
NASA

1
00:00:01,140 --> 00:00:05,310
>> Coming up on Thursday, the Expedition
30 crew will also have a spacewalk,

2
00:00:05,310 --> 00:00:08,640
two Russian crew members Oleg
Kononenko and Anton Shkaplerov.

3
00:00:08,640 --> 00:00:12,910
They're going to be stepping outside to conduct
a Russian EVA out of the Russian segment

4
00:00:12,910 --> 00:00:14,180
of the International Space Station.

5
00:00:14,180 --> 00:00:18,600
We are pleased to be joined by Glenda
Brown who is here inside Mission Control.

6
00:00:18,600 --> 00:00:22,550
She's going to be the Lead Space Walk officer
for the Houston Team here inside Mission Control

7
00:00:22,550 --> 00:00:24,990
on Thursday, during all those activities.

8
00:00:24,990 --> 00:00:25,760
So, Glenda, welcome.

9
00:00:25,760 --> 00:00:28,810
First of all, tell us a little bit
about what the crew's going to be doing

10
00:00:28,810 --> 00:00:30,680
on Thursday whenever they step outside.

11
00:00:30,680 --> 00:00:35,820
>> Well, they've got a couple of activities,
they're on their nominal time line.

12
00:00:35,820 --> 00:00:41,880
The first of which will be move the
Strela One from the Pirs' airlock

13
00:00:41,880 --> 00:00:45,650
up to the new air lock for use on future EVAs.

14
00:00:45,650 --> 00:00:49,470
And they'll be using one Strela
to move the other Strela.

15
00:00:49,470 --> 00:00:54,200
You can see that coming up here
on the video that we're playing.

16
00:00:54,200 --> 00:01:04,590
So the first part of this EVA, they'll egress
out of the Pirs' airlock onto the EVA ladder

17
00:01:04,590 --> 00:01:08,380
and then move over to the Strela One.

18
00:01:08,380 --> 00:01:13,280
One crew member gets in position to epic
controls, they have a little footplate

19
00:01:13,280 --> 00:01:16,770
that they stand on and then some
hand cranks that move it around.

20
00:01:16,770 --> 00:01:20,990
The other crew member gets down
at the end effect or end of it,

21
00:01:20,990 --> 00:01:25,790
releases it from some straps that they
have that are just holding it in position,

22

00:01:25,790 --> 00:01:33,270
move it around to the Strela Two, which on the,
kind of on the other side of the Pirs' airlock.

23
00:01:33,270 --> 00:01:41,350
And once they're translated over to the other
side, they begin to release the other one.

24
00:01:42,660 --> 00:01:48,830
Oh, then I guess before they do that, they have
an extension boom that goes onto the first one,

25
00:01:48,830 --> 00:01:52,530
that's needed so that it can actually
reach around onto the other side.

26
00:01:52,530 --> 00:01:57,900
You can see it, it, it, it telescopes out

27
00:01:57,900 --> 00:02:02,160
and then it has a gimbal mechanism
so it can kind of bend around.

28
00:02:02,160 --> 00:02:11,350
Then the one operator bends it around to, to the
other Strela, as you can see here in the video.

29
00:02:11,350 --> 00:02:16,120
>> These, these Strela booms are kind of
interesting because they, they, they're,

30
00:02:16,120 --> 00:02:17,640
they basically telescope out, right?

31
00:02:17,640 --> 00:02:20,260
And then the crew can use them to move
around, it's a little bit different

32
00:02:20,260 --> 00:02:24,500
with how we do things in the U.S. segment,

sort of a hand over hand sort of maneuver down,

33
00:02:24,500 --> 00:02:28,200
down the tress segment, things like that,
which people have seen during shuttle missions,

34
00:02:28,200 --> 00:02:32,870
but talk about some of the other differences
between Russian spacewalks and U.S. spacewalks

35
00:02:32,870 --> 00:02:36,590
in terms of how the crew gets prepared for it,
what they do whenever they're outside, you know,

36
00:02:36,590 --> 00:02:38,180
how do you interact with the Russian team.

37
00:02:38,180 --> 00:02:40,270
It's, it's really kind of a different world.

38
00:02:40,270 --> 00:02:44,110
>> It is a different world and it
starts right there with the Strela boom,

39
00:02:44,110 --> 00:02:53,800
so that's a hand operated telescoping pole
where we have a robotically operated SSRMS, the,

40
00:02:53,800 --> 00:02:58,810
the Canadian robot arm that's
on the U.S. segment.

41
00:02:58,810 --> 00:03:03,940
So the crew members on U.S.
EVA, which is right on that arm,

42
00:03:03,940 --> 00:03:08,530
while a robot operator inside
kind of drives them around.

43
00:03:08,530 --> 00:03:11,160
That's one difference in the
actual execution of the EVA.

44
00:03:11,160 --> 00:03:14,960
You mentioned translation,
that's a little bit different.

45
00:03:14,960 --> 00:03:20,180
We have a single [inaudible] tether that
you anchor down in one, at one point

46
00:03:20,180 --> 00:03:25,070
and then basically reel out to the end of
it, translating around wherever you like.

