1
00:00:01,205 --> 00:00:02,685
Music

2
00:00:02,685 --> 00:00:07,178
NARRATOR: NASA's Kennedy Space Center in Florida is home to three of the most high-tech garages

3
00:00:07,178 --> 00:00:11,340
in the world . . . where some of the most skilled and dedicated technicians ready a spaceship

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00:00:11,340 --> 00:00:17,100
for amazing adventures and huge cranes move tons of cargo into place.

5
00:00:17,100 --> 00:00:21,392
Wayne Bingham - United Space Alliance: "I spent my life here. This is pretty much my career.

6
00:00:21,392 --> 00:00:27,218
Working on the spacecraft, launching the spacecraft, remodeling or updating spacecraft."

7
00:00:27,218 --> 00:00:32,977
NARRATOR: They're officially called orbiter processing facilities, but often go by OPFs, bays,

8
00:00:32,977 --> 00:00:39,352
or hangars. Since 1979, space shuttles have spent about two-thirds of their time inside the

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00:00:39,352 --> 00:00:45,788
custom-built, 29,000-square-foot buildings. It starts with a short tow from Kennedy's Shuttle

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00:00:45,788 --> 00:00:50,678
Landing Facility following a mission and some careful maneuvering to pull the spacecraft in

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00:00:50,678 --> 00:00:56,967
just right. Then, platforms and a main access bridge surround the shuttle like a glove.

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00:00:56,967 --> 00:01:02,325
Wayne Bingham: ?Each high bay has a footprint of the orbiter, and when it rolls in, it has to

13
00:01:02,325 --> 00:01:07,270

fit to that footprint. And the reason it fits that footprint is we jack-and-level it and take

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00:01:07,270 --> 00:01:10,627
it to what we call 'maintenance height' and all those platforms then interact.

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00:01:10,627 --> 00:01:17,103
And we try to keep those platforms within a maximum distance can be 6-8 inches, but a minimum

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00:01:17,103 --> 00:01:21,597
distance of 4 inches. So, as these platforms flip down or raise up, we need at least a 4-inch

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00:01:21,597 --> 00:01:24,330
clearance all the way around the spacecraft.?

18
00:01:24,330 --> 00:01:29,773
NARRATOR: During the first couple of days inside the bays, tech?nicians drain hazardous fuels,

19
00:01:29,773 --> 00:01:35,628
dry the engines and open the door panels to gain access. Then, they remove the previous

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00:01:35,628 --> 00:01:41,390
mission?s payload. Next, it?s on to about three month?s worth of work to check the heat shield

21
00:01:41,390 --> 00:01:46,197
tiles, swap out the space shuttle main engines, and assess the vehicle?s structural,

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00:01:46,197 --> 00:01:51,377
mechanical and electrical integrity. It's all extremely detailed work that requires quite the

23
00:01:51,377 --> 00:01:53,040
team effort.

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00:01:53,040 --> 00:01:57,118
Mike Leinbach - NASA Shuttle Launch Director: "We do virtually the same testing and checkout

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00:01:57,118 --> 00:02:01,182
and work on the three orbiters, but, each team has its own feel and it?s really created at

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00:02:01,182 --> 00:02:06,153
the leadership of the team from the flow director on the NASA side and the flow manager on the

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00:02:06,153 --> 00:02:10,768
USA side. They set the tone for their team much like a commander sets a tone for a mission."

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00:02:10,768 --> 00:02:14,673
Wayne Bingham: "And, we all think we're the best, which is good. And it keeps everyone in a

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00:02:14,673 --> 00:02:18,132
competitive spirit and keeps everybody on their toes."

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00:02:18,132 --> 00:02:22,183
NARRATOR: Columbia was the first shuttle to occupy one of these processing hangars after

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00:02:22,183 --> 00:02:28,027
arriving from its assembly plant in Palmdale, California, atop a 747 carrier aircraft in March

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00:02:28,027 --> 00:02:34,425
1979. It didn't journey out of the OPF and to the Vehicle Assembly Building until

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00:02:34,425 --> 00:02:37,838
November 1980- more than a year and a half later.

