1
00:00:32,790 --> 00:00:30,790
this is really a pretty satellite so

2
00:00:35,190 --> 00:00:32,800
this is how the world saw the deployment

3
00:00:37,430 --> 00:00:35,200
of the tdrs or tracking and data relay

4
00:00:38,869 --> 00:00:37,440
satellite during the most recent mission

5
00:00:42,310 --> 00:00:38,879
of discovery

6
00:00:43,590 --> 00:00:42,320
there you see it very smooth separation

7
00:00:45,270 --> 00:00:43,600
we heard

8
00:00:47,350 --> 00:00:45,280
nothing and felt nothing in the cabin

9
00:00:49,430 --> 00:00:47,360
when that separated what most people

10
00:00:51,350 --> 00:00:49,440
didn't realize was that the bottom half

11
00:00:54,549 --> 00:00:51,360
of this satellite assembly the lighter

12
00:00:58,069 --> 00:00:54,559
colored area is a space transfer vehicle

13
00:01:01,270 --> 00:00:58,079

called the inertial upper stage or ius

14
00:01:03,349 --> 00:01:01,280
now nasa is gearing up to use this ius

15
00:01:05,270 --> 00:01:03,359
to help launch another tdrs satellite

16
00:01:07,429 --> 00:01:05,280
during the next shuttle flight and

17
00:01:09,429 --> 00:01:07,439
they're aiming for a carbon copy of that

18
00:01:11,109 --> 00:01:09,439
previous mission i would like to see it

19
00:01:13,590 --> 00:01:11,119
just like that again that was just

20
00:01:15,749 --> 00:01:13,600
letter perfect parker counts oversees

21
00:01:17,749 --> 00:01:15,759
the upper stage projects office at the

22
00:01:19,990 --> 00:01:17,759
marshall space flight center

23
00:01:22,070 --> 00:01:20,000
he explains that the ius was developed

24
00:01:25,030 --> 00:01:22,080
by the air force for use aboard the

25
00:01:26,870 --> 00:01:25,040
shuttle and expendable launch vehicles

26
00:01:28,950 --> 00:01:26,880
marshall center officials purchased the

27
00:01:31,670 --> 00:01:28,960
transfer vehicle from the air force for

28
00:01:33,749 --> 00:01:31,680
use aboard nasa missions it bridges an

29
00:01:35,670 --> 00:01:33,759
important orbital gap between the

30
00:01:37,190 --> 00:01:35,680
altitude of the shuttle and what you

31
00:01:40,310 --> 00:01:37,200
might call the parking orbit for

32
00:01:43,190 --> 00:01:40,320
satellites that's nearly 150 times

33
00:01:43,910 --> 00:01:43,200
higher roughly we're looking at an orbit

34
00:01:46,149 --> 00:01:43,920
of

35
00:01:47,030 --> 00:01:46,159
160 miles where we start with the

36
00:01:49,910 --> 00:01:47,040
shuttle

37
00:01:53,670 --> 00:01:49,920
then we take it uh from there with a

38
00:01:55,190 --> 00:01:53,680

two-stage inertial upper stage to 22 300

39
00:01:57,830 --> 00:01:55,200
miles that's what we call the

40
00:02:00,310 --> 00:01:57,840
geostationary orbit where that orbit is

41
00:02:02,069 --> 00:02:00,320
in sync with the rotation of the earth

42
00:02:04,550 --> 00:02:02,079
that's important because it means that

43
00:02:06,870 --> 00:02:04,560
satellite dishes on the earth can remain

44
00:02:09,430 --> 00:02:06,880
pointed in one direction

45
00:02:11,910 --> 00:02:09,440
but the ius is powerful enough to do

46
00:02:13,430 --> 00:02:11,920
much more than just boost satellites

47
00:02:15,910 --> 00:02:13,440
the shuttle mission after next for

48
00:02:18,150 --> 00:02:15,920
example will use an ius to send the

49
00:02:20,949 --> 00:02:18,160
unmanned magellan space probe on its

50
00:02:23,110 --> 00:02:20,959
journey to map the surface of venus

51
00:02:25,830 --> 00:02:23,120
at least two other planetary probes will

52
00:02:28,070 --> 00:02:25,840
also be propelled by ius vehicles

53
00:02:30,869 --> 00:02:28,080
later this year galileo is slated to

54
00:02:32,869 --> 00:02:30,879
begin a mission to explore jupiter

55
00:02:35,830 --> 00:02:32,879
ulysses is scheduled to begin a voyage

56
00:02:38,390 --> 00:02:35,840
to the sun about a year later

57
00:02:40,710 --> 00:02:38,400
as nasa continues to probe the frontiers

58
00:02:43,190 --> 00:02:40,720
of space the inertial upper stage

59
00:02:44,470 --> 00:02:43,200
remains a powerful way to extend our

60
00:02:46,550 --> 00:02:44,480
reach

61
00:03:02,390 --> 00:02:46,560
at the marshall space flight center this

62
00:03:07,350 --> 00:03:04,630
roughly we're looking at um an orbit of

63
00:03:08,309 --> 00:03:07,360

uh 160 miles where we start with the

64
00:03:11,190 --> 00:03:08,319
shuttle

65
00:03:14,470 --> 00:03:11,200
then we take it uh from there with a

66
00:03:16,470 --> 00:03:14,480
two-stage uh inertial upper stage to 22

67
00:03:19,110 --> 00:03:16,480
300 miles that's what we call the

68
00:03:21,670 --> 00:03:19,120
geostationary orbit where that orbit is

69
00:03:23,990 --> 00:03:21,680
in sync with the rotation of the earth

70
00:03:41,509 --> 00:03:24,000
and we were able to do that with a very

71
00:03:41,519 --> 00:03:46,550
great

72
00:03:50,470 --> 00:03:48,869
this is really a pretty satellite so

73
00:03:51,750 --> 00:03:50,480
really some gorgeous views out the

74
00:03:53,509 --> 00:03:51,760
window

75
00:03:55,270 --> 00:03:53,519
through the deployment

76
00:03:57,030 --> 00:03:55,280
and i hope we captured a lot of that on

77
00:03:58,949 --> 00:03:57,040
film

78
00:04:00,470 --> 00:03:58,959
there you see it uh very smooth

79
00:04:01,750 --> 00:04:00,480
separation

80
00:04:03,429 --> 00:04:01,760
we heard

81
00:04:07,670 --> 00:04:03,439
nothing and felt nothing in the cabin