
MSOLO

1
00:00:11,830 --> 00:00:02,740
foreign

2
00:00:16,369 --> 00:00:14,629
you never bring everything with you you

3
00:00:18,470 --> 00:00:16,379
always kind of live off the land even

4
00:00:21,349 --> 00:00:18,480
when we go on road trips right we buy

5
00:00:23,570 --> 00:00:21,359
gas going you know as we travel and we

6
00:00:25,250 --> 00:00:23,580
buy food as we travel well when we go

7
00:00:27,050 --> 00:00:25,260
exploring we need to do that same thing

8
00:00:28,609 --> 00:00:27,060
we need to live off the land we need to

9
00:00:30,170 --> 00:00:28,619
live on the lunar surface and then

10
00:00:32,089 --> 00:00:30,180
eventually we need to go on to Mars and

11
00:00:33,830 --> 00:00:32,099
be able to live off of that surface the

12
00:00:35,750 --> 00:00:33,840
main things that we have available on

13
00:00:37,970 --> 00:00:35,760

the moon and Mars primarily we have

14
00:00:41,869 --> 00:00:37,980
oxygen

15
00:00:43,910 --> 00:00:41,879
roughly there's a lot of ways to get

16
00:00:45,770 --> 00:00:43,920
that oxygen out this is one of the

17
00:00:48,529 --> 00:00:45,780
processes that we're testing today is is

18
00:00:51,170 --> 00:00:48,539
a well-proven method for extracting

19
00:00:54,290 --> 00:00:51,180
oxygen from uh from lunar soil or

20
00:00:59,330 --> 00:00:54,300
regolith as we go forward we need to be

21
00:00:59,340 --> 00:01:03,889
lunar-like environment

22
00:01:09,770 --> 00:01:06,649
this test is extracting oxygen from

23
00:01:12,710 --> 00:01:09,780
lunar stimulant and what that is going

24
00:01:14,870 --> 00:01:12,720
to enable us to do is live off the land

25
00:01:17,750 --> 00:01:14,880
on the lunar surface so this is our

26
00:01:19,190 --> 00:01:17,760
15-foot dirty thermal vacuum chamber we

27
00:01:21,170 --> 00:01:19,200
use it to simulate the surface of the

28
00:01:23,090 --> 00:01:21,180
Moon because on the surface of the Moon

29
00:01:25,010 --> 00:01:23,100
there is no air that means that

30
00:01:27,109 --> 00:01:25,020
convective heat transfer does not occur

31
00:01:28,490 --> 00:01:27,119
and any hardware that you build you need

32
00:01:30,469 --> 00:01:28,500
to make sure that it can withstand that

33
00:01:32,330 --> 00:01:30,479
harsh environment so here in the chamber

34
00:01:35,569 --> 00:01:32,340
right now you see our industry partner

35
00:01:38,390 --> 00:01:35,579
Sierra spaces built reactor we use this

36
00:01:41,450 --> 00:01:38,400
reactor to melt lunar regolith stimulant

37
00:01:43,789 --> 00:01:41,460
so we have a reactor that was developed

38
00:01:46,850 --> 00:01:43,799

by a commercial company and we are

39
00:01:50,270 --> 00:01:46,860
integrating our gas analysis system with

40
00:01:52,850 --> 00:01:50,280
that reactor and so we have a laser that

41
00:01:55,130 --> 00:01:52,860
is going to deliver energy to the

42
00:01:57,410 --> 00:01:55,140
regolith Melt the regolith and we're

43
00:02:00,410 --> 00:01:57,420
going to extract the oxygen that way and

44
00:02:01,969 --> 00:02:00,420
then we analyze the gas products with an

45
00:02:04,190 --> 00:02:01,979
instrument that is actually flight

46
00:02:06,530 --> 00:02:04,200
forward and so we have a mass

47
00:02:08,510 --> 00:02:06,540
spectrometer and that mess back Mass

48
00:02:11,570 --> 00:02:08,520
Spec is going to be delivered to the

49
00:02:13,250 --> 00:02:11,580
moon on earlier Eclipse missions and so

50
00:02:16,190 --> 00:02:13,260
we're using that technology that

51
00:02:18,530 --> 00:02:16,200
partnering with industry to enable us to

52
00:02:20,449 --> 00:02:18,540
analyze the gases and have a path

53
00:02:22,130 --> 00:02:20,459
forward to flight so this will increase

54
00:02:24,770 --> 00:02:22,140
what we call the technology Readiness

55
00:02:27,110 --> 00:02:24,780
level because we're we're performing the

56
00:02:28,850 --> 00:02:27,120
test in a relevant environment the

57
00:02:31,130 --> 00:02:28,860
vacuum being the relevant environment so

58
00:02:32,750 --> 00:02:31,140
what the vacuum chamber does is make

59
00:02:33,290 --> 00:02:32,760
sure that

60
00:02:35,570 --> 00:02:33,300
um

61
00:02:38,990 --> 00:02:35,580
our thermal management approach is is

62
00:02:45,050 --> 00:02:39,000
working well our gas analysis system is

63
00:02:49,850 --> 00:02:46,670

are we really making with this process

64
00:02:52,550 --> 00:02:49,860
so it's really exciting to be part of

65
00:02:55,729 --> 00:02:52,560
that ground floor effort to get that

66
00:02:57,650 --> 00:02:55,739
technology ready to support our next big

67
00:03:00,290 --> 00:02:57,660
exploration push this is really the

68
00:03:01,850 --> 00:03:00,300
first step in a series of

69
00:03:04,490 --> 00:03:01,860
what I think would

70
00:03:06,350 --> 00:03:04,500
ideally be a campaign to where we get to

71
00:03:08,390 --> 00:03:06,360
the point where we're extracting

72
00:03:11,390 --> 00:03:08,400
useful quantities of oxygen on the lunar

73
00:03:12,949 --> 00:03:11,400
surface so so this first step lets us

74
00:03:14,809 --> 00:03:12,959
know that we can perform the process at

75
00:03:16,970 --> 00:03:14,819
least at a small scale what we're doing

76
00:03:19,009 --> 00:03:16,980
today is something that's never been