47
00:03:25,070 --> 00:03:30,070
The Russians have been using a different hand
over hand technique from the very beginning

48
00:03:30,070 --> 00:03:33,750
of their first spacewalks, just two
different techniques of how you do EVA.

49
00:03:33,750 --> 00:03:41,350
You asked about preparation, the preparation
for us on these EVAs is completely different

50
00:03:41,350 --> 00:03:46,580
for a U.S. EVA, our team here in
Houston puts the whole thing together.

51
00:03:46,580 --> 00:03:51,690
We run it over in the neutral buoyance
laboratory, we build the procedures,

52
00:03:51,690 --> 00:03:55,100
train the crew, all of that
is done right here in Houston.

53
00:03:55,100 --> 00:04:02,070
For the Russian EVAs, they have a, a similar
development process, but they basically have two

54
00:04:02,070 --> 00:04:06,760
or three specialists that develop a short
list of tasks that they're going to do.

55
00:04:06,760 --> 00:04:10,450
They'll write their procedures and
then they train in the hydro lab.

56
00:04:10,450 --> 00:04:17,130
Then tend to do more skills based training,
which is just the very how do you the task part.

57
00:04:17,130 --> 00:04:22,040
They don't train end to end like we do where
they start at the airlock and go through all

58
00:04:22,040 --> 00:04:26,750
of their EVA tasks for the day, kind of
practicing in the dress rehearsal kind of way.

59
00:04:26,750 --> 00:04:33,810
They just go one individual task [inaudible] We
are starting to train some more like that here

60
00:04:33,810 --> 00:04:37,170
on the U.S. side as well in
preparation for the maintenance EVAs.

61
00:04:37,170 --> 00:04:41,550
We never know what's going to go wrong
on the station, so we have to prepare

62
00:04:41,550 --> 00:04:44,640
in a skills based way all those various tasks.

63

00:04:44,640 --> 00:04:47,090
>> Let's talk about the suits themselves
and for those of you who are going

64
00:04:47,090 --> 00:04:49,030
to be watching tomorrow, we're
actually going to have a live shot

65
00:04:49,030 --> 00:04:52,040
from the space [inaudible] lab here at
the Johnson Space Center where we have one

66
00:04:52,040 --> 00:04:55,610
of the Orlon space suits, which is what
the crew will be using on Thursday.

67
00:04:55,610 --> 00:04:58,140
They're quite different than the EMUs.

68
00:04:58,140 --> 00:05:01,150
The -- or the, the white space suits
that people know from the U.S. side,

69
00:05:01,150 --> 00:05:04,920
but they're at a different pressure too, so
the U.S., you know, the U.S. suits are down at

70
00:05:04,920 --> 00:05:07,360
like a 4.3 or something like that, PSI and,

71
00:05:07,360 --> 00:05:09,360
and the Russian suits are
a little bit higher, right?

72
00:05:09,360 --> 00:05:14,300
>> That's right, Josh, and what that
does for the crew member on our side

73
00:05:14,300 --> 00:05:17,780
when we use the lower suit

pressure, the good part of that is

74
00:05:17,780 --> 00:05:21,130
that it's less resistance in the suit, so...

75
00:05:21,130 --> 00:05:21,440
>> Easy to use.

76
00:05:25,720 --> 00:05:21,620
Yeah.

77
00:05:25,720 --> 00:05:31,180
compressing the hand is a little bit easier in
the gloves, it's not just all blown up and, and,

78
00:05:31,180 --> 00:05:38,330
and stiff and hard at 8 PSI, like the Russian
suit, it's at 4 PSI, so a little easier to move.

79
00:05:38,330 --> 00:05:40,760
So that's one difference with the pressure.

80
00:05:40,760 --> 00:05:48,150
On the other side of things because
they're at a higher pressure, they,

81
00:05:48,150 --> 00:05:50,670
they don't have to pre-breathe as long, so...

82
00:05:50,670 --> 00:05:53,690
>> Which has to get their bodies ready to get
all the nitrogen out of their blood [inaudible]

83
00:05:53,690 --> 00:05:55,510
>> Right. To prevent the bends.

84
00:05:55,510 --> 00:05:57,940
>> Right. So, you know, people saw
that during the shuttle missions and,

85
00:05:57,940 --> 00:06:01,670
and station space walks that they would camp
out, used to camp out inside the Quest airlock

86
00:06:01,670 --> 00:06:03,250
and now we kind of changed that little bit.

87
00:06:03,250 --> 00:06:05,060
We do sort of an exercise [inaudible]

88
00:06:05,060 --> 00:06:06,300
>> Right. Right.

89
00:06:06,300 --> 00:06:13,220
So, we used to bring the whole -- let's
see on the shuttle world long ago,

90
00:06:13,220 --> 00:06:18,990
we brought the whole cabin down to 10.2
PSI, then we went over to the space station

91
00:06:18,990 --> 00:06:22,580
and we were able to just depress
the equipment lock and the crew lock

92
00:06:22,580 --> 00:06:28,910
down to 10.2 PSI overnight and that would
allow us to pre-breathe at that lower pressure,

93
00:06:28,910 --> 00:06:32,240
purging the nitrogen from
the tissues to prevent bends.

