



1
00:00:09,820 --> 00:00:15,220
the Apollo's

2
00:00:19,359 --> 00:00:17,230
and module will carry the three-man crew

3
00:00:21,029 --> 00:00:19,369
together with guidance communications

4
00:00:23,499 --> 00:00:21,039
and life support systems

5
00:00:25,390 --> 00:00:23,509
the service module will contain

6
00:00:27,819 --> 00:00:25,400
propulsion systems for mid-course

7
00:00:30,729 --> 00:00:27,829
maneuvers as well as for entering and

8
00:00:33,100 --> 00:00:30,739
escaping the lunar orbit the lunar

9
00:00:34,869 --> 00:00:33,110
excursion module will carry two crew

10
00:00:36,720 --> 00:00:34,879
members to the surface of the Moon

11
00:00:40,150 --> 00:00:36,730
along with scientific instruments

12
00:00:42,250 --> 00:00:40,160
communications and guidance systems it

13
00:00:45,130 --> 00:00:42,260

also will have a propulsion capability

14

00:00:48,910 --> 00:00:45,140

for lunar landing and for return to the

15

00:00:50,830 --> 00:00:48,920

orbiting command and service modules the

16

00:00:53,939 --> 00:00:50,840

Apollo spacecraft and its launch escape

17

00:00:56,680 --> 00:00:53,949

system total 75 feet in length the

18

00:01:01,450 --> 00:00:56,690

three-stage advanced Saturn booster adds

19

00:01:04,600 --> 00:01:01,460

another 280 feet in length in project

20

00:01:06,430 --> 00:01:04,610

Apollo Saturn's first stage will provide

21

00:01:09,850 --> 00:01:06,440

seven and a half million pounds of

22

00:01:13,510 --> 00:01:09,860

thrust from 5f1 engines for liftoff and

23

00:01:15,490 --> 00:01:13,520

initial powered flight the second stage

24

00:01:18,490 --> 00:01:15,500

will develop 1 million pounds of thrust

25

00:01:20,880 --> 00:01:18,500

from 5j to engines to boost the

26

00:01:23,680 --> 00:01:20,890

spacecraft almost into Earth orbit

27

00:01:25,930 --> 00:01:23,690

immediately after ignition of the second

28

00:01:33,110 --> 00:01:25,940

stage the launch escape system will be

29

00:01:39,650 --> 00:01:37,160

a single j2 engine in the s4b stage will

30

00:01:41,780 --> 00:01:39,660

provide 200,000 pounds of thrust

31

00:01:44,360 --> 00:01:41,790

it will place the spacecraft in an earth

32

00:01:47,630 --> 00:01:44,370

parking orbit then its engine will be

33

00:01:50,690 --> 00:01:47,640

shut down at the proper predetermined

34

00:01:53,120 --> 00:01:50,700

time and position in the earth orbit the

35

00:01:55,040 --> 00:01:53,130

s4 b will be reignited for propelling

36

00:01:58,790 --> 00:01:55,050

the spacecraft into a trans lunar

37

00:01:59,600 --> 00:01:58,800

trajectory a few minutes later staging

38

00:02:02,870 --> 00:01:59,610

will occur

39

00:02:04,820 --> 00:02:02,880

the s4 B will be separated fairings will

40

00:02:07,220 --> 00:02:04,830

be jettisoned and the lunar excursion

41

00:02:09,350 --> 00:02:07,230

module will be repositioned to a

42

00:02:15,170 --> 00:02:09,360

nose-to-nose attitude with a command

43

00:02:16,970 --> 00:02:15,180

module a number of mid-course maneuvers

44

00:02:19,040 --> 00:02:16,980

may be required to place the spacecraft

45

00:02:22,760 --> 00:02:19,050

into position for obtaining the desired

46

00:02:24,770 --> 00:02:22,770

orbit around the moon preparatory to

47

00:02:27,910 --> 00:02:24,780

acquiring its lunar orbit the spacecraft

48

00:02:30,470 --> 00:02:27,920

will be reoriented for deceleration the

49

00:02:32,150 --> 00:02:30,480

service module propulsion system will

50

00:02:34,010 --> 00:02:32,160

slow the spacecraft to the proper

51
00:02:36,830 --> 00:02:34,020
velocity for obtaining a precise

52
00:02:39,160 --> 00:02:36,840
circular orbit approximately 100

53
00:02:41,960 --> 00:02:39,170
nautical miles above the lunar surface

54
00:02:44,479 --> 00:02:41,970
while the spacecraft is coasting in its

55
00:02:46,430 --> 00:02:44,489
lunar orbit two members of the crew will

56
00:02:48,470 --> 00:02:46,440
transfer to the lunar excursion module

57
