1
00:00:07,410 --> 00:00:11,510
This Week at NASA…

2
00:00:11,510 --> 00:00:16,900
Expedition 24 Flight Engineers Doug Wheelock
and Tracy Caldwell Dyson completed the first

3
00:00:16,900 --> 00:00:21,910
spacewalk to replace
a failed ammonia pump module on the International

4
00:00:21,910 --> 00:00:25,250
Space Station.

5
00:00:25,250 --> 00:00:30,440
The 8 hour, 3 minute excursion fell short
of removing the failed Pump Module due to

6
00:00:30,440 --> 00:00:33,540
a leak in the fourth of four
ammonia line connectors.

7
00:00:33,540 --> 00:00:37,210
“The team is in great spirits, they did
a great job today. It’s disappointing that

8
00:00:37,210 --> 00:00:42,321
we didn’t’ get further along in the
plan but the system is stable and the team

9
00:00:42,321 --> 00:00:45,380
is ready to take on the challenge of rescheduling
with EVAs and getting

10
00:00:45,380 --> 00:00:48,030
back out there to complete the job.”

11
00:00:48,030 --> 00:00:53,760
The completion of the process will most likely

require at least two additional spacewalks.

12
00:00:53,760 --> 00:00:58,079
Saturday’s spacewalk
was the longest expedition crew EVA in history

13
00:00:58,079 --> 00:01:03,260
and the sixth longest in the history of spaceflight.

14
00:01:03,260 --> 00:01:09,210
NASA and the European Space Agency (ESA) have
joined forces and resources to explore the

15
00:01:09,210 --> 00:01:10,210
Red Planet.

16
00:01:10,210 --> 00:01:15,830
“Recognizing missions cost a lot more to
do the best science and, the economic situation

17
00:01:15,830 --> 00:01:20,410
isn’t the best it could
be; it’s’ time for us to stop competing

18
00:01:20,410 --> 00:01:23,819
with our major partners, like the Europeans,
and start working together.”

19
00:01:23,819 --> 00:01:28,970
In three separate robotic missions, the partner
agencies will study the possibility of past

20
00:01:28,970 --> 00:01:33,270
life on the Red Planet as
well as test communications relays and explore

21
00:01:33,270 --> 00:01:38,670
other geochemical and biological mysteries.
The first, in 2016, will

22
00:01:38,670 --> 00:01:43,880
search for trace gases in the Martian atmosphere
that could indicate the existence of life

23
00:01:43,880 --> 00:01:48,580
on the Red Planet. A
second, in 2018, will send two rovers to the

24
00:01:48,580 --> 00:01:52,400
Martian surface. Both missions will lead the
way for a third in the

25
00:01:52,400 --> 00:01:57,580
following decade that'll return to Earth
a sample taken from the Martian surface.

26
00:01:57,580 --> 00:02:06,310
"The driving reason behind an ESA/NASA collaboration
is to build our capabilities to return sample

27
00:02:06,310 --> 00:02:10,450
from Mars in
the 2020s. We call it a campaign because it

28
00:02:10,450 --> 00:02:14,610
could cover 2, or maybe three launch ops to
be able to be able to set

29
00:02:14,610 --> 00:02:18,970
the infrastructure on the surface of the planet,
get the samples back off the of the planet

30
00:02:18,970 --> 00:02:24,380
and return them to Earth
safely."

31
00:02:24,380 --> 00:02:29,090
Engineers at the Jet Propulsion Laboratory
are getting their ATHLETE some exercise. ATHLETE,

32
00:02:29,090 --> 00:02:33,250
for All-Terrain,
Hex-Limbed, Extra-Terrestrial Explorer, is

33
00:02:33,250 --> 00:02:37,460
a working prototype of a robotic rover that
can transport habitats and

34
00:02:37,460 --> 00:02:42,670
other cargo on the surface of the moon or
Mars. The half-scale vehicle that stands 15

35
00:02:42,670 --> 00:02:46,820
feet tall has been stretching
its six legs on a series of extended-drive

36
00:02:46,820 --> 00:02:49,700
tests on the long, dirt roads adjacent to
JPL.

37
00:02:49,700 --> 00:02:54,780
“The ATHLETE is actually programmed to adjust
the height of each leg so that it keeps and

38
00:02:54,780 --> 00:02:56,850
equal amount of weight
on each wheel. And so that means that as its

39
00:02:56,850 --> 00:03:00,450
going over small hills, through rolling terrain,
it will actually conform

40
00:03:00,450 --> 00:03:04,480
to the hills and valleys then make sure that
the robots always have an equal amount of

41
00:03:04,480 --> 00:03:07,340
force on each tire. For
rougher terrain, like if there’s lots of

42
00:03:07,340 --> 00:03:11,319
obstacles like rock, or it gets really loose
and sandy, and really steep, an

43
00:03:11,319 --> 00:03:13,350
ATHLETE can actually start walking."