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00:02:37,838 --> 00:02:41,287
Mark Barnes - United Space Alliance: "So, what we were doing in bay 1 was we were taking the

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00:02:41,287 --> 00:02:47,125
thermal tiles off of Columbia that were installed at the plant in Palmdale, California, and we

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00:02:47,125 --> 00:02:51,803
were bringing them into bay 2 and running them through the back shop densification process and

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00:02:51,803 --> 00:02:54,213
then reapplying them to Columbia."

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00:02:54,213 --> 00:02:59,672

NARRATOR: At their disposal today are 30-ton bridge cranes with hooks at 66 feet high for

39
00:02:59,672 --> 00:03:04,300
lifting operations . Communications rooms, offices and supervisory control

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00:03:04,300 --> 00:03:06,573
rooms complete the facilities.

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00:03:06,573 --> 00:03:11,830
Mark Barnes: "Then we keep the temperature very, very moderate. Couple reasons for that,

42
00:03:11,830 --> 00:03:16,705
mostly it's for the hardware. The workers benefit from that obviously during the summer months,

43
00:03:16,705 --> 00:03:20,148
it's nice working in here versus outside."

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00:03:20,148 --> 00:03:24,478
NARRATOR: The comfortable environment, meant to protect the shuttle hardware from corrosion,

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00:03:24,478 --> 00:03:30,465
is a clean one, too. Everyone who works inside lives by very strict house rules that begin

46
00:03:30,465 --> 00:03:35,837
with foreign object debris training and orbiter access clerks who log everything that goes in

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00:03:35,837 --> 00:03:39,258
and out- and it ends with daily and weekly walkdowns of the shuttle.

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00:03:39,258 --> 00:03:41,602
Jim Bolton - NASA Vehicle Manager: "Something as innocuous as a staple, which we don't allow on

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00:03:41,602 --> 00:03:48,557
the paper products out here, but a staple in the crew module just finds a place and it rests.

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00:03:48,557 --> 00:03:55,032
Well, during launch vibrations, during the zero gravity, that staple could move around and it

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00:03:55,032 --> 00:03:56,617
could create an electrical short."

52
00:03:56,617 --> 00:04:01,577
NARRATOR: On occasion, OPF workers get to put their hands on the spacecraft or payloads flying

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00:04:01,577 --> 00:04:06,668
aboard a shuttle, specifically those processed in a horizontal position. And sometimes

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00:04:06,668 --> 00:04:11,913
they have to troubleshoot issues or replace crucial sys?tems . . . but not without informing

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00:04:11,913 --> 00:04:18,427
the astronauts who will be strapped aboard traveling about 17,500 miles per hour into space.

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00:04:18,427 --> 00:04:21,923
Dan Johnson - United Space Alliance: "We try to keep them tied in, or just communicate the

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00:04:21,923 --> 00:04:28,643
problems that we've had and it's just a way to maintain rapport just so they know, well we

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00:04:28,643 --> 00:04:34,207
replaced this box or we troubleshot and changed out this component so they understand.

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00:04:34,207 --> 00:04:38,555
Especially if it was an in-flight anomaly from a previous mission, they know we addressed it

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00:04:38,555 --> 00:04:40,277
and she's ready to fly."

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00:04:40,277 --> 00:04:45,092
Rex Walheim - Astronaut: "It's just been a pleasure. I love the space program and I know they

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00:04:45,092 --> 00:04:47,855
love the space program every bit. And they are all so detail oriented and so meticulous and

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00:04:47,855 --> 00:04:53,535

precise and they won't let something go that's substandard. I've known that and absolutely

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00:04:53,535 --> 00:04:57,840
trust their work implicitly and I'm very, very proud to be associated with everyone of them."

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00:04:57,840 --> 00:05:03,453
NARRATOR: That implicit trust could stem from the personal re?lationship each OPF worker

66
00:05:03,453 --> 00:05:07,252
develops with their shuttle while working in a bay.

67
00:05:07,252 --> 00:05:12,002
Wayne Bingham: "You get to identify with the orbiter. You spend time with it,

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00:05:12,002 --> 00:05:18,885
or you spend time with the spacecraft and what you find is it takes on its own personality.

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00:05:18,885 --> 00:05:24,112
And you become attached to it. You actually walk around sometimes and talk to it.

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00:05:24,112 --> 00:05:27,467
You know, 'you got to be good today, you can't break, you gotta do this test, we gotta do it on

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00:05:27,467 --> 00:05:31,645
time, so you've got to perform.' And, you know, people look at you who are outside the