00:02:51,410 --> 00:02:48,480
through the hatch at the connection

58
00:02:53,900 --> 00:02:51,420
point between the two vehicles after

59
00:02:55,970 --> 00:02:53,910
preparations are completed the lunar

60
00:02:58,160 --> 00:02:55,980
excursion module will separate from the

61
00:03:00,920 --> 00:02:58,170
command and service modules which will

62
00:03:02,660 --> 00:03:00,930
remain in lunar orbit the lunar

63
00:03:05,000 --> 00:03:02,670

excursion module will be properly

64

00:03:07,040 --> 00:03:05,010

oriented and its propulsion system will

65

00:03:09,260 --> 00:03:07,050

transfer the vehicle into an elliptical

66

00:03:12,080 --> 00:03:09,270

orbit suitable for approaching the lunar

67

00:03:14,840 --> 00:03:12,090

surface the vehicle will be reoriented

68

00:03:16,490 --> 00:03:14,850

for landing then through a carefully

69

00:03:19,759 --> 00:03:16,500

blended combination of manual control

70

00:03:21,650 --> 00:03:19,769

and automatic systems operation the

71

00:03:24,979 --> 00:03:21,660

vehicle will be lowered toward the lunar

72

00:03:27,500 --> 00:03:24,989

surface it will be able to hover and if

73

00:03:33,490 --> 00:03:27,510

necessary move laterally so that the

74

00:03:38,540 --> 00:03:36,710

before taking any other action the two

75

00:03:41,449 --> 00:03:38,550

lunar explorers will prepare for

76

00:03:43,520 --> 00:03:41,459

relaunching in addition to their own

77

00:03:45,470 --> 00:03:43,530

inspection and checking they will be

78

00:03:45,720 --> 00:03:45,480

instructed and guided in this activity

79

00:03:47,550 --> 00:03:45,730

by

80

00:03:50,990 --> 00:03:47,560

as a third member in the mothership and

81

00:03:53,280 --> 00:03:51,000

by information transmitted from Earth

82

00:03:56,130 --> 00:03:53,290

photographs and samples of the lunar

83

00:03:58,199 --> 00:03:56,140

surface will be obtained apparatus for

84

00:04:00,720 --> 00:03:58,209

continued operation and transmission of

85

00:04:04,020 --> 00:04:00,730

scientific data back to earth probably

86

00:04:05,940 --> 00:04:04,030

will be left on the moon the crew will

87

00:04:08,550 --> 00:04:05,950

fire the lunar launching engine had a

88

00:04:10,740 --> 00:04:08,560

precisely determined instant to enter a

89

00:04:12,930 --> 00:04:10,750

transfer ellipse calculated to

90

00:04:14,490 --> 00:04:12,940

rendezvous with a mothership after

91

00:04:18,120 --> 00:04:14,500

traveling part of the way around the

92

00:04:19,830 --> 00:04:18,130

moon after proper orientation the lunar

93

00:04:29,640 --> 00:04:19,840

excursion module will complete the

94

00:04:31,560 --> 00:04:29,650

docking maneuver the two lunar explorers

95

00:04:34,170 --> 00:04:31,570

will transfer back into the command

96

00:04:36,870 --> 00:04:34,180

module their lunar excursion module

97

00:04:40,230 --> 00:04:36,880

probably will be left in lunar orbit to

98

00:04:41,700 --> 00:04:40,240

save weight on the return trip after the

99

00:04:43,110 --> 00:04:41,710

command and service modules are

100

00:04:45,719 --> 00:04:43,120

thoroughly checked out and all

101
00:04:47,580 --> 00:04:45,729
calculations are confirmed the Apollo

102
00:04:50,790 --> 00:04:47,590
spacecraft will be fired into its

103
00:04:52,860 --> 00:04:50,800
trajectory for return to Earth following

104
00:04:55,200 --> 00:04:52,870
mid-course Corrections and just before

105
00:04:57,150 --> 00:04:55,210
entering the Earth's atmosphere the

106
00:04:59,610 --> 00:04:57,160
service module will be jettisoned and

107
00:05:08,800 --> 00:04:59,620
the command module will be oriented for

108
00:05:14,260 --> 00:05:11,530
at an altitude of approximately 50,000

109
00:05:17,140 --> 00:05:14,270
feet a drogue parachute will deploy to

110
00:05:18,970 --> 00:05:17,150
stabilize the vehicle this will be

111
00:05:21,190 --> 00:05:18,980
followed shortly by the main parachute

112
00:05:24,159 --> 00:05:21,200
system which will gently lower the