



1
00:00:02,140 --> 00:00:04,480
Houston, Discovery has the runway in sight.

2
00:00:05,000 --> 00:00:05,740
Copy runway

3
00:00:06,480 --> 00:00:08,140
Discovery descending through 3000 feet

4
00:00:08,140 --> 00:00:09,380
Three miles to touchdown

5
00:00:10,860 --> 00:00:11,740
1000 feet

6
00:00:14,980 --> 00:00:16,340
Landing gear is down and locked

7
00:00:22,900 --> 00:00:24,140
Main gear touchdown

8
00:00:31,640 --> 00:00:32,840
Drag chute deployed

9
00:00:37,700 --> 00:00:38,960
Nose gear touchdown

10
00:00:40,480 --> 00:00:41,660
And Discovery is home

11
00:00:42,880 --> 00:00:45,780
Return to flight mission STS-114

12
00:00:45,920 --> 00:00:48,780
culminates at NASA's Dryden Flight Research Center

13
00:00:48,780 --> 00:00:51,420

at Edwards Air Force Base in California.

14

00:00:52,740 --> 00:00:54,420

Discovery's landing initiates

15

00:00:54,420 --> 00:00:56,520

a complex series of activities.

16

00:00:58,440 --> 00:01:00,400

The orbiter is recovered by a convoy

17

00:01:00,400 --> 00:01:02,840

of over 20 specialized vehicles.

18

00:01:03,940 --> 00:01:06,660

A variety of of specialists assist the astronauts

19

00:01:06,660 --> 00:01:08,600

with systems shutdown, egress

20

00:01:08,600 --> 00:01:09,860

and medical assessments.

21

00:01:15,260 --> 00:01:17,620

I'd like say hello to everybody and

22

00:01:17,620 --> 00:01:20,320

on behalf of the STS-114 crew,

23

00:01:21,040 --> 00:01:22,980

we have had a fantastic mission.

24

00:01:23,320 --> 00:01:26,540

We are, so glad to be able to come back and say it

25

00:01:26,550 --> 00:01:29,020

was successful and we have resupplied

26
00:01:29,020 --> 00:01:30,509
the International Space Station and

27
00:01:30,509 --> 00:01:31,900
we've met the test objectives

28
00:01:32,200 --> 00:01:33,660
of the Space Shuttle Program.

29
00:01:33,880 --> 00:01:35,700
We brought Discovery back in great shape.

30
00:01:35,700 --> 00:01:37,360
as you can see behind us that,

31
00:01:37,920 --> 00:01:39,820
the crew is really anxious to walk and

32
00:01:39,960 --> 00:01:41,200
see what the outside looked like

33
00:01:41,200 --> 00:01:42,420
and it looks fantastic.

34
00:01:42,420 --> 00:01:44,020
We got a great group of folks here that are

35
00:01:44,620 --> 00:01:47,020
taking care of Discovery and taking care of us.

36
00:01:48,980 --> 00:01:52,100
After the initial recovery operations on the runway

37
00:01:52,100 --> 00:01:53,820
the orbiter is towed four miles

38
00:01:53,820 --> 00:01:56,579

to a Mate/Demate Device or MDD,

39

00:01:56,580 --> 00:01:58,040

where it is de serviced .

40

00:01:59,840 --> 00:02:01,820

Once at the MDD, the week-long

41

00:02:01,820 --> 00:02:03,420

turnaround process begins

42

00:02:03,420 --> 00:02:05,660

with crews working around the clock

43

00:02:05,660 --> 00:02:07,110

in preparation for the Shuttle's

44

00:02:07,110 --> 00:02:08,960

cross-country return home.

45

00:02:11,120 --> 00:02:14,440

Discovery's onboard fuel cell systems are shut down

46

00:02:14,560 --> 00:02:16,160

and the Orbiter's electrical systems

47

00:02:16,160 --> 00:02:17,820

are switched to ground power.

48

00:02:19,220 --> 00:02:21,040

The Shuttle is hoisted and aligned

49

00:02:21,040 --> 00:02:22,880

with the MDD'S work platforms

50

00:02:23,140 --> 00:02:24,380

so that technicians may have

51
00:02:24,380 --> 00:02:26,280
access to the Orbiter's systems.

