
LIQUID NITROGEN
NASA

1
00:00:00,120 --> 00:00:04,490
Hello my name is Diane Linne, I'm a Senior
Research Engineer at The NASA Glen Research

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00:00:04,490 --> 00:00:09,290
Center.

3
00:00:09,290 --> 00:00:18,230
One area that we are working on is trying
to find out how we can make oxygen both to

4
00:00:18,230 --> 00:00:22,750
fill our propellant tanks for the ascent vehicle
to come home and also for breathing air.

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00:00:22,750 --> 00:00:27,630
We now believe that there is quite a bit of
water in the soil either as bound water or

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00:00:27,630 --> 00:00:28,630
as hydrated minerals.

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00:00:28,630 --> 00:00:31,320
That's what we're working on, on this
rig here.

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00:00:31,320 --> 00:00:36,890
So what we have here is a bin of simulated
Mars soil, on top, we have heater plates that

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00:00:36,890 --> 00:00:38,079
will be baking the soil.

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00:00:38,079 --> 00:00:42,469
But we need to, turn up the soil so that the
soil is exposed to the high temperatures.

11
00:00:42,469 --> 00:00:47,570
SO I was in my garden one day, roto-tilling

my garden and I thought, “Well why can’t

12
00:00:47,570 --> 00:00:49,969
we roto-till the Mars soil?”

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00:00:49,969 --> 00:00:54,719
So we’re going to be putting this in our
bin here and turn up the soil, while we’re

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00:00:54,719 --> 00:01:00,159
heating it and then, we can expose the hydrogen
and it will get heated and the hydrogen will

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00:01:00,159 --> 00:01:01,159
come off.

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00:01:01,159 --> 00:01:05,980
We have a fan in here that will then blow
the hydrogen, the moist air and we’ll capture

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00:01:05,980 --> 00:01:07,680
it downstream in a condenser.

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00:01:07,680 --> 00:01:12,030
Now we have water for drinking water, but
more importantly, we can split that water

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00:01:12,030 --> 00:01:17,050
up and combine the hydrogen back with the
carbon-dioxide in the air and now we can make

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00:01:17,050 --> 00:01:23,540
methane and more oxygen, so now we have oxygen
for our propellant tanks and the fuel, methane.