
VOYAGER 2
August 20, 1977
Cape Canaveral, Florida


VOYAGER 1
Cape Canaveral, Florida

1
00:00:00,400 --> 00:00:03,202
[■]

2
00:00:03,235 --> 00:00:05,938
40 years ago

3
00:00:05,971 --> 00:00:08,941
[■ and machine sounds]]

4
00:00:14,213 --> 00:00:17,183
Two Voyagers began an odyssey

5
00:00:21,220 --> 00:00:25,024
Mission Control: 3-2-1-

6
00:00:25,057 --> 00:00:28,494
We have ignition,
and we have liftoff!

7
00:00:28,527 --> 00:00:29,562
[rockets firing]

8
00:00:29,595 --> 00:00:31,898
We have liftoff of
the Titan Centaur

9
00:00:31,931 --> 00:00:34,367
carrying the first of
two Voyager spacecraft

10
00:00:34,400 --> 00:00:37,270
to extend man's senses farther
into the solar system

11
00:00:37,303 --> 00:00:39,439
than ever before.

12
00:00:41,540 --> 00:00:42,875

Deep Space Network Control Room

13
00:00:42,908 --> 00:00:45,878
The "dark room" is the
"Center of the Universe."

14
00:00:47,580 --> 00:00:49,682
It's where we communicate with

15
00:00:49,715 --> 00:00:52,685
the deepest spacecraft
we have out.

16
00:00:52,718 --> 00:00:53,986
Suzanne Dodd, Voyager
Project Manager:

17
00:00:54,019 --> 00:00:55,488
We still communicate
with the Voyagers.

18
00:00:55,521 --> 00:00:58,491
They send us signals every day.

19
00:00:58,524 --> 00:01:00,726
You can see Voyager
2 is being tracked

20
00:01:00,759 --> 00:01:03,729
both by Antenna 35
and Antenna 36.

21
00:01:07,700 --> 00:01:10,670
Voyager has been a real
mission of discovery.

22
00:01:11,938 --> 00:01:15,508
Every planet we flew by, we got
more questions than answers.

23
00:01:15,541 --> 00:01:16,909
Ed Stone, Voyager
Project Scientist:

24
00:01:16,942 --> 00:01:19,712
I think none of us knew when
we launched 40 years ago

25
00:01:19,745 --> 00:01:21,747
that anything would be working
for such a wonderful

26
00:01:21,780 --> 00:01:23,749
long journey.

27
00:01:24,917 --> 00:01:27,320
We had hoped that we could
reach interstellar space.

28
00:01:27,353 --> 00:01:30,323
[■]

29
00:01:34,126 --> 00:01:36,863
We reached that with Voyager 1.

30
00:01:36,896 --> 00:01:39,866
And we're about to reach it
with Voyager 2.

31
00:01:42,868 --> 00:01:45,838
[■]

32
00:01:47,173 --> 00:01:51,744
Voyager 1 is the further
of the two spacecraft.

33
00:01:51,777 --> 00:01:56,149
And it's currently at about
13 billion miles from us

34
00:01:56,182 --> 00:01:58,918
here on Earth.

35
00:02:00,686 --> 00:02:03,656
The transmitters on
the Voyager spacecraft

36
00:02:03,689 --> 00:02:06,759
are slightly over 20 watts--

37
00:02:06,792 --> 00:02:09,996
about what your refrigerator
light bulb would give off.

38
00:02:11,497 --> 00:02:15,968
So when the signal crosses
that vast distance to us,

39
00:02:16,001 --> 00:02:17,837
the strength of the signal

40
00:02:17,870 --> 00:02:21,841
is one ten-trillionth of
a billionth of a watt

41
00:02:21,874 --> 00:02:26,012
--which is the equivalent of
one divided by 10

42
00:02:26,045 --> 00:02:28,581
with 21 zeroes after it.

43
00:02:31,350 --> 00:02:33,186
A real opportunity on
Voyager 2, of course, is

44
00:02:33,219 --> 00:02:35,788
because we have a working

solar wind instrument

45
00:02:35,821 --> 00:02:37,456
to measure the
solar wind itself,

46
00:02:37,489 --> 00:02:42,228
it's currently measuring the
solar wind inside the bubble.

47
00:02:42,261 --> 00:02:44,497
When it leaves the bubble
it will then enter

48
00:02:44,530 --> 00:02:47,533
interstellar space where there's
an interstellar wind.

49
00:02:47,566 --> 00:02:50,269
which has come from
other stars that blew up.

50
00:02:50,302 --> 00:02:52,638
And so we will have a chance
with that instrument

51
00:02:52,671 --> 00:02:55,775
to actually measure the wind
for the first time directly.

52
00:02:57,376 --> 00:02:58,811
The wonderful thing
about the journey is

53
00:02:58,844 --> 00:03:01,414
not just that it's
40 years long,

54
00:03:01,447 --> 00:03:03,649
but, in fact, it's still

discovering new things

55
00:03:03,682 --> 00:03:06,619
because it's going where
nothing has been before.

56
00:03:08,354 --> 00:03:11,824
They will continue until
they finally run out of power

57
00:03:11,857 --> 00:03:14,994
but they will orbit at the
center of the Milky Way galaxy.

58
00:03:16,062 --> 00:03:19,498
For billions of years, our
silent ambassadors.

59
00:03:23,602 --> 00:03:24,971
NASA Jet Propulsion Laboratory