concept (Alt No. 1).
RECOMMENDATIONS

1. ORG&E APPROVE CHANGING STANDARD AGENA PRODUCTION CONCEPT
   FROM PRODUCTION OF ASSEMBLED AND TESTED VEHICLES
   TO PRODUCTION OF COMPONENTS AND SUB-ASSEMBLIES

2. ORG&E DELEGATE TO SAFRD APPROVAL AUTHORITY FOR THIS PRODUCTION

3. CONTRACTING FOR COMPONENTS AND SUB-ASSEMBLIES BE DONE BY:
   ASSP FOR ALL STANDARD ITEMS
   FOR ALL PECULIAR ITEMS, EXCEPT A FEW MISSION-SENSITIVE ITEMS
   SUCH AS PROJECT 770 COMMAND SYSTEM
   AND PROJECT 770 SOLAR ARRAY
   SAFSP FOR FEW MISSION-SENSITIVE ITEMS

4. ASSP PRODUCTION CONTRACT PROVIDE FOR:
   LASCTO FURNISH FOLLOWING ITEMS: CFE
   ENGINES
   VELOCITY METERS
   HORIZON SENSORS
   BTL GUIDANCE
   UNIVAC COMPUTER SUPPORT
   SAT CONTROL AIRCRAFT EQUIPMENT
   SAFSP-PREPARED CONFIGURATION MANAGEMENT PLAN IN LIEU OF
   375-SERIES PROCEDURES
   SPECIFICATIONS PREPARED BY SAFSP

CONTRACT AT 12 YEAR
INTERVALS FOR AN ANNUALLY
DECLASIFIED, DOD DIR 8535.2
RECOMMENDATIONS (CONTINUED)

5 APPRO CONFIGURATION CONTROL RESPONSIBILITY BE CHANGED TO A ROLE OF SURVEILLANCE AND MAKING RECOMMENDATIONS TO SAFSP

6 SAFSP ESTABLISH A CONFIGURATION REVIEW BOARD TO CONTROL CONFIGURATION OF:
   ITEMS PROCURED BY SSD
   FAMILIARIZED VEHICLES PROCURED BY SAFSP

7 DEVELOPMENT OF IMPROVED AGENA COMPONENTS BE LIMITED TO THOSE IMPROVEMENTS REQUIRED BY SAFSP
   A. CONTINUE UNDER SSD MANAGEMENT FOLLOWING DEVELOPMENTS ALREADY UNDER WAY
      BELL 8533 ENGINE (RE-STUDY TIME PHASING)
      BELL TYPE ITA VELOCITY METER
      REPLACEMENT FOR D-TIMER QUANTIC HORIZON SENSOR
   B. FUTURE IMPROVEMENTS BE REVIEWED BY SAFSP/SSD TO DETERMINE WHICH AGENCY MANAGES DEVELOPMENT

8 SSD CONTRACT WITH LMASC FOR AGENA LOGISTICS SUPPORT BE MODIFIED TO GIVE SAFSP RESPONSIBILITY FOR DETERMINING FLIGHT-WORTHINESS AND DISPOSITION OF ITEMS

9 SSD RETAIN RESPONSIBILITY FOR AGENA LAUNCH SERVICES, EXCEPT FOR THOSE SERVICES REQUIRED TO BE PROCURED BY SAFSP UNDER FACTORY TO PAD CONCEPT
RECOMMENDATIONS (CONTINUED)

10. SSD AGENA SPE TO BE MANAGED TO DO THESE TASKS
    PROCUREMENTS OF OPEN SPECIFICATIONS
    PURSUE SELECTED DEVELOPMENTS AS REQUIRED BY SAFSP
    PROCURE LAUNCH SERVICES

11. BUDGET ESTIMATING AND PRODUCTION PLANNING BE ACCOMPLISHED IN SAFSP-SAFPO CHANNEL

12. IMPLEMENTATION OF ALL THE ABOVE BE CARRIED OUT IN TWO STEPS

   STEP 1 (INITIATE AFTER GO-AHEAD)
   STOP ASSEMBLY AND SYSTEM TEST OF STANDARD AGENA
   STOP MANUFACTURE OF COMPONENTS NOT USED BY SAFSP
   REPLACE 315-SERIES WITH SAFSP CONFIGURATION MANAGEMENT PLAN
   VEST IN SAFSP AUTHORITY TO DETERMINE FLIGHT-WORTHINESS AND
   DISPOSITION OF ITEMS IN LOGISTICS INVENTORY

   STEP 2 (6-9 MONTHS AFTER GO-AHEAD)
   ORDERLY EXECUTION OF REMAINING ITEMS
CURRENT

COMPLETE AGENA VEHICLE

FAB ASSEMBLY SYSTEM TEST

ST. AGENA OFFICE PROCURES

PROPOSED

STANDARD COMPONENTS

COMMON TO ALL USERS

ST. AGENA OFFICE:

FABRICATES

ACCEPTS ON COMPONENT TEST BASIS

OPTIONAL KITS

COMMON TO 2 OR MORE USERS

BY SAFSP

PECULIARIZED VEHICLE

DISASSEMBLY

RETURN FOR CREDIT

MODIFY

ADD PECULIAR COMPONENTS

ASSEMBLY

SYSTEM TEST

SAFSP PROCURES

PROJECT PECULIAR COMPONENTS

QUANTITY REQUIREMENT

SMALL REQUIREMENT OR MISSION SENSITIVE

ASSEMBLY

SYSTEM TEST

SAFSP:

COMPLETES THE FABRICATION

ASSEMBLES IN PECULIAR CONFIG.

SYSTEM TEST AS PECULIAR VEHICLE

DOWNEQUIPED AT 12 YEAR

INTERVALS FOR OPERATIONAL

DECLASSIFIED 00/5/2017

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RESULTS, THE PROGRAM DIRECTOR DETERMINED THAT IT WAS UNWISE TO PROCEED INTO PHASE II OF THE DEVELOPMENT PROGRAM ON THE SCHEDULED DATE, 29 MAY 67. CONSEQUENTLY THE ALREADY HIGHLY COMPRESSED SCHEDULE CALLING FOR A MARCH 69 DD 250 OF THE FIRST PRODUCTION VEHICLE IS IN INCREASING JEOPARDY.

3. THE CONSIDERATIONS WHICH COLLECTIVELY RESULTED IN THE DECISION NOT TO PROCEED ON SCHEDULE ARE AS FOLLOWS:

1) INSUFFICIENT PROGRAM DEFINITION: FROM THE OUTSET, IT WAS REALIZED THAT ACHIEVEMENT OF ADEQUATE DEFINITION IN 90 DAYS WAS AN OPTIMISTIC GOAL. THE GOAL HAS NOT BEEN REACHED AND ADEQUATE TOOLS TO INSURE VEHICLE PERFORMANCE AND CONTROL CONTRACTOR'S COSTS AND SCHEDULE HAVE NOT YET BEEN DEVELOPED.

2) CRITICAL TECHNICAL PROBLEM: AS A RESULT OF THE PRELIMINARY DESIGN REVIEW AND A REVIEW OF THE RECENT DATA DEVELOPED BY INVESTIGATIONS OF THE CURRENT TURBINE PUMP ASSEMBLY FLIGHT ANOMALY PROBLEM (PROJECT COUGHDROP), THE APPLICATION OF AN UPRATED VERSION OF THE CURRENT PUMP ASSEMBLY IS CONSIDERED
(3) UNAVAILABILITY OF PRELIMINARY COST PROPOSAL:

THE CONTRACTOR'S COST PROPOSAL FOR PHASE II WAS DUE FOR SUBMISSION IS MAY 67. TO DATE IT HAS NOT BEEN SUBMITTED. IT HAS ALWAYS BEEN A PROGRAM OFFICE CONDITION THAT PHASE II WOULD NOT PROCEED WITHOUT A DETAILED COST PROPOSAL.

PART II. ASSISTANCE REQUIRED:

1. I DO REQUIRE THE ASSISTANCE OF HIGHER HEADQUARTERS.

2. RECOMMENDED COURSE OF ACTION: WE HAVE BEEN INFORMALLY ADVISED BY SATSP THAT THE NEED DATE FOR THE FIRST VEHICLE MAY BE RESCHEDULED. BASED ON THE USER NEED DATE THE CURRENT SCHEDULE OF MARCH 69 DD 250 OF THE FIRST PRODUCTION IMPROVED AGENA VEHICLE CAN BE EXTENDED TO SEPTEMBER 76. THIS WOULD PERMIT ADEQUATE COMPLETION OF PHASE I EFFORT AND ALLOW INCORPORATION OF A COOLED-BEARING TURBINE PUMP ASSEMBLY. REQUEST APPROVAL OF THIS COURSE OF ACTION BY 12 JUNE 67.

3. ALTERNATIVE COURSES OF ACTION:

(A) IF YOU ARE WILLING TO ACCEPT THE RISK ASSOCIATED WITH UPDATING THE CURRENT TURBINE PUMP DESIGN,

EXTEND THE CURRENT SCHEDULE OF MAR 69 DD 250 TO
MAY 69. YOUR DIRECTION IF THIS ALTERNATIVE IS SELECTED IS REQUIRED BY 12 JUN 69.

(b) IF THE WAR 69 DB 250 VOR IS LEVYABLE, AND THE TECHNICAL AND COST RISKS ARE ACCEPTABLE, YOUR DIRECTION TO PROCEED IMMEDIATELY INTO PHASE II IS REQUIRED BY 26 MAY 69.

4. ADDITIONAL COORDINATION WITH SAFSP IS REQUIRED AND THIS COORDINATION IS UNDERWAY. INCLUDED IS HAVING THEM SPECIFY DETAILED DESIGN REQUIREMENTS. IF HEADQUARTERS IS AWARE OF ANY OTHER DESIGN REQUIREMENTS OTHER THAN THOSE OF SAFSP REQUEST ADVERTISEMENT.

PART III. COMMANDER'S COMMENTS:

I AGREE WITH THE PROGRAM DIRECTOR'S ANALYSIS OF THE PROBLEM, HIS IMMEDIATE ACTION AND HIS RECOMMENDED COURSE OF ACTION. I URGE YOUR APPROVAL AND SUPPORT IN CARRING APPROVAL OF THIS COURSE OF ACTION FROM HQ USAF AND SAFRD. CP-3.
CONFIDENTIAL SCSS 2231 MAY 67.
FOR SSV, REFERENCE SSD MESSAGE RED LINE PRESTO SSG 67-12.
THIS MESSAGE IN FOUR PARTS: PART ONE, CONCUR WITH YOUR
DECISION NOT TO PROCEED WITH PHASE II PENDING FURTHER USER
PROGRAM GUIDANCE. PART TWO, REQUEST YOU PROCEED WITH
SAFSP COORDINATION TO OBTAIN DETAILED MISSION REQUIREMENTS
FOR INPUT TO PHASE I DOCUMENTATION. ANY ADDITIONAL
REQUIREMENTS AVAILABLE TO THIS HEADQUARTERS WILL BE
FORWARDED BY SUBSEQUENT MESSAGE. PART THREE, USER FUNDING
AND SCHEDULE POSTURE CURRENTLY UNDER DETAILED REVIEW BY
SAFSS, SASSM AND SAFRD. AT MEETING TODAY AMONG SAFSS,
APRDOE AND SCSSU, USER HAS AGREED TO PROVIDE SCHEDULE/
FUNDING POSTION BY 06 JUNE 1967, TO SUPPORT COURSE-OF-
ACTION DECISION BY 12 JUNE 1967. PART FOUR, REQUEST YOU
PROVIDE BY 7 JUNE 1967 INFORMATION FOR FOLLOWING PROGRAM
OPTIONS WHICH SHOULD INCLUDE COMPLETION OF ACCEPTABLE

PAGE TWO RUEDTAA7414 CONFIDENTIAL
PHASE I, NECESSARY TURBOPUMP TASK, AND LIMIT OF FY 1967 FUNDS
OF $2,237 MILLION. A. SCHEDULE AND FUNDING FOR EARLIEST
POSSIBLE AVAILABILITY DATE, WITH FY 1968 FUNDING NOT TO
EXCEED $211.1 MILLION. B. SCHEDULE AND FY 1970 FUNDING FOR
PROGRAM FUNDED WITH $2,237 MILLION IN FY 1967, $14.0 MILLION
IN FY 1968, AND $10.2 MILLION IN FY 1969. C. SCHEDULE AND
FUNDING FOR DD 250 DATE OF SEPTEMBER 1970.
SSV

SSD Position on SAFSP Proposal for a New Production Management Concept for Agena

SAFSP (Gen Martin)

1. Pursuant to your briefing and our discussion on 29 May 1967, I would like to restate the position that I expressed to you at that time. Your Proposal 3 would relegate the role of SSD to one of a procuring authority for parts and components, as opposed to the SSD mission which is system responsibility - including responsibility for design, development, test and procurement of a system. What you are proposing is contrary to the management concept that has evolved over the years wherein we plan the total RDT&E responsibility, including procurement actions, under single management. In the event that you do proceed with the components and parts approach, your Option 3 1/2 appears to be the only one of the two that is manageable since you as program manager will have all elements of the program directly under you.

2. However, I believe that a more acceptable solution can be reached. There is a possibility of future NASA business. If additional uses for Agena should materialize, your Option 3 or 3 1/2 would be even less desirable. It seems reasonable to me that an ascent vehicle could be built and tested as a system as separate and distinct from the on-orbit mode. Such an arrangement should satisfy your objections to the current Standard Agena as well as provide an integrated Agena Ascent Vehicle which would interest NASA as well as other programs. In order to achieve this we will have to obtain your requirements on a more timely basis in order to exercise proper configuration control and to optimize production to meet user requirements.

3. I believe that such an ascent vehicle could be defined which would be an acceptable approach for you as well as a viable system for us. However, our Agena Program Office is currently engaged full time in trying to resolve the 939 Letter Contract as well as Instruct Lockheed as to what additional effort will be required to clean up the Phase I portion of the Advanced Agena Program and commence Phase II. Additionally, we are working a number of technical problems with which
you are familiar. In order to arrive at a well conceived solution I suggest a 90-day moratorium on this problem to allow my program office to clean up current business before addressing the management problem which you have raised. I would suggest a team approach with SAFSP, the SSD Agena Program Office, and Lockheed all participating.

SIGNED

PAUL T. COOPER
Major General, USAF
Commander
MEMO FOR RECORD

7 June 1967

During Colonel Koofer's staff meeting on 7 June 1967, he stated that Generals Ferguson, Cooper and Martin were meeting with Doctor Jaxx today to discuss SP's approach to Agent management. As a result we should receive guidance on what to build.

ROBERT R. CRANFORD, Major, USAF
Acting Chief, Engineering Division
Agent Progress Office
SSVA/Col Keefer/32228

Improved Agena Performance Requirements

SSGS (General Martin)

1. As we have discussed recently in connection with the Red Line Presso message on the Improved Agena Program schedule adjustment, this system development is in urgent need of your inputs to mission performance requirements and a resolution of subsystem developments to be pursued.

2. The Improved Agena has been laid out as a two phase program in which Phase I consists of contract definition and Phase II involves design, development and production of the first vehicle. We are currently part way through the Phase I activity with a rescheduled goal of completion by 15 Jul 67, followed by immediate commencement of Phase II. At the Preliminary Design Review conducted in mid May 1967, at which you had representation, it became clear that adequate contract definition in terms of the work statement, specifications and cost proposal could not be achieved meaningfully without your inputs of mission performance requirements and an identification of the subsystems that need modification or redesign to satisfy your requirements. As you recall, I asked in my recent Red Line Presso message that other requirements, DOD and NASA, be identified and sent to me right away.

3. The current status of Improved Agena definition presents a number of inconsistencies, incompatibilities and omissions due largely to our lack of visibility in the area of desired vehicle performance characteristics envelopes concerning, for example, required orbit life, pad hold time, payload weights and volumes, first stage booster considerations, flight profiles, time on orbit, orientations on orbit, accuracies and reliability requirements. When these needed performance characteristics are known, the subsystem picture will begin to clear, i.e., guidance, power, tracking telemetry and command, propulsion (primary and secondary), environmental control, AGE and facilities. I recognize that there will need to be a close working relationship between your organization and my Agena SPO in the selection and development of these subsystems because of your variety of peculiarization and closely related hardware developments.

Group 3
Downgraded at 12 year intervals; not automatically declassified
4. In my view there is a need for a management mechanism that will routinely provide for an interchange of requirements, status, problem identification and resolution between your organization and the Agena SPO. To this end, I propose a regular meeting, perhaps monthly, to be chaired by my Agena Program Director, Col Norman J. Keefer, with a designated spokesman for SAFSP and additional representation from the SPO and each of your Project Officers. The first of these meetings should take place as soon as possible to insure early availability of your inputs to the definition of the Improved Agena Program.

5. I am convinced that a more formally constituted channel of communication between our two organizations will go a long way in relieving existing incompatibilities. I will look forward to the very near future to the identification of your primary representative and a suggested first meeting date for the group.

SIGNED

PAUL T. COOPER
Major General, USAF
Commander

[Signatures]
1. In a classified message, Dr. Flax has notified General Martin that the improved Agena with the N$_2$O$_4$ engine will be developed on a schedule calling for DD 250 of the first article in March 1970, that this first article will be flown on a development test flight and that the improved Agena will be introduced into Project 110 as soon as possible after the development flight.

2. The Agena SPO had originally planned to develop a completed improved standard Agena, incorporating several improvements in addition to the N$_2$O$_4$ engine. Dr. Flax has not yet taken action on our recommendation for Agena management changes. Pending such action, the Agena SPO's initial effort will probably be on development of the N$_2$O$_4$ to meet the schedule in para 1, above.

3. SAFSS responsibilities are assigned as follows:

   a. SP-7 will be responsible for planning and executing the Thor-boosted development flight in June 1970, and for coordinating this effort with other SAFSS offices and the Agena SPO. Scientific experiments may be carried as payloads on this flight provided the basic objective of testing and demonstrating the performance of the improved Agena is not compromised.

   b. SP-6 will be the focal point for planning such scientific experiments.

   c. __________ will be responsible for planning the introduction of the improved Agena into Project 110 after the development test flight.

   d. __________ will be responsible for collecting and assembling plans and costs for the above efforts, and for forwarding the package to SAFSS.
c. SP-7, [Redacted] will be responsible for providing the Agena SPO with performance characteristics and other technical requirements in connection with the NaO4 engine.

G. T. SMITH
Colonel, USAF
Vice Director

Copy to:
SSVA (Col Keefer)
21 Jun 1967, Lockheed briefing to Agena and SF personnel on customized Agena. This was in response to Agena SP0 request.

