



1  
00:01:07,240 --> 00:00:55,450  
go ahead Columbia copy that Mike stand

2  
00:01:15,850 --> 00:01:07,250  
by one for any instructions Columbia

3  
00:01:17,140 --> 00:01:15,860  
hunt oh yeah my god they're ready to let

4  
00:01:25,719 --> 00:01:17,150  
you go ahead and activate those to

5  
00:01:27,700 --> 00:01:25,729  
cancel also in addition to continuing

6  
00:01:29,740 --> 00:01:27,710  
work on the mid-deck of Columbia

7  
00:01:32,020 --> 00:01:29,750  
mission specialist Mike Lopez Alegria

8  
00:01:34,120 --> 00:01:32,030  
will also take some time to exercise

9  
00:01:37,480 --> 00:01:34,130  
today on the bicycle ergometer that will

10  
00:01:39,550 --> 00:01:37,490  
be set up on Columbia's mid deck Mike

11  
00:01:42,490 --> 00:01:39,560  
Lopez Alegria is also the astronaut on a

12  
00:01:58,109 --> 00:01:42,500  
blue team can you verify that that is

13  
00:02:08,910 --> 00:02:01,920

copy that Brett the Zaca CEQA insertion

14

00:02:15,259 --> 00:02:08,920

is complete that's affirmative son now

15

00:02:15,269 --> 00:02:31,899

copy that Fred five point one

16

00:03:12,839 --> 00:02:34,190

they sell phones for Katy we did not

17

00:03:18,699 --> 00:03:16,240

and Katie that is the termination fluid

18

00:03:20,229 --> 00:03:18,709

the top plunger and the center plunger

19

00:04:03,100 --> 00:03:20,239

would terminate so we do not want to

20

00:04:16,360 --> 00:04:12,700

I'm so sad for a CBC go ahead put them

21

00:04:18,759 --> 00:04:16,370

under step one point one six assists to

22

00:04:24,510 --> 00:04:18,769

remove kept on tape from the isolator

23

00:04:24,520 --> 00:07:07,180

copy different

24

00:07:12,649 --> 00:07:10,790

also upcoming for the crew in about 20

25

00:07:14,180 --> 00:07:12,659

minutes one of the final activities for

26

00:07:16,670 --> 00:07:14,190

the blue team will be a test of a new

27

00:07:19,159 --> 00:07:16,680

system being flown for the first time on

28

00:07:21,350 --> 00:07:19,169

a shuttle onboard duct Columbian STS 73

29

00:07:23,570 --> 00:07:21,360

that system a system that allows a

30

00:07:25,430 --> 00:07:23,580

ground tear television to be sent to

31

00:07:28,070 --> 00:07:25,440

television from the ground to be sent up

32

00:07:29,659 --> 00:07:28,080

a to the crew and a vice versa

33

00:07:32,210 --> 00:07:29,669

two-way television essentially after

34

00:07:34,219 --> 00:07:32,220

two-way conversations again the first

35

00:07:36,529 --> 00:07:34,229

test of that system which is being flown

36

00:07:39,110 --> 00:07:36,539

is a test objective on this flight will

37

00:07:50,600 --> 00:07:39,120

be taking place in just about 20 minutes

38

00:07:57,320 --> 00:07:50,610

or so this concludes the pre-recorded

39

00:07:59,029 --> 00:07:57,330

oblique transmission of the GA TV this

40

00:08:01,640 --> 00:07:59,039

is Mission Control Houston now that

41

00:08:04,939 --> 00:08:01,650

again has been a test of ground to air

42

00:08:07,040 --> 00:08:04,949

television uplink to Columbia that

43

00:08:11,839 --> 00:08:07,050

equipment being flown for the first time

44

00:08:15,110 --> 00:08:11,849

on this flight again allowing scenes to

45

00:08:17,360 --> 00:08:15,120

be sent up to the shuttle from the

46

00:08:18,950 --> 00:08:17,370

ground from Mission Control that segment

47

00:08:20,719 --> 00:08:18,960

just a test segment with several

48

00:08:22,279 --> 00:08:20,729

different test patterns and several

49

00:08:28,959 --> 00:08:22,289

different highlights from past shuttle

50

00:08:33,949 --> 00:08:32,269

this shot now is live from Mission

