SpacetoGround

1
00:00:02,696 --> 00:00:04,656
"HOUSTON, STATION
ON SPACE TO GROUND."

2
00:00:05,026 --> 00:00:07,196
WELCOME TO SPACE TO
GROUND, I AM KAYLA LAFRANCE.

3
00:00:07,886 --> 00:00:10,496
A BUILDING MATERIAL THAT HAS
BEEN USED THROUGHOUT HUMAN

4
00:00:10,496 --> 00:00:11,876
HISTORY IS BEING TESTED

5
00:00:11,876 --> 00:00:14,626
BY ASTRONAUTS ONBOARD THE
INTERNATIONAL SPACE STATION.

6
00:00:15,386 --> 00:00:18,546
THIS WEEK NASA'S SERENA
AUNON-CHANCELLOR WORKED

7
00:00:18,546 --> 00:00:20,066
ON AN EXPERIMENT USING CEMENT.

8
00:00:20,906 --> 00:00:24,416
THE MVP CELL-05 EXPERIMENT
USES A CENTRIFUGE

9
00:00:24,526 --> 00:00:26,766
TO IMPART THREE SIMULATED
GRAVITY LEVELS

10
00:00:26,916 --> 00:00:28,226
TO DIFFERENT CEMENT SAMPLES.

11
00:00:28,906 --> 00:00:32,656
THE VARIATION IN GRAVITY LEVELS

MATCHES THOSE OF LUNAR GRAVITY,

12
00:00:32,956 --> 00:00:35,036
MARS GRAVITY AND MICRO GRAVITY.

13
00:00:35,036 --> 00:00:38,386
THE PROCESS OF MAKING
CEMENT - HYDRATING A POWDER

14
00:00:38,386 --> 00:00:41,556
AND LETTING IT DRY TO HARDEN
- CREATES MICROSTRUCTURES

15
00:00:41,776 --> 00:00:44,566
THAT RESULT IN ELABORATE
COMBINATIONS OF PHASES,

16
00:00:44,996 --> 00:00:47,226
ULTIMATELY DETERMINING
THE MATERIAL PROPERTIES

17
00:00:47,326 --> 00:00:48,436
OF THE HARDENED CEMENT.

18
00:00:49,216 --> 00:00:51,356
BY SOLIDIFYING CEMENT
IN MICROGRAVITY,

19
00:00:51,616 --> 00:00:54,296
RESEARCHERS MINIMIZE
GRAVITY-DRIVEN PHENOMENA

20
00:00:54,606 --> 00:00:57,106
AND ARE ABLE TO CREATE A
DIFFERENT MICROSTRUCTURE

21
00:00:57,326 --> 00:01:00,086
THAN THAT OBSERVED IN TYPICAL
LABORATORY CONDITIONS ON EARTH.

22
00:01:00,896 --> 00:01:03,866
RESEARCHERS AIM TO UNDERSTAND
THIS PROCESS IN MICROGRAVITY,

23
00:01:04,316 --> 00:01:07,436
THIS KNOWLEDGE IS ESSENTIAL
TO ADVANCING THE USE OF CEMENT

24
00:01:07,476 --> 00:01:10,366
IN EXTRATERRESTRIAL SETTINGS,
SUCH AS THE MOON OR MARS.

25
00:01:10,876 --> 00:01:13,186
THIS KNOWLEDGE COULD
ALSO LEAD TO IMPROVEMENTS

26
00:01:13,246 --> 00:01:16,086
IN MANUFACTURING PROCESSES
HERE ON EARTH AS WELL.

27
00:01:16,386 --> 00:01:18,626
IT WILL NOT BE LONG
UNTIL THE NUMBER

28
00:01:18,626 --> 00:01:20,966
OF RESIDENTS ONBOARD THE
SPACE STATION DOUBLES.

29
00:01:21,496 --> 00:01:23,756
NEXT WEEK, NASA ASTRONAUT
ANNE MCCLAIN,

30
00:01:23,886 --> 00:01:27,056
CANADIAN SPACE AGENCY
ASTRONAUT DAVID SAINT-JACQUES,

31
00:01:27,356 --> 00:01:31,456
AND COSMONAUT OLEG KONONENKO
WILL LAUNCH INSIDE A SOYUZ

32
00:01:31,506 --> 00:01:34,696
FROM THE BAIKONUR
COSMODROME IN KAZAKHSTAN.

33
00:01:34,696 --> 00:01:38,246
MAKE SURE YOU TUNE IN TO NASA TV
ON MONDAY, DECEMBER 3 STARTING

34
00:01:38,246 --> 00:01:41,816
AT 6:30AM EASTERN FOR LIVE
COVERAGE OF THEIR LAUNCH,

35
00:01:41,816 --> 00:01:43,786
DOCKING, AND THEIR
WELCOMING ONBOARD.

36
00:01:44,556 --> 00:01:47,566
SUNI WILLIAMS IS A
VETERAN STATION COMMANDER

37
00:01:47,566 --> 00:01:51,236
AND EXPERIENCED SPACEWALKER, BUT
THERE IS STILL A LOT OF TRAINING

38
00:01:51,236 --> 00:01:52,546
TO DO BEFORE HER NEXT FLIGHT!

39
00:01:53,076 --> 00:01:57,006
ASSIGNED TO THE SECOND MISSION
ON BOEING'S CST-100 STARLINER,

40
00:01:57,306 --> 00:02:00,526
SHE RECENTLY DID SOME SPACEWALK
TRAINING IN VIRTUAL REALITY

41
00:02:00,746 --> 00:02:03,826
TO PREPARE FOR HER NEXT LONG
DURATION STAY ABOARD THE

42

00:02:03,916 --> 00:02:04,406
SPACE STATION.

43
00:02:04,986 --> 00:02:06,626
TO SEE THE LATEST
AS WE GET CLOSER

44
00:02:06,626 --> 00:02:09,816
TO THESE FIRST COMMERCIAL CREW
FLIGHTS FROM BOEING AND SPACEX,

45
00:02:10,220 --> 00:02:12,940
VISIT NASA.GOV/COMMERICALCREW.