OBJECTIVE:
- TO FURNISH VEHICLES FROM STANDARD AGENA WHICH ARE CONFIGURED TO THE SPECIFIC USING PROGRAM REQUIREMENTS

PERIOD:
- DEFINE (BY SPECIFICATION) THE VEHICLE CONFIGURATIONS FOR 3 OR 4 PROGRAMS AND CONDUCT TO BUILD AND DELIVER SPECIFIC QUANTITIES OF EACH CONFIGURATION AT A SPECIFIED RATE

- BUILD THE VEHICLES IN TWO STEPS: FIRST, FABRICATE AND ASSEMBLE BASIC, UNCHANGING PORTIONS, BACK TEST, AND STORE; THEN, FULL FROM STORAGE, DO RETROFIT, ADD FINAL EQUIPMENT, ACCEPTANCE TEST VEHICLE, DD-250, AND DELIVER TO PROGRAM
CUSTOMIZED STANDARD AGENDA

IMPLEMENTATION:

1. ESTABLISH "SENIOR REQUIREMENTS PANEL" AT INSC AND AT AFSSD TO SELECT PROGRAM CONFIGURATIONS AND DEVICE REQUIREMENTS

2. INITIATE ECA CH -589 CONTRACT TO WRITE SPECIFICATIONS, DO ENGINEERING, PRODUCE PRODUCTION DRAWINGS, HOLD DESIGN REVIEWS, BUILD MOCKUP, CONFIGURE DIM, BUILD AND QUALITY ANY INM COMPONENTS, DEFINE TESTING, AND WRITE ATP'S

3. CON THE PRODUCTION CONTRACT TO CALL FOR DELIVERY OF "CUSTOMIZED" VEHICLES AS DEFINED IN ABOVE SPECIFICATIONS
# CUSTOMIZED STANDARD AGENDA

## SENIOR REQUIREMENTS PANEL

### AT LMSC

**CHAIRMAN**: REPRESENTATIVE OF F.C.E. ODER

**MEMBERS**: PROGRAM MANAGERS OR REPRESENTATIVES FROM STANDARD AGENDA AND EACH USING PROGRAM

### AT AFSSD

**CHAIRMAN**: REPRESENTATIVES OF STANDARD AGENDA AND USING PROGRAM SPEC

### FUNCTIONS

1. ESTABLISH ORGANIZATIONAL DEVELOPMENT/ PROCUREMENT RESPONSIBILITY FOR ALL SSD FLIGHT EQUIPMENT

2. DESIGNATE THE PROGRAM VEHICLE TO BE SUPPLIED

3. DEFINE THE REQUIREMENTS FOR EACH OF THE DESIGNATED VEHICLES (TECHNICAL, QUANTITY, AND SCHEDULE)

4. REVIEW AND APPROVE OVERALL REQUIREMENTS AND CONFIGURATION FOR CUSTOMIZED STANDARD AGENDA

5. CONFIRM AND APPROVE THE ACTIONS OF THE LMSC PANEL

6. ESTABLISH OFFICIAL VEHICLE ASSIGNMENTS

7. INITIATE AND REVISE OFFICIAL PROGRAM REQUIREMENTS

8. REVIEW AND APPROVE CONTRACTUAL DOCUMENTS
CUSTOMIZED STANDARD AGENA

ENGINEERING IMPLEMENTATION

ACTIVATE A PROGRAM UNDER THE -589 CONTRACT TO:

1. PREPARE A PART I SPECIFICATION FOR EACH CONFIGURATION TO BE DELIVERED
2. CONDUCT FORMAL FIR'S
3. DO DETAILLED DESIGN AND NECESSARY DEVELOPMENT
4. CONDUCT FORMAL CDR'S
5. BUILD AND QUALITY REQUIRED NEW EQUIPMENT
6. BUILD MOCKUP(S)
7. DEFINE TEST REQUIREMENTS AND WRITE ATP'S
8. CONFIGURE DEV AND USE TO VERIFY ATP'S AND TEST COMPLEX
9. PREPARE COMPLETE PRODUCTION DOCUMENTATION PACKAGE (PART II SPECS)
PRODUCT CONTRACT INCORPORATION

- Write ECP to -939 Contract to change deliveries from Standard Agents to Customized Standard Agents (as defined by specifications) effective from AD-197 and up.

- Modify Work Statement to define new acceptance test requirements.

- Modify contract to permit partial payment based on placement of vehicles in storage.
<table>
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<tr>
<th>AD 5</th>
<th>SCHEDULE DELIVERY</th>
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**CUSTOMIZED STANDARD AGMA**

PROPOSED CHANGE IN 4939 CONTRACT DELIVERIES

1. NO CHANGE THROUGH AD-196

2. FOR THE 17 VEHICLES FROM AD-197 THROUGH AD-203
   - DELIVER 13 CUSTOMIZED FOR PROGRAM 846
   - DELIVER 3 CUSTOMIZED FOR PROGRAM 770
   - DELIVER 1 CUSTOMIZED FOR PROGRAM [ ]

3. WITHOUT SPECIFYING WHICH, DELIVER AT A RATE OF 1-1/2 VEHICLES PER MONTH
CUSTOMIZED   STANDARD  AGENDA

TYPICAL SEQUENCE - FOR PROGRAM 946 VEHICLE

ACT KICK

- STRUCTURE
- ENGINE
- HYDRAULICS
- PNEUMATICS
- SPECIAL BRACKETS
- 2 HARNESS ES
- 2 BOXES

PROF. TANK

- TANKS
- SPECIAL FAIRINGS
- SPECIAL CLIPS

FORWARD RACK

- STRUCTURE
- 11 BASIC RINGS
- 2 OPTIONAL KITS
- 5 C-FRP ITEMS
- 22 HARNESS ES

GUIDANCE

MODULE

VARIABLE
SPAN

ASSEMBLE, ROLL TEST, E. STROKE

REMOVES FROM
STORAGE &
ACCOMPLISH REWORKS

ADD:
- 13 EQUIPMENTS
- 6 HARNESS ES

FORMAL
ACCEPTANCE
TEST

SHAVE,
AS 250,
DELIVER
TO
PROGRAM

(IN BLOCK 104
OR 
LAUNCH BASE)
# Customized Agenda Meeting

## Attendance List

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>J. Solomoni</td>
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<tr>
<td>D. Church</td>
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<td>C. W. Ecker</td>
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<tr>
<td>J. M. McElroy, Major</td>
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<td>C. E. Reinaugh</td>
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<td>A. J. Glenn, 1 Lt. Col.</td>
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<td>A. A. Adamson</td>
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<td>R. J. Turner</td>
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<td>Capt. C. Anderson</td>
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<td>E. L. Stein</td>
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Approved for Release: 2017/08/28 C05097006
23 June 1967

ATTN OF: SP-1

SUBJECT: Improved Agena

TO: SSG (General Cooper)

1. Reference: Your 12 June memo, subject: "Improved Agena Performance Requirements."

2. Dr. Flax has informed me that he will approve the development of an improved Agena with the N₂O₄ engine with the first flight to be in June 1970, and that SAFSP Project 110 will be the first project to use this development. In lieu of making the first flight with a Project 110 payload, I requested approval for one Thor-boosted test launch, and proposed to carry out such a launch in the same manner as we followed in the launch, with SAFSP responsible for integration of research and experimental payloads and for conducting the overall system engineering, tests, and actual flight. Dr. Flax agreed, with the provision that the carrying of such payloads not compromise the basic objective of testing and demonstrating the performance of the improved Agena prior to its actual use on the much more expensive project 110 flight. On 13 June I received a classified message from Dr. Flax confirming his previous statements and requesting my plan for conducting this development flight, identification by fiscal year of SAFSP costs for the development flight, and vehicle effectivity for incorporation into Project 110. By memorandum of 15 June, Colonel Smith made internal assignments of responsibility within SAFSP, and notified SSVA (Col. Keese) by copy of this same memorandum. I understand that a message is on its way to you through Hq USAF-AFSC channels.

3. The Thor-boosted test flight will be conducted as a one-flight project in the same general manner as all other SAFSP projects. SP-6 will be responsible for identification of appropriate research and experimental payloads, which will include consideration of SESP payloads in addition to SAFSP payloads. SP-7 will be responsible for the overall one-flight project, including payload integration, Agena project peculiarization, overall system engineering, test, preparation and acceptance for flight, and flight. SP-7 will obtain the improved Agena from SSVA in its "standard" form on the same basis as other Agenas are obtained for other SAFSP projects. SAFSP will budget for the entire flight, except...
that payloads which are accepted for flight will be provided to SAFSP by the sponsoring organization, including costs of integration of these payloads.

4. Although SAFSP Project 110 will be the first project to use the improved Agena, we will incorporate it into other SAFSP projects. Accordingly, the development by SSVA should be in a "standard" form rather than a version developed especially for any one project, including the one-time Thor-boosted test flight. The exact configuration of this "standard" vehicle will be determined by the action taken on my recent recommendation on changes in the "standard" Agena concept.

5. With respect to your 12 June memorandum on "Improved Agena Performance Requirements," I have designated the following individuals to represent the several SAFSP projects which use the Agena in working with the standard Agena SPO:

   SP-7: Major B. D. White
   Major J. W. Browning

These individuals will provide on a continuous basis the requirements of their respective projects which pertain to the design or performance of the standard Agena. They will also provide information on project peculiar requirements which I have determined suitable for procurement by the standard Agena SPO in accordance with the criteria I outlined at the recent SAFSP presentation to General Ferguson which you attended. However, I am not going to expand the standard Agena SPO into the SAFSP projects or into the determination of requirements for project-peculiar items or processes. I will retain personally the responsibility for determining any items in the project-peculiar process which can be standardized between two or more SAFSP projects.

6. We will make every effort to keep the standard Agena SPO aware of the desired performance, capabilities and characteristics of the "standard" Agena. However, it should be understood clearly that each
of the projects concerned will continue to experience changes and that we cannot describe any "standard" configuration which will eliminate the necessity for extensive individual project peculiarization by SAFSP.

JOHN L. MARTIN, JR
Brigadier General, USAF
Director
SUBJECT: Improved Agers Requirements Meeting

1. On 27 June the initial Improved Agers Requirements Meeting was held in Colonel Keeler's office. Important points resulting from the meeting were:

a. EP is willing to provide Improved Agers requirements in as much detail as they can at this date.

b. Our requirements should still be completed and a joint EP reply will be returned to us.

c. It is EP's feeling that Improved Agers should be produced in the same manner as the EP concept for Standard Agers.

d. In general, EP is not interested in standardization if it imposes any restriction on their requirements.

ROBERT E. CLEVER, Major, USAF
Acting Chief, Engineering Division
Agers Program Office
14 Jul 1967, Briefing on Agena D and E Management Problems. This briefing was given to Gen Cooper. It resulted in setting up an LMSC meeting with Gen Cooper, Colonels Hamilton and Smith.

AGENA D AND E

MANAGEMENT PROBLEMS

11 JULY 1967
BRIEFING OUTLINE

AGENA D MANAGEMENT CONCEPTS

I CUSTOM VEHICLE FEASIBILITY STUDY
   ( ALTERNATE APPROACHES
   ( CONCLUSIONS AND RECOMMENDATIONS

II CONTRACT STRUCTURE
   ( RECOMMENDATION

III COUGH DROP RETROFIT PROGRAM
   ( RECOMMENDATIONS

AGENA E DEVELOPMENT CONCEPTS

IV SOLE SOURCE CONSIDERATIONS
   ( CONCLUSIONS AND RECOMMENDATIONS

V SP CONCEPT
   ( SPO CONCEPT
   ( CONCLUSIONS
   ( RECOMMENDATIONS

RECOMMENDATIONS SUMMARY
SP'S OBJECTIONS TO STANDARD AGENA CONCEPT

- Requires extensive equipment removal
- Invalid system function tests
- Lack of responsiveness and control over improvements
- GFE interferes with incentive contracting

SP CONCEPT

JOINT SPO/SP/AFPRO/LMSC CUSTOM VEHICLE FEASIBILITY STUDY
AGENA D

CUSTOM VEHICLE FEASIBILITY STUDY

APPROACH

- LMSC
  - ASSEMBLE CUSTOM VEHICLE
  - LIMITED "FUNCTIONAL" TEST
  - DD-250
  - TRANSFER TO USER

- AIR FORCE
  - ASSEMBLE CUSTOM VEHICLE
  - TRANSFER TO USER
  - ADDITIONAL ASSEMBLY
  - SYSTEM TEST
  - JOINT DD-250

FINDINGS - CUSTOMIZED AGENA VEHICLE FEASIBLE
# CUSTOMIZED STANDARD AGENDA

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**STANDARD AGENDA**

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**CUSTOMIZED STANDARD AGENDA**

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*Note: The diagram includes a monthly schedule with various activities and dates marked from January to August 1967.*
Divides responsibilities between two commands.

Advantages of standardization lost.

Removes standard spacecraft from the inventory.

Contrary to ARSC system concept.

Advantages.

Initial reduction of system costs.

Eliminates invalid testing.

Eliminates necessary for disassembly.

Advantages.

Assessment of custom vehicle.

Arena II.
MODIFIED D VEHICLE

ADVANTAGES

- NO DISASSEMBLY OR REWORK
- DECREASED COST

DISADVANTAGES

- VIOLATES AFSC SYSTEM CONCEPT
- TAKES STANDARD AGENA OUT OF INVENTORY
- ADVANTAGES OF STANDARDIZATION LOST
- DIVIDES RESPONSIBILITY BETWEEN TWO COMMANDS
SP OPTION 3 1/2

ADVANTAGES

- Cleans up lines of responsibility and authority
- Eliminates necessity to disassemble vehicle
- Communications problem solved
- Rapid reaction problem solved
- Allows SAFSP to handle contract incentive problem as they desire
- Provides best control for SAFSP

DISADVANTAGES

- Eliminates standard Agena from inventory
- Contributes to build-up of a second "Systems Command"
- Cost to government would increase
- Sets precedent for Agena E
ADVANTAGES

- COMPATIBLE WITH SYSTEMS COMMAND'S SYSTEM ACQUISITION MISSION

- ELIMINATES SOME SP OBJECTIONS

- CLEAR CUT LINES OF RESPONSIBILITY AND AUTHORITY

- SYSTEM AVAILABILITY TO OTHER USERS

DISADVANTAGES

- MAJOR CHANGE IN CONCEPT

- ADVANTAGES OF STANDARDIZATION ARE LARGELY LOST

- ADDITIONAL SPO MANPOWER REQUIRED

- SECURITY CLEARANCE PROBLEMS
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AGENDA D

CONCLUSION

- CUSTOM VEHICLE IS FEASIBLE BUT NOT DESIRABLE
- CUSTOM SYSTEM IS FEASIBLE AND MAY SOLVE PROBLEM

RECOMMENDATION

- ADVOCATE THE CUSTOM SYSTEM CONCEPT
- ESTABLISH A JOINT SPO/AFSP/AFPRO/LMSC WORKING GROUP
- BRIEF OR WRITE LETTER TO GENERAL FERGUSON - COORDINATE OR COPY TO GENERAL MARTIN
CONTRACT STRUCTURE

PRIOR TO 1965

- PRIME CONTRACT TO LOCKHEED
- COST PER VEHICLE: $ .901M
- NO CONTRACTUAL DESIGNATION
  - CENTRALIZED INTERFACE CONTROL
  - HARDWARE INTEGRATION

POST 1965

- ASSOCIATE CONTRACT STRUCTURE
  - LMSC - VEHICLE
  - BAC - ENGINE
  - BAC - VELOCITY METER
  - BEC - HORIZON SENSOR
- COST PER VEHICLE: $ .667 - .980M
- NO CONTRACTUAL DESIGNATION
  - CENTRALIZED INTERFACE CONTROL
  - HARDWARE INTEGRATION
CONTRACT STRUCTURE

- OBJECTIONS TO CURRENT STRUCTURE

  - GFP TO SP CAUSES INCENTIVE CONTRACTING PROBLEMS
  - NUMBER OF CONTRACTS CAUSES UNACCEPTABLE SPO WORKLOAD
  - LACK OF CLEAR DESIGNATION OF RESPONSIBILITY CAUSES:
    - CONTINUAL QUESTIONS
    - LOST TIME AND EFFORT
    - INCREASED COSTS TO REPAIR ERRORS

- PLANNED ACTIONS

  - RETURN TO PRIME STRUCTURE AT LEAST BY NEXT PRODUCTION CONTRACT
  - DESIGNATE LMSC
    - CENTRALIZED INTERFACE CONTROL CONTRACTOR
    - HARDWARE INTEGRATION CONTRACTOR
AGENDA D

RECOMMENDATIONS

APPROVE IN PRINCIPLE RETURNING TO PRIME CONTRACT STRUCTURE.
PROJECT COUGH DROP

INTERIM INCREASED CONFIDENCE ACTIONS

- USE "D" OIL AT ALL SITES
- OIL FLUSH AT ALL LAUNCH SITES
- TIGHTEN CURRENT SEAL SPECS
- IMPROVE CURRENT BEARING CLEARANCE
- IMPROVE GEAR TOOTH FINISH
- RETROFIT PUMPS WITH "LOOSE" CLEARANCE BEARINGS
- INSTALL FLIGHT INSTRUMENTS ON 12 VEHICLES FOR VERIFICATION
- INITIATE VERTICAL ACCEPTANCE TEST AT BAC

PHASE II TEST PROGRAM UNDERWAY

RETROFIT OF 5 NASA VEHICLES

ADDITIONAL LMSC AND BAC RECOMMENDATIONS

- IMMEDIATE RETROFIT TO ELIMINATE INVINCIBLE GEARS.
  INSTALL LOOSE BEARINGS AND NEW SEALS
PROJECT COUGH DROP

IMMEDIATE RETROFIT
- REPLACE BEARINGS WITH LOOSE CLEARING BEARINGS
- REPLACE FUEL SECONDARY BEARING
- INSPECT GEARS - REPLACE ALL INVINCIBLES WITH PILEY
- PERFORM REVERSE LEAK CHECK ON FUEL SECONDARY SEAL
- REDUCE LEAK SPEC ON TURBINE HOT GAS SEAL

RETROFIT PLAN EXCLUDES 15 VEHICLES
- SYSTEM TEST COMPLETE
- SCHEDULE IMPACT

10 VEHICLES CAN BE RETROFITTED BETWEEN 15 JULY AND 1 NOVEMBER 1967

NO IMPACT ON FLIGHT SCHEDULES - MINOR IMPACT ON USER PRODUCTION SCHEDULES

ESTIMATED COST: 20 - 30K/VEHICLE
PROJECT COUGH DROP

- November Retrofit - Following Phase II Test Validation
  - "York Quality" Gears
  - New High Temperature Bearings
  - Improved Turbine Drive and Fuel Secondary Seals
  - Possible Changes to Lubrication - Quantity and Quality

- Retrofit of 17 Additional Vehicles Between 1 Nov 67 and 1 Mar 68

- No Impact on Flight Schedules

- Estimated Cost: 25/35K per Vehicle
CONCLUSION

- INCREASED CONFIDENCE IN PC DIP ELIMINATION JUSTIFIES $20-30K/ENGINE EXPENDITURE FOR IMMEDIATE RETROFIT OF 10 ADDITIONAL ENGINES

RECOMMENDATION

- APPROVAL OF IMPLEMENTATION OF IMMEDIATE RETROFIT PLAN
FEBRUARY 1967 (SYSTEM)

- "MAXIMUM USE OF STANDARD AGENA COMPONENTS"
- EXISTING FACILITIES
- AGENA KNOW-HOW (LMSC/BAC)
- SCHEDULE, MARCH 69 DD 250

JULY 1967 (SYSTEM)

- PHASE I DEFINITION ORIENTATED TOWARDS MAXIMUM USE OF STANDARD AGENA COMPONENTS
- SPECIFICATIONS AND OTHER DATA FOR PHASE II NOT USEFUL FOR COMPETITION
- ALL PHASE I ARGUMENTS STILL APPLY EXCEPT DD 250 MARCH 70
- AWARD TO NEW CONTRACTORS WOULD REQUIRE NEW PHASE I
- SP RELATIONSHIPS

JULY 1967 (ENGINE ONLY)

- PHASE I SYSTEM DEFINITION ORIENTED TOWARDS IMPROVEMENT OF EXISTING ENGINE
- SPECIFICATIONS AND OTHER DATA FOR PHASE II NOT USEFUL FOR COMPETITION
- ALL PHASE I ARGUMENTS STILL APPLY EXCEPT DD 250 MARCH 70
- AWARD TO NEW CONTRACTOR WOULD REQUIRE NEW PHASE I FOR SYSTEM
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**SOURCE SYSTEM**

**PHASE I**

**DESIGN & DEVELOPMENT**

**PHASE II**

**ENGINE TEST & DEMONSTRATION**

**FAB & QUAL**

**PRODUCTION**

1st Flt Eng Reqd 1st Veh DD 250

---

**COMPETE SYSTEM**

**COMPETE ENGINE** (Only)

**PHASE I**

**DESIGN & DEVELOPMENT**

**FAB & QUAL**

**ENGINE TEST & DEMONSTRATION**

**PRODUCTION**
CONCLUSIONS

- STILL ON FIRM GROUND FOR SOLE SOURCE
  - SYSTEM
  - ENGINE ALONE

RECOMMENDATION

- CONTINUE SOLE SOURCE TO LMSC/BAC
CONFIGURATION WILL BE DETERMINED BY ACTION TAKEN ON AGENA D MANAGEMENT

- SP WILL DETERMINE PROJECT PECULIAR ITEMS OR PROCESSES
- PROJECT PECULIARIZATION WILL CONTINUE
- DOES NOT CONTEMPLATE A STANDARD VEHICLE

AGENA SPO RESPONSIBLE FOR

- DEVELOPMENT "IN A STANDARD FORM"
- PROVIDING "STANDARD AGENA" TO SP FOR FLIGHT TEST

TEST PROGRAM TO BE CONDUCTED BY SP

- SYSTEM ENGINEERING
- INTEGRATION OF SCIENTIFIC PAYLOAD
- TEST PLAN
- FLIGHT TEST
INITIAL CONFIGURATION DETERMINED BY:
- DIRECTED LIMITATIONS
- SP MISSION PERFORMANCE REQUIREMENTS

PROCEED INTO PHASE II WITH INITIAL CONFIGURATION DESIGN REQUIREMENTS BASELINE

DEFINE ADDITIONAL HOUSEKEEPING SUBSYSTEMS ASAP:
- SPACEFRAME
- POWER
- GUIDANCE & CONTROL MODULARIZED TO SUIT MISSION REQUIREMENTS
- TT & C
- AGE

OBTAIN APPROVAL FOR COMPLETE SYSTEM CONFIGURATION DEVELOPMENT FROM SAMSO, SAFSP, AFSC, USAF, SAFRD

SPO CONDUCT TEST PROGRAM AS PART OF DEVELOPMENT EFFORT
THERE IS A FUNDAMENTAL PHILOSOPHICAL DIFFERENCE BETWEEN SP AND AGENA SPO ON IMPROVED AGENA DEVELOPMENT

SP VISUALIZES:
- HOUSEKEEPING SUBSYSTEMS AS PECULIAR UNDER DIRECT SP CONTROL
- TEST PROGRAM TO BE CONDUCTED BY SP

SPO VISUALIZES:
- HOUSEKEEPING SUBSYSTEMS AS STANDARD (MODULARIZED) AS PART OF SPACECRAFT SYSTEM
- TEST PROGRAM TO BE PART OF SPO DEVELOPMENT PROGRAM
RECOMMENDATIONS

- ADVOCATE THE SPO CONCEPT OF SYSTEM DEVELOPMENT

- REPLY TO GENERAL MARTIN'S 23 JUNE LETTER EXPRESSING SAMSÖ CONCEPT OF IMPROVED AGENA DEVELOPMENT
## RECOMMENDATIONS

### SUMMARY

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<tr>
<td>I</td>
<td>ADVOCATE THE CUSTOM SYSTEM CONCEPT AND ADVISE AFSC AND SAFSP</td>
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<tr>
<td>II</td>
<td>APPROVE IN PRINCIPLE RETURNING TO PRIME CONTRACT STRUCTURE</td>
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<td>III</td>
<td>APPROVE TURBO PUMP IMMEDIATE RETROFIT PROGRAM</td>
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<td>ADVOCATE THE SPO CONCEPT OF DEVELOPMENT AND ADVISE SAFSP</td>
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SUBJECT: Historical Report

Attached is one copy of SSVA Historical Report for the period of 1 Jan 67 to 30 June 67.

