



1
00:00:01,040 --> 00:00:06,869

i love you

2
00:00:10,150 --> 00:00:08,629

thank you for that song more by matthew

3
00:00:11,749 --> 00:00:10,160

west it's a great description of the

4
00:00:13,990 --> 00:00:11,759

beauty of this earth and a wonderful

5
00:00:15,990 --> 00:00:14,000

reminder of god's love for us so thanks

6
00:00:17,990 --> 00:00:16,000

for that and a special greeting to my

7
00:00:19,349 --> 00:00:18,000

wonderful wife margie and my great boys

8
00:00:21,510 --> 00:00:19,359

alex and jeffrey i hope you're having a

9
00:00:23,590 --> 00:00:21,520

great day and i miss them and look

10
00:00:25,189 --> 00:00:23,600

forward to seeing them

11
00:00:27,189 --> 00:00:25,199

this is mission control houston

12
00:00:29,029 --> 00:00:27,199

spacewalk preparations continue in the

13
00:00:31,189 --> 00:00:29,039

equipment lock section of the quest

14

00:00:33,590 --> 00:00:31,199

airlock you see mike fossum

15

00:00:36,950 --> 00:00:33,600

slithering his way into the upper torso

16

00:00:39,030 --> 00:00:36,960

of his extra vehicular mobility unit

17

00:00:41,670 --> 00:00:39,040

not the easiest task in the world but

18

00:00:43,910 --> 00:00:41,680

with the assistance of satoshi furukawa

19

00:00:45,990 --> 00:00:43,920

on the left and atlantis commander chris

20

00:00:46,709 --> 00:00:46,000

ferguson on the right

21

00:00:48,549 --> 00:00:46,719

for

22

00:00:50,869 --> 00:00:48,559

fossum is now

23

00:00:51,990 --> 00:00:50,879

secured in the upper torso portion of a

24

00:00:54,069 --> 00:00:52,000

suit

25

00:00:55,350 --> 00:00:54,079

flexing his arms to make sure he's

26

00:00:57,350 --> 00:00:55,360

comfortable

27

00:01:00,310 --> 00:00:57,360

and a good view from another camera in

28

00:01:02,869 --> 00:01:00,320

the quest airlock as you watch fossum on

29

00:01:05,270 --> 00:01:02,879

the right and garen on the left flexing

30

00:01:09,109 --> 00:01:05,280

their legs part of this exercise

31

00:01:21,429 --> 00:01:10,789

all the texts look good are you guys

32

00:01:24,950 --> 00:01:23,270

um cover is open you can egress the

33

00:01:27,350 --> 00:01:24,960

arrow lock if you want

34

00:01:29,429 --> 00:01:27,360

all right be attaching an anchor hook to

35

00:01:30,710 --> 00:01:29,439

the aft external d-ring

36

00:01:33,190 --> 00:01:30,720

ready you're ready to rock and roll

37

00:01:37,990 --> 00:01:33,200

ready to rock and roll let's go buddy

38

00:01:40,789 --> 00:01:38,950

we

39

00:01:43,030 --> 00:01:40,799

started out installing the new colt

40

00:01:45,749 --> 00:01:43,040

tools or the contingency operation lapid

41

00:01:48,870 --> 00:01:45,759

tools uh onto the uh

42

00:01:51,190 --> 00:01:48,880

back side of the pump module platform

43

00:01:52,789 --> 00:01:51,200

those went right into position uh what a

44

00:01:54,550 --> 00:01:52,799

great team working together to get that

45

00:01:57,109 --> 00:01:54,560

designed uh

46

00:01:57,830 --> 00:01:57,119

those tools worked flawlessly

47

00:02:00,550 --> 00:01:57,840

uh

48

00:02:01,670 --> 00:02:00,560

module hung up just a little bit on the

49

00:02:03,510 --> 00:02:01,680

uh

50

00:02:05,670 --> 00:02:03,520

external stowage platform before we got

51
00:02:07,429 --> 00:02:05,680
it released he gave it uh one more

52
00:02:09,990 --> 00:02:07,439
little try with the

53
00:02:11,190 --> 00:02:10,000
pgt bolt didn't turn at all so he gave

54
00:02:13,589 --> 00:02:11,200
it a little

55
00:02:14,869 --> 00:02:13,599
little yank and the whole thing came

56
00:02:16,710 --> 00:02:14,879
loose

57
00:02:18,710 --> 00:02:16,720
and

58
00:02:22,790 --> 00:02:18,720
there you can see it's starting to move

59
00:02:25,510 --> 00:02:22,800
it's about 1500 pounds so

60
00:02:26,869 --> 00:02:25,520
takes quite a bit to move it

61
00:02:28,869 --> 00:02:26,879
okay ronnie you're ready to lift up the

62
