1
00:00:11,020 --> 00:00:04,370
[Music]

2
00:00:16,430 --> 00:00:14,330
set by film report number 19 cover

3
00:00:21,830 --> 00:00:16,440
stress during the bridge timber October

4
00:00:24,980 --> 00:00:21,840
and November 1967 an historic milestone

5
00:00:27,439 --> 00:00:24,990
in the Saturn 5 program launching of the

6
00:00:29,349 --> 00:00:27,449
first thousand 5 flight vehicle was

7
00:00:32,840 --> 00:00:29,359
successfully accomplished this water

8
00:00:36,440 --> 00:00:32,850
launch preparations for the 360 3 foot

9
00:00:37,970 --> 00:00:36,450
tall vehicle designated Apollo 4 got

10
00:00:41,000 --> 00:00:37,980
underway immediately following its

11
00:00:42,500 --> 00:00:41,010
rollout on August 26th from the Vehicle

12
00:00:46,720 --> 00:00:42,510
Assembly Building at Kennedy Space

13
00:00:48,799 --> 00:00:46,730

Center to pad a of launch complex 39

14
00:00:51,170 --> 00:00:48,809
primary mission of the flight would be

15
00:00:52,729 --> 00:00:51,180
to flight test the launch vehicle which

16
00:00:54,709 --> 00:00:52,739
was developed under Marshall Center

17
00:00:57,229 --> 00:00:54,719
direction and to test the Apollo

18
00:00:59,860 --> 00:00:57,239
spacecraft heat shield upon its re-entry

19
00:01:02,389 --> 00:00:59,870
into the Earth's atmosphere at speeds

20
00:01:06,590 --> 00:01:02,399
similar to those reached from a lunar

21
00:01:08,420 --> 00:01:06,600
mission check out of the vehicle's

22
00:01:10,370 --> 00:01:08,430
mechanical and electrical systems

23
00:01:12,460 --> 00:01:10,380
progressed smoothly throughout the first

24
00:01:14,510 --> 00:01:12,470
month of the report period in

25
00:01:18,679 --> 00:01:14,520
preparation for the vital countdown

26
00:01:23,840 --> 00:01:18,689
demonstration test or CD DT which began

27
00:01:25,730 --> 00:01:23,850
on September 30th the CD DT encompassed

28
00:01:28,219 --> 00:01:25,740
a complete dry run of the launching of

29
00:01:31,190 --> 00:01:28,229
the Apollo 4 including a practice

30
00:01:34,810 --> 00:01:31,200
countdown actual fueling and simulated

31
00:01:37,100 --> 00:01:34,820
firing in flight by means of the CD DT

32
00:01:40,340 --> 00:01:37,110
engineers were able to discover and

33
00:01:42,289 --> 00:01:40,350
eliminate any problem areas among those

34
00:01:44,600 --> 00:01:42,299
encountered during the exercise where

35
00:01:47,330 --> 00:01:44,610
the ground check out computers first

36
00:01:49,789 --> 00:01:47,340
stage helium pressure regulators launch

37
00:01:53,560 --> 00:01:49,799
vehicle batteries and moisture in

38
00:01:55,910 --> 00:01:53,570

certain electrical cables and components

39
00:01:58,219 --> 00:01:55,920
after successful solution of these

40
00:02:00,020 --> 00:01:58,229
problems and completion of the Cee'd EDT

41
00:02:02,660 --> 00:02:00,030
on October 13th

42
00:02:05,450 --> 00:02:02,670
final preparations tests and check out

43
00:02:07,809 --> 00:02:05,460
operations got underway to assure flight

44
00:02:10,790 --> 00:02:07,819
readiness of the huge space vehicle

45
00:02:11,600 --> 00:02:10,800
three weeks later at 8:30 p.m. Eastern

46
00:02:13,830 --> 00:02:11,610
Standard Time

47
00:02:16,410 --> 00:02:13,840
on November 6th

48
00:02:17,479 --> 00:02:16,420
terminal countdown was started t-minus

49
00:02:19,979 --> 00:02:17,489
49 hours

50
00:02:22,070 --> 00:02:19,989
the computerized countdown with a

51
00:02:25,440 --> 00:02:22,080
built-in hold of seven and a half hours

