1
00:00:02,270 --> 00:00:12,970
[Music]

2
00:00:18,980 --> 00:00:16,129
the uprated Saturn one quarterly film

3
00:00:21,880 --> 00:00:18,990
report number 29 covers progress during

4
00:00:31,009 --> 00:00:21,890
the months of July August and September

5
00:00:33,680 --> 00:00:31,019
1966 highlighting this report period

6
00:00:37,280 --> 00:00:33,690
were the successful flights of a s 2 O 3

7
00:00:42,680 --> 00:00:37,290
and a s 202 launched at Kennedy Space

8
00:00:44,869 --> 00:00:42,690
Center the launch vehicle for a s 203

9
00:00:47,959 --> 00:00:44,879
was developed and built by the joint

10
00:00:53,720 --> 00:00:47,969
efforts of Chrysler Douglas and IBM

11
00:00:57,200 --> 00:00:53,730
under Marshall management a s 203 flight

12
00:00:59,860 --> 00:00:57,210
objectives were to evaluate the second

13
00:01:02,660 --> 00:00:59,870

stage liquid hydrogen continuous venting

14
00:01:06,410 --> 00:01:02,670
engine chill down and recirculation

15
00:01:08,660 --> 00:01:06,420
systems didn't tank fluid dynamics and

16
00:01:12,080 --> 00:01:08,670
heat transfer into liquid through the

17
00:01:14,530 --> 00:01:12,090
tank wall evaluates second stage and

18
00:01:16,969 --> 00:01:14,540
instrument unit check out in orbit

19
00:01:19,100 --> 00:01:16,979
demonstrate orbital operation of the

20
00:01:22,160 --> 00:01:19,110
launch vehicle attitude control and

21
00:01:24,200 --> 00:01:22,170
thermal control systems and ability of

22
00:01:27,200 --> 00:01:24,210
the guidance system to insert a payload

23
00:01:32,240 --> 00:01:27,210
into orbit demonstrate operational

24
00:01:34,219 --> 00:01:32,250
structure of the launch vehicle a s 2 o

25
00:01:37,039 --> 00:01:34,229
3 was programmed to be launched from

26
00:01:40,429 --> 00:01:37,049
Cape Kennedy on a flight azimuth of 72

27
00:01:42,770 --> 00:01:40,439
degrees the second stage instrument unit

28
00:01:46,280 --> 00:01:42,780
and nose cone were to be placed into a

29
00:01:49,870 --> 00:01:46,290
circular orbit of 100 nautical miles the

30
00:01:52,520 --> 00:01:49,880
flight was planned for three orbits plus

31
00:01:55,130 --> 00:01:52,530
the entire flight was to be monitored by

32
00:01:57,889 --> 00:01:55,140
television cameras mounted in the liquid

33
00:02:03,260 --> 00:01:57,899
hydrogen tank designed to relay pictures

34
00:02:05,660 --> 00:02:03,270
of lh2 behavior in flight the launch was

35
00:02:07,429 --> 00:02:05,670
temporarily delayed by a malfunction of

36
00:02:09,490 --> 00:02:07,439
one of the two cameras in the

37
00:02:11,960 --> 00:02:09,500
all-important television system a

38
00:02:13,730 --> 00:02:11,970

decision was made to launch the vehicle

39
00:02:25,820 --> 00:02:13,740
with only one camera

40
00:02:32,000 --> 00:02:25,830
operational liftoff occurred on July 5th

41
00:02:34,880 --> 00:02:32,010
at 9:53 a.m. Eastern Standard Time first

42
00:02:37,820 --> 00:02:34,890
stage cutoff occurred 2 minutes and 23

43
00:02:41,390 --> 00:02:37,830
seconds after ignition followed by stage

44
00:02:43,880 --> 00:02:41,400
separation second stage cutoff occurred

45
00:02:46,850 --> 00:02:43,890
at t-plus 433 seconds

46
00:02:49,720 --> 00:02:46,860
placing the stage instrument unit and

47
00:02:54,470 --> 00:02:49,730
nose cone in a near circular orbit of

48
00:02:57,050 --> 00:02:54,480
100 nautical miles during second stage

49
00:02:59,570 --> 00:02:57,060
burn television coverage shows fuel

50
00:03:04,550 --> 00:02:59,580
level decreasing in the liquid hydrogen

51
00:03:07,040 --> 00:03:04,560
tank following second stage cut off the