44
00:03:13,350 --> 00:03:18,819
The engineers want to test ATHLETE's ability
to meet a NASA milestone of traveling at least

45
00:03:18,819 --> 00:03:24,010
25 miles under its own
power in 14 days or less. The robot's top

46
00:03:24,010 --> 00:03:28,230
speed is about a mile-and-a-quarter an hour.
The official demonstration

47
00:03:28,230 --> 00:03:33,730
is slated to begin next month during NASA's
D-RATS, or Desert Research and Technology

48
00:03:33,730 --> 00:03:39,100
Studies tests in remote
northern Arizona.

49
00:03:39,100 --> 00:03:44,080
This new composite image from the Chandra
X-ray Observatory, the Hubble Space Telescope,

50
00:03:44,080 --> 00:03:48,020
and the Spitzer
Space Telescope shows two colliding galaxies

51
00:03:48,020 --> 00:03:52,480
more than 100 million years after they first
impacted each other.

52

00:03:52,480 --> 00:03:58,100
The continuing collision of the Antennae galaxies,
located about 62 million light years from

53
00:03:58,100 --> 00:04:02,370
Earth, has triggered the
formation of millions of stars in clouds of

54
00:04:02,370 --> 00:04:05,099
dusts and gas in the galaxies.

55
00:04:05,099 --> 00:04:10,720
The X-ray image from Chandra shows huge clouds
of hot, interstellar gas that have been injected

56
00:04:10,720 --> 00:04:14,750
with rich
deposits of elements from supernova explosions.

57
00:04:14,750 --> 00:04:18,470
This enriched gas, which includes elements
such as oxygen,

58
00:04:18,470 --> 00:04:24,770
iron, magnesium and silicon, will one day
be incorporated into new generations of stars

59
00:04:24,770 --> 00:04:25,770
and planets.

60
00:04:25,770 --> 00:04:33,400
A half-dozen students participating in NASA's
INSPIRE summer internship program at the Dryden

61
00:04:33,400 --> 00:04:37,650
Flight Research
Center are learning first-hand about the start-to-finish

62
00:04:37,650 --> 00:04:40,500
lifecycle of flight testing experimental aircraft.

63
00:04:40,500 --> 00:04:48,070
The students worked in teams to flight test
a large remote-controlled model airplane.

64
00:04:48,070 --> 00:04:55,410
(nat) They analyzed the
performance of the aircraft using data collected

65
00:04:55,410 --> 00:05:01,530
on those flights. (nat) NASA's INSPIRE provides
future engineers

66
00:05:01,530 --> 00:05:06,389
with project experience prior to entering
their senior year in high school or their

67
00:05:06,389 --> 00:05:10,220
first semester of college.

68
00:05:10,220 --> 00:05:17,100
50 years ago, NASA launched its first communications
satellite, Echo 1. Made from mylar polyester

69
00:05:17,100 --> 00:05:20,990
film and
measuring about 100 feet across, the balloon-shaped

70
00:05:20,990 --> 00:05:27,570
spacecraft was designed as a passive communications
reflector for transcontinental and intercontinental

71
00:05:27,570 --> 00:05:31,880
telephone, radio, and television signals.
During orbit, a special

72
00:05:31,880 --> 00:05:37,550
recorded message from President Dwight Eisenhower
was bounced off Echo 1 and picked up by radio

73
00:05:37,550 --> 00:05:40,830
operators
across the nation.

74
00:05:40,830 --> 00:05:48,540
“This is President Eisenhower speaking.
It is a great personal satisfaction to participate

75
00:05:48,540 --> 00:05:49,970
in this first experiment in
communications.”

76
00:05:49,970 --> 00:05:54,990
ECHO 1 re-entered the atmosphere on May 24,
1968.

77
00:05:54,990 --> 00:06:00,770
”Ignition and liftoff of the Atlas V rocket
with MRO.”

78
00:06:00,770 --> 00:06:05,870
Five years ago, NASA's Mars Reconnaissance
Orbiter was launched in search of evidence

79
00:06:05,870 --> 00:06:10,290
that water persisted on
the surface of Mars over a prolonged period

80
00:06:10,290 --> 00:06:14,840
of time. Previous Mars missions indicated
that, at some point in the

81
00:06:14,840 --> 00:06:20,920
Red Planet’s history, water flowed across
its surface. Throughout the years, the MRO

82
00:06:20,920 --> 00:06:25,110
has continued to analyze
minerals, look for water, trace the distribution

83
00:06:25,110 --> 00:06:29,090
of dust in the atmosphere and monitor the
Martian weather.

84
00:06:29,090 --> 00:06:31,169
And that’s This Week at NASA.