52
00:02:27,030 --> 00:02:25,450
proceeded smoothly on schedule the

53
00:02:30,150 --> 00:02:27,040
launch would mark several momentous

54
00:02:32,240 --> 00:02:30,160
program milestones first flight test of

55
00:02:35,699 --> 00:02:32,250
a vehicle of such size and complexity

56
00:02:38,400 --> 00:02:35,709
first complete vehicle flight test first

57
00:02:41,369 --> 00:02:38,410
flight of both the s1 c and s two stages

58
00:02:49,800 --> 00:02:41,379
and the first engine restart in orbit of

59
00:02:51,660 --> 00:02:49,810
the s4 B stage a flawless liftoff on

60
00:02:54,360 --> 00:02:51,670
schedule at 7:00 a.m. Eastern Standard

61
00:02:56,100 --> 00:02:54,370
Time November 9th sent the vehicle on

62
00:02:58,140 --> 00:02:56,110
its way to what would later be described

63
00:02:58,910 --> 00:02:58,150

as a virtually perfect flight in every

64
00:03:01,380 --> 00:02:58,920
respect

65
00:03:03,539 --> 00:03:01,390
launch tower clearance was maintained

66
00:03:06,600 --> 00:03:03,549
during liftoff where the yaw bias

67
00:03:09,809 --> 00:03:06,610
accomplished his program to escape the

68
00:03:11,910 --> 00:03:09,819
400 foot tall launch tower 16 seconds

69
00:03:14,880 --> 00:03:11,920
were required by the 6.2 con space

70
00:03:16,920 --> 00:03:14,890
vehicle it's 5 first stage f-1 engines

71
00:03:20,280 --> 00:03:16,930
generating a total of seven and a half

72
00:03:22,680 --> 00:03:20,290
million pounds thrust telemetry data

73
00:03:25,610 --> 00:03:22,690
indicated the s-1 sea stage engines

74
00:03:28,379 --> 00:03:25,620
stage propellant utilization system

75
00:03:30,539 --> 00:03:28,389
pressurization system and pneumatic

76
00:03:32,819 --> 00:03:30,549
control system all operated

77
00:03:36,750 --> 00:03:32,829
satisfactorily and within expected

78
00:03:40,229 --> 00:03:36,760
tolerances maximum bending moment was

79
00:03:42,870 --> 00:03:40,239
well below design values your role in

80
00:03:44,839 --> 00:03:42,880
pitch programs in the s-1 sea were

81
00:03:47,430 --> 00:03:44,849
accomplished as expected

82
00:03:49,080 --> 00:03:47,440
structural temperatures and aerodynamic

83
00:03:53,129 --> 00:03:49,090
measurements proved well within

84
00:03:56,400 --> 00:03:53,139
predicted values at t plus 135 point 5

85
00:03:58,800 --> 00:03:56,410
seconds the s-1 CN board engine cutoff

86
00:04:01,080 --> 00:03:58,810
is scheduled to be followed fifteen

87
00:04:07,500 --> 00:04:01,090
point three seconds later by outboard

88
00:04:10,349 --> 00:04:07,510

engine cutoff onboard cameras later

89
00:04:12,240 --> 00:04:10,359
ejected and recovered showed the s-1 sea

90
00:04:15,659 --> 00:04:12,250
separating and falling back toward the

91
00:04:18,390 --> 00:04:15,669
earth then at t plus 150 three point

92
00:04:23,880 --> 00:04:18,400
three seconds ignition of the s2 stage

93
00:04:27,220 --> 00:04:23,890
occurred 29 seconds later the s1 c s2

94
00:04:29,600 --> 00:04:27,230
enter stage also separated and fell away

95
00:04:32,180 --> 00:04:29,610
separation was extremely smooth and

96
00:04:35,570 --> 00:04:32,190
clearances were adequate as in the case

97
00:04:37,910 --> 00:04:35,580
of the s1c stage all systems of the s2

98
00:04:42,080 --> 00:04:37,920
stage operated properly and within

99
00:04:44,300 --> 00:04:42,090
expected tolerances the s2 stage is 5j

100
00:04:47,030 --> 00:04:44,310
two engines burning liquid hydrogen and

101
00:04:49,940 --> 00:04:47,040