52
00:03:09,200 --> 00:03:07,050
bulk of the fuel remains settled except

53
00:03:11,810 --> 00:03:09,210
for a sheet containing about 50 pounds

54
00:03:15,230 --> 00:03:11,820
which splashed up to the forward end of

55
00:03:17,230 --> 00:03:15,240
the tank then immediately resettled

56
00:03:20,720 --> 00:03:17,240
because of the small acceleration

57
00:03:25,070 --> 00:03:20,730
continuously imparted to the stage by

58
00:03:28,280 --> 00:03:25,080
the venting systems fog formed as a

59
00:03:32,180 --> 00:03:28,290
result of boiling however no liquid was

60
00:03:34,640 --> 00:03:32,190
lost through venting as part of the

61
00:03:36,770 --> 00:03:34,650
simulated restart hydrogen was pumped

62
00:03:41,110 --> 00:03:36,780
engine demonstrating restart

63
00:03:44,150 --> 00:03:41,120

capabilities vital to future flights all

64
00:03:46,100 --> 00:03:44,160
objectives of the flight were met the

65
00:03:47,480 --> 00:03:46,110
liquid hydrogen experiment proved that

66
00:03:50,510 --> 00:03:47,490
this fuel could be handled

67
00:03:52,480 --> 00:03:50,520
satisfactorily for stage engine restart

68
00:03:54,890 --> 00:03:52,490
in a weightless environment a

69
00:04:02,570 --> 00:03:54,900
requirement for future Apollo Saturn

70
00:04:07,460 --> 00:04:04,570
early on the morning of August 25th

71
00:04:09,860 --> 00:04:07,470
final phases of terminal countdown began

72
00:04:14,720 --> 00:04:09,870
in preparation for the suborbital flight

73
00:04:17,360 --> 00:04:14,730
of a s 202 the launch vehicle for a s

74
00:04:20,750 --> 00:04:17,370
202 was also developed by Chrysler

75
00:04:24,070 --> 00:04:20,760
Douglas and IBM under the management of

76
00:04:27,370 --> 00:04:24,080
Marshall flight objectives were to

77
00:04:29,720 --> 00:04:27,380
demonstrate the structural integrity and

78
00:04:33,410 --> 00:04:29,730
compatibility of the launch vehicle and

79
00:04:35,690 --> 00:04:33,420
spacecraft and confirm launch loads to

80
00:04:38,180 --> 00:04:35,700
verify operation of the launch vehicles

81
00:04:41,660 --> 00:04:38,190
propulsion guidance and control and

82
00:04:44,120 --> 00:04:41,670
electrical systems evaluate the vehicles

83
00:04:46,130 --> 00:04:44,130
emergency detection system which was

84
00:04:49,880 --> 00:04:46,140
flown in closed loop for the first time

85
00:04:52,400 --> 00:04:49,890
and also verify the spacecraft systems

86
00:04:57,020 --> 00:04:52,410
and command module heat shield at high

87
00:05:00,230 --> 00:04:57,030
heat load during reentry a flight plan

88
00:05:02,600 --> 00:05:00,240

called for a s 202 to be launched from

89
00:05:05,450 --> 00:05:02,610
the Cape on a flight azimuth of 105

90
00:05:07,790 --> 00:05:05,460
degrees the spacecraft was to reach his

91
00:05:10,760 --> 00:05:07,800
Apogee over the east coast of South

92
00:05:13,330 --> 00:05:10,770
Africa the command module was to

93
00:05:17,060 --> 00:05:13,340
re-enter over the Pacific Ocean about

94
00:05:20,270 --> 00:05:17,070
235 statute miles east-southeast of Wake

95
00:05:26,000 --> 00:05:20,280
Island with a total planned flight time

96
00:05:27,770 --> 00:05:26,010
of one hour and 33 minutes after a 45

97
00:05:29,840 --> 00:05:27,780
minute delay due to a programming

98
00:05:33,920 --> 00:05:29,850
problem on a downrange tracking ship

99
00:05:38,000 --> 00:05:33,930
Apollo Saturn 202 was launched at 12:15

100
00:05:40,190 --> 00:05:38,010
p.m. Eastern Standard Time ten seconds

101
00:05:47,779 --> 00:05:40,200
after liftoff the vehicle began its

102
