
685-1
E.Cook

1
00:00:12,060 --> 00:00:09,930
the safety discipline has a history of

2
00:00:13,440 --> 00:00:12,070
learning from the past and ensuring you

3
00:00:16,140 --> 00:00:13,450
don't forget those lessons

4
00:00:17,609 --> 00:00:16,150
sure safety is built into our name but

5
00:00:20,220 --> 00:00:17,619
every one of us at the Kennedy Space

6
00:00:22,530 --> 00:00:20,230
Center has the same responsibilities at

7
00:00:24,900 --> 00:00:22,540
NASA our goals are dairy and inherently

8
00:00:26,490 --> 00:00:24,910
risky sending humans to other planets

9
00:00:29,700 --> 00:00:26,500
means we're going to have to take some

10
00:00:31,890 --> 00:00:29,710
risks we all need to ask ourselves how

11
00:00:39,150 --> 00:00:31,900
do i balance risk and ensure mission

12
00:00:41,400 --> 00:00:39,160
success okay so on the mobile launcher

13
00:00:43,590 --> 00:00:41,410

here we have dozens of high pressure gas

14
00:00:45,479 --> 00:00:43,600
panels they service a cryogenic systems

15
00:00:47,610 --> 00:00:45,489
environmental life-support systems and

16
00:00:49,229 --> 00:00:47,620
other facility systems and on these

17
00:00:52,729 --> 00:00:49,239
panels in between the panel's we have

18
00:00:54,690 --> 00:00:52,739
literally thousands of tube assemblies

19
00:00:57,420 --> 00:00:54,700
right now we're going through our design

20
00:00:59,310 --> 00:00:57,430
certification process and part of that

21
00:01:01,439 --> 00:00:59,320
process is to certify the pressure

22
00:01:02,910 --> 00:01:01,449
system so when we do this pressure

23
00:01:05,340 --> 00:01:02,920
system certification we work very

24
00:01:07,230 --> 00:01:05,350
closely with SMA particularly the

25
00:01:09,960 --> 00:01:07,240
pressure systems manager's office

26
00:01:12,480 --> 00:01:09,970
we've engineering prepares certification

27
00:01:13,980 --> 00:01:12,490
reports we submit it to the pressure

28
00:01:15,510 --> 00:01:13,990
systems management office for review

29
00:01:17,609 --> 00:01:15,520
they provide feedback to us and

30
00:01:25,230 --> 00:01:17,619
ultimately give us a final okay to

31
00:01:26,460 --> 00:01:25,240
certify the system while we were going

32
00:01:28,380 --> 00:01:26,470
through this process we started

33
00:01:30,690 --> 00:01:28,390
submitting reports to the Presidency's

34
00:01:32,820 --> 00:01:30,700
management office and they came back

35
00:01:34,320 --> 00:01:32,830
with some feedback for us about the

36
00:01:38,969 --> 00:01:34,330
vibration loads and the vibration

37
00:01:40,410 --> 00:01:38,979
analysis on what we were seeing was the

38
00:01:42,420 --> 00:01:40,420

panel's even though their shuttle

39
00:01:44,819 --> 00:01:42,430
heritage and they did survive shuttle

40
00:01:46,350 --> 00:01:44,829
launch loads with the SLS rocket we

41
00:01:48,450 --> 00:01:46,360
would have higher vibrational loads

42
00:01:50,609 --> 00:01:48,460
going into the panel so we wanted to

43
00:01:53,370 --> 00:01:50,619
ensure that we wouldn't be exceeding the

44
00:01:55,980 --> 00:01:53,380
allowable stresses that are in our PVS

45
00:01:57,600 --> 00:01:55,990
codes and standards that we have to sign

46
00:02:00,600 --> 00:01:57,610
off the certification saying that these

47
00:02:03,090 --> 00:02:00,610
panels mean so what we were thinking the

48
00:02:06,209 --> 00:02:03,100
way to do this accurately would be to do

49
00:02:07,920 --> 00:02:06,219
a full finite element analysis and since

50
00:02:09,719 --> 00:02:07,930
all these panels are unique to pull that

51
00:02:11,520 --> 00:02:09,729
off would be an extensive amount of

52
00:02:14,160 --> 00:02:11,530
effort based upon our analysis guys

53
00:02:17,460 --> 00:02:14,170
through engineering it would take months

54
00:02:20,010 --> 00:02:17,470
if not years to do it all properly and

55
00:02:21,540 --> 00:02:20,020
the overall benefit was probably low

56
00:02:23,430 --> 00:02:21,550
since we had confidence that these

57
00:02:24,960 --> 00:02:23,440
panels could survive a launch we just

58
00:02:27,450 --> 00:02:24,970
didn't have the objective evidence to

59
00:02:30,280 --> 00:02:27,460
make that claim

60
00:02:32,960 --> 00:02:30,290
[Music]