94
00:06:32,240 --> 00:06:40,300
And then recently, we've moved to the
exercise protocol or the aisle protocol,

95
00:06:40,300 --> 00:06:48,130

it's in suit light exercise and that allows us
to pre-breathe in the suit for a short period

96
00:06:48,130 --> 00:06:52,940
of time, about an hour or so in
addition to what we had been doing.

97
00:06:52,940 --> 00:06:58,110
And, and the pressure in the suited portion
of it, and they just move around a little bit

98
00:06:58,110 --> 00:07:02,680
and that helps purge those, purge the
nitrogen from their systems as well.

99
00:07:02,680 --> 00:07:05,260
So that's how we do it on the U.S.
side, but on the Russian side,

100
00:07:05,260 --> 00:07:09,310
because it's a higher suit pressure, they
just basically bring the suit pressure down,

101
00:07:09,310 --> 00:07:14,440
ingress the suits, bring the suit pressure
down to their nominal operating pressure,

102
00:07:14,440 --> 00:07:17,780
pre-breathe there for just a little while
and basically as long as it takes them

103
00:07:17,780 --> 00:07:20,830
to do their other operations to get
out the door and then they're out.

104
00:07:20,830 --> 00:07:20,900
[Inaudible]

105
00:07:20,900 --> 00:07:22,490
>> Done. It's impressive.

106
00:07:22,490 --> 00:07:26,200
So everything has checked out today, the Orlon suits, they, they [inaudible] them on and,

107
00:07:26,200 --> 00:07:29,690
and made sure everything was ready to go and everything was okay from I heard, right?

108
00:07:29,690 --> 00:07:32,000
>> Yeah, we'll call that a dress rehearsal.

109
00:07:32,000 --> 00:07:36,420
They started about 2 a.m. local Houston time.

110
00:07:36,420 --> 00:07:42,350
They started checking out all of their airlock systems and then got into the space suits

111
00:07:42,350 --> 00:07:44,380
and tried, tried the suit sizing.

112
00:07:44,380 --> 00:07:45,950
They had to make a few adjustments.

113
00:07:45,950 --> 00:07:49,220
The way their suit adjust in size is different than ours.

114
00:07:49,220 --> 00:07:53,660
Ours has a bunch of different components that we size pretty specifically to the crew member.

115
00:07:53,660 --> 00:08:02,490
For the Russians, they have kind of a one size fits all, and they have some cam adjustments

116
00:08:02,490 --> 00:08:09,300
and some arm and leg length adjustments,

basically think of it as a big cinch cord

117
00:08:09,300 --> 00:08:13,400
that you pull to make the legs
shorter or the arms shorter.

118
00:08:13,400 --> 00:08:15,460
And they have to make some of those adjustments.

119
00:08:15,460 --> 00:08:19,550
They do that in their dry run,
which is what they were doing today.

120
00:08:19,550 --> 00:08:23,930
They got all that suit sizing taken care of,
it took one crew member a little bit longer

121
00:08:23,930 --> 00:08:28,390
than the other one, Oleg has some
more experience than Anton does.

122
00:08:28,390 --> 00:08:31,570
So it took them -- him just a
little longer to get his done.

123
00:08:31,570 --> 00:08:35,310
And then after that, they actually
practiced some translations while they're

124
00:08:35,310 --> 00:08:36,110
in their airlock.

125
00:08:36,110 --> 00:08:40,490
It's a pretty good size airlock so they can
move around quite a bit, give them a chance

126
00:08:40,490 --> 00:08:45,100
to acclimated before they actually
go outside to do their spacewalk.

127
00:08:45,100 --> 00:08:46,870
They checked some of the
tools, some of the tools

128
00:08:46,870 --> 00:08:49,680
that are being provided by
-- from the U.S. side.

129
00:08:49,680 --> 00:08:54,120
They're using some of our tools, some tethers
and stuff that give them some added capability

130
00:08:54,120 --> 00:08:56,490
that they don't have on their own tools.

131
00:08:56,490 --> 00:09:01,000
So they checked out some of those
and all of that worked really well.

132
00:09:01,000 --> 00:09:02,530
>> Well, I think everything's set for Thursday.

133
00:09:02,530 --> 00:09:06,460
If you're going to be watching live with
us, we'll have our live coverage at about --

134
00:09:06,460 --> 00:09:10,380
a little after 7:45 a.m. Central
Time, 8:45 a.m. Eastern Time,

135
00:09:10,380 --> 00:09:12,780
and the spacewalk will get
kicked off about 30 minutes later

136
00:09:12,780 --> 00:09:16,570
at 8:15 a.m. Central Time,
9:15 a.m. Easter time.

137
00:09:16,570 --> 00:09:20,060

It will run about five and a half, six
hours if everything goes according to plan.

138
00:09:20,060 --> 00:09:21,670
So, Glenda, thank you very much for coming by.