00:05:53,279 --> 00:05:50,550
following a first stage burn time of 2

103
00:05:56,400 --> 00:05:53,289
minutes and 23 seconds the second stage

104
00:06:01,589 --> 00:05:56,410
ignited and 23 seconds later the launch

105
00:06:04,529 --> 00:06:01,599
escape system jettisoned an on-board

106
00:06:07,589 --> 00:06:04,539
camera recorded separation and second

107
00:06:11,010 --> 00:06:07,599
stage ignition the j2 engine performed

108
00:06:14,760 --> 00:06:11,020
satisfactorily overall data indicated

109
00:06:17,969 --> 00:06:14,770
good vehicle performance the emergency

110
00:06:21,020 --> 00:06:17,979
detection system closed-loop operational

111
00:06:23,730 --> 00:06:21,030
for the first time performed as planned

112
00:06:25,680 --> 00:06:23,740
after the 22-ton Apollo spacecraft

113
00:06:28,140 --> 00:06:25,690

separated from the remainder of the

114
00:06:30,689 --> 00:06:28,150
vehicle the spacecraft guidance and

115
00:06:35,339 --> 00:06:30,699
control system also operational for the

116
00:06:38,249 --> 00:06:35,349
first time was activated spacecraft

117
00:06:41,850 --> 00:06:38,259
re-entry photographed by a camera aboard

118
00:06:44,370 --> 00:06:41,860
the command module was as planned the

119
00:06:46,860 --> 00:06:44,380
earth landing sequences including the

120
00:06:50,820 --> 00:06:46,870
deployment and main parachute were also

121
00:06:53,180 --> 00:06:50,830
successful the command module landed

122
00:06:56,070 --> 00:06:53,190
southwest of the planned impact point

123
00:06:58,230 --> 00:06:56,080
search aircraft located it and para

124
00:07:01,830 --> 00:06:58,240
rescue swimmers attached the floatation

125
00:07:04,409 --> 00:07:01,840
color several hours later the USS Hornet

126
00:07:07,709 --> 00:07:04,419
arrived and recovered the command module

127
00:07:16,020 --> 00:07:07,719
in good condition data acquired showed

128
00:07:18,180 --> 00:07:16,030
good vehicle performance following

129
00:07:20,909 --> 00:07:18,190
completion of post static check out at

130
00:07:22,980 --> 00:07:20,919
Michou by Chrysler the booster for the

131
00:07:25,980 --> 00:07:22,990
fourth flight vehicle was shipped from

132
00:07:30,629 --> 00:07:25,990
issue August 10th and arrived at KSC

133
00:07:32,909 --> 00:07:30,639
August 15th the Douglas built second

134
00:07:35,010 --> 00:07:32,919
stage for the fourth flight vehicle was

135
00:07:40,230 --> 00:07:35,020
shipped from the West Coast to KSC on

136
00:07:42,719 --> 00:07:40,240
August 6th aboard the super guppy the

137
00:07:45,240 --> 00:07:42,729
instrument unit assembled and tested by

138
00:07:48,899 --> 00:07:45,250

IBM for the fourth flight vehicle

139
00:07:52,860 --> 00:07:48,909
arrived at KSC August 16th aboard the

140
00:07:57,029 --> 00:07:52,870
super guppy following availability of

141
00:07:58,470 --> 00:07:57,039
launch complex 34 all stages of a s 204

142
00:08:00,990 --> 00:07:58,480
were stacked by

143
00:08:01,860 --> 00:08:01,000
the end of August pre-flight check out

144
00:08:04,710 --> 00:08:01,870
is underway

145
00:08:06,720 --> 00:08:04,720
no major launch vehicle problems had

146
00:08:15,300 --> 00:08:06,730
been encountered by the close of this

147
00:08:17,610 --> 00:08:15,310
report period at Michou following

148
00:08:19,170 --> 00:08:17,620
completion of post static modifications

149
00:08:21,780 --> 00:08:19,180
of the booster for the fifth flight

150
00:08:22,530 --> 00:08:21,790
vehicle Chrysler placed the stage in

151
00:08:27,120 --> 00:08:22,540
storage

152
00:08:29,340 --> 00:08:27,130
