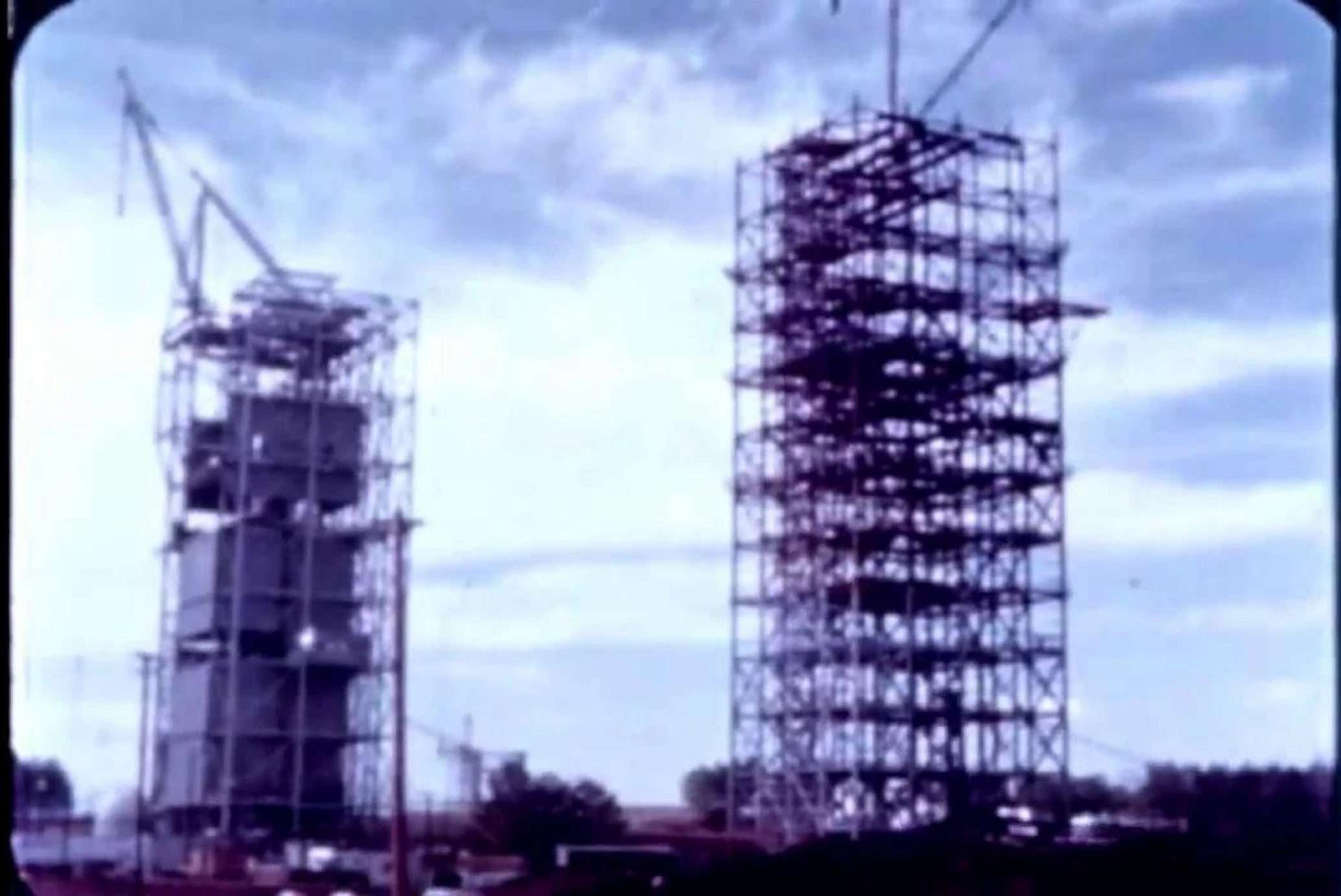

1
00:00:16,269 --> 00:00:13,549
Saturn five quarterly film report number

2
00:00:20,290 --> 00:00:16,279
five covers progress from December 1st

3
00:00:22,910 --> 00:00:20,300
1963 through February 29th 1964

4
00:00:31,550 --> 00:00:22,920
highlighting Saturn ground test stage

5
00:00:32,990 --> 00:00:31,560
construction s 1c efforts at the

6
00:00:35,450 --> 00:00:33,000
Marshall Space Flight Center this

7
00:00:37,700 --> 00:00:35,460
quarter were primarily in support of the

8
00:00:42,350 --> 00:00:37,710
test fuel tank and the static firing

9
00:00:44,810 --> 00:00:42,360
test stage following completion of fuel

10
00:00:46,910 --> 00:00:44,820
tank assembly last quarter the liquid

11
00:00:49,279 --> 00:00:46,920
oxygen tunnel for the tank was trimmed

12
00:00:52,850 --> 00:00:49,289
fitted and welded into the bulkheads in

13
00:00:57,500 --> 00:00:52,860

January later s 1c tanks will each have

14
00:00:59,869 --> 00:00:57,510
five such LOX tunnels structural

15
00:01:02,180 --> 00:00:59,879
assembly of the aft adapter for the test

16
00:01:04,789 --> 00:01:02,190
fuel tank was completed in early

17
00:01:06,859 --> 00:01:04,799
February and the adapter was placed in

18
00:01:11,450 --> 00:01:06,869
the vertical Assembly Building pit for

19
00:01:13,789 --> 00:01:11,460
mating with the tank Marshalls

20
00:01:16,429 --> 00:01:13,799
hydrostatic test tower part of the

21
00:01:18,609 --> 00:01:16,439
vertical Assembly Building was used for

22
00:01:21,050 --> 00:01:18,619
the first time in early february during

23
00:01:24,219 --> 00:01:21,060
hydrostatic pressure testing of the test

24
00:01:26,690 --> 00:01:24,229
fuel tank the tank was filled with some

25
00:01:28,929 --> 00:01:26,700
225,000 gallons of water weighing

26
00:01:32,330 --> 00:01:28,939
approximately two million pounds

27
00:01:34,969 --> 00:01:32,340
pressurization totalled 30 psi G at the

28
00:01:37,399 --> 00:01:34,979
lower bulkhead the tank was instrumented

29
00:01:40,670 --> 00:01:37,409
with some 250 strain gauges and

30
00:01:43,819 --> 00:01:40,680
deflection transducers in areas expected

31
00:01:46,249 --> 00:01:43,829
to experience high stress a fluorescent

32
00:01:49,280 --> 00:01:46,259
dye which glows under ultraviolet light

33
00:01:51,260 --> 00:01:49,290
was mixed with the deionized water as an

34
00:01:56,270 --> 00:01:51,270
aid in checking for any leaks around

35
00:01:58,700 --> 00:01:56,280
weld seams following the successful

36
00:02:00,800 --> 00:01:58,710
pressure testing the tank was lifted

37
00:02:05,420 --> 00:02:00,810
from the hydrostatic Tower by means of

38
00:02:08,389 --> 00:02:05,430

giant cranes and set down on top of the

39
00:02:11,390 --> 00:02:08,399
AFT adapter for mating to it nating was

40
00:02:13,040 --> 00:02:11,400
by means of mechanical fasteners the AFT

41
00:02:17,750 --> 00:02:13,050
adapter

42
00:02:21,770 --> 00:02:17,760