00:02:30,949 --> 00:02:28,879
front muscle let's do it

63
00:02:34,630 --> 00:02:30,959

it's 1400 pounds buddy

64

00:02:36,550 --> 00:02:34,640

let's kill this yeah okay

65

00:02:39,350 --> 00:02:36,560

pretty

66

00:02:41,509 --> 00:02:39,360

uh here you see uh ron uh controlling

67

00:02:43,589 --> 00:02:41,519

the whole thing on the robot arm and

68

00:02:45,670 --> 00:02:43,599

notice he's just very slowly turning the

69

00:02:47,270 --> 00:02:45,680

whole thing over it started out in one

70

00:02:50,070 --> 00:02:47,280

orientation kind of a heads-up

71

00:02:51,589 --> 00:02:50,080

orientation and he needed to turn it 180

72

00:02:54,229 --> 00:02:51,599

degrees around so that when he got down

73

00:02:55,670 --> 00:02:54,239

to the payload bay he'd be heads down

74

00:02:58,390 --> 00:02:55,680

in the payload bay and could install the

75

00:03:00,710 --> 00:02:58,400

pump module when he got down there

76
00:03:02,630 --> 00:03:00,720
now clear of external stowage platform

77
00:03:04,949 --> 00:03:02,640
number two headed down to atlanta's

78
00:03:07,830 --> 00:03:04,959
payload bay where the pump module will

79
00:03:10,309 --> 00:03:07,840
be secured on a truss support structure

80
00:03:12,949 --> 00:03:10,319
at the very back of the bay for the trip

81
00:03:14,869 --> 00:03:12,959
back home and an engineering evaluation

82
00:03:19,110 --> 00:03:14,879
to determine what caused the pump to

83
00:03:21,509 --> 00:03:19,120
fail on the night of july 31st last year

84
00:03:24,229 --> 00:03:21,519
there are three spare pump modules

85
00:03:26,070 --> 00:03:24,239
residing on various locations on the

86
00:03:31,350 --> 00:03:26,080
international space station for use in

87
00:03:31,360 --> 00:03:35,350
nice down spaceship you guys got here

88
00:03:40,710 --> 00:03:37,990

why thank you

89

00:03:41,589 --> 00:03:40,720

mike fossum is uh preparing the work

90

00:03:43,910 --> 00:03:41,599

site

91

00:03:46,390 --> 00:03:43,920

at the uh mission peculiar support

92

00:03:48,869 --> 00:03:46,400

structure as it's called the cargo truss

93

00:03:50,149 --> 00:03:48,879

basically at the back of the cargo bay

94

00:03:52,470 --> 00:03:50,159

of atlantis

95

00:03:54,949 --> 00:03:52,480

just above him is ron garan holding on

96

00:04:00,470 --> 00:03:54,959

to the pump module and its support

97

00:04:05,830 --> 00:04:02,470

the pump module and its attachment

98

00:04:08,470 --> 00:04:05,840

mechanism uh now aligned to a comparable

99

00:04:12,710 --> 00:04:08,480

uh attachment mechanism on this truss at

100

00:04:18,150 --> 00:04:15,030

you guys are uh good with the gca we can

101
00:04:21,349 --> 00:04:18,160
ngc angle breaks out gca is complete

102
00:04:28,070 --> 00:04:23,350
brakes are on you guys are clear for

103
00:04:32,629 --> 00:04:30,629
mike fossum has this robotic refueling

104
00:04:34,310 --> 00:04:32,639
mission the rrm in his hands he's on the

105
00:04:39,749 --> 00:04:34,320
end of the station's arm and moving out

106
00:04:46,469 --> 00:04:43,110
hey close encounter the obss

107
00:04:48,310 --> 00:04:46,479
hear that cheerful red light on the top

108
00:04:50,710 --> 00:04:48,320
here you see the robotics refueling

109
00:04:53,510 --> 00:04:50,720
mission uh just about to be installed

110
00:04:56,070 --> 00:04:53,520
and handed off to the dexter arm over on

111
00:04:57,830 --> 00:04:56,080
the lab nader

112
00:04:59,510 --> 00:04:57,840
i know that everybody at goddard was

113
00:05:00,629 --> 00:04:59,520

holding their breath here making sure

114

00:05:01,990 --> 00:05:00,639

that

115

00:05:03,909 --> 00:05:02,000

we were all

116

00:05:05,510 --> 00:05:03,919

sending them good wishes and

117

00:05:07,830 --> 00:05:05,520

we were able to get it installed onto

118

00:05:10,870 --> 00:05:07,840

the dexter just fine then it was off to

119

00:05:13,029 --> 00:05:10,880

install the missy or the materials iss

