



1
00:01:10,870 --> 00:00:54,709
and the way the sunlight plays upon her

2
00:01:10,880 --> 00:01:22,310
i'm

3
00:01:22,320 --> 00:01:38,830
hey

4
00:01:38,840 --> 00:01:42,390
she's close to me

5
00:01:42,400 --> 00:01:54,230
softly smile i know she must be

6
00:01:54,240 --> 00:02:15,670
she goes with me

7
00:02:39,990 --> 00:02:35,509
good

8
00:02:41,270 --> 00:02:40,000
for you bjarni you probably guessed that

9
00:02:42,710 --> 00:02:41,280
and uh

10
00:02:45,350 --> 00:02:42,720
we know you're thinking a lot about

11
00:02:51,509 --> 00:02:45,360
vibrations these days and uh may all

12
00:02:55,190 --> 00:02:53,030
thanks mark just took a little while to

13
00:02:56,550 --> 00:02:55,200

figure that out kind of slow up here but

14

00:03:00,470 --> 00:02:56,560

hopefully we'll be back in business with

15

00:03:00,480 --> 00:04:36,310

sounds good

16

00:04:42,390 --> 00:04:38,469

colonel brown good morning and thank you

17

00:04:45,590 --> 00:04:44,150

good morning to you and it's uh

18

00:04:47,510 --> 00:04:45,600

definitely a pleasure we always love to

19

00:04:49,670 --> 00:04:47,520

talk to the folks

20

00:04:50,870 --> 00:04:49,680

let me ask you first of all how long

21

00:04:52,870 --> 00:04:50,880

have you folks been up this morning i

22

00:04:54,710 --> 00:04:52,880

understand the beach boys the sound of

23

00:04:56,150 --> 00:04:54,720

the beach boys at least awakened you a

24

00:04:59,670 --> 00:04:56,160

little earlier this morning how long

25

00:05:03,189 --> 00:05:01,270

well we just been up a couple three

26
00:05:05,110 --> 00:05:03,199
hours now we're just finishing up on our

27
00:05:06,629 --> 00:05:05,120
post leap activities which is basically

28
00:05:07,909 --> 00:05:06,639
getting up and getting reconfigured for

29
00:05:09,510 --> 00:05:07,919
the day's work

30
00:05:11,590 --> 00:05:09,520
and matter of fact we're just starting

31
00:05:14,070 --> 00:05:11,600
uh some of our robot robot arm

32
00:05:18,070 --> 00:05:14,080
operations in just a few moments

33
00:05:24,550 --> 00:05:20,710
well actually today is a new sequence of

34
00:05:26,390 --> 00:05:24,560
uh testing uh we're gonna detach the

35
00:05:27,270 --> 00:05:26,400
orbital replacement unit one more time

36
00:05:29,670 --> 00:05:27,280
today

37
00:05:32,150 --> 00:05:29,680
but the new part is uh the ground is

38
00:05:32,950 --> 00:05:32,160

going to uplink commands to the robot

39

00:05:34,390 --> 00:05:32,960

arm

40

00:05:36,070 --> 00:05:34,400

and they're going to control it from the

41

00:05:38,390 --> 00:05:36,080

ground pretty much and we're going to be

42

00:05:40,870 --> 00:05:38,400

on the ass flight deck of the orbiter

43

00:05:42,310 --> 00:05:40,880

watching the uh arm and uh we're kind of

44

00:05:45,830 --> 00:05:42,320

like these safety observers and the

45

00:05:49,590 --> 00:05:47,510

let me ask you i understand that

46

00:05:51,590 --> 00:05:49,600

the german satellite that you launched

47

00:05:54,790 --> 00:05:51,600

the other day

48

00:05:56,710 --> 00:05:54,800

came within one and a half miles of a

49

00:06:00,070 --> 00:05:56,720

500 piece of

50

00:06:02,310 --> 00:06:00,080

space junk up there in orbit how close

51
00:06:06,309 --> 00:06:02,320
was that and how serious a problem was

52
00:06:10,629 --> 00:06:08,870
well actually um there's obviously a lot

53
00:06:13,110 --> 00:06:10,639
of debris up here in space we've been

