1
00:00:14,349 --> 00:00:20,090
The uprated Saturn I/Saturn IB Quarterly Film
Report Number 30 covers progress during the

2
00:00:20,090 --> 00:00:31,259
months of October, November, and December
1966.

3
00:00:31,259 --> 00:00:36,410
At the Kennedy Space Center, prelaunch activities
for the Apollo/Saturn 20 mission continued

4
00:00:36,410 --> 00:00:38,360
throughout the quarter.

5
00:00:38,360 --> 00:00:43,469
Launch of the first manned uprated Saturn
I spacecraft was rescheduled for next quarter

6
00:00:43,469 --> 00:00:45,629
because of spacecraft problems.

7
00:00:45,629 --> 00:00:51,079
In addition, the uprated Saturn I launch schedule
has be revised because of further spacecraft

8
00:00:51,079 --> 00:00:52,420
delay.

9
00:00:52,420 --> 00:00:58,430
Saturn 206, which will carry a lunar module,
is now the next vehicle scheduled for launch.

10
00:00:58,430 --> 00:01:04,940
Apollo/Saturn 205 and 208 will be launched
next summer for the first Apollo uprated Saturn

11
00:01:04,940 --> 00:01:09,040
I dual launch mission.

12
00:01:09,040 --> 00:01:14,290
Checkout of Saturn 204 was satisfactory except
for one booster engine, which was replaced

13
00:01:14,290 --> 00:01:17,120
due to a turbopump problem.

14
00:01:17,120 --> 00:01:22,200
The first manned flight is scheduled to last
up to fourteen days.

15
00:01:22,200 --> 00:01:26,350
The prime missions will be to evaluate the
performance of the spacecraft and its crew

16
00:01:26,350 --> 00:01:32,969
during Earth orbit and to evaluate the performance
of the launch vehicle.

17
00:01:32,969 --> 00:01:38,070
Following modification of the seventy inch
LOX tanks, the booster for Saturn 206 was

18
00:01:38,070 --> 00:01:45,270
shipped from Michoud December 13 and arrived
at KSC five days later.

19
00:01:45,270 --> 00:01:49,509
In parallel with first stage shipment, the
second stage was shipped from the west coast

20
00:01:49,509 --> 00:01:56,869
by Super Guppy December 13 and arrived at
KSC the next day.

21
00:01:56,869 --> 00:02:02,130
Checkout of the instrument unit for Saturn
206 was completed in November at IBM.

22
00:02:02,130 --> 00:02:08,660
The unit was shipped December 16 and arrived
at KSC the next day.

23
00:02:08,660 --> 00:02:14,890
At Marshall, work efforts continue with manufacturing
of nosecones for Lunar Module space vehicles.

24
00:02:14,890 --> 00:02:22,690
The nosecone for Apollo/Saturn 206 vehicle
is to be shipped to KSC next quarter.

25
00:02:22,690 --> 00:02:28,080
The mission for Apollo/Saturn 206 will be
to place a Lunar Module into Earth orbit,

26
00:02:28,080 --> 00:02:32,160
primarily to verify the module's propulsion
subsystem.

27
00:02:32,160 --> 00:02:39,580
Verification will include firing its engine
remotely and subjecting it to various maneuvers.

28
00:02:39,580 --> 00:02:43,410
Saturn 205 stages will be shipped to the Cape
next quarter.

29
00:02:43,410 --> 00:02:48,390
The booster and the second stage are presently
stored at the manufacturer's facilities.

30
00:02:48,390 --> 00:02:59,550
The instrument unit is undergoing necessary
modifications for the new mission.

31
00:02:59,550 --> 00:03:04,570
At Michoud, post-static work is in progress
on the Saturn 207 booster.

32
00:03:04,570 --> 00:03:09,410
During checkout, a decision was made to replace
one engine in which pieces of Teflon were

33
00:03:09,410 --> 00:03:10,550
found.

34
00:03:10,550 --> 00:03:15,710
The problem was investigated and determined
to be an isolated case.

35
00:03:15,710 --> 00:03:20,950
Checkout of the booster is continuing well
ahead of schedule.

36
00:03:20,950 --> 00:03:26,170
The booster for Saturn 208 was received at
MSFC October 25.

37
00:03:26,170 --> 00:03:30,160
Upon delivery, it was placed in the Static
Test Stand.

38
00:03:30,160 --> 00:03:35,600
A short-duration firing was conducted on November
16.