tank are special items to permit

43
00:02:24,140 --> 00:02:21,780
structural testing of the tank in

44
00:02:26,120 --> 00:02:24,150
assembly operations on the s-1 CT

45
00:02:28,520 --> 00:02:26,130
welding of the upper fuel bulkhead to

46
00:02:30,680 --> 00:02:28,530
the wiring was begun out of sequence in

47
00:02:32,540 --> 00:02:30,690
order to make optimum use of tooling

48
00:02:34,310 --> 00:02:32,550
while weld certification tests were

49
00:02:36,740 --> 00:02:34,320
being conducted to solve problems

50
00:02:39,620 --> 00:02:36,750
encountered during final assembly of the

51
00:02:42,110 --> 00:02:39,630
lower bulkhead the law of fuel book had

52
00:02:44,780 --> 00:02:42,120
two locks tunnel extension weld and the

53
00:02:48,740 --> 00:02:44,790
upper fuel book had polar kept weld had

54
00:02:50,930 --> 00:02:48,750
both been rejected and removed welding

55
00:02:53,210 --> 00:02:50,940
of the s-1 C T law of fuel tank

56
00:02:57,830 --> 00:02:53,220
cylindrical skin assembly was completed

57
00:02:59,720 --> 00:02:57,840
during the quarter all skin sections

58
00:03:02,030 --> 00:02:59,730
were available for the upper fuel tank

59
00:03:03,920 --> 00:03:02,040
cylindrical skin assembly but welding

60
00:03:09,530 --> 00:03:03,930
was held up until completion of the weld

61
00:03:11,780 --> 00:03:09,540
certification program assembly

62
00:03:13,460 --> 00:03:11,790
operations on the s-1 CT thrust

63
00:03:15,950 --> 00:03:13,470

structure continued at the Marshall

64
00:03:18,320 --> 00:03:15,960
Center during the report period the four

65
00:03:20,780 --> 00:03:18,330
thrust posts delivered to Marshall in

66
00:03:22,310 --> 00:03:20,790
early January have been fitted and

67
00:03:24,890 --> 00:03:22,320
installed in the thrust structure

68
00:03:30,430 --> 00:03:24,900
assembly fixture the thrust structure is

69
00:03:35,810 --> 00:03:33,710
Assembly of s1 C mock-ups continued at

70
00:03:37,699 --> 00:03:35,820
Marshall dis quarter with installation

71
00:03:39,410 --> 00:03:37,709
of the control pressure system in the

72
00:03:42,410 --> 00:03:39,420
forward and hitter tank mock-up

73
00:03:44,090 --> 00:03:42,420
virtually completed the basic heat

74
00:03:45,979 --> 00:03:44,100
shield support structure has been

75
00:03:50,060 --> 00:03:45,989
assembled and installed in the tail

76
00:03:51,440 --> 00:03:50,070
section mock-up at Marshalls s1 see

77
00:03:54,110 --> 00:03:51,450
static test stand

78
00:03:57,470 --> 00:03:54,120
all major welding on the load platform

79
00:03:59,390 --> 00:03:57,480
has been completed the 1,900 ton

80
00:04:01,400 --> 00:03:59,400
deflector has been rolled into its

81
00:04:05,360 --> 00:04:01,410
normal position at is being rigidly

82
00:04:08,030 --> 00:04:05,370
fastened to the supporting base cable

83
00:04:13,190 --> 00:04:08,040
installation in the 150 ton derrick is

84
00:04:15,190 --> 00:04:13,200
complete site work around the test stand