54
00:06:14,550 --> 00:06:13,120
coming into space uh our country and

55
00:06:16,469 --> 00:06:14,560
other countries for many years so there

56
00:06:18,150 --> 00:06:16,479
is a lot of debris up here

57
00:06:21,270 --> 00:06:18,160
we do track that debris and we try to

58
00:06:23,029 --> 00:06:21,280
maintain our distance from that

59
00:06:24,790 --> 00:06:23,039
i read the news this morning obviously

60
00:06:26,950 --> 00:06:24,800
and saw that

61
00:06:28,070 --> 00:06:26,960
it wasn't any danger to the orbiter

62
00:06:30,070 --> 00:06:28,080
obviously they had a little bit of

63
00:06:31,990 --> 00:06:30,080

concern for the satellite but once they

64

00:06:34,790 --> 00:06:32,000

uh got the tracking down and narrowed it

65

00:06:37,110 --> 00:06:34,800

down exactly where it was going it uh it

66

00:06:38,790 --> 00:06:37,120

was okay that as far as i know they did

67

00:06:41,110 --> 00:06:38,800

not have to maneuver the crystal

68

00:06:43,749 --> 00:06:41,120

satellite around to uh

69

00:06:45,029 --> 00:06:43,759

to miss the uh the piece of hardware but

70

00:06:46,550 --> 00:06:45,039

they could have done that if they really

71

00:06:48,790 --> 00:06:46,560

needed to

72

00:06:50,230 --> 00:06:48,800

but i read down here that had they in

73

00:06:52,150 --> 00:06:50,240

fact collided it would have been

74

00:06:55,189 --> 00:06:52,160

disastrous for that satellite is that

75

00:06:59,350 --> 00:06:57,749

well satellites were built to operate in

76

00:07:02,710 --> 00:06:59,360

vacuum and in space they're not very

77

00:07:05,110 --> 00:07:02,720

structurally sound meaning that anything

78

00:07:07,909 --> 00:07:05,120

that collides with orbiting body is

79

00:07:09,430 --> 00:07:07,919

probably going to do severe damage

80

00:07:10,790 --> 00:07:09,440

just because of the speeds that are

81

00:07:13,270 --> 00:07:10,800

traveling and if they're coming from

82

00:07:14,629 --> 00:07:13,280

different directions you almost double

83

00:07:16,710 --> 00:07:14,639

that speed

84

00:07:17,909 --> 00:07:16,720

okay let me the this satellite that is

85

00:07:20,550 --> 00:07:17,919

out there is i understand is doing

86

00:07:22,790 --> 00:07:20,560

research on the ozone layers of the

87

00:07:24,629 --> 00:07:22,800

earth uh tell me a little bit about that

88

00:07:29,350 --> 00:07:24,639

and why that is significant for for

89

00:07:33,029 --> 00:07:30,950

well we're trying to learn as much as we

90

00:07:35,749 --> 00:07:33,039

can about the earth's atmosphere and how

91

00:07:39,070 --> 00:07:35,759

we as humans affect that atmosphere

92

00:07:41,909 --> 00:07:39,080

this satellite flew back in 1994 on the

93

00:07:44,150 --> 00:07:41,919

sts-66 shuttle mission i had a chance to

94

00:07:45,990 --> 00:07:44,160

take part in that mission also and we

95

00:07:47,830 --> 00:07:46,000

gathered a lot of data about the ozone

96

00:07:48,950 --> 00:07:47,840

the upper level structure of the

97

00:07:50,629 --> 00:07:48,960

atmosphere

98

00:07:52,469 --> 00:07:50,639

and this mission we're going to do the

99

00:07:54,230 --> 00:07:52,479

same but they've incorporated a new

100

00:07:55,909 --> 00:07:54,240

twist to their satellite

101
00:07:58,070 --> 00:07:55,919
they're able to maneuver their satellite

102
00:07:59,670 --> 00:07:58,080
and yaw it left and right to be able to

103
00:08:01,990 --> 00:07:59,680