39
00:03:35,600 --> 00:03:40,150
One engine displayed a lower than normal thrust,
requiring replacement.

40
00:03:40,150 --> 00:03:44,500
A long-duration firing was completed November
29.

41
00:03:44,500 --> 00:03:51,040
The stage is back at Michoud undergoing post-static
modifications and rework.

42

00:03:51,040 --> 00:03:56,560
There it was discovered that four engines
were defective because wrong material, 316

43
00:03:56,560 --> 00:04:02,020
stainless steel instead of Haynes Stellite
alloy, was used for manufacturing.

44
00:04:02,020 --> 00:04:07,920
After rework, the engines will be returned
from Neosho to Michoud for reinstallation

45
00:04:07,920 --> 00:04:10,400
in late January.

46
00:04:10,400 --> 00:04:19,220
Defective blades also were found in engines
on AS-204, -207, -208, -209, and -210.

47
00:04:19,220 --> 00:04:23,880
These are being replace or reworked.

48
00:04:23,880 --> 00:04:29,650
Following completion of assembly of the booster
for Saturn 209 late last quarter, the stage

49
00:04:29,650 --> 00:04:32,570
was at Michoud for pre-static checkout.

50
00:04:32,570 --> 00:04:39,030
Shipment to Marshall for planned static firing
is on schedule.

51
00:04:39,030 --> 00:04:44,240
Assembly and engine installation on the booster
for Saturn 210 continued through this report

52
00:04:44,240 --> 00:04:45,970
period.

53
00:04:45,970 --> 00:04:51,120
Pre-static checkout of the stage is scheduled
for next quarter.

54
00:04:51,120 --> 00:04:56,330
Tail section assembly of Saturn 211 booster
was completed in October.

55
00:04:56,330 --> 00:05:02,300
Tank clustering began November 14 with installation
of the final LOX tank, completed December

56
00:05:02,300 --> 00:05:03,480
1.

57
00:05:03,480 --> 00:05:07,940
Final assembly is ahead of schedule.

58
00:05:07,940 --> 00:05:13,290
Fabrication work on the booster for Saturn
212 is in process and ahead of schedule.

59
00:05:13,290 --> 00:05:15,770
Assembly is planned to start next quarter.

60
00:05:15,770 --> 00:05:21,280
MSFC and Chrysler have negotiated a contract
for the procurement of long lead time items

61
00:05:21,280 --> 00:05:29,040
for four more stages to maintain production
capability on a temporary basis.

62
00:05:29,040 --> 00:05:33,490
At the Michoud Assembly Facility, the first
stage, seventy inch LOX tank qualification

63
00:05:33,490 --> 00:05:35,990
testing was completed this quarter.

64
00:05:35,990 --> 00:05:41,790
The seventy inch LOX tank had met the unmanned
125 percent safety factor test.

65
00:05:41,790 --> 00:05:47,090
The tank had also been qualified to 140 percent
of design flight loads.

66
00:05:47,090 --> 00:05:53,100
However, a failure occurred, which resulted
in preflight ground wind restrictions.

67
00:05:53,100 --> 00:05:57,840
In order to relieve the wind restrictions,
the tank was modified in the upper skirt to

68
00:05:57,840 --> 00:06:00,700
redistribute structural loads.

69
00:06:00,700 --> 00:06:06,400
In mid-December, the modified tank was tested
to 140 percent of the most critical loads

70
00:06:06,400 --> 00:06:10,330
and the prelaunch wind restrictions were eliminated.

71
00:06:10,330 --> 00:06:19,070
Testing of the LOX tanks is complete.

72
00:06:19,070 --> 00:06:26,250
At Douglas' SACTO facility, the second stage
for Saturn 207 underwent a 447 second acceptance

73
00:06:26,250 --> 00:06:29,100
firing October 19.

74
00:06:29,100 --> 00:06:32,260
Post-static checkout was completed November

23.

75
00:06:32,260 --> 00:06:35,639
The stage is presently undergoing minor modifications.

76
00:06:35,639 --> 00:06:41,820
Upon completion, the stage will be stored
until it is shipped to the Cape.

77
00:06:41,820 --> 00:06:47,320
Factory checkout for the second stage for
Saturn 208 was completed October 25.

78
00:06:47,320 --> 00:06:53,690
It was shipped to SACTO by Super Guppy December
14 and was offloaded the next day.