awaiting shipment to KSC following

153
00:08:31,950 --> 00:08:29,350
completion of static firing last quarter

154
00:08:34,950 --> 00:08:31,960
the sixth flight booster was shipped

155
00:08:37,380 --> 00:08:34,960
from Marshall July 8th and arrived at

156
00:08:39,540 --> 00:08:37,390
Michou five days later stage

157
00:08:42,990 --> 00:08:39,550
modification and repair were completed

158
00:08:47,280 --> 00:08:43,000
August 23rd no static checkout was begun

159
00:08:49,740 --> 00:08:47,290
and is well ahead of schedule the first

160
00:08:51,630 --> 00:08:49,750
stage for the seventh flight vehicle was

161
00:08:57,000 --> 00:08:51,640
placed in the static test our August

162
00:08:59,340 --> 00:08:57,010
11th a short duration firing was

163
00:09:02,970 --> 00:08:59,350

conducted September first followed by a

164
00:09:04,380 --> 00:09:02,980
long duration firing September 13th the

165
00:09:06,990 --> 00:09:04,390
stage was shipped from Marshall

166
00:09:10,260 --> 00:09:07,000
September 20th arriving at issue

167
00:09:14,580 --> 00:09:10,270
September 25th or post static checkout

168
00:09:16,770 --> 00:09:14,590
and modifications assembly of the eighth

169
00:09:20,400 --> 00:09:16,780
flight booster was completed in August

170
00:09:22,350 --> 00:09:20,410
by Chrysler at the nishu facility pre

171
00:09:25,290 --> 00:09:22,360
static check out of the stage was

172
00:09:27,660 --> 00:09:25,300
completed September 23rd it is now

173
00:09:32,040 --> 00:09:27,670
undergoing preparation for shipment to

174
00:09:34,140 --> 00:09:32,050
Marshall assembly and engine clustering

175
00:09:37,050 --> 00:09:34,150
of the ninth flight vehicle were

176
00:09:40,010 --> 00:09:37,060
completed in September pre static

177
00:09:43,530 --> 00:09:40,020
checkout is planned for next quarter

178
00:09:46,170 --> 00:09:43,540
also at me Shu fabrication and assembly

179
00:09:49,440 --> 00:09:46,180
of the tenth and eleventh boosters are

180
00:09:53,330 --> 00:09:49,450
underway pre static check out of the s-1

181
00:09:55,590 --> 00:09:53,340
b10 is scheduled for next quarter

182
00:09:58,200 --> 00:09:55,600
fabrication of the 12th and final

183
00:10:03,240 --> 00:09:58,210
booster under the present contract is

184
00:10:06,360 --> 00:10:03,250
also underway at me Shu assembly

185
00:10:09,120 --> 00:10:06,370
facility tank qualification testing of

186
00:10:12,290 --> 00:10:09,130
the 105 inch LOX tank started last

187
00:10:15,329 --> 00:10:12,300
quarter by CCSD was completed

188
00:10:18,269 --> 00:10:15,339

reliability testing of the tank to 200%

189
00:10:20,220 --> 00:10:18,279
of design load was accomplished marking

190
00:10:23,370 --> 00:10:20,230
another step for man rating stage

191
00:10:25,800 --> 00:10:23,380
components qualification testing of the

192
00:10:34,620 --> 00:10:25,810
70 inch LOX tank continued throughout

193
00:10:37,530 --> 00:10:34,630
the quarter at Douglas Sacto facility

194
00:10:39,840 --> 00:10:37,540
the second stage for the fifth flight

195
00:10:42,480 --> 00:10:39,850
vehicle was removed from the stand and

196
00:10:46,499 --> 00:10:42,490
installed in the check-out laboratory on

197
00:10:48,840 --> 00:10:46,509
July 5th for modifications following

198
00:10:49,559 --> 00:10:48,850
modifications the stage was placed in

199
00:10:52,079 --> 00:10:49,569
storage

200
00:10:55,920 --> 00:10:52,089
awaiting scheduled shipment to Cape

201
00:10:58,499 --> 00:10:55,930
Kennedy pre static checkout of the

202
00:11:01,199 --> 00:10:58,509
Douglas built 2nd stage for the 6th

203