Harry F. Hedlund, Lt Col, USAF
Acting Program Director, AGENA

1 Atch
Historical Report
AGENA PROGRAM OFFICE  

Historical Data  

1 Jan 67 to 30 Jun 67

1. Col Norman J. Keefer assumed the duties of Chief, Agena Program Office on 8 May 1967, thus relieving Col Alfred J. Gardner who has assumed the duties of Special Assistant to the Deputy for Launch Vehicles until his retirement on 31 July 1967.

2. During January the remaining two vehicles of the 57 vehicle production contract, APO4(695)-722, were delivered. The first ten vehicles of the current 36 vehicle production contract, APO4(695)-939 were delivered at the rate of two a month commencing in February. The original production rate on the current contract was scheduled at 2½ vehicles per month commencing in February 1967 and terminating in April 1968. Due to a change in using program requirements, resulting in an increasing number of vehicles in storage, the schedule now calls for two vehicles a month from February 1967 through July 1967, decreasing to 1½ vehicles a month from August 1967 through November 1968. The follow-on production contract was originally scheduled to have delivery of 19 vehicles at a rate of two per month commencing in April 1968 and terminating in April 1969. Due to the stretch-out production schedule on the current contract, the follow-on contract now specifies 1½ vehicles per month commencing in December 1968 and terminating in December 1969.

3. In February the Improved Agena (Agena "E") Phase I effort, contract was initiated. The Phase II development effort was scheduled to begin in mid May. Due to the lack of adequate design definition the Phase I effort was stretched out to adequately define the design requirements and eliminate the possible existence of any serious technical problems. The Phase II effort is now scheduled to begin 1 September 1967 and continue through March 1970.

4. During the period February to May, SAFSP conducted a comprehensive study of the Agena production methods. In a briefing to Dr. Flax, they proposed to eliminate the present method - which involves considerable disassembly and modification of the vehicle by using programs. The Agena program office is currently conducting a comprehensive study of user requirements which will be complete by 1 September 1967.
1. During the report period the delivery schedule for Standard Agena Vehicles, procured from Lockheed Missiles and Space Co. on Contract AFO4(695)-939, was reduced from 2 1/2 vehicles to 2 vehicles per month with a further reduction to 1 1/2 commencing in August. This change was due to using program reductions in vehicle requirements which necessitated a delivery stretchout. Bell Aerosystems schedule for delivery of engines on Contract AFO4(695)-939, was adjusted to support the stretched-out vehicle schedule.

2. Phase I program for an Improved Agena was initiated in February 1967. The first production unit is planned for delivery in early 1970.

3. Direction was initiated on 27 January 1967, for Western Electric Co. to retrofit forty-four (44) guidance cansisters containing a latent defect in the pulse delay network. Scheduling and reallocations developed precluded launch or production line impact.

4. Program 110 requested peculiarization of the Horizon Sensor for their requirements. Contract AFO4(695)-1008 was changed calling for the last twelve (12) Sensors to be manufactured as Model II-C's. The first Mod II-C unit should be delivered in July 1967, and will be installed on Vehicle No. 4762.

5. Capt C. Smyser was assigned to the Division on 31 May 1967, being re-assigned from SSVAC. Miss Opal Twibell transferred into the Division from SMAMA on 16 April 1967.
SUBJECT: SSVAC Historical Report (1 Jan - 30 Jun 1967)

TO: SSVAC

1. Mission. The mission of the Agena Configuration Management Division (SSVAC) is to apply the principles of configuration management to the Agena space vehicle program with as few deviations as possible.

2. Personnel. Capt. John Straton and 2d Lts. Barde Sizemore and Bentley Stansbury have been assigned to the division. Capt. Craig Smyser was reassigned to SSVAP, and Miss Barbara Wessman left the civil service. Major Bradford is attempting to add a GS-12 civilian position to the division and upgrade an existing civilian position from GS-12 to GS-13. Support from Aerospace Corporation is now being received.

3. Activities.
   a. Reviews and Inspections. Preliminary Design Reviews (PDRs) were conducted on the Velocity Meter/Velocity Meter Counter and the Electronic Event Timer. The PDR on the Improved Agena was aborted. This will cause delay in going into Phase II of the program. Combined PDR/CDRs (Critical Design Reviews) were held on the Three-Start Engine and the Command destruct Kit. A CDR was held on Brazed Plumbing for the Agena and First Article Configuration Inspections (FACIs) were conducted on the Maximum Access Booster Adapter (MABA) and the Four Rocket Engine Service Kits.
   b. Configuration Control. Lockheed Missiles and Space Company (LMSC) agreed to put effectivities on Class II changes. Preliminary Engineering Change Proposals (PECPs) are being submitted by the contractors at the suggestion of the Configuration Management Division. Rigorous ECP guidelines are in preparation.
   c. Configuration Accounting. The previously used configuration accounting report has been replaced with a new, superior, Contract End Item History Report. The new report is superior to the old report in that it can be effectively used as a tool for verifying completion of engineering and documentation changes by referencing changes authorized to specific part number changes and serialized articles installed in the vehicle.
   d. Configuration Identification. The Agena Configuration Management Division is reviewing the level at which it intends to control specifications. In the past, specifications have been controlled down the level of piece part and process specifications.
   e. Data Management. SSVAC continues to handle Data Management for the directorate. A formal data call system has been implemented by the Data Management Officer, Mr. Phillips, to insure that data requirements are adequately
met on each contract, program plan, and basic ordering agreement.

4. Significant Events.

a. Improved Agena. The decision has been made to procure an Improved Agena. This major effort has had a large impact on the Configuration Management Div. Phase II of the effort has been delayed due to the unsuccessful Preliminary Design Review.

b. IG Inspection. Representatives of the Office of the Inspector General reviewed the operations of the division during the reporting period. The last significant recommendation furnished by the inspecting team was to set up a formal data call system to insure adequate data management on all contracts. This has been accomplished.

KIMERLEI J. BRADFORD, Major, USAF
Chief, Configuration Management Div.
Agena Program Office
Approved for Release: 2017/08/28 C05097006

HISTORICAL REPORT
January-June 1967
SSVAE-1

1. Standard Agena Telemetry Frequency Conversion

Clearance was received to proceed with the conversion to S-Band. Work
is now underway.

2. Command Destruct System

The evaluation of the Command Destruct System compatibility problem has
continued throughout the first half of 1967. This problem originated in
March 1966 when the ETR Range Safety Office (ETOSH) conducted a new review
of the Destruct system and disapproved it. The disapproval was based on the
interrelationship of the battery, receiver, and destruct unit. The destruct
unit (a 1-Ohm device) drew a very large current when activated. The surge
current caused the battery terminal voltage to drop to 9 volts. The receiver,
designed to operate with at least 22 volts, could not continue to operate
at 9 volts. After 10-20 milliseconds, the receiver output relays would de­
activate, removing power from the destruct unit. Tests and calculations by
LMSC indicated that the destruct unit would always detonate before relay drop­
out; however ETR would not accept the statistical detonator sure-fire time
and insisted that the destruct relays would remain activated unless the com­
mand was removed. To meet the requirement, SSVA initiated modification of the
Command Destruct System through Program Plan 279 which was redesignated as
Program Plan 303 on 1 January 1967, and which provided a wire harness to limit
the surge current from the battery, preselects of battery cells, and tests on
battery & receiver/decoder compatibility.

The final Design Review Meeting was held during 22-24 May 1967. Revised
documentation from the meeting was expected to be released prior to the sched­
uled launch of Mariner-Venus in June. During the Design Review a represent­
ative of the receiver manufacturer discovered the much longer time duration
requirement which existed at the proposed new low voltage limit for the re­
ciever/decoder. Consequently, he could not agree to the revised specification
on which the prime contractor had committed to APSSD, and which was to be re­
leased following the design review. This information was telephoned by the
prime contractor to APSSD on 1 June. LMSC submitted (per request of SSVA) an
addendum which would authorize additional testing by LMSC to attempt to resolve
the differences between the current-voltage requirements of APETR, and the limi­
tations of existing equipment. After revising the addendum, SSVA authorized
LMSC to implement the revised addendum to Program Plan 303.
HISTORICAL REPORT
1 Jan 67 - 30 Jun 67
Systems Branch/ESVAE-2

1. (U) Significant Policy & Planning Developments

a. The arrival of our third program director (Colonel Keefer) within
the year, the retirement of Lt Col Greenfield, Chief of Engineering, without
a replacement, the removal of Maj Crawford from his reliability/quality
activities to SSVC as Chief of Engineering, the transfer of Capt Stratton to
SSVC with no one to take his place, and the arrival of 25 Aerospace MIS for
the first time on the program, has resulted in a shift from a systems engineer-
capability to a philosophy of systems management through increased
dependence on the contractor.

b. A highlight of this period has been the demonstration by Major
Einstein of the great value of the Engineering Management Office (EMO)
function. The EMO has developed a self-checking system of managerial con-
trols over the efforts of our division engineers that has resulted in im-
proved communication within the SPO, more effective planning, a new
orderliness to technical direction and an "inescapable" tracking of sus-
pense items.

c. Capt Tubbasing has made further improvements to the preparation
and coordination of technical statements of work (SOW). The significant
result of this effort is a much more accurate definition of engineering
requirements in the SOW which, with initial understanding, helps to elim-
inate down-stream interpretation differences.

d. New policies have been established by the SPO, as the result of
Systems Branch action, which more effectively utilize the resources of the
APPRO. Each SPO member has identified his APPRO counterpart, and will es-

tablish a personal working relationship with him. Also, information copies
of all correspondence to the contractor will be directed to an individual
APPRO addressee. This improved communication should result in a better
informed SPO. We have found that the APPRO viewpoint always adds a dimen-
sion of depth to problems reported--but not necessarily researched--by the con-
tractor.

e. A Systems Branch manpower study of the Engineering Division devel-
oped, upon Colonel Keefer's arrival, into a comprehensive analysis of the
entire SPO function. The result of this study was the determination of
need and approval for 25 additional technical people. Since Air Force per-
sonnel were not available, an alternate decision was made to use 25 Aero-
space members of the technical staff (MIS). These are now phasing into
the program.
2. (U) **Current Mission Objectives**

   a. One of the main branch activities is the technical administration of the support engineering contracts. A new contract became effective 1 Jan 67 for 390,000 manhours ($6.385 million) of engineering. Through an improved SCW on this contract, the CPO is realizing an increase of useful engineering effort of about $200,000.

   b. **Proposal Evaluation**

   This office has assisted in the fact finding/negotiations of the following contracts:

   (1) Agena Production Contract - AF 04(695)-939
   (2) Engineering Support Contract
   (3) Electronic Event Timer - AF 04(695)-589 Order No. SSD-67-22
   (4) Agena Coupling Improvement Program - AF04(695)-589 Order No. SSD-67-20
   (5) Production Qualification Program - AF 04(695)-589 Order No. SSD-67-16
   (6) Agena Storage Contract

   c. **Statement of Work Preparation**

   During this period, the following work statements were prepared and submitted to the Agena Contracts Division (SSVK) for contractual action:

   (1) Velocity Meter Counter Mod II B - AF 04(695)-589 Order No. SSD-63-24
   (2) Quantic Horizon Sensor
   (3) Project Cough Drop - AF 04(695)-589 Order No. SSD-67-23
   (4) Agena Storage Contract
   (5) Electronic Event Timer Phase II - AF 04(695)-589 Order No. SSD-67-22

3. (C) **Agena Flight Performance**

   Through 30 June 1967 there have been 243 Agena flights. Of this total, 150 have been of the Standard Agena or Agena D configuration. The flight success ratio of the Standard Agena is 95%. A complete resume of Agena flights is contained in the semi-annual report, "Agena Flight Summary Reports." The report covering flights through 30 June 1967 will be distributed by 15 Sep 67.
1. DEVELOPMENTS

1.1 GCE

In January it became increasingly clear that one major using program planned to proceed with full development of a Redundant Attitude Control System (RACS) and planned to fly the system as soon as development was complete. Later a second generation system consisting of a Dual Attitude Control System (DACS) would replace the entire Agena primary guidance and control system. With the advent of this dual system, the GCE would no longer be required by the major user of Agena vehicles. On 24 Feb 67 all work on the GCE development was stopped. The residual data was gathered and stored pending a possible future need for this development.

1.2 Digital Velocity Meter Mod IIA

The previous designation of Velocity Cut-off System Mod X (VCS Mod X) was dropped. The Bell contract was revised to call for individual contract end item (CEI) specifications for the DVM IIA and the Mod IIA Counter. IMSC will furnish individual interface specifications which will be incorporated in the CEI's. This will lead to a cleaner set of specifications and will permit future changes to the components without affecting the "system".

The Preliminary Design Review was held at Bell on 11-13 January 1967. The FDR was unsatisfactory and repeated on 4-5 April 67. The first service test unit is scheduled to be sent to IMSC on 1 July 1967, and the first production unit will be available in Oct 67 for incorporation on AD 199 and subsequent vehicles. The Critical Design Review is tentatively scheduled for 12 Jul 67 at Bell.

1.3 Velocity Meter Counter, Mod IID

In June it was apparent that the Velocity Meter Counter Mod IIA was not compatible with the power supplies of a major using program. Standard Agena suggested that the IIA Counter be modified for this program and that the modifications include improvements to satisfy the Improved Agena requirements. The engineering required to add the extra burns for Improved Agena would be included with very little additional cost. By satisfying this using program's need and adding the multi-burn capability, the Counter remains a piece of standard equipment and will meet known future requirements. This development is mandatory to support the using programs.

1.4 Electronic Event Timer

The EET effort was reinstated in mid-December 1966, as a study effort. IMSC presented their proposal on the revised effort on 20 January 1967. Negotiations are held on 27-28 February at SSD. The Preliminary Design Review was held at IMSC on 13-14 April 1967. Co-located for the Acquisition Phase was given in the form of a letter contract on 1 May 1967. In view of the Improved Agena slippage, a stop work order was issued in early June 1967 holding all work in abeyance for 90 days.
1.5 Improved Agena

The Guidance Branch has provided support for the Improved Agena Program by participating in Fact-Findings, specification reviews, and the Preliminary Design Review. Every effort has been made to point out the necessity for including the Guidance Subsystem in the improvement program, rather than try to use all the existing equipment. The Improved Agena provides an engine capable of five starts, increased payload capability, 90-day orbital lifetime, and an integral secondary propulsion system capable of 10 starts. However, no provision has yet been made to update the Guidance System to make it capable of controlling a multi-burn engine or a secondary propulsion system; or to increase its altitude capabilities and injection accuracies; or to make it capable of a 90-day orbital lifetime.

1.6 New Horizon Sensor Concept

1.6.1 Applied Devices (formerly Belock Instrument Corporation) completed their contract for the development of a "Solid State Horizon Scanning Technique." The objective was to develop and demonstrate a specific photo-conductive detector for use with the Applied Devices Solid State Light Beam Scanner. The objective was not reached, but most of the major problem areas were met and solved. A high degree of confidence can now be placed on the ultimate attainment of an infrared photo-conductive detector which would not require cryogenic cooling. Further effort is required to fully optimize the doping process and to develop the applicable photo-conductor deposition techniques. A follow-on contract is planned, but the sponsor has not been identified.

1.6.2 The Quantic Industries development of a "High Accuracy Horizon Sensor System" was concluded during this period under Contract AF 04 (695)-924. The technical objectives of this development were obtained. The final report will be published in July 1967. A follow-on effort is planned. The objectives of this effort will be the development, qualification and fabrication of two Quantic Mod IVA Precision Horizon Sensor Systems for orbital flight test to determine the accuracy, reliability, and other key performance parameters of the Sensor System in a Space environment. The contract duration will be 88 weeks beginning July 1967.

1.7 Barnes 13-150-33 Model IIC Horizon Sensor

In order to meet Using Program requirements, the last 12 GFP systems to be delivered under Contract AF 04(695)-1008 will be program peculiar. The telemetry scale factor and the procedure for nulling the control outputs has been changed. Delivery of the first modified system is scheduled for the last week in July. The changes are contracted for under LCP-23E.

1.8 Inertial Reference Package (IRP)

MIT continued the design and development of a three-axis, strapdown IRP for possible use on the Agent Spacecraft. All preliminary components of the IRP have been subjected to rigorous testing and analyses. Many second and third generation components have evolved that feature improvements extending their
application beyond earlier designs. Much effort has been concentrated on circuit optimization, analysis and testing. The gyro-to-base plate thermal model has been analyzed and worst case temperature limits for base plate variations have been obtained in terms of the variations in gyro power consumption, supply voltage and thermal resistance.

Tests on the second Kearfott Alpha series gyros are nearing completion. All parameters are within specification. Delivery of the gyros for the design proof unit are expected in July. After installation, qualification testing will begin on the design proof unit. Present schedule calls for completion of all testing by September 30, 1967.
2. MAJOR PROBLEMS

2.1 Sequence Timer

2.1.1 Timer Improvements. The redesigned cam, stiffening rings, and new gear wheels have been scheduled for incorporation at the same time the improved Lincoln switches are incorporated. Currently LMSC is having problems getting the new gear wheels, and this is holding up the whole program. LMSC is estimating that the first improved timer will be produced by the end of July.

2.1.2 Glean Motor Thrust Bearing. In June a Sequence Timer failure experienced by General Dynamics/Convair Division was traced to an improperly installed thrust bearing in their timer motor. Inspection of several similar timer motors at LMSC found one motor (P/N 1062385-5 CCA 1470-1110) with the inner and outer bearing races reversed (documented on PEDR 35197 Suppl. 13637) was issued to sweep all Sequence Timers which contain Globe motors and all uninstalled Globe motors for a bearing inspection. Action is continuing at this time.

Modification of the bearing assembly is also under consideration. There are two candidate fixes, one of which looks very promising. Motors with the redesigned bearings could be available by the end of July.

2.2 Sterer Thrust Valve Bent Rods

In March during a program systems test a Sterer Thrust Valve jammed in the open position. Subsequent failure analysis showed that the solenoid piston had wedged itself in the coil due to a bend in the rod which connects the piston to the bellows assembly. Examination of other units showed this same condition to exist in varying degrees in a number of valve clusters.

Through discussions with Sterer it was determined that the rods had been improperly heat treated, which permitted them to warp after assembly. All units have been retrofitted with new piston assemblies.