liquid oxygen and generating 1 million

102
00:04:53,540 --> 00:04:49,950
pounds thrust shutdown is scheduled at t

103
00:04:56,900 --> 00:04:53,550
+ 519 point eight seconds within the

104
00:04:59,630 --> 00:04:56,910
following second s2 separation and s 4 b

105
00:05:01,670 --> 00:04:59,640
stage ignition were accomplished these

106
00:05:04,100 --> 00:05:01,680
were not recorded by onboard cameras

107
00:05:06,170 --> 00:05:04,110
since orbital altitude had been reached

108
00:05:09,680 --> 00:05:06,180
by then and cameras could not have been

109
00:05:12,530 --> 00:05:09,690
returned to earth the S 4 B stages

110
00:05:15,860 --> 00:05:12,540
single J - engine cutoff at t + six

111
00:05:17,960 --> 00:05:15,870
sixty five point six seconds and the 280

112
00:05:20,659 --> 00:05:17,970
thousand pound third stage instrument

113
00:05:24,710 --> 00:05:20,669

unit spacecraft combination went into

114
00:05:27,830 --> 00:05:24,720
orbit at 117 statute miles after an 88

115
00:05:30,020 --> 00:05:27,840
minute to orbit coast period the S 4 B

116
00:05:32,690 --> 00:05:30,030
stage engine was restarted and operated

117
00:05:34,930 --> 00:05:32,700
for five minutes to send the Apollo on

118
00:05:37,969 --> 00:05:34,940
the way to its reentry test mission

119
00:05:40,300 --> 00:05:37,979
pressure in the S 4 B fuel tank was

120
00:05:43,120 --> 00:05:40,310
somewhat low at second burn initiation

121
00:05:46,070 --> 00:05:43,130
but stabilized at an acceptable level

122
00:05:48,110 --> 00:05:46,080
the Saturn 5 instrument unit performed

123
00:05:52,400 --> 00:05:48,120
satisfactorily throughout the entire

124
00:05:54,620 --> 00:05:52,410
flight climaxed by the Apollo spacecraft

125
00:05:57,110 --> 00:05:54,630
re-entry and recovery in the Pacific

126
00:06:00,200 --> 00:05:57,120
Ocean eight hours and 40 minutes after

127
00:06:02,570 --> 00:06:00,210
liftoff Apollo 4 had achieved every one

128
00:06:07,430 --> 00:06:02,580
of its primary and secondary missions in

129
00:06:09,170 --> 00:06:07,440
a textbook perfect flight with the

130
00:06:11,870 --> 00:06:09,180
highly significant initial launch a

131
00:06:13,990 --> 00:06:11,880
success attention now focuses on the

132
00:06:17,390 --> 00:06:14,000
second Saturn 5 flight vehicle

133
00:06:20,380 --> 00:06:17,400
designated Apollo 6 which stands erected

134
00:06:22,909 --> 00:06:20,390
in the KSC Vehicle Assembly Building

135
00:06:25,219 --> 00:06:22,919
vehicle checkout is in progress with no

136
00:06:30,890 --> 00:06:25,229
serious problems reported for a

137
00:06:32,840 --> 00:06:30,900
scheduled launch early in 1968 the s 1 C

138
00:06:34,550 --> 00:06:32,850

stage for the third flight vehicle has

139
00:06:36,680 --> 00:06:34,560
been removed from storage at Boeing

140
00:06:38,330 --> 00:06:36,690
machine New Orleans and is now

141
00:06:40,540 --> 00:06:38,340
undergoing check out and post-delivery

142
00:06:43,990 --> 00:06:40,550
storage modifications

143
00:06:46,360 --> 00:06:44,000
shipment to KSC of the s1c as well as

144
00:06:48,730 --> 00:06:46,370
the upper stages an instrument unit for

145
00:06:52,000 --> 00:06:48,740
the third flight vehicle is slated for

146
00:06:54,310 --> 00:06:52,010
late December the s-1 sea stage for the

147
00:06:56,830 --> 00:06:54,320
fourth flight vehicle has been placed in

148
00:07:00,100 --> 00:06:56,840
storage all elements of the fourth

149
00:07:05,470 --> 00:07:00,110