00:11:04,319 --> 00:11:01,209
flight vehicle was completed in August a

204
00:11:06,749 --> 00:11:04,329
full duration 7 and 1/2 minute

205
00:11:10,230 --> 00:11:06,759
acceptance firing was successfully

206
00:11:12,420 --> 00:11:10,240
completed August 19th following

207
00:11:14,970 --> 00:11:12,430
replacement of a defective LOX pump a

208
00:11:19,889 --> 00:11:14,980
second firing was completed September

209
00:11:22,139 --> 00:11:19,899
14th to verify engine caliber factory

210
00:11:24,150 --> 00:11:22,149
checkout of the second stage for the

211
00:11:27,480 --> 00:11:24,160
seventh flight vehicle was completed in

212
00:11:29,730 --> 00:11:27,490
July following painting the stage was

213
00:11:33,360 --> 00:11:29,740

shipped to Sacto aboard the super guppy

214
00:11:37,410 --> 00:11:33,370
August 30th static firing is planned for

215
00:11:39,960 --> 00:11:37,420
October work efforts continued with

216
00:11:44,990 --> 00:11:39,970
assembly systems installations and

217
00:11:49,949 --> 00:11:45,000
factory checkout for s4 be 208 209 and

218
00:11:52,800 --> 00:11:49,959
210 fabrication for the 11th vehicle

219
00:11:55,579 --> 00:11:52,810
second stage is well underway stage

220
00:11:58,800 --> 00:11:55,589
assembly is scheduled for next quarter

221
00:12:01,710 --> 00:11:58,810
fabrication for the 12th vehicles second

222
00:12:04,139 --> 00:12:01,720
stage is on schedule this is the last

223
00:12:10,990 --> 00:12:04,149
stage to be completed under the present

224
00:12:17,050 --> 00:12:14,259
at IBM Huntsville component installation

225
00:12:19,600 --> 00:12:17,060
in the fifth flight IU was completed in

226
00:12:22,329 --> 00:12:19,610
July checkout was completed September

227
00:12:25,990 --> 00:12:22,339
20th shipment of the unit to the Cape is

228
00:12:27,850 --> 00:12:26,000
planned for next quarter structural

229
00:12:31,230 --> 00:12:27,860
fabrication for the sixth flight

230
00:12:33,879 --> 00:12:31,240
instrument unit was completed July 13th

231
00:12:34,860 --> 00:12:33,889
component installation was started July

232
00:12:37,960 --> 00:12:34,870
15th

233
00:12:42,429 --> 00:12:37,970
checkout started September 28th with

234
00:12:45,429 --> 00:12:42,439
completion planned for next quarter also

235
00:12:47,470 --> 00:12:45,439
at IBM Huntsville structural fabrication

236
00:12:50,199 --> 00:12:47,480
of the seventh flight vehicle was

237
00:12:52,389 --> 00:12:50,209
completed September 7th component

238
00:12:55,199 --> 00:12:52,399

installation was started with completion

239
00:12:59,579 --> 00:12:55,209
planned for next quarter

240
00:13:02,499 --> 00:12:59,589
in summary July August and September

241
00:13:04,480 --> 00:13:02,509
1966 four months of significant

242
00:13:08,470 --> 00:13:04,490
achievements within the Saturn 1b

243
00:13:10,660 --> 00:13:08,480
prevent a smooth continuity of on

244
00:13:14,590 --> 00:13:10,670
scheduled production of launch vehicle

245
00:13:17,799 --> 00:13:14,600
stages successful acceptance testing of

246
00:13:19,689 --> 00:13:17,809
the seventh flight booster successful

247
00:13:23,049 --> 00:13:19,699
acceptance testing of the second stage

248
00:13:27,040 --> 00:13:23,059
for the sixth flight vehicle a highly

249
00:13:29,730 --> 00:13:27,050
successful flight of a s 203 and the

250
00:13:33,040 --> 00:13:29,740
equally successful flight of a s 202

251
00:13:35,949 --> 00:13:33,050
each contributing its share to the

252
00:13:36,730 --> 00:13:35,959
national space effort and to place human

253
00:13:38,120 --> 00:13:36,740
explorers