

AND AWARDS CEREMONY
— 2010 —

NASA
Small
Business
SYMPOSIUM
— 2010 —



1
00:00:06,990 --> 00:00:08,389
This Week @NASA...

2
00:00:08,389 --> 00:00:15,519
"I'd like to introduce to you today to
the bacterium GFAJ-1."

3
00:00:15,519 --> 00:00:22,160
A team of NASA-funded researchers has discovered
a bacterium that can live and grow without

4
00:00:22,160 --> 00:00:27,369
phosphate salt, an essential building block
for life as we know it. The bacterium, from

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00:00:27,369 --> 00:00:31,960
the toxic and briny
Mono Lake in California, was also shown to

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00:00:31,960 --> 00:00:36,580
sustain itself and grow on the toxic chemical,
arsenic. This is

7
00:00:36,580 --> 00:00:41,850
the first microorganism known to thrive this
way and will change how scientists search

8
00:00:41,850 --> 00:00:43,220
for life in space.

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00:00:43,220 --> 00:00:47,420
"I've led a team that has discovered a
microbe that can substitute arsenic for phosphorus

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00:00:47,420 --> 00:00:50,989
in its major
biomolecules, but let me step back for a minute.

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00:00:50,989 --> 00:00:53,280

All life that we know of requires carbon,
hydrogen,

12
00:00:53,280 --> 00:00:57,750
nitrogen, oxygen, phosphorus and sulfur and
it uses those six elements in some of the

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00:00:57,750 --> 00:01:00,050
critical pieces I
think we're all familiar with including:

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00:01:00,050 --> 00:01:04,350
DNA and RNA or the information technology
of the cell, the

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00:01:04,350 --> 00:01:08,980
proteins which are the molecular machines
and the lipids which separates you from everything

16
00:01:08,980 --> 00:01:14,140
else. And
so, we've discovered an organism which can

17
00:01:14,140 --> 00:01:16,850
substitute one element for another in these
major

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00:01:16,850 --> 00:01:17,850
biomolecules."

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00:01:17,850 --> 00:01:21,960
"With respect to space exploration, this
is a very interesting result again because

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00:01:21,960 --> 00:01:26,420
the implication is that
we still don't know everything there is

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00:01:26,420 --> 00:01:28,950
to know about what would make a habitable

environment on

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00:01:28,950 --> 00:01:34,509
another planet, or a satellite of another
planet; we have to increasingly broaden our

23
00:01:34,509 --> 00:01:39,090
perspective. So,
perhaps arsenic is not an essential component

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00:01:39,090 --> 00:01:43,210
for habitability or for life, but it may be
one that can be

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00:01:43,210 --> 00:01:44,210
tolerated.”

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00:01:44,210 --> 00:01:49,799
Until now, astronomers and scientists have
believed that, without phosphates, life couldn't

27
00:01:49,799 --> 00:01:53,299
exist
anywhere else in the universe. Discovery of

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00:01:53,299 --> 00:01:57,530
this arsenic-eating bacterium tells scientists
they need to re-

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00:01:57,530 --> 00:02:00,930
examine how and where they look.

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00:02:00,930 --> 00:02:05,860
“There is really no way we can get there
before the December launch window, so what

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00:02:05,860 --> 00:02:09,280
we'd like to do now
is take that off the table and let John and

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00:02:09,280 --> 00:02:12,400

his team do a little bit of planning over the next several days,

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00:02:12,400 --> 00:02:19,260

first part of next week, and analyze the overall plan and the workflow between now, as we go

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00:02:19,260 --> 00:02:23,280

forward, so we're setting the next launch date tentative

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00:02:23,280 --> 00:02:25,140

around Feb. 3.

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00:02:25,140 --> 00:02:29,200

"After reviewing the progress of repairs that have delayed Discovery's launch, program

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00:02:29,200 --> 00:02:30,200

managers are now targeting the shuttle's liftoff for

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00:02:30,200 --> 00:02:32,170

no earlier than Feb.3. Shuttle managers determined that more tests

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00:02:32,170 --> 00:02:38,150

and analyses are needed before proceeding with the STS-133 mission to the International

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00:02:38,150 --> 00:02:39,230

Space Station.

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00:02:39,230 --> 00:02:46,340

"We've hit a point where there is no obvious answer as to what occurred. What that means

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00:02:46,340 --> 00:02:49,100

is that we
have to take the next step. And, we have to

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00:02:49,100 --> 00:02:54,170

look in greater detail, to understand what
types of stresses

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00:02:54,170 --> 00:02:58,570

you can put on these stringers during the
assembly process, see how they could line

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00:02:58,570 --> 00:03:01,900

up, and add stress
to that stringer. And, we have to do that

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00:03:01,900 --> 00:03:05,590

through a demonstration; analysis is not going
to get us there.”