2.3 DVM Chopper Failure

In May an Agena Space Vehicle experienced an in-flight anomaly in which the Velocity Meter failed to shut down the main engine at the predetermined velocity. Investigation of flight data and test records indicated the probable cause to be the failure of a synchroverter switch (chopper). All Agena vehicles were grounded at this time until corrective action could be accomplished. The failure mode was determined to be a broken wire between the chopper mechanism and pin 7 of the header, due to metal fatigue of the wire when exposed to a vibration environment of 30 g's.

The design of the switch allowed movement of the chopper mechanism relative to its cylindrical sleeve, and the wire was flexed by this motion.

Investigation revealed a series of unreported failures which had occurred during the past several months. One chopper failure at LMSC was not reported to SSD nor was corrective action initiated. Six of the seven failures which occurred at
Bell Aerosystems Co. were not reported to LMSC. In addition, there were three failures at the part level at Bristol Co, the part supplier, and one at Bell. With the flight failure, this made a total of 13 known failures.

It was also determined that the same part was being used in the Barnes Engineering Co. Horizon Sensor. Analysis showed that the Horizon Sensor performance was not in great danger from a chopper failure. It was therefore recommended to use the Horizon Sensors in present condition until testing or analysis indicates otherwise.

Corrective action required to fix the chopper was to secure the mechanical vibrator in place with an epoxy. Existing systems will be reworked to new configuration.

In addition, the failure reporting and corrective action system at Bell was thoroughly reviewed and action taken to implement effective procedures.

2.4 Guidance J-Box Pulse Engineering Transformer Failures

Investigation of several transformer (P/N 1461900-001) failures in the Guidance J-Box revealed a failure mode which consisted of open windings in the primary and/or secondary caused by expansion and contraction of transformers materials. Since most flight missions do not require the function of the suspect transformer, the disposition of the majority of boxes was "use as is". For those programs desiring the use of the transformer, the recommended fix consisted of temperature cycling the J-Box and retesting. Failed transformers will be replaced with units which have been screened by a similar temperature cycling test.

3. PERSONNEL

The Guidance Branch is now operating with four of its six authorized officers. These are Maj Moore, Maj Hirsh, Capt Cronquist and Lt Wood. Lt Col Wa. Gallup departed in May for flying duty in SEA, although he had been TDX for training since December 1966.
Subsystem A

1. **Titan III B/Agona**

   The FACI of the booster adapter optional kit for this vehicle was conducted during February 1967. As the result of this FACI, changes to the Destruct/Discrete Junction Box Assembly specification were required and the preparation of a Part I booster adapter specification was initiated. It is estimated that these actions will be completed during July 1967. The first optional kit will be delivered to the using program early in the next report period. The booster adapter has, to date, been manufactured under a using program contract and has successfully completed several flights.

2. **Strengthened Booster Adapter**

   During the first four months of this calendar year LMDC subjected a new .160 inch thick booster adapter to a series of qualification tests. It was the objective of this program to verify the capability of the structure to withstand to ultimate levels, the flight loads due to maximum acceleration and to maximum airloading. A secondary, yet significant consideration was that of determining the capability of the adapter to withstand a non-uniform pattern of stress due to an asymmetrical temperature distribution coupled with concurrent mechanical loading due to acceleration. Previously a similar test with a slightly different distribution caused a .143 in adapter to buckle prematurely.
A planning error occurred, in that the aft Y-ring and tank skirt assembly was not aged to the required -76 condition, and buckling failure did eventually take place unexpectedly. A second assembly was manufactured and the structure withstood all loading, including a test to 131% of limit load prior to failure. The latter took the form of a small buckle above the nitrogen fill door. As test objectives were achieved a qualification certificate was issued.

Although some degree of qualification to an asymmetrical temperature distribution (80/60) was demonstrated, it remains for the technique referenced in the booster adapter specification to be exercised to properly evaluate structural capability for a given mission. This method is discussed briefly in paragraph 5 below.

3. Zipcord Program

As noted in the last report, the program contractor, LMSC, had submitted a plan to investigate the cause of the Zipcord jacket failures. This plan was evaluated but no decision to continue or cancel the program was reached.

4. Agena Propellant Tank Discrepancies

Since the last report, concrete efforts have been made to improve the overall quality of the Agena propellant tank in view of continuing quality problems. Particular attention has been given to the areas of surface imperfections (scratches, pits, etc.) and weldment discrepancies (porosity, thermal cracks, etc.) which reflect the contractor's level of workmanship. Of those tank assemblies found discrepant, to one degree or
another, final analysis revealed the condition to be acceptable from a performance standpoint. The problem, therefore, is considered a conflict between engineering specification requirement trying to maintain a level of manufacturing quality above what is demanded by the flight environment. This, together with certain inherent difficulties in the welding of 6061-T6 aluminum material, has resulted in several engineering/quality assurance disagreements, resolved finally by contract waiver action.

The following major steps have been taken to alleviate this problem:

(a) The contractor has proceeded to upgrade his tooling, particularly that used during the welding operations.

(b) Welding equipment is being improved, particularly with the aim of reducing the wandering of the AC weld arc. This action contributes to a surface melting condition away from the weld bead which manifests itself eventually as fine surface cracks.

(c) A coordinated effort is presently underway to relax certain specification requirements in line with defect magnitudes found acceptable by fracture mechanics analyses. A new criteria is also being developed to aid in the evaluation of porosity and its effect on weld strength.

The efforts outlined above are believed to be an approach to resolving the tank quality problems.
5. Determination of Asymmetrical Heating Effects on Standard Agena Vehicles

During this report period test data was gathered and collated as part of the final effort to develop a reliable analytical technique for determining the effects of an asymmetrical temperature distribution on the strength of the Agena vehicle. The data were used to verify the accuracy of a computer program based largely on the modified cylindrical shell equations of Flügge. Specifically, this program is intended to provide values for stress as a function of angular position around the structure under consideration. As finally documented, a thermal stress decrement due to asymmetrical heating can then be determined and subtracted from the stress capability based on uniform heating. The result should be the final capability expressed as a decreased value of structural margin.

As future flight profiles will reflect various trajectory parameters, this technique should prove invaluable in terms of its adaptability and ultimate accuracy. To date, a mission has not required its use although that time is probably fast approaching. The method, nevertheless, has been exercised in conjunction with the qualification test of the Agena .160 booster adapter mentioned above. Comparison of predicted stress values with test measurements indicated very close agreement. In conclusion, the value of this program, together with the advancements realized in the area of small scale structural testing, have more than justified the cost of the total endeavor. Furthermore, with the dissemination of program information, the Aerospace industry should realize significant benefits in terms of conducting future buckling tests of
cylindrical, monocoque structures. Rather than relying on empirical data from costly and time consuming test programs, this analytical technique may be employed with confidence.

6. Plumbing Improvement Program (Flared Joints)

It was previously reported that an effort had been made by IMSC to upgrade the quality of tube flares in separable connectors in an attempt to reduce cold gas leakage once installed on the vehicle. The development of an orbital flaring machine has promised this reduction in gas leakage, yet obstacles have arisen to preclude the adoption of the improved flaring technique on a 100% production basis. A program evaluating the orbital machines manufacturing accuracy was therefore initiated during this period. The results of this program were compared on a 3 sigma statistical basis with the existing process specification LAC 0942F and the updated NASA Standard NCG 146. A side program was also performed to determine the effect of tube bending on flare quality.

The primary phases of work have been completed and results are as follows:

(a) For 1/8 hard CRES it is possible to adopt NCG 146 Revision C with the exception that the external angle requirement will have to be relaxed to 66° ±2°.

(b) For 5052-0 Aluminum Alloy it is possible to adopt NCG 146 revision D with the exception noted in (a).

(c) For the annealed stainless steel and 6061-0 aluminum materials significant improvements in quality were not evident and therefore the existing process requirements must stand.
(d) At this time all inspection work has yet to be completed although it does appear certain that tubing cannot be bent after flaring without experiencing some degree of distortion.

The overall conclusion of this program is that a marked upgrading of flare quality can be achieved for certain primary materials as previously noted. However, it is not going to be possible to adopt a single set of updated process requirements. The appropriate specification, as revised, will reflect differing sets of flaring requirements, each to be invoked as deemed applicable by the design engineer, (i.e., for high pressure cold gas systems 1/6 hard CRFS tubing will be necessary and flared in accordance with MC 146 revision C.)

At this time an effort is underway to revise the process specification LAC 0942 by 25 August 1967.

7. Incorporation of Permanent Joints on the Standard Agena Vehicle

During this report period concluding reports were received describing in detail the development and qualification efforts required to incorporate induction brazed fittings on the Standard Agena Vehicle. The documents reflected an accurate and thorough program of design, test and evaluation necessary for production modifications to be effected with confidence. A progressive inspection was also conducted by Air Force personnel to insure engineering drawing and process control adequacy. Of significance during this review was the attention given to radiographic inspection and its bearing on the acceptability of brazed fittings. To this end a 100% inspection program was instigated to gain confidence after which a sampling plan is to go into effect.
To date several Agona vehicles have received brazed pneumatic system plumbing lines as part of their normal build-up. Program peculiar vehicles have also received a brazing retrofit of certain optional kits serving attitude control functions. This changeover from the separable connector design has not been subjected to the rigors of pre-launch checkout or of the flight environment; however, a high degree of confidence does exist insofar as the integrity of this design is concerned.

In the future, effort will be made to maintain a high level of process control which together with good workmanship will insure to the largest extent a structurally sound and leak-free plumbing system. As part of this work, higher quality thermocouples will be sought as well as sensitive, portable, gas leak detectors. Programs will also be undertaken to replace more separable connectors with brazed fittings thereby reducing in proportion any leakage potential.
Subsystem B

1. Agena Propulsion Performance

During the period of this report 16 Agena vehicles were launched. All of these launches used the YLR-81-BA-11 rocket engines. Of the 15 vehicles which were given a chance to perform on the booster, 14 were successful as far as the propulsion subsystem is concerned. The single gross propulsion failure was the NASA ATS satellite which did not achieve a proper orbit due to a failure to achieve an engine restart. This failure was traced to the oxidizer propellant isolation valve which did not close, thus allowing engine heat to boil propellants out of the oxidizer pump and sump starving the engine inlet at restart. The valve underwent a rapid modification program to prevent future occurrences. This program was successful and all vehicles are being retrofitted with the new design.

2. USAF YLR-81-BA-11 Rocket Engines

The engines continue to exhibit the chamber pressure anomaly (\(P_c\)) dip) at an alarming rate. Nine such occurrences have now been recorded since mid 1966 and the last two have occurred on consecutive launches.

Project "Coughdrop" was initiated in late 1966 as a high priority program to isolate the causes of failure. To date more than $1.4 million has been spent with less than conclusive results. The failures have been reproduced in test at both Bell Aerosystems Company (BAC) and in the altitude chambers at Arnold Engineering Development Center (AEDC). The occurrence has been shown to be the failure of one or more ball bearings in the turbine pump assembly. The main unknown is the triggering mechanism, since the failures are thermally induced by adverse
heating rates in the pump. An exhaustive review of the flight and ground test history, manufacturing documentation and "cradle to grave" handling has been conducted in an attempt to isolate changes which might have occurred in any phase of the cycle which could contribute to the failures. Two such correlations were found:

(1) When, for various reasons, the MIL-L-7808D oil was changed to MIL-L-7808E and then 7808F revisions, the latest revision was automatically incorporated into the engine in the field. A detailed review of the military specification revisions indicated it would have been better to stay with the "D" revision. However, a return to the "D" oil has apparently not solved the problem since the last two dips occurred after the change back.

(2) BAC changed gear vendors in mid 1965 which apparently resulted in a block of lower quality gears in the group of engines which exhibit a high anomaly rate. Test and retrofit planning is underway in case a gear change becomes mandatory.

An extensive test program has been conducted at sites previously mentioned which seems to indicate the trigger mechanism may also be associated with a flow of combustion products through the gear case resulting from a leaking turbine drive seal.

A high priority effort is now underway to determine running heat and leak rates in the pump. Parallel efforts are also underway to:

(a) provide a high strength high temperature ball bearing for this application,
(b) provide better quality seals to maintain internal gearbox pressure as well as prevent the flow of combustion products into the assembly.

The effort, including qualification testing, will be conducted as rapidly as possible but any ECD earlier than December 1967 is very optimistic.

3. 3-Start YLR 81-BA-11 Rocket Engine Kit

A three start capability for the YLR-81-BA-11 is progressing well. The design was selected because of a substantial weight saving over the multi start XLR-81-BA-13 engine. One test failure of the bracketry associated with the triple starter assembly has been experienced. The failure was caused by the use of a "non-flight" bolt in a vibration test fixture. No significant cost or schedule impact is forecast at this time and hardware deliveries are slated for the August-September 1967 time period.

4. Improved Agena Program

a. Approval was secured to run a modified contract definition phase to define the work required to develop the 8133 rocket engine and integral secondary propulsion system (ISPS) for the Agena vehicle. The definition phase started 13 February 1967 and is still in progress as of this report. The effort was funded under P.E. 6.44.09.12.4 and contracted for under contract \[\underline{\text{......}}\] with Lockheed Missiles and Space Co (LMSC) as prime contractor and Bell Aerosystems Company (BAC) as subcontractor for the engine work. During the definition phase (or Phase I as it became known), the BAC model number of the engine was changed from 8133 to 8533 and the engine was given the USAF designation of XLR 81-BA-15. The
Improved Agena vehicle was given the military designation of S-6D Space Vehicle.

b. Very briefly, the primary objectives of the Improved Agena Program are to increase vehicle payload by converting the presently used unsymmetrical dimethylhydrazine (UDMH) fuel to a 50/50 by weight blend of hydrazine and UDMH, and changing the oxidizer from inhibited red fuming nitric acid (IRMA) to nitrogen tetroxide (N₂O₄). An additional objective is to increase the orbital maneuvering capability of the vehicle by incorporating a multistart capability on the 8533 engine (similar to that on the XLR 81-BA-13 Gemini Agena Target Vehicle Engine) and by development of the ISPS which will provide orbital adjust capability and use propellants from the vehicle main tanks.

c. Accomplishments made to date during the definition phase are the following:

(1) Trade-offs were performed to define the design approach to be taken during the follow-on development phase (Phase II). The analyses and studies which serve as input to these trade-offs are continuing and evaluation of the trade-offs is in progress as of this report.

(2) Tests were performed to determine materials compatibility, performance and heat rejection of various injector configurations, thermal properties of the new propellants, and the capability of existing weld techniques to meet the environments imposed by the N₂O₄ oxidizer.

(3) Space allocations were made and interfaces defined.

(4) Key Part I CBI specifications were drafted for contractual use during Phase II.

(5) Various plans, such as contamination control reliability and EMI control, were drafted for use in Phase II.
d. In summary, the definition phase (which is now essentially complete) accomplished its objectives in that several key technical problem areas were discovered to exist which had previously been unsuspected. More realistic estimates of the cost and schedule for Phase II were developed. Present plans call for finishing Phase I in August of 1967 and giving go-ahead for Phase II shortly thereafter.

5. Pressurization System

a. The present aluminum propellant vent coupling has experienced a continuous history of discrepancies due to both the leakage caused by scratches and gouges on mating surfaces, and failure to meet specification pad-hold requirements during several test programs.

At the end of the last report period work was initiated on the Coupling Improvement Program. The primary objectives of this program are three fold. First, the coupling material has been changed from aluminum to stainless steel in order to eliminate or reduce the possibility of nicking mating surfaces. The change to steel will also enable the coupling to be installed into the vehicle plumbing system by means of a permanent induction brazed joint. Secondly, to assure a wet-pad-hold capability of 15 days, spring-loaded teflon seals (Omniseals) have been incorporated in the vent coupling and have satisfactorily completed exposure tests during development. Thirdly, in order to prohibit the transposition between any combination of gas fill and propellant vent valves, and thus eliminate pad hazards, four (4) distinct sets of non-interchangeability tongue and groove combinations have been introduced in the design.
The improved coupling is scheduled to be incorporated on vehicle AD 205 during the first quarter of 1969.

b. As mentioned above, the propellant isolation valve (PIV) was found to have caused a flight failure by not closing completely after engine first burn. A ground test program revealed that the main seal, against the moving blade of the valve, was able to be vibrated or shocked out of its retaining ring. The seal would then fall down into the path of the blade, jamming it open. A retaining method was designed into the seal and ring thus preventing recurrence of this failure.
1. During the period, Procurement Division (SMVAK) supported the Agena Directorate by issuing and administering a variety of contracts for the following supplies and services:

- Standard Agena Vehicles
- Propulsion Subsystems
- Guidance and Control Subsystems
- Velocity Meters
- Horizon Sensors
- Spare Parts and Logistics Support
- Modification Kits
- Repair Services and Storage
- Sustaining Engineering and Studies
- Launch Services at AMSTR & AMSTR
- Parts Qualification Program (PQP)

The above contracts have a value exceeding $500,000,000.

2. During this period, Hq USAF authorized development of an Improved Agena in January 1967. Letter Contract was issued in February 1967 for Phase I of the development program. The definitive contract was distributed in June 1967. Start of the Phase II effort originally scheduled to start during this period was slipped due to changes in program requirements and additional effort to be performed as part of Phase I. The requirement for implementing the "Cost/Schedule Planning and Control Specification" (C/SPCS) was established under Contract also.

3. Additional new procurements were initiated during this period as follows:

Letter Contract was issued to Lockheed in January 1967 to procure nineteen (19) additional Agena Vehicles.

Letter Contract was issued to Lockheed in March 1967 to purchase Engineering Support and Studies for the Agena program.

Definitive Contracts were issued in March and June 1967 respectively for Launch Services at the AF Eastern Test Range and AF Western Test Range.
Basic Ordering Agreement Orders under Contract AF04(695)-589 were issued as follows:

No. 18 - Production Qualification Program
No. 20 - Brazed Coupling Development
No. 21 - Agena 3 Start Engine Development
No. 22 - Electric Event Timer Development
No. 23 - Project Cough Drop

4. Letter Contract AF04(695)-939 with Lockheed, for procurement of thirty six (36) Agena Vehicles, was negotiated in June 1967.

5. Personnel changes during the period involved assignment of a new Military Division Chief, a Procuring Contracting Officer and two (2) buyers.

HARRY F. MEDLUND, Lt. Col USAF
Chief, Procurement Division
Agena Program Office
OPERATIONS DIVISION
Historical Data
1 January 1967 to 30 June 1967

1. (U) SSVAO has been operating at 70% authorized strength throughout the period except after the departure of Capt Norman Lee on 9 June. Lt Gordon Waterous, Capt Lee's replacement, reported in on 30 June. Maj Elmer T. Davis, Jr, was designated as Chief of the Division 28 Mar 67.

2. (U) A Memo of Agreement was drafted between SSDG and SSVA concerning mutual responsibilities for procurement of ETL radio guidance support for the TIII B. Final signature has been delayed pending comments on the proposed Memo from Program 110, which is concerned about giving too much control of the guidance function to the TIII SFO.

3. (U) The SLV-2G (Long Tank TAT)/Agena interface specification prepared by IMEC under SSVAO direction was signed off by IMEC, DAC, SSVA, and SSVX in January 1967 and released.

4. (U) IMEC began preparations, under SSVAO direction, on the SLV-3A (Long Tank Atlas)/Agena interface specification. Coordination copy of the completed specification was sent to SSVA 30 June 1967.

5. (U) The activation of the Vandenberg AFH Ground Guidance Station (GGS) 6-1 is proceeding on schedule. GGS-4 will be turned over to AIX on 1 April 1968. The principle events that have occurred are:

a. (U) A Supplemental Agreement was negotiated with Western Electric Co (WECO) for $605,000 to provide all necessary radar equipment modifications and activities to activate GGS 6-1.

b. (U) The facility criteria for GGS 6-1 was completed by WECO and furnished to the Corps of Engineers. The Corps provided the detailed design package, the contract was let, and the facility contractor has been working since April 67.

c. (U) The status of facility work on 30 Jun 67 was: Monolith completed, Antenna Pad completed, Terminal Building in final completion stage, Control Room and other GGS modifications almost finished. The total project should be completed in mid July 67.

d. (U) The three Titan I IOC Radar Systems received from Ellsworth AFB were found to be corroded and were therefore scrapped. Two other Titan I systems were received from Cape Kennedy as replacements for the GGS 6-1 job. Additional items of equipment will be obtained from the Titan I sites at Mt Home and Lowry.

CONFIDENTIAL
6. (U) The Guided Missile Test Station (GMTS) replaced the laboratory model GMR on SLG-4 West during May 67. The removed unit is being modified for installation at SLG-3 West.