85
00:04:17,570 --> 00:04:15,200
and support building is continuing with

86
00:04:21,440 --> 00:04:17,580
approximately 60% of the concrete

87
00:04:23,480 --> 00:04:21,450
sections port assembly of the s-1 C

88
00:04:25,909 --> 00:04:23,490

transporter was completed at Marshall

89
00:04:26,840 --> 00:04:25,919
this quarter mechanical hydraulic and

90
00:04:29,270 --> 00:04:26,850
electrical check

91
00:04:31,580 --> 00:04:29,280
have been performed the 100-ton

92
00:04:34,340 --> 00:04:31,590
transporter which has a total of twenty

93
00:04:35,660 --> 00:04:34,350
four wheels consists of $2 which will be

94
00:04:39,200 --> 00:04:35,670
bolted to the ends of the

95
00:04:43,340 --> 00:04:39,210
self-supporting s1c stage road tests

96
00:04:46,550 --> 00:04:43,350
will start next quarter at Marshalls

97
00:04:48,890 --> 00:04:46,560
Michou Operations Boeing's s1c activity

98
00:04:51,770 --> 00:04:48,900
this quarter included fabrication of the

99
00:04:54,200 --> 00:04:51,780
16 and 1/2 ton forward handling ring a

100
00:04:57,440 --> 00:04:54,210
tool which will be used in all phases of

101
00:04:59,390 --> 00:04:57,450
movement of the s1c stage followed the

102
00:05:02,360 --> 00:04:59,400
ring failed in its initial tests in

103
00:05:05,330 --> 00:05:02,370
miche's proof load facility later tests

104
00:05:07,640 --> 00:05:05,340
following repair were successful and the

105
00:05:09,620 --> 00:05:07,650
ring was sent to the Marshall Center the

106
00:05:15,320 --> 00:05:09,630
final two rings are now being assembled

107
00:05:17,330 --> 00:05:15,330
at Michou the s1 CT inter tank was

108
00:05:19,280 --> 00:05:17,340
completed at Boeing Michou during the

109
00:05:23,060 --> 00:05:19,290
report period and will be shipped to

110
00:05:24,980 --> 00:05:23,070
Marshall shortly 660 degree skin panels

111
00:05:27,290 --> 00:05:24,990
are joined on the inter tech final

112
00:05:29,840 --> 00:05:27,300
assembly fixture to form the connecting

113
00:05:34,850 --> 00:05:29,850

link between the s-1 seed locks and fuel

114
00:05:36,710 --> 00:05:34,860
tanks the s-1 see forward skirt assembly

115
00:05:39,200 --> 00:05:36,720
fixture has been installed at miss you

116
00:05:41,420 --> 00:05:39,210
by bowing the skirt assembly which will

117
00:05:44,480 --> 00:05:41,430
be made here functions as the connecting

118
00:05:48,050 --> 00:05:44,490
link between the s-1 C stage and the s2

119
00:05:49,850 --> 00:05:48,060
stage this use vertical Assembly

120
00:05:51,890 --> 00:05:49,860
Building construction is now completed

121
00:05:53,930 --> 00:05:51,900
final work this Porter included

122
00:05:56,750 --> 00:05:53,940
installation of the 180 ton capacity

123
00:05:58,760 --> 00:05:56,760
overhead bridge crane installation of

124
00:06:02,720 --> 00:05:58,770
tooling and test equipment is presently

125
00:06:05,720 --> 00:06:02,730
underway at Boeing's plant into Wichita

126
