



**Space**to**Ground**

1  
00:00:02,750 --> 00:00:05,080  
"HOUSTON, STATION ON SPACE TO GROUND."

2  
00:00:05,080 --> 00:00:08,010  
WELCOME TO SPACE TO GROUND, I'M KATHRYN  
CLAYTON.

3  
00:00:08,010 --> 00:00:09,960  
THERES MORE SCIENCE TO GET EXCITED ABOUT WITH

4  
00:00:09,960 --> 00:00:13,040  
THE ARRIVAL OF THE NEW SPACE-X CARGO DRAGON.

5  
00:00:13,710 --> 00:00:15,810  
ON SUNDAY SPACEX LAUNCHED THEIR

6  
00:00:15,810 --> 00:00:18,360  
COMMERCIAL RESUPPLY SERVICES MISSION-21

7  
00:00:18,360 --> 00:00:19,730  
TO THE INTERNATIONAL SPACE STATION

8  
00:00:19,730 --> 00:00:21,750  
FROM KENNEDY SPACE CENTER IN FLORIDA.

9  
00:00:21,750 --> 00:00:23,510  
THE UPGRADED CARGO DRAGON DELIVERED

10  
00:00:23,510 --> 00:00:25,820  
MORE THAN 6,400 POUNDS OF RESEARCH,

11  
00:00:25,820 --> 00:00:27,730  
CREW SUPPLIES AND HARDWARE.

12  
00:00:27,730 --> 00:00:29,890  
THE AUTONOMOUS DOCKING WAS A FIRST

13

00:00:29,890 --> 00:00:30,890  
FOR THE CARGO DRAGON

14  
00:00:30,890 --> 00:00:32,930  
AND WAS MONITORED BY ASTRONAUTS

15  
00:00:32,930 --> 00:00:34,530  
KATE RUBINS AND VICTOR GLOVER

16  
00:00:34,530 --> 00:00:35,690  
ABOARD THE STATION.

17  
00:00:35,690 --> 00:00:37,200  
THE CARGO DRAGON WILL JOIN

18  
00:00:37,200 --> 00:00:38,200  
THE DRAGON RESILIENCE

19  
00:00:38,200 --> 00:00:39,760  
THAT DELVERED THE CREW-1 ASTRONAUTS

20  
00:00:39,760 --> 00:00:41,140  
TO THE STATION LAST MONTH,

21  
00:00:41,140 --> 00:00:42,140  
MARKING THE FIRST TIME

22  
00:00:42,140 --> 00:00:43,640  
THERE ARE TWO DRAGON SPACECRAFTS

23  
00:00:43,640 --> 00:00:45,641  
DOCKED TO THE STATION SIMULTANEOUSLY.

24  
00:00:45,641 --> 00:00:47,399  
THE CARGO DRAGON WILL SPEND APPROXIMATELY

25  
00:00:47,399 --> 00:00:49,300  
ONE MONTH ATTACHED TO THE SPACE STATION

26

00:00:49,300 --> 00:00:51,847

BEFORE RETURNING TO EARTH WITH CARGO AND RESEARCH.

27

00:00:52,564 --> 00:00:55,670

CRS-21 DELIVERED EXCITING SCIENCE INVESTIGATIONS

28

00:00:55,670 --> 00:00:56,930

THAT WILL HELP US UNDERSTAND

29

00:00:56,930 --> 00:00:58,469

THE HUMAN BODY AND HOW WE ADAPT

30

00:00:58,469 --> 00:01:00,360

TO DIFFERENT ENVIRONMENTS.

31

00:01:00,360 --> 00:01:01,680

THE EFFECT OF MICROGRAVITY

32

00:01:01,680 --> 00:01:03,879

ON HUMAN BRAIN ORGANIDS WILL OBSERVE

33

00:01:03,879 --> 00:01:07,220

THE RESPONSE OF BRAIN ORGANIDS TO MICROGRAVITY.