61
00:02:35,270 --> 00:02:32,970
we worked really closely and we we came

62
00:02:37,280 --> 00:02:35,280
up with basically about half a dozen

63
00:02:39,080 --> 00:02:37,290

different geometries and pretty

64
00:02:40,340 --> 00:02:39,090
accurately defined all the tooth

65
00:02:43,130 --> 00:02:40,350
assemblies we have in the mobile

66
00:02:45,080 --> 00:02:43,140
launcher so our analysis group it did

67
00:02:46,700 --> 00:02:45,090
analysis on some worst case scenario is

68
00:02:49,250 --> 00:02:46,710
using using those different geometries

69
00:02:50,750 --> 00:02:49,260
to make sure that all of the supports

70
00:02:53,480 --> 00:02:50,760
that we already had installed and oliver

71
00:02:56,300 --> 00:02:53,490
our tube routing was was safe to operate

72
00:02:59,390 --> 00:02:56,310
and would survive the vibration load

73
00:03:01,310 --> 00:02:59,400
during an SLS right this analysis was

74
00:03:02,750 --> 00:03:01,320
much more truncated than what it would

75
00:03:05,810 --> 00:03:02,760
have been required but it did capture

76
00:03:07,490 --> 00:03:05,820
worst-case scenario the outcome of the

77
00:03:09,230 --> 00:03:07,500
analysis we did have to add supports

78
00:03:11,510 --> 00:03:09,240
along some of the tubing runs because we

79
00:03:13,550 --> 00:03:11,520
found that they were unsupported that

80
00:03:15,800 --> 00:03:13,560
stresses in certain areas would exceed

81
00:03:17,630 --> 00:03:15,810
allowable but it was very minor compared

82
00:03:20,480 --> 00:03:17,640
to what the overall impact could have

83
00:03:22,340 --> 00:03:20,490
been to the schedule and cost to get us

84
00:03:22,750 --> 00:03:22,350
where we're comfortable diffusing these

85
00:03:24,910 --> 00:03:22,760
pants

86
00:03:26,710 --> 00:03:24,920
with the last rocket causing the

87
00:03:28,149 --> 00:03:26,720
vibration on the hem well right let's

88
00:03:30,220 --> 00:03:28,159

save the save the engineering came a

89
00:03:32,320 --> 00:03:30,230
great deal of time all right we were

90
00:03:35,259 --> 00:03:32,330
looking at an enormous analysis tasks

91
00:03:38,470 --> 00:03:35,269
that we were able to generalize and do

92
00:03:40,240 --> 00:03:38,480
in a much smaller scale really helpful

93
00:03:42,009 --> 00:03:40,250
for us and they're also standardized the

94
00:03:44,080 --> 00:03:42,019
process that we use in were able to

95
00:03:49,119 --> 00:03:44,090
develop a standard now that we can

96
00:03:51,130 --> 00:03:49,129
canoes for future equipment to although

97
00:03:51,729 --> 00:03:51,140
we're pursuing our exploration goals as

98
00:03:53,530 --> 00:03:51,739
a team

99
00:03:55,949 --> 00:03:53,540
it's critically important that we each

100
00:03:58,300 --> 00:03:55,959
take ownership of our own unique role

101
00:04:01,569 --> 00:03:58,310
competence and credibility are the keys

102
00:04:03,699 --> 00:04:01,579
to success know what matters look out

103
00:04:06,089 --> 00:04:03,709
for your teammates serve your customers

104
00:04:08,680 --> 00:04:06,099
and remember who the stakeholders are

105
00:04:11,470 --> 00:04:08,690
never lose sight of why we're balancing

106
00:04:13,930 --> 00:04:11,480
risk and safety safety and mission