51  
00:08:36,529 --> 00:08:33,959  
Control of a flight director Brian

52  
00:08:41,930 --> 00:08:36,539  
Austin and spacecraft communicator Carl

53  
00:08:44,630 --> 00:08:41,940  
Meade again being sent up to Columbia as

54  
00:08:46,490 --> 00:08:44,640  
well again Columbia the first shuttle to

55  
00:08:48,199 --> 00:08:46,500  
fly with this equipment it's a test

56  
00:08:50,319 --> 00:08:48,209  
objective several other tests of the

57  
00:08:53,300 --> 00:08:50,329  
ground air television capability will be

58  
00:08:58,819 --> 00:08:53,310  
performed throughout the 16 days a

59  
00:09:00,800 --> 00:08:58,829  
Columbia spins in general and we can see

60  
00:09:02,930 --> 00:09:00,810  
payload specialist al Sacco they're

61  
00:09:06,220 --> 00:09:02,940  
going into one of the stowage containers

62  
00:09:11,949 --> 00:09:06,230  
on the ceiling of the Space Lab module

63  
00:09:17,680 --> 00:09:14,150

apparatus that has to be stored in

64

00:09:23,380 --> 00:09:17,690

special areas of the module or

65

00:09:25,690 --> 00:09:23,390

the shuttle mid-deck in lockers and all

66

00:09:29,590 --> 00:09:25,700

of that comes under the heading of

67

00:09:31,770 --> 00:09:29,600

stowage it's a one specialized aspect of

68

00:09:33,820 --> 00:09:31,780

preparing for a shuttle mission is just

69

00:09:35,170 --> 00:09:33,830

planning out where you're going to put

70

00:09:40,800 --> 00:09:35,180

all the things that the crew will need

71

00:09:42,700 --> 00:09:40,810

to get access to for launch and landing

72

00:09:45,880 --> 00:09:42,710

many of the things that they'll be using

73

00:09:52,390 --> 00:09:45,890

during the course of the mission are put

74

00:09:54,460 --> 00:09:52,400

away in particular areas so that they

75

00:09:57,330 --> 00:09:54,470

obviously saw that they aren't just

76

00:10:02,890 --> 00:09:57,340

floating around loose during those

77

00:10:05,380 --> 00:10:02,900

launch and landing periods and so now we

78

00:10:07,770 --> 00:10:05,390

get a better look with Sacco in the

79

00:10:11,200 --> 00:10:07,780

foreground pulling down one of those

80

00:10:13,060 --> 00:10:11,210

stowage areas it's like a drawer that in

81

00:11:39,480 --> 00:10:13,070

this case though comes down vertically

82

00:11:39,490 --> 00:11:47,610

Space Lab Huntsville with words on DPM

83

00:11:54,580 --> 00:11:50,830

yes Kathy DPM would like you to manually

84

00:12:48,710 --> 00:11:54,590

tune X to start with and see what

85

00:12:54,590 --> 00:12:51,470

this is in the Astro culture plant

86

00:12:56,869 --> 00:12:54,600

growth experiment system and it's the

87

00:12:59,509 --> 00:12:56,879

first opportunity that the science team

88

00:13:03,019 --> 00:12:59,519

for that experiment is having to take a

89

00:13:09,590 --> 00:13:03,029

look at sources for the next several

90

00:13:13,009 --> 00:13:09,600

minutes this is their first opportunity

91

00:13:16,749 --> 00:13:13,019

to see get a little insight into the

92

00:13:24,249 --> 00:13:16,759

status of the plant growth inside that

93

00:13:33,889 --> 00:13:29,689

allow potato seedlings to grow in

94

00:13:35,720 --> 00:13:33,899

microgravity conditions the principal

95

00:13:38,960 --> 00:13:35,730

investigator team here in Huntsville

96

00:13:43,910 --> 00:13:38,970

advised that they're elated at the way

97

00:13:48,230 --> 00:13:43,920

things look inside the facility it's a

98

00:13:52,220 --> 00:13:48,240

rather close-up view showing the tops of

99

00:13:55,759 --> 00:13:52,230

the leaflets there are about three of

100