cover more of the earth's surface so

104
00:08:03,270 --> 00:08:02,000
we'll be able to map more of the ozone

105
00:08:05,510 --> 00:08:03,280
and the upper level chemicals and

106
00:08:08,150 --> 00:08:05,520
structures of the atmosphere than we did

107
00:08:10,309 --> 00:08:08,160
in 1994. now when you put all that data

108
00:08:12,230 --> 00:08:10,319
together we're trying to understand how

109
00:08:14,150 --> 00:08:12,240
the earth's atmosphere evolves over time

110
00:08:16,150 --> 00:08:14,160
and how we as humans affect that

111
00:08:18,869 --> 00:08:16,160
atmosphere obviously we need that

112
00:08:20,629 --> 00:08:18,879
atmosphere to survive and and if we are

113
00:08:22,390 --> 00:08:20,639

doing something that we think may be

114

00:08:23,830 --> 00:08:22,400

hurting it we need to figure out a

115

00:08:25,990 --> 00:08:23,840

better way of doing it

116

00:08:27,430 --> 00:08:26,000

and the other thing you learn from space

117

00:08:28,869 --> 00:08:27,440

up in the shuttle if you look out at the

118

00:08:30,550 --> 00:08:28,879

earth's limb the little layer of

119

00:08:31,830 --> 00:08:30,560

atmosphere around the shuttle or excuse

120

00:08:33,269 --> 00:08:31,840

me around the earth

121

00:08:35,829 --> 00:08:33,279

from the shuttle

122

00:08:37,430 --> 00:08:35,839

you uh you realize how fragile the earth

123

00:08:38,630 --> 00:08:37,440

really is the atmosphere because it's a

124

00:08:40,550 --> 00:08:38,640

very thin

125

00:08:42,790 --> 00:08:40,560

body of material that envelops the earth

126

00:08:45,590 --> 00:08:42,800

and protects us from all the harmful

127

00:08:47,590 --> 00:08:45,600

emissions from outer space

128

00:08:51,670 --> 00:08:47,600

what's on tap for today specifically

129

00:08:54,550 --> 00:08:53,590

well a lot of the day will be done with

130

00:08:58,470 --> 00:08:54,560

the

131

00:09:00,710 --> 00:08:58,480

little small robot arm that we have on

132

00:09:03,030 --> 00:09:00,720

board we'll be working on that we also

133

00:09:04,230 --> 00:09:03,040

have the mid deck experiments going on

134

00:09:07,350 --> 00:09:04,240

the

135

00:09:09,910 --> 00:09:07,360

bds which is working with cell growth

136

00:09:12,470 --> 00:09:09,920

uh right to my uh my left here you can't

137

00:09:13,910 --> 00:09:12,480

see just out of the photo uh bjarney

138

00:09:16,070 --> 00:09:13,920

trigevison our canadian payload

139

00:09:18,790 --> 00:09:16,080

specialist is working hard on his uh

140

00:09:20,070 --> 00:09:18,800

microgravity isolation mount experiment

141

00:09:22,389 --> 00:09:20,080

and uh

142

00:09:24,949 --> 00:09:22,399

we're just busy as bees up here i this

143

00:09:25,910 --> 00:09:24,959

was my fourth flight and um

144

00:09:27,590 --> 00:09:25,920

i'm

145

00:09:29,509 --> 00:09:27,600

still awed by how busy we've been on

146

00:09:31,350 --> 00:09:29,519

this flight and uh and it seems to

147

00:09:33,750 --> 00:09:31,360

continue from day to day so we're very

148

00:09:35,430 --> 00:09:33,760

happy to be at work and

149

00:09:39,910 --> 00:09:35,440

time up here is very valuable so we like

150

00:09:50,630 --> 00:09:42,389

and discovery houston we do have video

151

00:09:50,640 --> 00:10:58,870

okay bill welcome aboard

152

00:11:01,430 --> 00:11:00,310

we'll give you a couple minutes of

153

00:11:05,670 --> 00:11:01,440

flight deck