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00:03:05,590 --> 00:03:11,980

At issue: cracks on two 21-foot-long, U-shaped
aluminum brackets, called stringers, on the

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00:03:11,980 --> 00:03:15,620

shuttle's
external tank. The cracks have been fixed

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00:03:15,620 --> 00:03:18,410

and the stringers re-covered with foam.

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00:03:18,410 --> 00:03:23,880

If Discovery proves ready to go on Feb. 3,
liftoff from the Kennedy Space Center would

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00:03:23,880 --> 00:03:26,750

come at 1:34
a.m. Eastern.

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00:03:26,750 --> 00:03:31,520

“These tests stand to really move us forward.

We're at that point in the troubleshooting

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00:03:31,520 --> 00:03:33,770

where we need to
do these additional tests. We'll take the

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00:03:33,770 --> 00:03:37,740

time to do that, and get ready to go fly when
it's time to go fly."

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00:03:37,740 --> 00:03:45,060

"We just finished a very successful first
science flight on SOFIA, almost ten hours

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00:03:45,060 --> 00:03:49,980

in the air. We flew out
over the ocean and we spent a large part of

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00:03:49,980 --> 00:03:52,910

the flight on one of the most famous infrared
sources in the

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00:03:52,910 --> 00:03:57,640

sky, the star formation, the Orion Nebula
in the constellation Orion, plus several other

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00:03:57,640 --> 00:04:00,990

objects and in
general things went very well."

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00:04:00,990 --> 00:04:07,790

NASA's Stratospheric Observatory For Infrared
Astronomy, SOFIA, completed its first of six

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00:04:07,790 --> 00:04:10,510

initial
science flights planned over the next few

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00:04:10,510 --> 00:04:14,410

months. This Short Science series of flights

is demonstrating

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00:04:14,410 --> 00:04:20,459

the airborne platform's ability to perform first-class astronomical observations not

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00:04:20,459 --> 00:04:22,470

possible with ground-based telescopes.

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00:04:22,470 --> 00:04:26,979

"The scientists got some good data. They were kind of excited about that, that's

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00:04:26,979 --> 00:04:32,050

always good, that's why I like to do it. I want to see them get

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00:04:32,050 --> 00:04:33,050

what they need."

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00:04:33,050 --> 00:04:38,490

"It's an amazing engineering feat. I think that that door back there, as big a hole as

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00:04:38,490 --> 00:04:45,020

it is, when it opens you don't even notice it. In fact, most

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00:04:45,020 --> 00:04:50,320

of us have tried to predict that it's coming open and the only way

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00:04:50,320 --> 00:04:56,210

you know its coming open is if someone tells you we're about to open door in 5-4-3-2-1

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00:04:56,210 --> 00:04:57,210

now!

73
00:04:57,210 --> 00:05:02,680
SOFIA's Short Science series begins a 20-year
astronomical quest by scientists using the

74
00:05:02,680 --> 00:05:04,520
world's largest
airborne telescope.

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00:05:04,520 --> 00:05:12,090
"It was a great night; everything worked
perfect. The crew did a great job tonight

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00:05:12,090 --> 00:05:18,460
and with these first
science results we are on the move from a

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00:05:18,460 --> 00:05:24,949
development phase to the operational phase
of SOFIA."

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00:05:24,949 --> 00:05:30,749
NASA held its 3rd annual Small Business Symposium
and Awards Ceremony in Bethesda, Maryland,

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00:05:30,749 --> 00:05:34,409
just
outside Washington. NASA Administrator Charlie

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00:05:34,409 --> 00:05:39,650
Bolden kicked off the two-day event with NASA's
Associate Administrator for Small Business

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00:05:39,650 --> 00:05:41,360
Programs, Glenn Delgado.

82
00:05:41,360 --> 00:05:47,050
"NASA must transform itself in the areas
of information technology and technology development,

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00:05:47,050 --> 00:05:49,330

if we
are to, more effectively and efficiently,

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00:05:49,330 --> 00:05:53,240

achieve the missions that we undertake, and
how we at NASA are

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00:05:53,240 --> 00:05:59,180

looking for help from both our large and small
industry partners to successfully accomplish

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00:05:59,180 --> 00:06:00,189

these future
missions.”

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00:06:00,189 --> 00:06:05,580

Attendees learned how to conduct business
with NASA and its prime contractors and met

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00:06:05,580 --> 00:06:10,069

and networked
with key agency personnel. Participants also

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00:06:10,069 --> 00:06:12,939

heard from representatives of the U.S. Small
Business

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00:06:12,939 --> 00:06:25,909

Administration, other federal agencies, and
the aerospace

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00:06:25,909 --> 00:06:26,909

industry.

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00:06:26,909 --> 00:06:36,379

“How we are partnering with organizations
such as yours is something that can really

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00:06:36,379 --> 00:06:42,270

help us provide
better value to the tax payer and a more efficient

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00:06:42,270 --> 00:06:43,270
space program.”