vehicle are due at KSC in the spring of

150
00:07:07,750 --> 00:07:05,480
1968 the s2 stage for the third flight

151
00:07:09,820 --> 00:07:07,760
vehicle was successfully static test at

152
00:07:12,490 --> 00:07:09,830
this quarter at the Mississippi test

153
00:07:16,510 --> 00:07:12,500
facility and is now undergoing post

154
00:07:19,780 --> 00:07:16,520
static checkout operations the first s23

155
00:07:22,150 --> 00:07:19,790
firing for 64 seconds was primarily to

156
00:07:26,080 --> 00:07:22,160
check out the newly completed a1 second

157
00:07:29,350 --> 00:07:26,090
stage test and an MTF a second firing of

158
00:07:32,980 --> 00:07:29,360
full duration of 384 seconds served to

159
00:07:35,710 --> 00:07:32,990
acceptance test the s2 3 stage initial

160
00:07:40,750 --> 00:07:35,720
use of the new a1 stand this quarter now

161
00:07:42,700 --> 00:07:40,760
completely activates MTF the s2 stage

162
00:07:45,550 --> 00:07:42,710
for the fourth flight vehicle arrived at

163
00:07:47,410 --> 00:07:45,560

MTF in late november from north american

164
00:07:51,160 --> 00:07:47,420
rock wall space division at seal Beach

165
00:07:53,890 --> 00:07:51,170
California s2 four ways some 3,000

166
00:07:55,540 --> 00:07:53,900
pounds less than previous stages due to

167
00:07:57,910 --> 00:07:55,550
thinner propellant tank walls and

168
00:08:00,220 --> 00:07:57,920
lighter structures a full duration

169
00:08:04,510 --> 00:08:00,230
acceptance firing is scheduled during

170
00:08:07,180 --> 00:08:04,520
the next report period after removal

171
00:08:09,940 --> 00:08:07,190
from storage the s4 b4 the third flight

172
00:08:12,040 --> 00:08:09,950
vehicle is now in post static check out

173
00:08:15,760 --> 00:08:12,050
at the McDonnell Douglas Sacramento test

174
00:08:18,010 --> 00:08:15,770
site in California the s4 B stage for

175
00:08:20,350 --> 00:08:18,020
the fourth flight vehicle has also been

176
00:08:24,760 --> 00:08:20,360
removed from storage and is undergoing

177
00:08:28,330 --> 00:08:24,770
checkout retest of the instrument unit

178
00:08:31,780 --> 00:08:28,340
for a s 503 began in mid-november in the

179
00:08:33,910 --> 00:08:31,790
checkout stand at IBM Huntsville retest

180
00:08:35,980 --> 00:08:33,920
was necessary after incorporation of

181
00:08:38,740 --> 00:08:35,990
various IU modifications had been

182
00:08:41,700 --> 00:08:38,750
accomplished completion of checkout and

183
00:08:44,350 --> 00:08:41,710
shipment to KSC is due in late December

184
00:08:49,900 --> 00:08:44,360
check out of the instrument unit for a s

185
00:08:51,550 --> 00:08:49,910
504 was finished in late October stages

186
00:08:54,040 --> 00:08:51,560
and instrument units for subsequent

187
00:08:55,960 --> 00:08:54,050
saturn v flight vehicles are

188
00:08:58,630 --> 00:08:55,970

various phases of fabrication assembly

189
00:09:01,360 --> 00:08:58,640
check out and testing at prime

190
00:09:02,860 --> 00:09:01,370
contractor facilities with no serious

191
00:09:06,990 --> 00:09:02,870
problems or slippage is being

192
00:09:09,670 --> 00:09:07,000
encountered in any of these operations

193
00:09:12,040 --> 00:09:09,680
refurbishment of the third stage beta 3

194
00:09:14,740 --> 00:09:12,050
test standard Sacto was completed early

195
00:09:17,620 --> 00:09:14,750
in the quarter and cold flow testing on

196
00:09:20,350 --> 00:09:17,630
the stand began in mid-october the stand

197
00:09:22,630 --> 00:09:20,360