7. (U) Activities in Support of the Proposed TIIID Program.

   a. (U) An experiment designed to measure the effect of Solid Rocket Motor Flame Attenuation (Project See-Thru) at X band frequencies was flown on TIIIC-10. The purpose is to predict possible Flame attenuation that could affect the VEWC Ground Guidance Radar to MROB R.F. link. VEWC participated in the project planning but at the time of this report has not completed the data review. Present planning is to perform similar tests on TIIIC-5 in Dec 67.

   b. (U) A TIIID guidance accuracy and error analysis updated report was completed during this period. The significant results were that the major error contribution was due to thrust vector misalignment, and that Kalman Filter techniques result in appreciable improvement of accuracy and reduction of error effect. The TIIID SFO has informed SSVAO and VEWC that the TIIID specification requires implementation of techniques to reduce thrust vector misalignment.

   c. (U) To date no program go-ahead has been given for TIIID. The continued slippage of the program will render invalid many of the results of the guidance accuracy study. Also, if no attempt is made to retain contractor personnel who are familiar with TIIID and the guidance study, a significant time advantage will be lost. A significant refamiliarization time period will be required for new personnel who are taken on to accomplish the guidance equation task when the program is given go-ahead. This has been brought to the attention of the TIIID SFO and SAF/P.

8. (S) 846 Program.

   a. (S) During the last six months modifications have been made to the Program 846 guidance program to allow split shaping of the pitch program for their mission, i.e., they will have two basic booster pitch programs, one for low inclination missions and one for high inclination missions. Present planning is for implementation of the split shaping during the next six months.

   b. (S) In conjunction with the split shaping for the pitch program VEWC has performed an extensive look angle study to determine if the radar look angles will be acceptable with the new Pitch Programs. One result has been to design a ferrite attenuator switch. This will permit elimination of the Dorsal/Ventral antenna interference region that currently exists. The ferrite attenuator will be incorporated within the next six months.
c. (U) Ground Guidance station 6-2 at VAFB has been fully activated since 15 Mar 67 and is now providing all operational support for Programs 846 and 770. NASA Delta and NASA/Agena are programmed to move to GGS 6-2 in Feb 1968.

9. (U) Program 110.

a. (U) An Acquisition Aid system for use with the WECO ground guidance radar has been designed and is near completion in GGS 94. The system uses Range Safety Tracking data to provide pointing information to the WECO Radar Antenna.

b. (U) Mission Safety Program (MSP). Implementation of the Mission Safety Program has been deferred until implementation of the Acquisition Aid. The MSP will be located in the off line computer utilized for processing the Acquisition Aid Tracking data provided by range safety. It is anticipated that the MSP and Acquisition Aid will be completed in July 67.

c. (U) A look angle study has been initiated for an "extended life" follow-on vehicle for Program 110.

10. (U) A consolidated contract was negotiated with Western Electric Company for all WECO hardware supporting the 846, 770, Titan III, NASA/Agena and Improved Delta Programs. Full implementation of AFSCM 375 configuration management has also been placed on all WECO hardware for the above programs.

11. (U) A number of Western Electric hardware problems occurred during the current report period. Significant among these were:

   a. (U) A latent defect in the G-346308 pulse delay network, manufactured by Andersen Laboratories, was uncovered which resulted in questionable reliability of forty four (44) series 600 missile borne guidance units. Recycle and repair had to be effected from three launch sites and two contractor plants. Through judicious planning no production or launch impact occurred.

   b. (U) Questionable J-8 connectors were uncovered during production sample testing. This problem resulted in a two month production stoppage effective from 1 June, which will continue to 31 July. No serious schedule impact is contemplated.


   a. (U) In the last six months WECO/UNIVAC guidance has guided eleven program 846, 770, 110, NASA/Agena and NASA Delta W.T.R. launches without a guidance system anomaly.
b. (U) A proposal was submitted for guiding an Atlas/Agena vehicle from ETR using WECO/UNITVAC guidance. This proposal was significantly less than the cost of the G.E. guidance that will be used. Because of the tight schedule, however, it appears that will use the G.E. guidance system.

13. (U) ETR Launch Complex 14 was deactivated and turned back to the Range except for the Blockhouse and the Propellant Transfer Unit (PTU) building. Pending further disposition, the Agena electrical and mechanical equipment will be stored in the Blockhouse and the PTU units will remain in the PTU building.

14. (U) Space Launch Complex (SLC) 3 East has been placed on a standby status since the last PRIME launch. Several of the Agena AGE items have been transferred to SLC 3 West for the Thorad modification.

15. (U) Agreement was reached with NASA to transfer the Vehicle Systems Test (VST) Complex 10 to SAREP. VST C10 was used and modified by NASA for the Gemini Agena Target Vehicle Program.

16. (U) Captain Norman Lee, the Chairman of the SLC-3W Complex Modification Working Group was transferred out of SSD 9 Jun 67. The chairmanship of the group was turned over to Captain F. R. Anderson (SSVX). SSVAO continues participation in the modification of the Complex, but in a reduced role due to small amount of IMSC work remaining and to lack of personnel. Target date for completion is late August 1967.

17. (U) Contract was negotiated and definitized during the period for $4,568,000 Target Price. This contract provides the Agena launch capability at the Eastern Test Range from 1 Apr 67 through 31 Mar 68. There are six launches scheduled under the contract.

18. (U) Contract was negotiated in June 67. It will not be definitized until 30 Sep 67. This contract buys the Agena launch capability at VAFB from 1 Oct 67 through 30 Sep 68. The Target Price is $17,132,000.

19. (U) The Santa Cruz Test Base Sustaining Contract was negotiated and definitized during the period. The contract guarantees the capability to test Agena vehicle systems while hot firing the engine when the need arises. It also provides the pyrotechnic testing and inspection required to support Agena users. The contract Target Price is $1,113,000. The contract period runs from 1 July 67 through 30 June 68.
"Final Customized Agena Program Plan." This document defines Lockheed method of satisfying the requirement to produce peculiarized vehicles rather than "standard" Agenas.

1. GENERAL

Standard Agena was initially configured to satisfy stated mission requirements of the then-existing programs, to be "used as is" except for planned optional and program add-ons. The emergence of new using program(s) and/or changed mission requirements, particularly during the last two years, renders the essentially unchanged Standard Agena configuration less than ideal for adaptation to present and foreseeable future usage. The using programs are consequently obliged to "work around" or implement changes to the Basic Agena in order to accomplish real mission objectives of today. The resultant impact to the Standard Agena concept is that the production-line vehicle must be modified following Standard system test, and even disassembled in some instances to permit removal of outdated equipment and harnesses. Program-substitute equipment is then installed, and test re-validation of the basic vehicle is required.

Authorization for preparation of this program plan is as recorded in Official Appendix No. 7 to the Standard Agena Technical Direction Meetings.

2. OBJECTIVE

The objective of this program plan is to conduct a study concerning update of the Standard Agena concept and production-line activity to permit fabrication and assembly of vehicles in accordance with present using program needs. The immediate objective is to define a customized Standard Agena vehicle for Programs 11/5 and 110, using only that basic and optional equipment desired by these programs. Program-peculiar equipment and equipment bracketing will also be identified that should be included during initial fabrication and assembly to permit on-line buildup with no planned later tear-down. The long-range objective of the Customized Standard Agena Program (not part of this plan), is to eliminate outdated Standard Agena equipment such as the Guidance Module, Safe/Air kit, etc., and replace these with program-developed equipment commensurate with present-day mission requirements.

Standard Agena Program ___________________________________________ Date __________

55030 Contracting Office Approval ___________________________________________ Date __________
APPLICABLE DOCUMENTS

Documents applicable to the effort conducted under this plan are as defined herein.

TASK STATEMENTS

Tasks to be included under this plan will include the following:

a. Study

(1) Program 646

(a) Creation of a Part I and Part II specification for the Program 646 Customized Agena;

(b) Compilation of a Program 646 Customized Agena equipment list;

(c) Creation of a Program 646 Customized Agena test plan (including DTV);

(d) Creation of a Program 646 Customized Agena manufacturing plan (tooling, etc.);

(e) Creation of a detailed implementation schedule;

(f) Preparation of a cost analysis to accomplish the tasks;

(g) A definition of what contractual and documentation changes are required to accomplish the tasks (Agena and using Program);

(h) Creation of a Program 646 Customized Agena Configuration Management Plan;

(i) Creation of Program 646 Customized Agena top assembly drawing;

(j) Preparation of a summary proposal that will form the basis of the production contract ECP.

(2) Program 110

The same tasks will be accomplished as defined in 4.a.(1) above for the Program 110 Customized Agena.

b. Analysis and Design

As applicable in 4.a above.

c. EMI Design

As applicable in 4.a above.
d. Reliability
   As applicable.

e. Productivity
   As applicable.

f. Parts and Material
   As applicable.

g. Quality Assurance
   As applicable.

h. Transportability
   As applicable.

i. Safety Engineering
   The concepts of MIL-S-38135 shall be used as a guide in the performance of this plan.

j. Air and Water Pollution Control
   Not applicable.

k. Human Engineering
   As applicable.

l. Maintainability
   As applicable.

m. Documentation
   Upon conclusion of the effort under this plan, a brief summary will be prepared and submitted to SAMSO (satisfying the requirement of Item 80.14 of Exhibit "B" to this contract). Copies of other documents created under this plan, in draft form, shall accompany submittal of the summary.

5. REPORTING REQUIREMENTS

Problems which may affect technical progress or schedule compliance shall be communicated to Headquarters SAMSO (GOMAR/F20). A project leader shall be named by the Contractor in writing to Headquarters SAMSO (GOMAR/F20) upon the Contracting Officer's approval of the progress plan.
6. RESOURCES (Engineering Estimates)
   a. Financial
      (1) Dollars: None
      (2) Manpower: 5863 man-hours
      (3) Manloading:
         Months 1 2 3
         Man-hours 1735 2208 1920
   b. Equipment
      Not applicable.
   c. Facilities
      Not applicable.

   SCHEDULE (See attached sheet)

   The final report will be submitted by LMSC to AFSSD on 30 September 1967.
Approved for Release: 2017/08/28 C05097006

General
- Standard Agenda initially configured to permit "use as is"
- New Programs and changing requirements now negate "use as is"
- Present usage requires various degrees of modification, disassembly, equipment substitution, and retest.

Objectives
- Immediate - customize production line for major programs
- Long range - utilize program developed hardware to re-establish Standard Agenda System concept

Tasks
- Define using program configurations.
- Prepare customized equipment lists
- List outdated basic and optional equipment
- Define impact upon planning, procurement and testing per omitted equipment.
- Define impact upon manufacturing schedule, system test per customized configurations
- Summarize configuration management/documentation
- Summarize long range objectives

Resources
- 36 man-months

Schedule
- 3 months - Prelim. Report 1 Sept. 1967
- 3 months - Final Report 30 Sept. 1967
CUSTOMIZED STANDARD AGENA
Support Engineering Program Plan

1. GENERAL

Standard Agena was initially configured to satisfy stated mission requirements of the then existing using programs to be "used as is" except for planned optional and program add-ons. The emergence of new using programs and/or changed mission requirements, particularly during the last two years, renders the essentially unchanged Standard Agena configuration less than ideal for adaptation to present and foreseeable future usage. The using programs are consequently obliged to "work around" or implement changes to the basic agena in order to accomplish real mission objectives of today. The resultant impact to the Standard Agena concept is that the production line vehicle must be modified following Standard Agena system test, and even disassembled in some instances to permit removal of outdated equipment and harnesses. Program substitute equipment is then installed and test revalidation of the basic vehicle is required.

2. OBJECTIVE

The objective of this program plan is to conduct a study concerning update of the Standard Agena concept and production line activity to permit fabrication and assembly of vehicles in accordance with present using program needs. The immediate objective is to define a customized Standard Agena vehicle for each major program using only that basic and optional equipment desired by the program. Program peculiar equipment and equipment bracketing will also be identified that should be included during initial fabrication and assembly to permit on-time-build-up with no planned later tear down.

Standard Agena Program Approval

Program contracting
Plan No. 225
26 June 1967

As limited by paragraph h(a)(6) below, the long range objective is to eliminate outdated Standard Agena equipment such as the Guidance module, Safe/Arm boxes, etc., and replace these with program developed equipment commensurate with present day mission requirements. By proper incorporation into the Standard Agena, Program developed equipment such as the dual attitude control system (DACS) and Safe/Arm boxes with telemetry instrumentation matrixes will reestablish the Standard Agena as a complete system capable of satisfying present day basic mission objective. Customization would gradually become less significant program to program with greater flexibility for vehicle late reassignments as flight schedules and newly created programs of the future may necessitate.

APPLICABLE DOCUMENTS
Not applicable.

4. TASKS
a. Study

Contractor studies will be conducted as follows:

(1) A review of each using program vehicle configuration definition will be made. Changes to Standard Agena configuration and equipment subsequent to Standard Agena DD250 will be itemized.

(2) A customized Standard Agena configuration (equipment list) will be compiled for each using program that requires significant change to the basic Agena. Program peculiar equipment which should be installed during initial vehicle assembly will be included. Structural holes and bracketry to accommodate Program equipment will be noted for incorporation during
Plan No. 325
26 June 1967

(3) A list of outdated basic and optional equipment will be compiled with quantity reference to the master vehicle schedule.

(4) A statement of impact upon planning, procurement, scheduling, production, incoming and acceptance testing, for the outdated equipment will be made.

(5) A statement of impact upon Standard Agenda System Test will be made.

(6) A statement of impact upon manufacturing schedules and activities as a result of the new customized configuration(s) will be made.

(7) A summary of proposed configuration management/documentation will be prepared.

(8) A summary plan will be provided that describes long range objective for replacing outdated portions of the present Standard Agenda with using program developed equipment that will in turn permit achievement of a maximum "common" and complete Standard Agenda system.

(b) Analysis and Design
6. RESOURCES

Mammoths: 18
Months: 1 2 3 4 5 6 7 8 9 10 11 12 6 6 6

Preliminary Report - September 1, 1967
Final Report - September 30, 1967
28 Jul 1967, meeting at Lockheed attended by Gen Cooper, Colonels Hamilton and Smith. Briefing material supplied.
STD. AGENA CONTR. REQUIREMENTS

AF 04 (695) 939/0077

VEHICLES

O TOTAL ON CONTRACT _______________ 55
O DEL. TO DATE _________________________ 12

OPTIONAL

O TOTAL ON CONTRACT _______________ 630
O DEL. TO DATE _________________________ 210

SPARES

O TOTAL ON CONTRACT _______________ 748
O DEL. TO DATE _________________________ 602

USING PROGRAM ALLOCATION

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STD. AGEMA TYPICAL SCHEDULE

FINAL ASSY
20 DAYS

SYSTEM TEST
30 DAYS

STORAGE
VARIABLE 0 - 6 MONTHS

BASED ON 5 DAY - SINGLE SHIFT
BASIC VEHICLE

AFT SECTION

TANK SECTION

FWD SECTION

GUIDANCE MODULE
NOTE: FOR AD 210 - 4773
THIS MODULE CONSISTS OF PACS AND RACS (OPTIONAL)
WHICH IS THE DUAL ATTITUDE CONTROL SYSTEM (DACS)

UNCLASSIFIED
FORWARD SECTION

BASIC

- PYRO HELIUM CONTROL VALVE
- SAFE PLUG
- FWD S/A BOX
- TM MODULE
- OX. FILL LINE
- RF SWITCH (TYPE IV)
- SEQUENCE TIMER
- FLIGHT CONTROL ELECTRONICS
- FLIGHT CONTROL J-BOX
- PRESSURIZED RF SWITCH
- VHF ANTENNA (TYPE XIII)

HELLEUM SPHERE

POWER MODULE
THREE PHASE INVERTER

TEST PLUG PANEL
OX. VENT COUPLING
FUEL VENT COUPLING
UMBILICAL DOOR
POWER DISTRIBUTION BOX
FORWARD SECTION

OPTIONALS

BLANK COMMUNICATIONS PANEL KIT

TM XMTR ADAPTER KIT

AUX FM/TM ADAPTER KIT

TM ORBIT ANTENNA SWITCH KIT

BTL ADAPTER KIT

AUXILIARY SEQUENCE TIMER KIT

FLIGHT CONTROL PATCH PANEL KIT

COMMAND DESTRUCT KIT

ORBITAL PROGRAMMER MOUNTING KIT

AMPERE HOUR METER KIT

UPA KIT (H/S LOCKOUT BAR ON GUIDANCE MODULE)

SAFE & ARM PLUG KIT

BTL J-BOX

BEACON MODULE KIT (ROTATED 90°)
## STD. AGENA FWD PACK

* MODEL 1191

### OPTIONAL KITS

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AFT SECTION
WITH OPTIONALS

ENGINE CONE AUX STRUCTURE KIT
(4 PANELS)

AUX NITROGEN KIT N₂

AFT STRUCTURE KIT (RIGHT SIDE)

8247 ENGINE KIT

AFT STRUCTURE KIT (LEFT SIDE)

PROPELLANT DUMP KIT

SINGLE START KIT

SAFE AND ARM PLUG KIT
AFT SECTION

USING PROGRAM ADDITIONS-STANDARD AGENA INSTALLED

AUX NITROGEN KIT

BEAM (PROG PECULIAR)

LIFE BOAT PNEUMATICS (PROG PECULIAR)

SINGLE START KIT

PROPellant DUMP KIT

UNCLASSIFIED
## STD. AGENA AFT PACK

### Optional Kits

<table>
<thead>
<tr>
<th>Nomenclature</th>
<th>84G</th>
<th>110</th>
<th>770</th>
<th>Other</th>
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<tbody>
<tr>
<td>Booster Adapter Ext.</td>
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<tr>
<td>Booster Adapter Ext. Ring</td>
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<td></td>
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<tr>
<td>Engine Cone Aux. Struct.</td>
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<td>* Single Start</td>
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<tr>
<td>* Propellant Dump</td>
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<td></td>
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<td>✔</td>
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<tr>
<td>* Aux. N₂ Tank</td>
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<tr>
<td>Aft Struct. Left Hand</td>
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<td></td>
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<tr>
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<td>Third Nitrogen Tank</td>
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<td>Booster Adapter (.160)</td>
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<tr>
<td>Maximum Access Booster Adapter (MABA)</td>
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* Model 1191

Approved for Release: 2017/08/28 C05097006
CONFIGURATION MANAGEMENT

STANDARD AGENA PROGRAM
<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>CONTRACT SPECS</th>
<th>375-1 ON CONTRACT</th>
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<tr>
<td>STD. AGENA</td>
<td>2000</td>
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<tr>
<td>110</td>
<td>9</td>
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<td>BOOSTER SYSTEMS</td>
<td>1</td>
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<tr>
<td>846</td>
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<tr>
<td>770</td>
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<td>949 (TRW)</td>
<td>40</td>
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AGENA COMPLIANCE DOCUMENTS

- ~ 2000 SPECS ON CONTRACT
  INCLUDES 209 MAJOR ASSEMBLIES, BLACK BOXES, & HARNESSES
  PLUS ELECTRONIC PIECE PARTS
  LOCKHEED CORP. PROCESS SPECS
  MILITARY SPECS.

- ~ 1650 DRAWINGS ON CONTRACT

- ANY SPEC. CHANGE OR NON-COMPLIANCE REQUIRES CLASS I ECP
  INVOLVES EJA, WAIVER OR USCN, AFPRO REVIEW, AESSD APPROVAL & CON.