120

00:05:15,430 --> 00:05:13,039

experiment the small portion of that

121

00:05:17,510 --> 00:05:15,440

called the ormate

122

00:05:19,990 --> 00:05:17,520

took some photos of that that's material

123

00:05:22,790 --> 00:05:20,000

samples that are exposed to the

124

00:05:24,710 --> 00:05:22,800

ram and wake of space

125

00:05:27,270 --> 00:05:24,720

from there we went on to work on the

126
00:05:28,550 --> 00:05:27,280
grapple fixture that had the little wire

127
00:05:30,150 --> 00:05:28,560
sticking out through one of the latch

128
00:05:32,629 --> 00:05:30,160
doors you can see it getting cleared

129
00:05:35,430 --> 00:05:32,639
there and then pulled out of the way

130
00:05:36,870 --> 00:05:35,440
um that went just like the training it

131
00:05:40,230 --> 00:05:36,880
could not it was just like watching

132
00:05:42,070 --> 00:05:40,240
trainia video to see how well this went

133
00:05:43,830 --> 00:05:42,080
just like we had planned it doesn't

134
00:05:47,590 --> 00:05:43,840
always go that well but today it sure

135
00:05:50,790 --> 00:05:47,600
did and we were glad to see it

136
00:05:52,790 --> 00:05:50,800
our final task on the eva was installing

137
00:05:54,710 --> 00:05:52,800
the thermal cover that chris was talking

138
00:05:56,070 --> 00:05:54,720

about here you see it coming out of the

139

00:05:58,550 --> 00:05:56,080

bag you think of it a great big

140

00:06:01,909 --> 00:05:58,560

comforter coming out of the

141

00:06:04,230 --> 00:06:01,919

oru bag or the on orbit replacement oru

142

00:06:08,230 --> 00:06:05,749

here you can see it in its final

143

00:06:09,909 --> 00:06:08,240

configuration strapped down it's got

144

00:06:13,029 --> 00:06:09,919

nine velcro straps that hold it into

145

00:06:14,629 --> 00:06:13,039

position and

146

00:06:16,550 --> 00:06:14,639

about the time that they had it

147

00:06:18,790 --> 00:06:16,560

installed in this configuration the

148

00:06:20,390 --> 00:06:18,800

thermal officer in the front room in the

149

00:06:22,710 --> 00:06:20,400

mission control center stood up and

150

00:06:25,510 --> 00:06:22,720

turned around and said i can already see

151
00:06:27,110 --> 00:06:25,520
it starting to take effect

152
00:06:28,950 --> 00:06:27,120
he could already see it in his data just

153
00:06:31,430 --> 00:06:28,960
that fast so that's very successful

154
00:06:33,830 --> 00:06:31,440
project

155
00:06:36,150 --> 00:06:33,840
well i'd like to thank

156
00:06:37,990 --> 00:06:36,160
was a lot of teams whose hard work all

157
00:06:39,590 --> 00:06:38,000
came into play

158
00:06:40,710 --> 00:06:39,600
for this eva

159
00:06:42,950 --> 00:06:40,720
uh

160
00:06:44,469 --> 00:06:42,960
brown led a you know magnificent team of

161
00:06:45,990 --> 00:06:44,479
people that put together a lot of stuff

162
00:06:49,029 --> 00:06:46,000
and they had to do it

163
00:06:52,150 --> 00:06:49,039

in the hard way with uh ron and i

164

00:06:54,309 --> 00:06:52,160

uh with ron and me traveling a lot

165

00:06:55,990 --> 00:06:54,319

and uh not even in country at the same

166

00:06:58,469 --> 00:06:56,000

time together a lot they had to work

167

00:06:59,670 --> 00:06:58,479

really hard and had a really really well

168

00:07:00,830 --> 00:06:59,680

integrated

169

00:07:03,510 --> 00:07:00,840

plan put

170

00:07:06,870 --> 00:07:03,520

together with all of the products and

171

00:07:09,830 --> 00:07:06,880

the pieces that really came together and

172

00:07:11,350 --> 00:07:09,840

from uh from goddard the folk team

173

00:07:13,830 --> 00:07:11,360

the pump module team to figure out how

174

00:07:15,830 --> 00:07:13,840

to get that thing back

175

00:07:18,950 --> 00:07:15,840

a whole lot of work by a lot of a lot of

176

00:07:21,909 --> 00:07:18,960

teams around the country really

177

00:07:25,830 --> 00:07:21,919

really all folks came together and today