00:06:08,210 --> 00:06:05,730
Kansas s1c support work such as this

127
00:06:12,710 --> 00:06:08,220
routing of fuel tank fittings continued

128
00:06:15,230 --> 00:06:12,720
during the report period at Boeing

129
00:06:17,840 --> 00:06:15,240
Seattle a welded locked tunnel 40 feet

130
00:06:20,120 --> 00:06:17,850
long and 25 inches in diameter was

131
00:06:22,040 --> 00:06:20,130
fabricated on a crash basis when

132
00:06:29,629 --> 00:06:22,050
difficulty was encountered in properly

133
00:06:33,920 --> 00:06:31,640
at the CEO beach facility of North

134
00:06:38,390 --> 00:06:33,930
American Aviation space and information

135
00:06:40,550 --> 00:06:38,400
systems division s2 structural test

136
00:06:42,830 --> 00:06:40,560
stage assembly progressed this quarter

137
00:06:46,700 --> 00:06:42,840
with the aft common bulkhead completed

138
00:06:48,920 --> 00:06:46,710

in February construction of the vertical

139
00:06:55,100 --> 00:06:48,930
assembly and hydro test building at seal

140
00:06:57,320 --> 00:06:55,110
Beach is now more than 80% complete the

141
00:07:00,140 --> 00:06:57,330
structural static tests tower is more

142
00:07:02,779 --> 00:07:00,150
than 55 percent complete steel frames

143
00:07:06,950 --> 00:07:02,789
stairways handrails and walkways have

144
00:07:08,689 --> 00:07:06,960
been erected to the 130 foot level at

145
00:07:10,939 --> 00:07:08,699
the Santa Susana propulsion field

146
00:07:13,610 --> 00:07:10,949
laboratory construction of the all

147
00:07:15,469 --> 00:07:13,620
systems tests and is virtually complete

148
00:07:18,129 --> 00:07:15,479
with ground support equipment and

149
00:07:21,379 --> 00:07:18,139
control equipment wiring being installed

150
00:07:23,179 --> 00:07:21,389
at the Battleship test stand the service

151
00:07:27,490 --> 00:07:23,189
tower and the flame deflector are

152
00:07:30,649 --> 00:07:27,500
complete and the spillway has been paved

153
00:07:32,929 --> 00:07:30,659
in late December the battleship LOX tank

154
00:07:35,089 --> 00:07:32,939
was filled with liquid nitrogen and a

155
00:07:36,379 --> 00:07:35,099
chilled test was conducted the purpose

156
00:07:39,079 --> 00:07:36,389
of the test was to evaluate

157
00:07:41,659 --> 00:07:39,089
effectiveness of the flexible seal that

158
00:07:43,640 --> 00:07:41,669
surrounds the LOX tank and to determine

159
00:07:46,010 --> 00:07:43,650
how well the seal adheres to the tank

160
00:07:48,680 --> 00:07:46,020
when subjected to cryogenic temperatures

161
00:07:53,629 --> 00:07:48,690
test results indicated there was no

162
00:07:56,390 --> 00:07:53,639
leakage around the seal at Essen tidies

163
00:07:59,059 --> 00:07:56,400

facility at Slauson California tooling

164
00:08:01,689 --> 00:07:59,069
for the manufacturing of s2 bulkhead sub

165
00:08:03,860 --> 00:08:01,699
assemblies was installed this quarter

166
00:08:06,950 --> 00:08:03,870
separation testing of a full-scale

167