- ALL CLASS I DWG. CHANGES REQUIRE ECP & CON

- ALL CLASS II DWG. CHANGES REQUIRE AFPRO ENG. APPROVAL
  NOT REQUIRED BY ANA 445 OR OTHER PROGRAMS

- NON-COMPLIANCE TO ANY DWG. IS SUBJECT TO CLASS I (ECP/CON)

HISTORY - 1966 - ~ 168 ECP'S PLUS 34 WAIVERS FOR DET. NON-COMPL.
CURRENT EX: NASA SPECS - 1 YEAR TO CONVERT 110 TO STD. AGENA

RESULT: A MAJOR FACTOR IN AGENA SLOW RESPONSE & COST
AGENA CONFIG, MGM'T/SPEC. PROPOSAL

- COMMON AGENA & USING PROGRAM CRD. RULES
- WRITE 375-1 INTERPRETATION EXHIBITS FOR CONTRACT
- WRITE MODEL SPEC. FOR EACH CUSTOMIZED PROG. ~ 4 ~
  840, 110, 770, & 672 CONFIG.
- REDUCE NUMBER FROM 2000 TO ~17 PER MODEL
- SCRUB THE REMAINING 17
  REMOVE AMBIGUITIES, REDUNDANCIES, ADD
  CRITICAL MATERIAL FROM SUB-TIERS, IF ANY
- RELAX SPEC. & DWG. NON-COMFORMANCE INTERPRETATION
  BY AFPRO PER SPO DIRECTION.
- ELIMINATE AFPRO CLASS II ENG. APPROVAL
AGENA CONTRACT STRUCTURE

DEVELOPMENT SEQUENCE

1ST STEP
-0092 ENGINEERING
PREPARE PROGRAM PLAN
AF AUTHORIZES
MAKE STUDY
WRITE SPECIFICATION.
OBTAIN AF APPROVAL

2ND STEP

-589 TESTS
AF REQUESTS QUOTE
SUBMIT QUOTE
NEGOTIATE/AUTHORIZE
BUILD HARDWARE
PERFORM TESTS
REVISE SPECS
OBTAIN AF APPROVAL
ESTABLISH BASELINE (FAI)

3RD STEP

-939 PRODUCTION
FORMAL ECP
CCN
PREPARE PRODUCTION ENGINEERING
INCORPORATE

EXAMPLES:
DC/DC CONVERTER INTEGRATE AD 143
496 DAYS

FILL/VENT COUPLING INTEGRATE AD 265
730 DAYS
EJA/ECP/CCN FLOW CHART

PREL. ECP ADDS ~ 53 WORKING DAYS

CCB PLANNING POINT EJA PREP CCB CHECK POINT ECP PREP CCB AFRY. POINT

AFSJD REVIEW CCBD & CCN# CCB CHECK POINT CDI START ENGRG STUDY, DES., TEST, ETC COMPLETE ENGRG

DCCB PROGRAM - HOLD

Approved for Release: 2017/08/28 C05097006
FORMAL EJA/ECP/CCN CYCLE

TYPICAL TIME SPAN WORKING DAYS

CSE MTG. FRI. AM
NEW ITEMS APPROVAL

CWB MTG. FRI. P.M.
PLAN NEW ITEMS

FORMAL EJA

REPRO. & DISTRIBUTE

CCB APPROVE & AUDIT PLAN

DCC PROGRAM

PRICING

ECP PREPARATION

ECP SUBMITTAL

AF CCB REVIEW

AF CCBP 70. CMCSC
CCN/ASNL

JCC CONTRACTS CDI

DCC PROGRAM

RELEASE

EMERGENCIES
COULD START HERE
WITH AF TYX & CCN #.
EJA/ECP/CCN CONTROL PLAN

Problem Meeting Reporting

Corrective Action
PROGRAM OBJECTIVES

DEVELOP STANDARDIZED VEHICLE AVAILABLE FOR FLIGHT JUNE 1962
INTEGRATES
HIGH RELIABILITY
MISSION ADAPTABILITY
MAINTAINABILITY
SERVICEABILITY
PRODUCIBILITY
REDUCE CHECKOUT REQUIREMENTS
IMPROVE PERFORMANCE
REDUCE PRODUCTION COST

CREATE A CAPABILITY FOR PRODUCTION AT 5/MONTH (FIXED PRICE CONTRACT)

DEVELOP AND MAINTAIN STREAMLINED PROCEDURES AND ORGANIZATION FOR FAST REACTION AND LOW COST
1. A DX PRIORITY IS ASSIGNED THE S-01A PROGRAM

2. THE ENGINEERING SYSTEM SHALL BE SIMPLIFIED, REQUIRING ONLY THOSE DRAWINGS ESSENTIAL TO TOOL, BUILD & SERVICE VEH.

3. FINAL CONFIGURATION FREEZE SHALL BE ACCOMPLISHED

4. ENGINEERING PERSONNEL SHALL BE LOCATED IN AN ENCLOSED AREA IMMEDIATELY ADJACENT TO THE TOOLING & MFG AREA

5. A RAPID DRAWING RELEASE SYSTEM (24 HOURS MAXIMUM) FROM THE PROJECT ENGINEERS APPROVAL TO THE MANUFACTURING GROUP SHALL BE ESTABLISHED

6. FUNDING SHALL BE ADEQUATE AND TIMELY

7. TECHNICAL DIRECTIVE MEETINGS INVOLVING LARGE GROUPS SHALL NOT BE REQUIRED. AIR FORCE PERSONNEL SHALL WORK IN CLOSE LIAISON WITH THE LMSC PROJECT ENGINEER SO FORMAL MEETINGS ARE NOT REQUIRED
8. REASONABLE OVERTIME WILL BE APPROVED. AFTER-THE-FACT APPROVAL IS NOT PRECLUDED. (PURSUANT TO CLAUSE A-37 OF THE CONTRACT)

9. AIR FORCE APPROVAL OF VENDOR SELECTION SHALL BE FURNISHED ON-THE-SPOT AT SUNNYVALE. WHEN SINGLE SOURCE PROCUREMENT IS NECESSARY, JUSTIFICATION OF SUCH ACTION WILL BE KEPT ON FILE.

10. TOOLING SHALL BE OF THE SIMPLEST TYPE THAT WILL ACHIEVE INTERCHANGEABILITY AS STATED IN THE BASIC S-01A SPECIFICATION. NO TOOL DRAWINGS OR OUTSIDE APPROVAL OF TOOLING WILL BE REG'D

11. INTERCHANGEABILITY ON EARLY S-01A'S WILL BE LIMITED TO MAJOR STRUCTURAL AND EQUIPMENT ITEMS. DOORS, FOR INSTANCE, MAY REQUIRE TRIM TO FIT.

12. NO ENGINEERING ANALYSIS REPORTS WILL BE REQUIRED, SINCE IT IS RECOGNIZED THAT BASIC ENG'RG RPTS FURNISH COMPARABLE DATA.

13. THE AIR FORCE PROGRAM DIRECTOR AND LMSC SHALL JOINTLY REVIEW THE SPECIFICATION PROBLEM & AGREE AT THE CONFIGURATION CONFERENCE TO REDUCE THE NUMBER INVOLVED TO THE MINIMUM COMPATIBLE WITH THE S-01A MISSION.
STANDARD AGENA

PHASE I. STANDARDIZATION (S-01A)

0. USE OF FLIGHT PROVEN AGENA B EQUIPMENT.

0. STANDARDIZATION OF MAJOR EQUIPMENT CIRCUITS & PLUMBING.

0. MODULARIZED SUBSYSTEMS FOR INTERCHANGEABILITY & SIMPLIFIED CHECKOUT

INTERMEDIATE IMPROVEMENT (ABC) (S-01B)

0. PIP

0. 8247 ENGINE

0. BTL

0. UPA AND UPC

PHASE II. MAJOR ORBITAL RELIABILITY IMPROVEMENT PROGRAM
STANDARD AGENA PROGRAM

ABC FEATURES (1963)

- INCREASED PAYLOAD CARRYING CAPABILITY
  95 LBS SPECIFIC SINGLE BURN MISSION
  100 TO 135 LBS DUAL BURN MISSION

- INCREASED VERSATILITY
  8247 MULTISTART ENGINE
  ADDITIONAL INSTRUMENTATION CAPABILITY

- INCREASED ORBITAL CAPABILITY
  DEACTIVATE/REACTIVATE VEHICLE ON COMMAND

- IMPROVED INJECTION ACCURACY
  BTL GUIDANCE SYSTEM IN AGENA

- ADDITIONAL OPTIONAL KITS AVAILABLE

- PERMITS ELIMINATION OF PROGRAM AUXILIARY FORWARD SECTION

- ELIMINATES PROGRAM MODIFICATIONS TO AGENA BASIC WIRING
AGENA UPDATING ACTIVITIES

STANDARD AGENA PROPOSALS - (ABORTED)

- IMPROVED GUIDANCE MODULE (IGM) ___________________ PROPOSED: '62 & '63
  WOULD HAVE AVOIDED GIP & DACS REJECTED: 11/63

- LONG-RANGE IMPROVEMENT PROGRAM (PHASE II) PROPOSED: '64
  3 PHASE - 19 MONTH - ALL SUBSYSTEMS REJECTED: 6/65

- GUIDANCE & CONTROL ELECTRONICS (GCE) _______________ DEV. INITIATED: 9/66
  WOULD ELIMINATE GIP & COMPAT. WITH DACS STOPPED: 3/67

- ELECTRONIC EVENT TIMER (EET) __________________________ STUDY INITIATED: 1/66
  REPLACE SEQUENCE TIMER DEV. STOPPED: 6/67

USING PROGRAM ACTIONS

- GUIDANCE INTERCONNECT PACKAGE (GIP) - PROG. 846 ______________ DEV. INITIATED: 6/65
  REPLACES STD. AGENA GUID & F/C J-BOXES

- DUAL ATTITUDE CONTROL SYSTEM (DACS) - PROG. 110 ______________ DEV. INITIATED: EARLY '67
  REPLACES STD. AGENA GUIDANCE EQUIPMENT
CURRENT PROBLEM

BASIC: USING PROGRAMS TEAR DOWN AND REBUILD - INVALIDATE TEST

EXAMPLES:

<table>
<thead>
<tr>
<th>770</th>
<th>846</th>
<th>110 (4773)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REMOVE ¥ MOD:</strong>&lt;br&gt;FLT. CONTROL J-BOX&lt;br&gt;GUID. J-BOX</td>
<td><strong>REMOVE:</strong>&lt;br&gt;FLT. CONTROL J-BOX&lt;br&gt;GUID. J-BOX&lt;br&gt;(9) HARNESS ES</td>
<td><strong>REMOVE:</strong>&lt;br&gt;FND SECT. COMPLETE&lt;br&gt;AFT SECT. BOXES&lt;br&gt;(1) AFT. HARNESS</td>
</tr>
<tr>
<td><strong>DRILL, CUT, ETC. TO ACCOMODATE PROG. EQUIP.</strong>&lt;br&gt;(3) PROG. BOXES&lt;br&gt;(3) HARNESS ES</td>
<td><strong>ADD (AGENA SYS.)</strong>&lt;br&gt;GUID. INTER. PKG.&lt;br&gt;SEQUENCE TIMER&lt;br&gt;RECOVERY TIMER&lt;br&gt;DC CONVERTER (REDUNDANT)&lt;br&gt;AUX. FM TELEMETER&lt;br&gt;FLT. LOGIC &amp; PROGMR. BOX&lt;br&gt;(1) HARNESS ES</td>
<td><strong>ADD (AGENA SYS.)</strong>&lt;br&gt;FND SECT. INCL. BASIC H4 SYS&lt;br&gt;(6) STD. AGENA BOXES (NEW)&lt;br&gt;DOCS. MODULE&lt;br&gt;RAMS H4 SYS.&lt;br&gt;PCH. TELEMETER&lt;br&gt;(30-40) HARNESS ES</td>
</tr>
<tr>
<td><strong>ADD (OTHER),</strong>&lt;br&gt;(5-10) PROG. BOXES&lt;br&gt;(3) HARNESS ES</td>
<td><strong>ADD (OTHER),</strong>&lt;br&gt;(25-30) PROG. BOXES&lt;br&gt;(30) HARNESS ES</td>
<td><strong>ADD (OTHER),</strong>&lt;br&gt;COMMAND SYSYS&lt;br&gt;SECONAARY PROG. SYS.&lt;br&gt;OTHER&lt;br&gt;(30) HARNESS ES</td>
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RECENT PROPOSED SOLUTIONS

SAFESP CONSIDERATION

- ELIMINATE STD AGENA
- AFSSD TO PROCURE COMPONENTS/SUB ASSEM. TO SP REG/NTS
- LMSC-PROGRAM 11C RELIABILITY ASSEMBLY METHOD
  - ONE TIME BUILD UP - INCREASE PROG. CONFIDENCE
  - INSTALL SOME PROG. EQUIPMENT
  - ELIMINATE AGENA SYSTEM TESTING

SSV PROPOSAL (CONCEPT I)

- ESTABLISH BASIC AGENA IN LIEU OF STD. AGENA
- ASSEMBLE COMMON EQUIPMENT PLUS CERTAIN PROG. ADD-ON'S
- SYSTEM TEST & CONDITIONAL DD-250

LMSC - SIMPLIFIED AGENA (BASIC)

- ASSEMBLE & TEST TO POINT OF COMMON USAGE
- TRY TO MAINTAIN BASIC ASCENT AGENA CAPABILITY

JOINT LMSC/SAMSO - CUSTOMIZED AGENA

- ONE TIME BUILD UP - INCLUDE PROG. STRUCT. & HARNESS
- INSTALL AGENA & PROG. EQUIPS. TO COMPLETE VEHICLE SYSTEM
- ACCEPTANCE TEST & CONDITIONAL DD-250
- ORGANIZE SITUATIONS & CONTRACT RESPONSE
PURPOSE

MODIFY STD. AGENA/PROG. ASSEMBLY & TEST SEQUENCE TO MEET PROG. REQUIREMENTS

OBJECTIVES

IMPROVE SYSTEM RELIABILITY
- Eliminate drilling, cutting, etc., after harness & box installation
- Minimize harness disconnect & flexing
- Optimize sequence of vehicle assembly (from core-cut)

IMPROVE OVERALL SCHEDULE
- Develop logical one-time vehicle build-up
- Reduce lead time for implementation of design changes

REDUCE TOTAL RECURRING COST
- Assemble vehicle under optimum accessibility conditions
- Eliminate unnecessary vehicle build-up & tear down, and test invalidation.
- Eliminate slave hardware
CUSTOMIZED STANDARD AGENDA

TYPICAL SEQUENCE - FOR PROG 846 VEHICLE

AFT RACK
- STRUCTURE
- ENGINE
- HYDRAULICS
- PNEUMATICS (INC. LIFEBOAT)
- SPECIAL BrACKETY
- 10 HARNESS
- 2 BOXES
- 2 OPTIONAL KITS

ASSEMBLE, RACK CHECK & STORE

SHORT VARIABLE SPAN

PROP. TANK
- TANKS
- SPECIAL FAIRINGS
- SPECIAL CLIPS

FORMAL ACCEPTANCE TEST

FWD RACK
- STRUCTURE
- 11 BASIC ITEMS
- 4 OPT. KITS
- 22 HARNESS

REMOVE FROM STORAGE AND ADD:
- 8 PROGRAM EQ'tS INCLUDING GIP & RECOVERY TIMER

DELIVER TO PROGRAM
AGENA ASSY METHOD TO ACCOMMODATE PROGRAM 110

STANDARD AGENA FAB/ASSY.
INCREASE BRACKETS,
Etc. TO ACCOMMODATE
REQUIREMENTS

INSTALL:
ENGINE
BRAZABLE ITEMS
BUSK KIT TUBES, ETC
AND N. TANKS

PAIRING & TANK FAB
ATTACH MAG.
SENSOR CLIPS

END PACK
FAB/ASSY
MILL & CLEAN
H. SYS. INSTL
BRACE & THERMAL

POLES & HARNESS
FAB.
MFG. TEST

INSTALL:
PROP FEED & LOAD SYS.
HID. SYSTEM
AFT SYS. BAY
AFT INSTR. BAY
BASIC HARNESS
FIRE & SELECT HOME

PROGRAM 110 INSTALL:

PROGRAM PECULIAR
& MISSION SENSITIVE
EQUIPMENT
REQUIRED ACTIONS

- LMSC PREPARE & SUBMIT PROPOSAL OF CUSTOMIZED PROGRAM 84G & PROGRAM 110 VEHICLES

- USAF & LMSC ESTABLISH SENIOR REQUIREMENTS PANELS

- MODIFY STANDARD AGENDA CONTRACT TO PROVIDE DELIVERY OF CUSTOMIZED VEHICLES AND TO PERMIT RESPONSIVENESS TO PROGRAM REQUIREMENTS

- SIMPLIFY CHANGE CONTROL REQUIREMENTS
PROPOSAL FOR CUSTOMIZED AGENDA

- SUBMITTAL FOR PROGRAM 846 VEHICLES: 8-15-67
- SUBMITTAL FOR PROGRAM 110 VEHICLES: 9-15-67
- PROPOSALS TO INCLUDE:
  - PART I SPECIFICATION FOR EACH VEHICLE
  - PART II SPECIFICATION FOR EACH VEHICLE
  - EQUIPMENT LIST (ECL) FOR EACH VEHICLE
  - INBOARD PROFILE DRAWING FOR EACH VEHICLE
  - MANUFACTURING PLAN FOR EACH VEHICLE
  - ACCEPTANCE TEST PLAN FOR EACH VEHICLE
  - DETAILED SCHEDULES
  - COST ANALYSIS
  - REQUIRED CONTRACT & CONFIGURATION CONTROL REQUIREMENTS
EXPECTED RESULTS

○ MAINTAINS RELIABILITY TREND OF STANDARD AGEMA

○ ELIMINATES TEAR DOWN & REWORK & REPLACEMENTS

○ INCREASES REL. CONFIDENCE IN USING PROGRAM CONFIGURATION

○ SHORTER OVERALL SCHEDULES

○ LOWER TOTAL COSTS

○ PROVIDES FLEXIBILITY & VERSATILITY TO AGEMA
STANDARD AGENA STATUS - JUNE '67

USING PROGRAM COMPLAINTS

- UNNECESSARY TEAR DOWN, REBUILD & RETEST
- DIFFICULT HANDLING AS GDP AFTER DD-250
- SLOW AGENA RESPONSE
- NO AGENA FLIGHT RESPONSIBILITY

- PROPOSAL: ELIM. STD AGENA - DELIVER ENGINE & TANK PLUS "BUCKET O' BOLTS"

STANDARD AGENA COMPLAINTS

- LACK OF TIMELY REQ'MTS FROM PROGRAMS
- UNNECESSARY CHANGES, LITTLE COORDINATION
- LOWER PRIORITY, SHORT FUNDING
- DIFFERENT MGMT GRD. RULES (AFSC VS. S.P.)

- PROPOSAL: CUSTOMIZE AGENA TO PROGRAM REQ'MTS
  - ONE TIME BUILD UP & TEST
  - SR. REQ'MTS PANEL - LMSC & AF
  - DELAY DD-250, CPDIF, DEF. INCENT.
  - COMMON MGMT GRD. RULES, REDUCE SPECS.
  - EQU. PRIORITY & COORD. FUNDING.

- RESULT: RETAINS RELIABILITY ADVANTAGE
  - MAINTAINS AGENA CAPABILITY FOR OTHER USERS
  - PROVIDES FLEXIBILITY & VERSATILITY
  - REDUCES TOTAL COST & OVERALL SCHEDULE.
SHY A/Lt Col Poo/3656
Agana D Contract Structure

HMCS (General Martin)

1. You will recall that in your 1 May Briefing on Agana Procurement, it was pointed out that the current method of procuring such items as engines and horizon sensors is inconsistent with NASP performance incentives. In an effort to correct this situation, the Agana Program Office has investigated the possibilities of returning to a prime contract structure with LMSC. This change in procurement management would authorize LMSC to procure engines for the Agana D as CFE hardware, but would not enable the procurement of horizon sensors and velocity meters by LMSC, since a buy out of these components for the remaining Agana D vehicles has already been made. Implementation of the change over plan to procure engines CFE could be made effective on the last production buy for 19 Agana D vehicles and would involve the following actions:

a. LMSC approval of request to deviate from AFR 76-9, which defines the engine as a Category 3 (associate) procurement.

b. Dr. Plan's approval of a revised Determination and Findings (DAF) and Form 111.

c. Supplement LMSC production contract to include procurement of engines. Based on LMSC input, we estimate an increase of $31,000 to $42,000 per engine over what we are now paying for CFE engines.

d. Cancel the current RFP to Bell Aerosystems Co (BAC) for 19 engines for which a proposal has been submitted to SMVA.

e. Negotiate contract closeout with BAC. Engine delivery schedule dictates that BAC have a contract by 1 Nov 67. In order for LMSC to negotiate such a contract, it is mandatory that the first three actions be accomplished by 1 September.
2. I call your attention to the above actions and associated schedule only because your strong support would be required to help meet these dates. Specifically, the expedited processing of the D&F thru Dr. Flex's office would require your personal endorsement.

3. Recognize that this action will only partially fulfill your desire to have LMSC provide all Agency D sub-systems. Nevertheless, it can be implemented if you feel that it appreciably strengthens your performance incentives. Considering the facts that increased costs are involved and that this action deviates from current procurement procedures as outlined in APL 70-9, I will not approve the move without your full cooperation and support.