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00:06:43,270 --> 00:06:44,400
An awards presentation led by Deputy Administrator
Lori Garver recognized outstanding support

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00:06:44,400 --> 00:06:45,400
by
employees and industry representatives for

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00:06:45,400 --> 00:06:46,400
NASA’s small business program.

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00:06:46,400 --> 00:06:51,300
Though he’s in orbit 220 miles above the
Earth, NASA astronaut Scott Kelly is showing

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00:06:51,300 --> 00:06:55,069
a lot of interest in
what’s back on the ground. Kelly, who’ll

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00:06:55,069 --> 00:06:58,330
be living aboard the International Space Station
for nearly six

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00:06:58,330 --> 00:07:04,479
months, is conducting a geography trivia game
using the social medium Twitter -- posting

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00:07:04,479 --> 00:07:07,520
photos of
different places on the globe he’s taking

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00:07:07,520 --> 00:07:12,139
from space. The first Tweep, or person using
Twitter to correctly

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00:07:12,139 --> 00:07:18,490

identify the location, wins a copy of the photo autographed by Kelly. The contest kicked

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00:07:18,490 --> 00:07:22,069

off during Geography Awareness Week last month and will

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00:07:22,069 --> 00:07:25,639

continue until Kelly's return to Earth next March.

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00:07:25,639 --> 00:07:30,699

To play, follow Kelly's Twitter account, at www.twitter.com/StationCDRKelly

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00:07:30,699 --> 00:07:39,930

You can also check out contest rules, and more about the International Space Station,

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00:07:39,930 --> 00:07:47,460

at www.nasa.gov/station

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00:07:47,460 --> 00:07:52,729

In the last two years, the Glenn Research Center has gained recognition as home to one

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00:07:52,729 --> 00:07:56,229

of the top government motor vehicle fleets in the country.

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00:07:56,229 --> 00:08:00,800

"We are definitely excited that we're able to be in a place where we can offer this

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00:08:00,800 --> 00:08:05,319

pilot program to partner with another federal agency such as the EPA.

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00:08:05,319 --> 00:08:08,030

We've received a good handful of other requests from

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00:08:08,030 --> 00:08:11,569

other agencies, but we thought it would be good to partner here locally."

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00:08:11,569 --> 00:08:16,849

Glenn should keep this distinction for years to come after announcing a new, alternative

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00:08:16,849 --> 00:08:20,289

fuel pilot program with the Cleveland office of the Environmental

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00:08:20,289 --> 00:08:21,439

Protection Agency.

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00:08:21,439 --> 00:08:26,069

"Those things are important to us here. So, this partnership with you is very important

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00:08:26,069 --> 00:08:28,930

to us because it signifies that we've made the next step

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00:08:28,930 --> 00:08:32,310

in our commitment to the environment and to using alternative

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00:08:32,310 --> 00:08:33,310

fuels."

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00:08:33,310 --> 00:08:37,919

The one-year partnership addresses a mandate that federal agencies decrease their greenhouse

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00:08:37,919 --> 00:08:42,169

gas

emissions and air pollution by using 2% less

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00:08:42,169 --> 00:08:46,130

petroleum each year; they've also been ordered to annually

126

00:08:46,130 --> 00:08:54,509

pump 10% more alternative fuels into their government-owned or -leased motor vehicles.

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00:08:54,509 --> 00:09:02,089

45 years ago, on December 4, 1965, astronauts Frank Borman and Jim Lovell set out from Cape

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00:09:02,089 --> 00:09:05,870

Canaveral

aboard Gemini Titan 7 on a two-week mission

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00:09:05,870 --> 00:09:09,370

to test flight equipment and rendezvous procedures in Earth

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00:09:09,370 --> 00:09:10,370

orbit.

131

00:09:10,370 --> 00:09:15,360

"Engine start. We're on our way Frank."

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00:09:15,360 --> 00:09:20,779

Among its milestones, the mission demonstrated controlled reentry close to the target landing

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00:09:20,779 --> 00:09:25,250

point. Gemini

7's 14 days in space doubled the length

134

00:09:25,250 --> 00:09:29,370

of any previous human spaceflight. The mission

would retain the

135

00:09:29,370 --> 00:09:35,820

American record as the longest flight until the Skylab missions of the 1970s. The Gemini

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00:09:35,820 --> 00:09:40,240

program served as a bridge between the Mercury and Apollo programs.

137

00:09:40,240 --> 00:09:43,339

The training astronauts and ground crews received during

138

00:09:43,339 --> 00:09:49,310

Gemini 7 helped lay the groundwork for NASA's future journeys to the moon.

139

00:09:49,310 --> 00:09:51,000

And that's This Week @NASA.