79
00:06:53,690 --> 00:06:57,720
Pre-static checkout is underway.

80
00:06:57,720 --> 00:07:02,210
Contractor efforts continued this quarter
with fabrication and assembly of the second

81
00:07:02,210 --> 00:07:07,800
stages for the ninth, tenth, eleventh, and
twelfth uprated Saturn I vehicles.

82
00:07:07,800 --> 00:07:12,750
During hydrostatic testing of Saturn 210's
second stage, water seeped into the common

83
00:07:12,750 --> 00:07:16,170
bulkhead due to an improperly sealed fitting.

84
00:07:16,170 --> 00:07:21,060
To prevent program schedule delay, the common
bulkhead and propellant tanks for the eleventh

85

00:07:21,060 --> 00:07:26,010
stage were moved up in the production schedule
to replace the defective items.

86
00:07:26,010 --> 00:07:32,470
Following successful drying procedures, the
tenth stage hardware was accepted as flight-worthy

87
00:07:32,470 --> 00:07:37,360
and placed back in the manufacturing schedule
for the eleventh stage.

88
00:07:37,360 --> 00:07:41,440
Completion of the twelfth second stage will
close the present contract.

89
00:07:41,440 --> 00:07:47,030
MSFC and Douglas have agreed to a contract
for the procurement of long lead time items

90
00:07:47,030 --> 00:07:58,620
for four more stages to temporarily maintain
production capability.

91
00:07:58,620 --> 00:08:04,620
At IBM Huntsville, work continued on the instrument
unit for Saturn 207.

92
00:08:04,620 --> 00:08:12,360
Checkout of the IU was begin December 16 and
is scheduled for completion next quarter.

93
00:08:12,360 --> 00:08:18,400
Structural fabrication of the instrument unit
for Saturn 208 was completed November 22.

94
00:08:18,400 --> 00:08:23,729
Component installation is underway with completion
planned for next quarter.

95

00:08:23,729 --> 00:08:30,490
Structural segments for Saturn 209 IU arrived
at IBM November 29.

96
00:08:30,490 --> 00:08:40,449
Fabrication began December 8 with completion
planned next quarter.

97
00:08:40,449 --> 00:08:45,519
At Marshall's Systems Development Facility,
new and improved techniques in ground support

98
00:08:45,519 --> 00:08:51,329
equipment and testing are being used to accomplish
automation to checkout and launch the uprated

99
00:08:51,329 --> 00:08:53,630
Saturn I vehicle.

100
00:08:53,630 --> 00:09:00,160
This is the facility utilized to debug and
validate checkout program takes.

101
00:09:00,160 --> 00:09:09,439
It contains a computer complex, a telemetry
station, digital data checkout station, networks,

102
00:09:09,439 --> 00:09:15,670
and associated vehicle components, actual
or simulated.

103
00:09:15,670 --> 00:09:21,540
Simulated flight tests are fed to REA-110A
computers on program tape.

104
00:09:21,540 --> 00:09:27,990
As many at 115identified tests and subroutines
will be programmed for future testing of uprated

105
00:09:27,990 --> 00:09:31,769

Saturn I vehicles.

106
00:09:31,769 --> 00:09:37,399
Validation of the program tapes is accomplished
in three phases: first, electrical support

107
00:09:37,399 --> 00:09:43,120
equipment and integration equipment systems,
which are a part of or related to the booster,

108
00:09:43,120 --> 00:09:50,749
second, equipment related to the second stage,
and third, the instrument unit.

109
00:09:50,749 --> 00:09:55,880
The Systems Development Facility allows for
a comprehensive checkout for overall systems

110
00:09:55,880 --> 00:09:57,199
compatibility.

111
00:09:57,199 --> 00:10:05,290
It also serves as a supporting unit for Cape
operations during checkout and launch.

112
00:10:05,290 --> 00:10:10,220
In summary, October, November, and December
were months of continued progress within the

113
00:10:10,220 --> 00:10:18,430
uprated Saturn Program, final preparations
for the manned flight Saturn 204, arrival

114
00:10:18,430 --> 00:10:25,670
of Saturn 206 stages at Cape Kennedy, successful
acceptance testing of the second stage or

115
00:10:25,670 --> 00:10:34,110
Saturn 207, successful acceptance testing
of the booster for Saturn 208, and testing

116
00:10:34,110 --> 00:10:39,220
of software related to the uprated Saturn
vehicles at Marshall’s Systems Development