4. I would appreciate your thoughts on this matter.

SIGNED

PAUL T. COOPER
Major General, USAF
Deputy Commander for Space
SMG / SMV/Col Hamilton/LtCol Poor -3288

Improved Agena Flight Test

SAFSP (Gen Martin)

1. Reference is made to your letter of 23 June 67, subject: "Improved Agena" in which you stated that you requested and obtained approval from Dr. Flick for one Thor-boosted test load for the improved Agena with SAFSP responsible for conducting the overall system engineering, test, and actual flight. SAFSP would also be responsible for payload integration.

2. I certainly concur as to the desirability of such a flight, which now becomes possible with the schedule relaxation approved by Dr. Flick. I further consider the flight test to be a logical extension of the Agena development program. As such, the test flight must have as its primary objective the verification of the Agena performance parameters as identified in the development criteria. All other objectives must be secondary. Flight instrumentation to measure performance parameters, or in the event of failure, to provide sufficient diagnostic data to analyze and correct the failure is a vital part of the test program. I consider that the Agena Program Office must share responsibility for the overall conduct of the test flight and in that role have responsibility for the identification and installation of vehicle instrumentation as well as analysis of flight data. In the case of a flight anomaly, the need for the Agena Program Office to share responsibility for the test flight is particularly emphasized, since that office as the developing agency would be responsible for analyzing and resolving the problem as was the case with the Gemini Agena Target Vehicle first flight engine failure.

3. Therefore, I would propose that the flight test program be a joint SAMSO/SAFSP effort with (a) SP-6 responsible for identification of appropriate research and experimental payloads, (b) SP-7 responsible for payload integration, (c) Agena SPO responsible for flight test instrument-

DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10
tation and flight data analysis and, (c) SP-7 and the Agena SPO jointly responsible for the overall test flight program including systems engineering and peculiarization to any of the subsystems. I believe that by working together in this fashion we can satisfy our mission of system acquisition and you can satisfy your program objectives.

SIGNED

PAUL T. COOPER
Major General, USAF
Deputy Commander for Space
SUBJECT: Improved Agena Flight Test

to: SMG-2 (General Cooper)


2. I agree that the Agena Program Office will have responsibility for the identification and installation of vehicle instrumentation to verify the Agena performance parameters as identified in the development criteria. I will expect this installation to be completed prior to turning the Agena over to my responsible project office (SP-7) for project peculiarization and payload integration. I also agree that the Agena Program Office will be responsible for analyzing flight data with respect to the performance of the Agena.

3. I do not agree to joint or shared responsibility for the test flight; the flight must be prepared and conducted under unequivocal assignment of specific responsibilities. Except as clarified in paragraph 2, above, these responsibilities are assigned in my 23 June letter on the same subject. We will, of course, work closely with the Agena SPO in planning and carrying out this important flight, and will welcome their assistance in analyzing any Agena flight anomaly which may occur.

JOHN L. MARTIN, JR
Brigadier General, USAF
Director
New Production Management Concept for Agena

SAF&F (Gen Martin)

1. Based on the meeting which you had with Col Hamilton and the Agena Program people on 13 August 1967, it is my understanding that you still desire that customization of the Agena for your programs be performed by your office rather than the Agena Program Office. The Agena Program Office will be responsible for procurement and assembly of the Agena only to that point in the assembly line which would be common to all your programs. In order to readjust the Agena office functions as well as amend the contracts for procurement and assembly of components, we will need a determination from you as to the location of this point.

2. While there will normally be no requirement for system testing on our part, in order to verify that the portion of the equipment for which we are responsible meets the specifications, some testing will be required.

3. I am anxious to have this matter resolved by the preparation of a mutually agreeable plan. Our Agena program people are ready to meet with your people to work out the details of such a plan.

SIGNED

PAUL T. COOPER
Major General, USAF
Deputy Commander for Space
subject: Improved Agena

for: SMG-2 (General Cooper)

1. I have reviewed the current planning of the SAMSO Agena Program Office for implementation of Phase II of the Improved Agena effort, and am alarmed to find that the estimated cost of this development has risen from the original $31.586 million to $56.315 million. This increase of $22.729 million (42%) during the short Phase I may well place the entire effort in jeopardy.

2. A second area of concern is the time phasing of funding. Only $13 million has been approved for FY 1968, whereas nearly $16 million is required for development and another $1.4 million for facilities. Unless this funding can be increased, the development may not be completed by the current target date of March 1970, which is itself a slip from the originally contemplated April 1969 date.

3. In my view there are three general areas in which the cost increases are not justified:

   a. The first is an apparent tendency to over-engineer both the hardware improvements and the test philosophy, imposing an extremely conservative engineering approach, with introduction of many new components (for example: injector, pump and thrust chamber in the N₂O₄ engine) and an exhaustive test program (for example: a requirement to test burn the ISPS 12 times without refurbishment, versus the 2-burn normal PFRT case). In some cases, the improved Agena is being designed to requirements considerably in excess of those furnished by SAFESP in July (for example: 60-day wet pad capability versus our 30-day requirement and 90-day on-orbit capability versus our 20-30 day requirement with a 45-day objective).

   b. The second area is the generation of voluminous paper work, which is not absolutely necessary. While some of this paper may be beyond our control to eliminate, e.g. the C/S PCS requirement, others (full 375-1 documentation, formal test plans and operability plans, changing all drawings to MIL-D-1600 Form 2) seem to me to go far beyond the documentation really required, especially when this question is considered in full...
context of the actual manner of employment of these vehicles (substantial modification by the same contractor prior to use, consumption without entering the inventory in the normal sense, all launch preparations and services by the same contractor, etc.)

c. The third area is smaller in dollar impact at present, and involves the investigation of sub-systems other than propulsion and structures. The stated objective of the Improved Agena was to introduce the N₂O₅ engine with modification of plumbing and structures as required. The current plan contemplates study of electrical, guidance, TT&C sub-systems and optional kits. While I agree that study of these items may well be required later, they are not part of the original concept which we discussed with Dr. Flax and upon which his approval to proceed was based.

4. I believe that we can and must scrub the current concept down to eliminate the effort that is not absolutely essential. I have attached a budget breakdown which shows in three columns the original cost estimate, the current cost estimate and a preliminary SAFSP estimate of a more reasonable approach, based upon elimination of work not necessary to meet our requirements. I hope we will be able to reduce this further. My people are looking into this in some detail and will work with the Agena Program Office as required.

JOHN L. MARTIN, JR.
Brigadier General, USAF
Director

I Atch
Improved Agena Estimates

CC: SMV (Col Hamilton)
<table>
<thead>
<tr>
<th></th>
<th>Original</th>
<th>Present</th>
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**Bell Engine sub-contract**

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<td>Facilities</td>
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*On 28 August LMSC and the SAMSO Agena Program Office presented to SAFSP a description of the work planned for Phase II of the Improved Agena program, together with the cost estimates shown in the middle column above. The cost estimates in the right hand column reflect SAFSP preliminary estimates, made in the 2 days subsequent to the briefing, of these items of work which could be eliminated and/or reduced in scope because they were not necessary to meet SAFSP requirements.*
SMG-2

Improved Agena (U)

SMCS (General Martin)

1. Reference your letter of 30 Aug 67, same subject. The cost estimate of $56.3M which alarmed you is a Lockheed ROM, based on a scope and depth of effort over which there is significant disagreement and misinterpretation, and my Agena Program Office does not concur with that estimate. We have been authorized to proceed with the program outlined in Option B of SSYA letter to AFSC, dated 6 Jun 67, Subject: Improved Agena Schedules and Funding. The Phase II cost estimate for Option B was $48.2M, of which $3M was for SE/TD support from Aerospace Corporation. Your office was informed of this new estimate prior to the time that they briefed Dr Flax on your recommended course of action for Agena management. In the same time period, I briefed General Ferguson on the new estimate and told him that I was concerned that Dr Flax might have some second thoughts concerning the improved Agena in view of the large increase in program cost. I am disturbed that although you have had this information since last June you are expressing alarm at this late date.

2. The time phasing of our funds was spelled out in Option B and the program will be conducted within those constraints. We have been assured that there is no possibility of obtaining additional funds in FY 68 and we are also aware that fiscal 69 will be a problem. Our development program will be tailored to meet these fiscal limitations and at the same time maintain the first delivery date of March 1970.

3. I am alarmed by the degree of misleading and, in some cases, incorrect information which has apparently been given to you on the Improved Agena Program. I will address each of the points in your paragraph 3:

a. "Tendency to over-engineer" - It is our intent to do a sound engineering job which will result in reliability of the Agena E comparable to Agena D. We are not redesigning anything unless it is required. You mentioned three examples of components which you felt did not require redesign:
d. "Voluminous paper work" -

(1) C/S PCS: Lockheed is stubbornly resisting C/S PCS, but we seem to have no choice but to include it as a requirement. They have undoubtedly over-priced this item in an attempt to scare us off.

(2) "Full 375-1 documentation": This is not really true. We are levying only 12 of the 16 Exhibits of AFSCM 375-1. We are also being as liberal as possible in the application of 375-1. For example, only those specifications which are substantially affected by design changes will be rewritten, and only those drawings which are new or substantially changed will have to conform to MIL-D-1000.

(3) "Formal test plans and operability plans" - These plans are necessary to the conduct of the program. Making them "formal" is admittedly a thorn to the contractor because it gives the Agena Program Office better visibility and control, thereby assuring more complete design verification and giving a better yardstick for estimating program costs.

c. The current plan does not include study of other subsystems such as electrical, guidance, TT&C and optional kits other than the single start kits. However, it may be necessary to make certain changes to these subsystems in order to make them compatible with the new propulsion subsystem. The Agena Program Office has recommended to your people that a review of these subsystems be accomplished at a later date. Serious consideration is also being given to elimination of the single start kit since the slight weight savings does not appear to justify the development cost.

4. I am concerned about your statement that you are having your people look into this Income detail, and I hope that our differences with Lockheed will not be further aggravated by your unilateral discussions with them concerning the scope of the development program. I am confident that my Agena Program Office is capable of managing the Agena E Development Program, both technically and financially.

SIGNED
PAUL T. COOPER
Major General, USAF
Deputy Commander for Space
SMG-2 (General Cooper)

1. (U) Your letter of 22 August asked me to determine the point on the standard Agena assembly line at which the vehicle would be common to all my using projects.

2. (U) We have addressed this question in the following steps:

   a. First, we determined for each using project the optimum configuration for delivery from the standard line to SAFSP, with "optimum configuration" defined as:

      (1) One from which nothing must be removed during the peculiarization process, and

      (2) One on which the peculiarization process inflicts no potential reduction in reliability (as, for instance, installing components in an awkward sequence, requiring holes bored after assembly of some interfering components has already been completed, undue strain on harnesses already installed, etc.).

   b. Second, we compared all the optimum configurations and determined the point of commonality.

3. (U) As has been previously pointed out, the truly common point is very early on the assembly line, because of the quite different peculiarization processes. With I describes this common point. Four different optimum configurations are required; that is, my using projects should take delivery at separate places on the standard Agena line, with a considerable spread between the earliest point and the latest point.

4. (U) In quantitative terms, I have firm requirements as of 5 September for more Agenas not yet delivered by SAMSO. Of these:

   a. 18 are either already built and in storage prior to delivery to SAFSP, or are in late stages of manufacture. At this point, it is more cost-effective to deliver these 18 in the current standard configuration.
b. Delivery of the remaining [ ] be more cost-effective, from the overall Government standpoint, in four different configurations. Listed below is the order in which these vehicles would come off the standard Agena assembly line, together with the number of vehicles of each type remaining to be manufactured to meet present firm program requirements:

14 for Project 110 come off the line at the earliest point
10 for Project 846 come off the line at a later point
4 for Project 770 come off still later

5. (U) Attachments 2 through 6 are summaries for each of these four projects, (plus a fifth project to which all required Agenas have already been delivered) showing firm quantitative requirements for Agenas yet to be delivered, desired change-over points (in terms of specific standard Agenas by tail number) from current standard Agena configuration to the optimum configurations, and descriptions of the optimum configurations for each project. Allocations of specific standard Agenas to projects have historically been subject to change; however, the tail numbers shown will provide a base line for planning.

6. (S) I am concerned that the actions which have been taken and apparently are being taken by SAMS0 on this problem continue to be at cross purposes with the actions recommended by SAFSP as the sole user of the vehicle in question. As a background, the following is a summary of the substance of the principal recommendations I submitted in May, after review with you, to Dr. Flax and subsequently briefed to Dr. Flax on 6 June, and to Gen Ferguson, Gen Stewart and you on 7 June:

a. Dr. Flax obtain from DDR&E:

(1) Approval to change the standard Agena concept from one of producing completely assembled and tested vehicles to one of producing components and sub-assemblies.

(2) Delegation to Dr. Flax of approval authority for production of the components and sub-assemblies.

b. After DDR&E approval is obtained, Dr. Flax direct:

[Signature]
(1) Immediate action to modify standard Agena production contracts to:

(a) Stop manufacture of components not used by SAFSP

(b) Stop (complete) assembly and system test of standard Agenas.

(c) Remove 375-series configuration control procedures and substitute therefor an SAFSP configuration management plan.

(2) Immediate action to modify the SAMSO Agena logistics contract to vest in SAFSP the sole approval authority over stores issue, determination of component flight worthiness and disposition of items not flight worthy.

(3) Planning and execution on an orderly basis of the remaining changes required in SAMSO or AFCMD responsibilities, organizations and contracts to implement above.

(4) Continue development of the Bell 8533 engine (but restudy the time phasing in view of SAFSP budget recommendation that it be incorporated in Project 110 vehicle #37 in Feb 1971 rather than in #23 in Apr 1969), the Bell Type IIA velocity meter, the LMSG electronic event timer and the Quantic horizon sensor.

(5) Review other proposed Agena developments with SAFSP to determine requirements before proceeding with development work.

(6) Planning and execution on an orderly basis of the remaining changes required in SAFSP responsibilities, organization and contracts to implement above.

7. It was my understanding at the time of making the above recommendations to Dr. Flex and Gen Ferguson that Dr. Flax would await Gen Ferguson's comments before taking action, and that, he, in turn, would await comments from you. I am not aware of any comments to Gen Ferguson on these recommendations (except for Gen Stewart's, made in his 14 June letter), and as far as I can tell, the action is still...
being held up in anticipation of your comments. The delay in getting approval to proceed on the recommended basis has left no alternative but for SAFSP to proceed with several contractual actions on the present standard Agema basis instead of on the recommended basis, which will unavoidably result in some lost motion in implementing any change. I have also necessarily deferred action on the CFE engine question raised in your letter of 2 August, since the feasibility of introducing the CFE/incentive contract approach in lieu of the present engine procurement arrangement is directly related to when and if we can get approval for the changes I have recommended and how many vehicles are left to lay at that point. In addition, I cannot see that the delay that has occurred has produced any useful result; the problem and the solution are the same as when the SAFSP recommendations were submitted in May, nothing substantive has changed at all except to impair the effectiveness of initiation of the recommended change. As we pointed out in the May recommendations and discussions and June presentations, the details of implementation will necessarily require several months after approval to proceed. These details will not affect the nature of the solution, and continued delay of the basic decision in attempts to work them all out in advance can only result in more vehicles being built under the present arrangements, with attendant waste of manpower and money.

8. (U) In summary, I am anxious to get approval to proceed as soon as possible and solicit your support. I hope that the data forwarded herewith will enable you to resolve any questions which remain. If not, I am ready for any further discussions which you may desire.

9. (U) This letter is classified SECRET because it reveals level of effort and projected plans on sensitive programs.

JOHN L. MARTIN, JR
Brigadier General, USAF
Director

6 Atch
1. Common Config
2. Proj 110
3. Proj 846
4. Proj 770
5.
6.

cc to: SMV (Col Hamilton)
MEMORANDUM FOR GENERAL O'NEILL

SUBJECT: New Production Management Concept for Agona (U)

1. The essence of the 15 September SAFSP letter to FMS in contained herein except that John Martin is now recommending a complete transfer of the Agona responsibility to SP at a certain date.

2. My memo to John Martin (attached) dated 22 August, in effect, capitulates to his recommendations and I do not understand why his 8 September letter still deplores the delay because we are ready to proceed. A misunderstanding obviously exists as to the requirement for us to state our views with Ferguson. I called Russ Berg and he, too, is of the opinion that FMS is waiting on Ferguson and he prepared a note for FMS to send, asking for the Ferguson comments.

3. I called Gen Ferguson and told him that "under the circumstances I think the best course of action is to accept the SAFSP recommendations including the new recommendation to transfer all of the Agona work at a certain date." I offered a briefing on the details and he said that he would call FMS if a briefing is necessary, he would advise.

PAUL T. COOPER
Major General, USAF
Deputy Commander for Space

2 Attach
1. SP-1 ltr to SMG-2, 8 Sep 67 (SECRET - SP-1-12)
2. SMV ltr to SAFSP, 22 Aug 67 (UAG)

Copy to SMV (Col Hamilton)

DOWNGRADED AT 3 YEAR INTERVAL
DECLASSIFIED AFTER 12 YEARS
DOD DIR 5200.10

SMC-67-23

CONFIDENTIAL
MEMO FOR THE RECORD

19 Sep 67

Subject: Custom Agena Briefing to Gen Martin

1. On 18 Aug 67 Gen Martin and his staff were briefed by SMWA on the Custom Agena concept. SMWA personnel attending included Lt Col Poor, Lt Col Medland, Maj Crawford, Maj Bell and Maj Bradford. Col Hamilton (GSM) was also present. Gen Martin was briefed as outlined in the attached charts. Purpose of the briefing was to point out to him how the Custom Agena concept would improve responsiveness to the Using Programs and would provide them with a vehicle configuration that satisfied their requirements. It was pointed out that customizing involved three areas; namely, Production Management, Configuration Management and Contract Management. Pertinent facts pointed out in each of these areas included the following:

Production Management

Manufacturing and testing of a Custom Agena by SAMS would involve:

a. Assembly of standard Agena and program peculiar components

b. CFE storage of the vehicle

c. Validation testing after CFE storage which would not include the current Task V System Test, and

d. Transfer of the Using Program for program additions and final systems test prior to joint SAMS/SP DD-250 sign off.

The detailed configuration by component and subsystems and the implementation schedule identified for each program.

Configuration Management

The principal point discussed under this topic was our plan to establish a Requirements Control Board located at LMSC and composed of members from SAMS, SAFSP, AFPRO and LMSC. It was pointed out that we felt this was the key to making the Custom Agena concept work.

Contract Management

Implementation of the Custom Agena Plan would involve SAMS production contracts, storage contract and the current development or engineering support contract. It would further involve close coordination with SP Procurement but presented no insurmountable problems as far as procurement is concerned.
2. It was pointed out to Gen. Martin that we considered the Saturn Agena concept to offer the best solution concerning what to build to satisfy the needs of SAMSO programs. In summary, we pointed out the conclusions outlined in the attached charts and recommended that action be taken to implement the plan.

3. Gen. Martin’s reaction to the briefing was as follows:

a. In summary, he rejected the plan and felt that SAMSO was not directing their attention to his recommendations made to Dr. Flex in June. He further indicated that he did not think we had even considered his recommendations. He stated that in order to clear out any misinterpretation of his original recommendations he wished to reiterate for everyone’s benefit in the briefing, what he had recommended, i.e., eliminate assembly and tests by SAMSO which are either redundant or invalidated by SP assembly and systems test after they receive vehicles from Standard Agena.

b. Additionally, he made the following specific comments concerning Agena Management:

(1) SAMSO should build Agena only up to the point of commonality for all SP programs. He did not envision this as including program peculiar hardware.

(2) He considered all SAMSO testing unnecessary. He pointed out that the SP system test is all that is required.

(3) He stated his opposition to the System Requirements Board in that he felt that it would unduly complicate management of the program.

(4) He made a considerable issue over the question why we felt we could build a system including program peculiar components better than SP. It was pointed out to him that we were recommending the configurations as briefed in that we felt this best satisfied his requirements.