34

00:01:07,220 --> 00:01:09,770

BRAIN ORGANIDS ARE SMALL LIVING MASSES OF  
CELLS

35

00:01:09,770 --> 00:01:12,670

THAT INTERACT, GROW AND CAN SURVIVE FOR MONTHS.

36

00:01:12,670 --> 00:01:13,860

THEY HELP US UNDERSTAND HOW

37

00:01:13,860 --> 00:01:15,530

LARGER SYSTEMS REACT TO CHANGES

38

00:01:15,530 --> 00:01:16,530  
IN THE ENVIRONMENT.

39

00:01:16,530 --> 00:01:18,210  
THE INVESTIGATION WILL EXPOSE

40

00:01:18,210 --> 00:01:19,810  
THE ORGANISMS TO MICROGRAVITY

41

00:01:19,810 --> 00:01:22,613  
FOR THREE WEEKS IN THE SPACE TANGO TANGOLAB.

42

00:01:23,330 --> 00:01:24,720  
NASA IS ALWAYS PREPARING

43

00:01:24,720 --> 00:01:26,030  
FOR FURTHER EXPLORATION

44

00:01:26,030 --> 00:01:27,710  
AND TWO INVESTIGATIONS DELIVERED

45

00:01:27,710 --> 00:01:31,200  
ON CRS-21 WILL MAKE THAT EXPLORATION POSSIBLE.

46

00:01:31,200 --> 00:01:32,960  
THE BIOASTEROID INVESTIGATION

47

00:01:32,960 --> 00:01:34,780  
WILL STUDY THE PROCESS OF HOW

48

00:01:34,780 --> 00:01:36,860  
MICROBES FORM LAYERS ON THE SURFACE

49

00:01:36,860 --> 00:01:38,479  
OF ASTEROIDAL MATERIAL AND HOW

50

00:01:38,479 --> 00:01:39,790

THE MICROBES ALTER THE RELEASE

51  
00:01:39,790 --> 00:01:41,630  
OF ELEMENTS FROM THE ROCKS.

52  
00:01:41,630 --> 00:01:44,360  
BIOASTEROID WILL ALSO STUDY BIOFILM FORMATION

53  
00:01:44,360 --> 00:01:46,149  
AND ELEMENTAL RELEASE IN MICROGRAVITY

54  
00:01:46,149 --> 00:01:48,110  
TO INVESTIGATE HOW SPACE CONDITIONS

55  
00:01:48,110 --> 00:01:51,629  
ULTIMATELY AFFECT MICROBE AND MINERAL INTERACTIONS  
IN SPACE.

56  
00:01:52,401 --> 00:01:53,880  
DEEP SPACE EXPLORATION

57  
00:01:53,880 --> 00:01:56,439  
WILL REQUIRE HUMAN SPACE HABITATS

58  
00:01:56,439 --> 00:02:00,049  
AND THE BRAZING OF ALUMINUM ALLOYS IN SPACE,

59  
00:02:00,049 --> 00:02:02,729  
OR SUBSA BRAINS, WILL EXAMINE A POTENTIAL TOOL

60  
00:02:02,729 --> 00:02:05,409  
FOR THE CONSTRUCTION OF HUMAN SPACE HABITATS.

61  
00:02:05,409 --> 00:02:06,560  
LIQUID METAL FORMED DURING

62  
00:02:06,560 --> 00:02:08,880  
A PROCESS CALLED BRAZING BONDS MATERIALS

63

00:02:08,880 --> 00:02:12,268

AT TEMPERATURES ABOVE 450 DEGREES CELSIUS.

64

00:02:12,268 --> 00:02:13,830

THE RESULTS OF THIS INVESTIGATION

65

00:02:13,830 --> 00:02:17,039

COULD ENABLE BRAZING IN SPACE STRUCTURES AND  
REPAIRS.

66

00:02:17,920 --> 00:02:19,310

KEEP SENDING IN YOUR QUESTIONS