52
00:02:30,520 --> 00:02:33,420
The main engines are flushed of residual fuel to

53
00:02:33,420 --> 00:02:36,280
protect the turbo pumps from possible contamination.

54
00:02:37,660 --> 00:02:39,940
The most hazardous part of the deservicing

55
00:02:40,000 --> 00:02:42,620
is the draining of the monomethylhydrazine fuel

56
00:02:42,620 --> 00:02:44,820
from the Orbiter's rockets and thrusters.

57
00:02:44,820 --> 00:02:48,060
[series of three loud clangs]

58
00:02:48,120 --> 00:02:50,840
This procedure is commonly called SCAPE,

59
00:02:51,320 --> 00:02:52,340
an acronym for the

60
00:02:52,340 --> 00:02:55,060
Self-Contained Atmospheric Protective Equipment

61
00:02:55,360 --> 00:02:56,980
the technicians must wear.

62
00:02:58,040 --> 00:03:01,620
It is a lengthy process mandated by safety requirements

63
00:03:01,620 --> 00:03:04,280

due to the highly toxic nature of the fuel.

64

00:03:05,280 --> 00:03:06,760

Once SCAPE is complete

65

00:03:06,820 --> 00:03:09,300

the aft engine area is prepared for installation

66

00:03:09,300 --> 00:03:11,120

of the aerodynamic tail cone.

67

00:03:13,640 --> 00:03:15,740

This 10,000 pound fairing is mounted

68

00:03:15,740 --> 00:03:17,440

over the main engine nozzles

69

00:03:17,700 --> 00:03:20,320

to help reduce drag during the ferry flight.

70

00:03:22,020 --> 00:03:23,780

Once the tail cone is in place

71

00:03:23,780 --> 00:03:25,700

the Orbiter's body flap is raised

72

00:03:25,700 --> 00:03:28,200

to fit flush against the tail cones bottom

73

00:03:28,760 --> 00:03:31,580

and the landing gear is raised and locked into place.

74

00:03:33,600 --> 00:03:35,620

Discovery is now ready to be mated

75

00:03:35,620 --> 00:03:38,580

to the Shuttle Carrier Aircraft or SCA.

76
00:03:41,140 --> 00:03:43,740
The Orbiter is lifted some 60 feet into the air

77
00:03:43,740 --> 00:03:45,380
by the MDD sling.

78
00:03:46,140 --> 00:03:50,600
The SCA, a modified 747, is been towed to the MDD

79
00:03:50,600 --> 00:03:52,600
and carefully positioned underneath.

80
00:03:55,700 --> 00:03:57,060
The Shuttle is now lowered

81
00:03:57,060 --> 00:03:59,960
onto three attach points on the 747.

82
00:04:00,900 --> 00:04:03,960
Once this slow exacting process is complete,

83
00:04:04,640 --> 00:04:06,440
the sling is removed from the Orbiter and

84
00:04:06,440 --> 00:04:09,240
and the Shuttle Carrier Aircraft is carefully towed

85
00:04:09,240 --> 00:04:10,420
from the MDD.

86
00:04:12,500 --> 00:04:15,380
With the Orbiter mounted securely atop the 747,

87
00:04:15,840 --> 00:04:17,840
the piggyback pair is ready to fly.

88
00:04:18,720 --> 00:04:20,240

Although the weight of the Orbiter

89

00:04:20,240 --> 00:04:22,540

is well within the SCA's carrying ability,

90

00:04:22,920 --> 00:04:24,800

the additional drag forces it to fly

91

00:04:24,800 --> 00:04:26,340

at much lower altitudes and

92

00:04:26,340 --> 00:04:29,520

and much slower speeds than a commercial 747.

93

00:04:31,580 --> 00:04:33,920

The 747 makes its long taxi

94

00:04:33,920 --> 00:04:36,420

to the 15,000 foot Edwards runway

95

00:04:37,360 --> 00:04:40,320

The flight crew gets takeoff clearance from the tower,

96

00:04:40,330 --> 00:04:41,700

the throttles are advanced

97

00:04:41,700 --> 00:04:42,940

and the brakes released.

98

00:04:46,080 --> 00:04:49,520

After an extended takeoff the SCA is airborne

99

00:04:49,520 --> 00:04:51,960

and the duo climb into the desert sky.