4. In discussing the management aspect of the overall program, it was obvious that with both SATSP and SAMSO having responsibility for the procurement, fabrication and testing of the Agena spacecraft, the management task becomes somewhat complex. The task is further complicated by the security criteria placed upon the program. During the discussion it was suggested by Col. Hamilton that because of the above situation, consideration should be given to the fact that it might be in the best interest of the Air Force if SATSP were to assume the responsibility for the procurement, fabrication and testing of the Agena Vehicle. Gen. Martin commented that while this was not his original recommendation, he would not be opposed to such a plan.
5. In summary, there were no conclusions reached as a result of the briefing other than it was quite evident that anything different from Gen Martin's original recommendations was unsatisfactory to him.
18 Aug 67 To Gen Martin
by Lt Col Poor

CUSTOM AGENA
CUSTOM AGENDA

PURPOSE OF CUSTOMIZING

1. RESPONSIVENESS TO THE USING PROGRAMS
2. PROVIDING A SYSTEM TO THE USER IN THE CONFIGURATION HE WANTS
<table>
<thead>
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<th>COMMAND ELEKTRONIK</th>
<th>PROGRESS CONTROL PANEL</th>
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<td>CMD, INTEGR. PACK</td>
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<td>SEQUENCE DIG.</td>
<td>PASSENGER PANEL</td>
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### Custom Agenda

#### Summary of Major Hardware Changes

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CUSTOM AGENDA

VEHICLE VERIFICATION TEST

PERFORMED

TASK I     VEHICLE HOOK-UP
TASK II    "POWER-ON" CHECK
TASK III   BACKUP EVENT VERIFICATION
TASK IV    TELEMETRY VERIFICATION
TASK V     GUIDANCE & CONTROL VERIFICATION
TASK VII   CONTAMINATION CHECK & DISCONNECT

ELIMINATED

TASK VI    SIMULATED FLIGHT
CUSTOM AGENDA

PRODUCTION IMPLEMENTATION SCHEDULE

1967  1968  1969

Contract - 939

10  646 vehicles

July 68
1st Prod 646 Custom Vehicles

Contract - 0077

15  110 vehicles
1  770
4  vehicles not yet assigned

15 Oct Co-Ahead

Sep 69
2st Prod 110 Custom Vehicles

Approved for Release: 2017/08/28 C05097006
### DIVERGENT PROGRAM MANAGEMENT

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<td>Level of Contract Control</td>
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<td>Liberal</td>
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<tr>
<td>Specification Program</td>
<td>Neither Agency Has Total Management</td>
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**SafeSp**
- System Concept: Non-Operational
- Configuration Management: Informal
- Level of Contract Control: Vehicle Only
- DWG, Compl. Interpretation by Air Force: Liberal
- Specification Program: Neither Agency Has Total Management

**Samso**
- System Concept: Operational
- Configuration Management: Formal
- Level of Contract Control: Vehicle, Black Box, PCE Part & Process
- DWG, Compl. Interpretation by Air Force: Strict
- Specification Program: Neither Agency Has Total Management
CUSTOM AGENDA

DESIGN CHANGE FLOW CHART

LMSC PROG OFFICE

GO AHEAD

APPROVE ISSUE CCB DIRECTIVE

SP/SPO PCO ISSUE CCN

LMSC )

REQMTS

CONTROL BOARD

DISAPPROVE NOTIFY

ORIGINATING OFFICE

FURTHER STUDY

ORIGINATING OFFICE

RESUBMIT

RESPONSIBLE MGMT OFFICE

SAFSP )

REQMTS

SAMSO )

AFPRO )
CUSTOM AGENDA

REQUIREMENTS CONTROL BOARD

Organizations

Chairman

Location

Permanent members full time in-plant at Sunnyvale, Calif.
Other members at call of chairman or permanent board member

Approved for Release: 2017/08/28 C05097006
CUSTOM AGENDA

SPO/SP ACTION REQUIRED TO IMPLEMENT

○ DEVELOP COMMON CONFIGURATION MANAGEMENT PLAN AND REQUIREMENTS DOCUMENT FOR CONTRACT IMPLEMENTATION

○ DEVELOP DETAILED OPERATING PROCEDURES AND AUTHORITY FOR REQUIREMENTS CONTROL BOARD

○ FORMALLY ESTABLISH REQUIREMENTS CONTROL BOARD
PROCUREMENT IMPLEMENTATION

O CHANGE HARDWARE CONTRACTS (2)

- 939 CONTRACT REQUIRES REVISED WORK STATEMENT BASED ON VEHICLE EFFECTIVITY

1. NEW SPECIFICATIONS
2. NEW TEST PROCEDURES
3. NEW DELIVERY SCHEDULE
4. CFE STORAGE REQUIREMENT

- 0077 LETTER CONTRACT REQUIRES REVISED WORK STATEMENT FOR ALL VEHICLES

- BOTH CONTRACTS WOULD REQUIRE NEW PAYMENT SCHEDULE FOR LMSC

1. COST SEGREGATION BY VEHICLE
2. PARTIAL PAYMENT AFTER SPO VEHICLE VERIFICATION TEST
3. FINAL PAYMENT AFTER FINAL SP SYSTEM TEST

- BOTH CONTRACTS MUST HAVE ARRANGEMENTS TO

1. TAKE CARE OF "AFTER TRANSFER" FAILURES
2. PERMIT FINAL PAYMENT BASED ON SP SYSTEMS TEST & JOINT SP/SPO DD-250
3. IMPLEMENT CONFIGURATION MANAGEMENT CHANGES
CUSTOM AGENDA

PROCUREMENT IMPLEMENTATION

O CHANGE STORAGE CONTRACTS
  - PRESENT CONTRACT CALLS FOR DD-250 THEN GFP STORAGE

O PLAN FOR QUICK REACTION DEVELOPMENT CONTRACT COVERAGE
  - PRESENT METHOD CAUSES USE OF THREE CONTRACTS, I. E., PROGRAM PLAN, DESIGN DEVELOPMENT, PRODUCTION CHANGE
  - IMMEDIATE PLAN WOULD USE TWO CONTRACTS, I. E., SINGLE DEVELOPMENT AND PRODUCTION
  - LONG RANGE PLAN WOULD USE ONE DEVELOPMENT & PRODUCTION CONTRACT

O ESTABLISH COORDINATION WITH SP PROCUREMENT
  - ELIMINATE PROCUREMENT DUPLICATION
  - PROMOTE BEST POSSIBLE CONTRACT MIX
  - INSURE ALL REQUIREMENTS CONTRACTUALLY COVERED
CUSTOM AGEMA

IMPLEMENTATION COST

(LMSC ROM)

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CUSTOM AGENA

CONCLUSIONS

- CUSTOM CONCEPT CAN BE IMPLEMENTED
- ELIMINATES TEARDOWN AND BUILD-UP OF VEHICLE
- IMPROVES RESPONSIVENESS TO PROGRAM REQUIREMENT AND REQUIREMENT CHANGES
- RETAINS CONSIDERATION FOR STANDARDIZATION
- PERMITS DELIVERY OF A REALISTICALLY DOCUMENTED USEABLE VEHICLE
- SHOULD DECREASE TOTAL PROCUREMENT COST
CUSTOM AGENDA

RECOMMENDATION

O ACTION BE TAKEN BY SAMSO/SAFSP TO IMPLEMENT PLAN
DEPARTMENT OF THE AIR FORCE
DIRECTORATE OF SPECIAL PROJECTS (OSAF)
AF UNIT POST OFFICE, LOS ANGELES, CALIFORNIA 90045

REPLY TO: SP-2
20 Sep 1967

SUBJECT: Procurement of Agena for SAFSP (U)

TO: SMG-2 (Gen Cooper)

3. (U) Gen Martin's 15 Sep letter to Dr. Flax has been modified to account for this new requirement. The recommendations are unchanged, i.e. terminate the -0077 contract and SAFSP will contract directly with LMSC for the total vehicles for both project 110 and

4. (U) This letter is classified SECRET because it reveals scope of, and future planning for, sensitive programs.

G. T. SMITH, Colonel, USAF
Vice Director

DOWNGRADED AT 12 YEAR INTERVAL; NOT AUTOMATICALLY DECLASSIFIED. DOD DIR 5200.10

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SEP-2-7

Approved for Release: 2017/08/28 C05097006
Manpower Packages for the Titan III SFO and the Agena Program Office

SCO8-27 (Col F. C. Norris, Jr)

1. Since June 1967, the workload of the Titan III SFO has been dramatically increased. This is attributed to approvals being obtained for follow-on procurements for the Titan III A, B, and C as well as the Titan III D development program. Also, the requirement to develop an advanced model (Agena E) of the Agena upper stage booster has increased the workload of the Agena Program Office. Further, recent reductions in the Aerospace Corporation GSE/TD support has in turn generated a reduction in the MRO levels for both the Titan III SFO and the Agena Program Office.

2. With regard to the Titan III SFO manpower package, it is important to be cognizant of Maj Gen O’Neill’s recent agreement to transfer 20 personnel and primary responsibility for the Titan III H to the NRO SFO. If Maj Gen O’Neill is not successful in increasing his authorized strength to cover this function, the Titan SFO may be required to transfer authorizations to the extent he is unsuccessful. This would, of course, change the composition of the current manpower package realizing that five additional authorizations are required rather than just the nine identified.

3. As you know, the serious deficiencies in the current manpower authorizations for the Titan III SFO are of particular concern to me. However, it should be recognized that in both organizations the workload has already developed and it is imperative that the attached manpower packages be reviewed and approved as soon as possible.

SIGNED

PAUL T. COOPER
Major General, USAF
Deputy Commander for Space

2 Aotch
1. Ngr Flg Titan III
2. Ngr Flg Agena Prog
DOW GRADED AT 3 YEAR INTERVALS.
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.11

PAGE 2 RBU DATTAGLSECRET

ASSIST YOU IN COORDINATING IMPLEMENTATION ACTIONS,
THE DIRECTOR, SAFSP WILL CONTACT THE COMMANDER,
ASSIST TO EFFECT APPROPRIATE ARRANGEMENTS FOR THE
MASTER OF RESPONSIBILITY AND TO TAKE ADDITIONAL
ACTIONS AS FOLLOWS: (1) TO PROCEED IN AN ORGUE
HANDTO CLEAR THE AGSNA PROGRAM AND PROV
'ON CONFORMS TO THOSE OUTLINED IN SAFSP LETTERS
OF MAY 23, 1967 AND SEPTEMBER 13, 1967,
(2) TO CHANGE THE PROCUREMENT OF
AGSNA LAUNCH SERVICES, HULL GUIDANCE, AND RELATED
SUPPORT WHICH ARE NOW PROCURED BY THE AGSNA SPO TO
A CONCEPT WHEREIN SAFSP PROCURES THESE SERVICES,
EQUIPMENT AND SUPPORT FOR SAFSP USES, AND ASSISTS
NASA OR OTHER USERS TO PROCURE EITHER DIRECTLY OR
THROUGH SAFSP THE AGSNA VEHICLES AND THE LAUNCH
SERVICES, EQUIPMENT AND SUPPORT WHICH THE OTHER
USERS REQUIRE. (3) TO ASSUME RESPONSIBILITY IN SAFSP
FOR THE DEVELOPMENT OF THE IMPROVED AGSNA WITH
THE 5509 ENGINE AND ISPS AS OF THE DATE OF TRANSFER
OF THE AGSNA SPO, REVIEWS OF THIS PROJECT

PAGE 3 RBU DATTAGLSECRET

CURRENTLY SCHEDULED IN THE SAFSP-ARGC-12 USAF
CHANNEL, ARE BEING CANCELLED AND WILL BE REPLACED
BY A SUITABLE REVIEW SCHEDULE IN THE SAFSP-OSAP
CHANNEL. (4) TO PLAN AND IMPLEMENT A REDISTRIBUTION
OF THE HANFORD SPACES CURRENTLY AUTHORIZED IN THE
AGSNA SPO BY JUNE 30, 1968, EXCESS SPACES ARE TO BE
RETURNED TO ARGC AND EXCESS PERSONNEL ARE TO BE
RELEASED FROM DETAIL TO SAFSP AND FROM THE SAFSP
CHANNEL LIST. (5) TO FULFILL THE

292-04

No Action

James D. Mra
SOD
Agena D Flight Summary

(Lt Col Wheeler)

1. Attached for your retention is a summary of all Agena D flights from 1962 through the present date. This summary is a condensation of the more complete data provided by IESC in the "Agena Flight Summary Report" submitted semiannually. I recommend that maintain the summary on a current basis. In the past, Col Hamilton has been a recipient of our summary and it may be that he is still interested in getting a copy.

2. For the purpose of this summary, the following definitions and explanations apply.

   a. The first column shows the cumulative totals of Agena D flights, successes, failures, no trials and percentage of successes. Success is defined as meeting primary mission objectives in Agena ascent and orbit injection. No trial is defined as a first stage booster anomaly which prevents normal Agena performance. Percentage of success is determined by the equation

   \[
   \text{Successes} \times 100
   \]

   Total flights-no trials

   b. The second column shows the cumulative total of all Agena flights. There were 93 flights of Agena A's and Agena B's. Since these vehicles have now all been flown, the total Agena flights will remain at 93 greater than the Agena D total. The summary includes a breakout of these flights for information.

   c. The third column states the Agena D (AD) sequence number and the contract on which it was produced. It should be noted that in the transition from SS-01A to SS-01B, AD numbers 61-1, 61-2, 61-3, 61-4, 61-5 and 61-6 were assigned to the last SS-01A's. All vehicles from AD-62 are SS-01B's. Thus there will be 6 more vehicles produced than indicated by the AD numbers.

   d. The fourth column lists the program which flew the Agena and the vehicle designation assigned by that program.

   e. The remarks column states reasons for failures and no trial and also indicates major equipment problems, even though the flight is judged a success. It also includes comments on orbital performance.

3. This letter, with attachment removed, is unclassified. The
Attachment is classified SECRET, SP 3, because it reveals launch dates by program, success ratio by program and overall Agana performance capabilities.

1 Attach
Agana Flight Summary Report (3) (2 cy)

cy to: w/attach (?)
### AGENA D FLIGHT SUMMARY

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<td>846/1637</td>
<td>1 Aug 67</td>
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<td>NT</td>
<td>%</td>
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1. **Agena D Flights**

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<td><strong>Total Agena D Flights</strong></td>
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2. In addition to Agena D there have been 93 flights of Agena A and Agena B with the following results:

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<table>
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<tr>
<th>Agena B Succeeses</th>
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3. **Agena D Reliability by Production Contract**

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<th>Launched</th>
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<th>F</th>
<th>MT</th>
<th>F</th>
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<td><strong>219</strong></td>
<td><strong>164</strong></td>
<td><strong>148</strong></td>
<td>10</td>
<td>6</td>
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<td>93.7</td>
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b. Agena B Reliability by year

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<td>164</td>
<td>148</td>
<td>10</td>
<td>6</td>
<td>93.7</td>
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</table>
Final Agena Historical Report, 1 July - 19 October 1967

SME

1. On 19 October 1967 the Agena Program Office, SMVA, was re-assigned from the Space and Missile Systems Organization (AFSC) to the Office of the Secretary of the Air Force, Directorate of Special Projects. Several factors influenced the final decision which led to this organizational change but the following was primary:

   a. The original requirement for a "Standard" Agena vehicle came about as a result of the need for the vehicle by many diverse programs - both Air Force and NASA. Central procurement and support engineering by a Standard Agena office was determined to be the most economical method of meeting each program's needs. Each using program, upon receipt of their "Standard" Agena D, added program peculiar equipment and modified the vehicle as required.

   b. A review of known, firm using program requirements during first quarter FY 69 indicated an almost exclusive use of the Agena D by SAFSP; therefore the original justification for a "standard" vehicle (i.e., the diverse requirement by many programs) was no longer valid.

2. At the time of the reorganization, 67 people were assigned to SMVA and Colonel Norman J. Keefer was Agena System Program Director. The organization was made up of five divisions - Engineering with 19 officers and 4 civilians, Configuration Management with 5 officers and 3 civilians, Program Control with 3 officers and 4 civilians, Operations with 9 officers and 2 civilians, and Procurement with 1 officer and 13 civilians.

3. The 213th and final Agena D vehicle will be delivered in July 1968 with support engineering, logistics, and launch service activities extending past that date. Dollar value of the total (30 Jun 61 through 30 Jul 68) Standard Agena D program will be $463.20 million, which includes $157.46 million for launch services.

JEAN G. GOPPERT, Colonel, USAF
Deputy Director for Agena
<table>
<thead>
<tr>
<th>Contr. No.</th>
<th>Contractor</th>
<th>Type</th>
<th>Description</th>
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* Contract Complete - has been sent to records storage

CONFIDENTIAL

Approved for Release: 2017/08/28 C05097006
## AGENA VEHICLE

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* Contract Complete - has been sent to records storage

- 2 -
### Funding History

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**Confidential**

Downgraded at 3 year intervals. Declassified after 12 years. ODNI DOD DIR 5200.10

Approved for Release: 2017/08/28 C05097006
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*Contract Complete - has been sent to records storage.*
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* CONTRACT RESPONSIBILITY TRANSFERRED TO AGENA D LAST HALF OF FY-62. AGENA D RECEIVED 7.640M OF $10.610M SHOWN.

DOWNGRADED AT 3 YEAR INTERVALS; DECLASSIFIED AFTER 12 YEARS.
COD DIR 520.10
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*Obligated funds equal funds received on these contracts
AGENA PROGRAM

DOCUMENTATION - AUTHORITY - SIGNIFICANT CHANGES

DOCUMENTATION:

PROGRAM 662A ABBREVIATED PROGRAM PLAN, DECEMBER 1961

PROGRAM 648A ABRIDGED PACKAGE, APRIL 1962

AGENA D PROGRAM MANAGEMENT CONCEPT, AFSC, 30 MARCH 1965

AGENA D, ADVANCED DEVELOPMENT PLAN, JUNE 1966,
CHEMICAL ROCKET, SPACE MANEUVERING (N₂O₄/AZ250 ENGINE & ISPS)

AUTHORITY:

30 NOV 61 - EQ USAF MESSAGE (AFSDC-F-82530) AUTHORIZING 12 R&D VEHICLES,
PROCUREMENT PACKAGE, PRODUCTION CAPABILITY 5 VEH/NO.

5 JAN 62 - EQ USAF MESSAGE (AFSSY-EQ-90915) AUTHORIZING 39 PRODUCTION
VEHICLES AT A 4 VEH/NO. RATE.

18 JUL 62 - EQ USAF MESSAGE (AFSSY-66176) AUTHORIZING 22 ADDITIONAL
PRODUCTION VEHICLES AT 4 VEH/NO.
AUTORITY CONT'D:

20 OCT 62 - EQ USAF MESSAGE (APSSY-114-62-117) AUTHORIZING ADDITIONAL 24 PRODUCTION VEHICLES AT 4 VEH/MO.

9 JAN 63 - EQ AFSC MESSAGE (MSFA-9-1-12) CHANGING THE PRODUCTION RATE TO 3 VEH/MO. EFFECTIVE 12 JUL 63.

21 DEC 63 - EQ USAF MESSAGE (AFRDDG 80266) AUTHORIZING 29 PRODUCTION VEHICLES AT A 3 VEH/MO RATE

22 APR 64 - EQ USAF MESSAGE (AFRDD 71625) AUTHORIZING 22 PRODUCTION VEHICLES AT A 4 VEH/MO RATE

10 DEC 64 - EQ USAF MESSAGE (AFRPA 96778) AUTHORIZING 35 PRODUCTION VEHICLES AT A 4 VEH/MO RATE

1 NOV 65 - DDR&G MEMO AUTHORIZING 36 PRODUCTION VEHICLES AT A 2½ VEH/MO RATE

4 NOV 66 - EQ USAF MESSAGE (AFRPA 84122) AUTHORIZING 25 PRODUCTION VEHICLES AT A 2 VEH/MO RATE
**AUTHORITY CONT'D:**

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**TOTAL:** 244

*24 deleted*
**SIGNIFICANT CHANGES**

**NOV 62**
- FACT COMPLETED FOR S-01A AGENA D NO. 19

**MAR 63**
- INITIATION OF PRODUCTION TEST PROGRAM (PREP)

**MAY 63 - APR 64**
- DEVELOPMENT AND INCORPORATION OF 8247 MULTI START ENGINE, AGENA D NO. 71

**JAN 64**
- INCORPORATION OF ADDITIONAL BASIC CAPABILITIES (ABC PROGRAM) IN PRODUCTION VEHICLE - AGENA D NO. 62

**MAR 64**
- FACT COMPLETED FOR S-01B AGENA D NO. 63

**MAR 65**
- DIRECT BUY OF 8096 ENGINES FROM BELL AEROSYSTEMS AF04(695)-766

**FEB 66**
- DIRECT BUY OF HORIZON SENSORS FROM BARNES ENGINEERING AF04(695)-1008

**MAR 66**
- DIRECT BUY OF VELOCITY METERS FROM BELL AEROSYSTEMS AF04(695)-1044
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