00:08:09,110 --> 00:08:06,960
simulated s2 interstage skirt section

168
00:08:12,200 --> 00:08:09,120
was successfully accomplished by essent

169
00:08:14,450 --> 00:08:12,210
ID at donee objectives of the tests are

170
00:08:17,209 --> 00:08:14,460
to verify that the linear shaped charge

171
00:08:19,399 --> 00:08:17,219
separation system is satisfactory for

172
00:08:23,510 --> 00:08:19,409
structural integrity and functional

173
00:08:25,760 --> 00:08:23,520
operation quarter-scale liquid hydrogen

174
00:08:28,189 --> 00:08:25,770
test tank number 2 was delivered to s

175
00:08:31,219 --> 00:08:28,199
and ids down a facility on December 31st

176
00:08:34,550 --> 00:08:31,229
by the subcontractor later the tank was

177
00:08:36,889 --> 00:08:34,560
pressurized with helium 7 and 1/2 psig

178
00:08:39,969 --> 00:08:36,899
and each weld seam was checked with a

179
00:08:47,290 --> 00:08:39,979
mass spectrometer leak detection probe

180
00:08:52,850 --> 00:08:50,480
at Douglas aircrafts Sacramento test

181
00:08:54,740 --> 00:08:52,860
facility s4b battleship tank

182
00:08:57,170 --> 00:08:54,750
pre-installation preparation was

183
00:08:59,660 --> 00:08:57,180
completed and the stage was installed in

184
00:09:02,570 --> 00:08:59,670
beta test stands number one on December

185
00:09:05,270 --> 00:09:02,580
18th water calibration of the battleship

186
00:09:07,550 --> 00:09:05,280
tank was completed successfully later in

187
00:09:09,830 --> 00:09:07,560
the report period installation of

188
00:09:12,700 --> 00:09:09,840

exterior components is underway and will

189
00:09:15,140 --> 00:09:12,710
continue next quarter

190
00:09:17,930 --> 00:09:15,150
construction of the all systems test

191
00:09:20,000 --> 00:09:17,940
stand beta 3 continued this quarter with

192
00:09:23,800 --> 00:09:20,010
installation of structural steel and

193
00:09:26,120 --> 00:09:23,810
building of propellant storage tanks

194
00:09:28,130 --> 00:09:26,130
initial ground support equipment for the

195
00:09:30,520 --> 00:09:28,140
beta control center arrived during the

196
00:09:32,990 --> 00:09:30,530
report period and was installed

197
00:09:36,530 --> 00:09:33,000
completion of GIC installation is

198
00:09:38,750 --> 00:09:36,540
scheduled next quarter this manual gse

199
00:09:41,300 --> 00:09:38,760
will be converted to automatic for

200
00:09:46,520 --> 00:09:41,310
acceptance firing of s4b stages early

201
00:09:49,420 --> 00:09:46,530
next year construction of complex gamma

202
00:09:52,280 --> 00:09:49,430
at sacto is now over 75% complete

203
00:09:55,420 --> 00:09:52,290
complex gamma will be used to static

204
00:09:57,830 --> 00:09:55,430
test s4b auxiliary propulsion modules

205
00:10:02,840 --> 00:09:57,840
the complex is scheduled for completion

206
00:10:04,730 --> 00:10:02,850
next quarter at the Douglas Huntington

207
00:10:07,610 --> 00:10:04,740
Beach facility the liquid oxygen tank

208
00:10:10,100 --> 00:10:07,620