00:13:58,699 --> 00:13:55,769

the small potato plant leaflets that are

101

00:14:04,519 --> 00:13:58,709

visible in this very detailed view the

102

00:14:10,689 --> 00:14:04,529

tubers that are the actual substance of

103

00:14:14,439 --> 00:14:10,699

the potatoes yes source of starch are

104

00:14:18,170 --> 00:14:14,449

buried or obscured by the leaflets and

105

00:14:21,499 --> 00:14:18,180

but the science team members are able to

106

00:14:24,079 --> 00:14:21,509

judge the status of growth from what

107

00:14:27,110 --> 00:14:24,089

they see in this video and they've

108

00:14:28,790 --> 00:14:27,120

indicated that what they see tells them

109

00:14:31,879 --> 00:14:28,800

that the plants so far at least are

110

00:14:41,269 --> 00:14:31,889

maintaining the vigor that they would

111

00:14:49,069 --> 00:14:46,170

and of course all of this is being done

112

00:14:51,720 --> 00:14:49,079

as preliminaries preliminary steps to

113

00:15:16,110 --> 00:14:51,730

starting to go into the actual science

114

00:15:20,639 --> 00:15:18,749

and Kathy we'd like you to go ahead and

115

00:15:46,620 --> 00:15:20,649

move the injectors in please fully

116

00:15:55,319 --> 00:15:49,819

and now we could see those injectors

117

00:16:00,030 --> 00:15:55,329

coming in and contacting the small solid

118

00:16:13,079 --> 00:16:00,040

sphere immobilizing the sphere this is

119

00:16:29,160 --> 00:16:13,089

another of the steps that's affirmative

120

00:16:34,770 --> 00:16:31,750

we get a pretty good close-up view of

121

00:16:38,200 --> 00:16:34,780

the liquid injector systems here in this

122

00:16:40,300 --> 00:16:38,210

video that's coming down they are one of

123

00:16:42,970 --> 00:16:40,310

the portions of this system that have

124

00:16:49,210 --> 00:16:42,980

been improved since the first flight on

125

00:16:55,660 --> 00:16:49,220

STS 50 us ml one the injectors and tips

126

00:17:04,930 --> 00:16:55,670

have been redesigned hand over to

127

00:17:06,970 --> 00:17:04,940

teacher sees this is space will have

128

00:17:09,190 --> 00:17:06,980

operations Huntsville where we are

129

00:17:13,660 --> 00:17:09,200

currently receiving downlink video from

130

00:17:16,630 --> 00:17:13,670

inside the chamber of the single Locker

131

00:17:19,060 --> 00:17:16,640

protein crystal growth experiment this

132

00:17:22,330 --> 00:17:19,070

particular experiment is crystal growth

133

00:17:24,310 --> 00:17:22,340

by liquid liquid diffusion for this

134

00:17:27,190 --> 00:17:24,320

experiment the protein crystals are

135

00:17:30,150 --> 00:17:27,200

grown in for handheld diffusion test

136

00:17:34,600 --> 00:17:30,160

cells which are often referred to as a

137

00:17:39,070 --> 00:17:34,610

THD t sees each one of these contains

138

00:17:42,370 --> 00:17:39,080

four test cells and by diffusing one

139

00:17:46,030 --> 00:17:42,380

liquid into another crystal growth is

140

00:17:49,060 --> 00:17:46,040

accomplished in this particular

141

00:17:51,250 --> 00:17:49,070

experiment the two different liquids are

142

00:17:54,340 --> 00:17:51,260

brought into contact with each other but

143

00:17:57,670 --> 00:17:54,350

they are not actually mixed eventually

144

00:18:00,040 --> 00:17:57,680

these fluids will intermingle with one

145

00:18:03,190 --> 00:18:00,050

another what is often refer to as

146

00:18:06,250 --> 00:18:03,200

diffusion through the random motion of

147

00:18:08,650 --> 00:18:06,260

molecules by gradually increasing the

148

00:18:12,310 --> 00:18:08,660

concentration of the precipitant in the