which had been damaged in the s4b 503

198
00:09:26,519 --> 00:09:22,640
explosion early this year will be

199
00:09:30,970 --> 00:09:28,509
investigations and tests of stage

200
00:09:33,460 --> 00:09:30,980
program related items such as the s4b

201
00:09:36,400 --> 00:09:33,470
stage propellant tank repressurization

202
00:09:39,579 --> 00:09:36,410
helium storage sphere continued during

203
00:09:42,220 --> 00:09:39,589
the report period purpose of these tests

204
00:09:44,050 --> 00:09:42,230
was to demonstrate to NASA the ability

205
00:09:47,410 --> 00:09:44,060
of test specimen to meet design

206
00:09:51,670 --> 00:09:47,420
requirements failure occurred at 8300

207
00:09:54,550 --> 00:09:51,680
PSIG approximately 300 psi G above the

208
00:09:56,530 --> 00:09:54,560
design minimum burst pressure because of

209
00:09:58,210 --> 00:09:56,540
the high burst pressure and the fact

210
00:10:01,000 --> 00:09:58,220
that the failure did not occur along the

211
00:10:05,440 --> 00:10:01,010
weld seam the test was considered a

212
00:10:06,280 --> 00:10:05,450
success a test program to determine the

213
00:10:09,699 --> 00:10:06,290

explosiveness

214
00:10:12,220 --> 00:10:09,709
of polyurethane foam insulation dust was

215
00:10:15,550 --> 00:10:12,230
conducted by the s2 stage contractor at

216
00:10:17,620 --> 00:10:15,560
its Downey California facility the tests

217
00:10:20,410 --> 00:10:17,630
were performed because foam dust is

218
00:10:23,740 --> 00:10:20,420
created when foam insulation is machined

219
00:10:25,900 --> 00:10:23,750
at the s2 manufacturing plant results of

220
00:10:28,389 --> 00:10:25,910
the tests indicated that the dust does

221
00:10:31,150 --> 00:10:28,399
not create an explosion hazard when its

222
00:10:36,069 --> 00:10:31,160
content is limited to 1 107 ounce per

223
00:10:37,840 --> 00:10:36,079
cubic foot s to 8 is the first stage to

224
00:10:40,780 --> 00:10:37,850
be insulated completely with

225
00:10:42,579 --> 00:10:40,790
polyurethane foam application of the

226
00:10:46,389 --> 00:10:42,589
foam is accomplished in about 25 minutes

227
00:10:48,130 --> 00:10:46,399
using three spray guns after 48 hours

228
00:10:49,900 --> 00:10:48,140
the foam has cured and is ready for

229
00:10:52,389 --> 00:10:49,910
machining to a thickness of two and a

230
00:10:55,449 --> 00:10:52,399
quarter inches during spraying and

231
00:11:00,160 --> 00:10:55,459
machining the entire s2 stage is rotated

232
00:11:02,290 --> 00:11:00,170
about its longitudinal axis a Thor

233
00:11:04,420 --> 00:11:02,300
missile fuel tank provided by Douglas

234
00:11:06,519 --> 00:11:04,430
McDonald has been insulated with the

235
00:11:07,970 --> 00:11:06,529
spray-on foam and instrumented with

236
00:11:10,820 --> 00:11:07,980
strain gauges and

237
00:11:13,280 --> 00:11:10,830
sensors at North American Rockwell seal

238
00:11:15,650 --> 00:11:13,290

Beach facility and will be shipped in

239
00:11:18,380 --> 00:11:15,660
early December to Sacto to undergo

240
00:11:23,000 --> 00:11:18,390
cryogenic tanking tests to evaluate the

241
00:11:25,250 --> 00:11:23,010
new insulation the unqualified success

242
00:11:27,950 --> 00:11:25,260
of the first launching of a saturn v

243
00:11:30,140 --> 00:11:27,960
flight vehicle provided a spectacular

244
00:11:32,510 --> 00:11:30,150
highlight or a report period which

245
00:11:36,230 --> 00:11:32,520
witness steady and wide-ranging progress