assembly for the s4 be hydrostatic test

209
00:10:12,380 --> 00:10:10,110
stage was installed in assembly tower

210
00:10:14,480 --> 00:10:12,390
number one this quarter the tank

211
00:10:18,830 --> 00:10:14,490
assembly had been fabricated at Douglas

212
00:10:20,960 --> 00:10:18,840
sera Monaco after movement of the

213
00:10:23,660 --> 00:10:20,970

hydrostatic test stage liquid hydrogen

214
00:10:25,940 --> 00:10:23,670
tank into the tower welding of the tank

215
00:10:30,140 --> 00:10:25,950
to the LOX tank was accomplished and the

216
00:10:32,120 --> 00:10:30,150
forward dome was welded on later the

217
00:10:34,130 --> 00:10:32,130
entire propellant tank was moved to

218
00:10:36,260 --> 00:10:34,140
assembly tower number two we're

219
00:10:38,660 --> 00:10:36,270
machining of skirt attach angles will

220
00:10:42,970 --> 00:10:38,670
take place next quarter the stage will

221
00:10:47,510 --> 00:10:45,620
assembly of the dynamic test stage was

222
00:10:50,060 --> 00:10:47,520
also begun this quarter at Huntington

223
00:10:51,920 --> 00:10:50,070
Beach the LOX tank assembly received

224
00:10:56,350 --> 00:10:51,930
from Santa Monica was positioned an

225
00:11:01,460 --> 00:10:59,210
the liquid hydrogen tank for the dynamic

226
00:11:03,560 --> 00:11:01,470
test stage was positioned for welding as

227
00:11:05,090 --> 00:11:03,570
the quarter ended the stage will be

228
00:11:08,330 --> 00:11:05,100
shipped to the Marshall Center in

229
00:11:16,430 --> 00:11:08,340
December 1964 for dynamic testing as

230
00:11:18,200 --> 00:11:16,440
part of the Saturn 5 vehicle propulsion

231
00:11:20,570 --> 00:11:18,210
system testing of the first f1

232
00:11:22,430 --> 00:11:20,580
production engine built by Rocketdyne

233
00:11:24,950 --> 00:11:22,440
began at the Marshall Center this

234
00:11:34,610 --> 00:11:24,960
quarter in the modified s1 static test

235
00:11:36,650 --> 00:11:34,620
stand a total of fourteen static firings

236
00:11:39,830 --> 00:11:36,660
was conducted for a total main stage

237
00:11:44,120 --> 00:11:39,840
time of 403 seconds the longest firing

238
00:11:45,950 --> 00:11:44,130

was for 122 seconds about 175 engine and

239
00:11:48,590 --> 00:11:45,960
facility performance measurements were

240
00:11:52,670 --> 00:11:48,600
recorded during each test the firings

241
00:11:55,220 --> 00:11:52,680
were continued next quarter at Marshalls

242
00:11:57,080 --> 00:11:55,230
f1 engine test stand erection of steel

243
00:11:59,090 --> 00:11:57,090
superstructure has been completed and

244
00:12:01,550 --> 00:11:59,100
the 100 ton Derrick has been installed

245
00:12:02,810 --> 00:12:01,560
siding installation on the elevator

246
00:12:05,090 --> 00:12:02,820
tower is in progress

247
00:12:07,370 --> 00:12:05,100
the deflector is complete except for

248
00:12:09,410 --> 00:12:07,380
minor welding and painting Technical

249
00:12:11,690 --> 00:12:09,420
Systems and utilities installation is

250
00:12:15,890 --> 00:12:11,700
continuing the preparation building has

251
00:12:17,960 --> 00:12:15,900
been completed and occupied at edwards

252
00:12:20,300 --> 00:12:17,970
rocket site in california a fully

253
00:12:22,940 --> 00:12:20,310
operational heat exchanger was installed

254
00:12:34,680 --> 00:12:22,950
in f1 engine all fourteen this quarter

255
00:12:39,750 --> 00:12:37,890
a number of successful system tests of

256
00:12:42,120 --> 00:12:39,760
production engine number two were held

257
00:12:48,810 --> 00:12:42,130
during the report period in test stand

258
00:12:50,730 --> 00:12:48,820
one be one at rocket dines new

259
00:12:53,430 --> 00:12:50,740
manufacturing building number three at

260
00:12:55,200 --> 00:12:53,440
Canoga Park f1 engine assembly and

261
00:12:58,080 --> 00:12:55,210
check-out are now being carried on

262
00:13:01,640 --> 00:12:58,090
full-time facilities here allow for

263
00:13:03,870 --> 00:13:01,650

building four engines simultaneously

264
00:13:05,850 --> 00:13:03,880
modifications to the water high flow

265
00:13:08,490 --> 00:13:05,860
test facility to increase its capacity

266
00:13:11,490 --> 00:13:08,500
were performed this quarter with piles

267
00:13:14,250 --> 00:13:11,500
being driven down to 65 feet to anchor

268
00:13:16,380 --> 00:13:14,260
the test run piping the increased

269
00:13:19,110 --> 00:13:16,390
capacity will make it possible to obtain

270
00:13:21,270 --> 00:13:19,120
flow information on f1 injectors and

271
00:13:37,860 --> 00:13:21,280
components that closer to normal

272
00:13:43,440 --> 00:13:40,829
on duration static luring tests of the

273
00:13:46,140 --> 00:13:43,450
j2 engine were continued by Rocketdyne

274
00:13:49,170 --> 00:13:46,150
headed santa susana test area during the

275
00:13:56,190 --> 00:13:49,180
report variant the delta to a position

276
00:13:58,350 --> 00:13:56,200
was activated in December in Rocketdyne

277
00:14:00,870 --> 00:13:58,360
structures lab at Canoga Park

278
00:14:03,720 --> 00:14:00,880
a hydraulic gimbal test machine has been

279
00:14:05,760 --> 00:14:03,730
placed in use to test the j2 engine

280
00:14:10,350 --> 00:14:05,770
gimbal bearing assembly in cycling

281
00:14:12,269 --> 00:14:10,360
operations testing of the j2 thrust

282
00:14:14,370 --> 00:14:12,279
chamber assembly determines thrust

283
00:14:18,720 --> 00:14:14,380
chamber and component deflection under

284
00:14:21,150 --> 00:14:18,730
given load conditions in rocket turns

285
00:14:23,460 --> 00:14:21,160
vertical alignment stand the thrust

286
00:14:25,470 --> 00:14:23,470
alignment of the j2 thrust chamber is

287
00:14:29,670 --> 00:14:25,480
determined through a series of optical

288
00:14:31,290 --> 00:14:29,680

and circumferential measuring guides the

289
00:14:33,630 --> 00:14:31,300
geometric center of the chamber is

290
00:14:43,260 --> 00:14:33,640
located so as to be coincident with the

291
00:14:44,240 --> 00:14:43,270
center of the engine gimbal block at the

292
00:14:47,010 --> 00:14:44,250
Marshall Space Flight Center

293
00:14:49,410 --> 00:14:47,020
construction of the saturn v dynamic

294
00:14:51,510 --> 00:14:49,420
test stand continued this quarter with

295
00:14:56,760 --> 00:14:51,520
tower steel erection having reached the

296
00:14:59,220 --> 00:14:56,770
night or 216 foot level excavation for

297
00:15:01,079 --> 00:14:59,230
tunnel B has been completed and forming

298
00:15:03,449 --> 00:15:01,089
for pouring the tunnel floor is in

299
00:15:05,430 --> 00:15:03,459
process the brick and mortar portion of

300
00:15:08,640 --> 00:15:05,440
the fan room in tunnel a has been

301
00:15:10,470 --> 00:15:08,650
finished miscellaneous work about the

302
00:15:13,710 --> 00:15:10,480
stand and determination building is

303
00:15:15,870 --> 00:15:13,720
continuing blockhouse excavation for

304
00:15:17,820 --> 00:15:15,880
Marshalls saturn v ground support

305
00:15:20,519 --> 00:15:17,830
equipment test facility was completed

306
00:15:24,780 --> 00:15:20,529
this quarter test area and roadway

307
00:15:26,430 --> 00:15:24,790
grading are continuing construction

308
00:15:29,190 --> 00:15:26,440
progressed to this quarter on Marshalls

309
00:15:31,500 --> 00:15:29,200
new load test facility a 30 million

310
00:15:34,949 --> 00:15:31,510
pound capacity test tower capable of

311
00:15:37,860 --> 00:15:34,959
testing s1c stages the tower is now up

312
00:15:40,860 --> 00:15:37,870
to its full height of 140 feet and work

313
00:15:45,150 --> 00:15:40,870

is underway on the 155-foot tall hangar

314
00:15:47,040 --> 00:15:45,160
type building which will house it at

315
00:15:49,470 --> 00:15:47,050
Marshalls Mississippi test facility

316
00:15:51,449 --> 00:15:49,480
construction moved ahead steadily at the

317
00:15:54,960 --> 00:15:51,459
three main complexes and under

318
00:15:57,090 --> 00:15:54,970
roads and waterways serving them the

319
00:16:01,109 --> 00:15:57,100
construction dock at Mt earth has been

320
00:16:05,280 --> 00:16:01,119
completed and the cryogenics dock is now

321
00:16:07,590 --> 00:16:05,290
over 50% finished at the Support

322
00:16:11,369 --> 00:16:07,600
Services complex construction progressed

323
00:16:15,199 --> 00:16:11,379
on the warehouse site maintenance

324
00:16:19,919 --> 00:16:15,209
building emergency services building

325
00:16:22,769 --> 00:16:19,929
central heating plant 115,000 volt

326
00:16:25,679 --> 00:16:22,779
electrical substation and telephone and

327
00:16:28,049 --> 00:16:25,689
communications building at the

328
00:16:30,179 --> 00:16:28,059
laboratory and engineering complex work

329
00:16:32,309 --> 00:16:30,189
is underway on the lab and engineering

330
00:16:36,600 --> 00:16:32,319
building which will serve as Mississippi

331
00:16:39,480 --> 00:16:36,610
test Operations headquarters and at the