1
00:00:13,190 --> 00:00:11,270
the deep impact mission was a mission to

2
00:00:14,910 --> 00:00:13,200
come at temple one to deliver an

3
00:00:18,150 --> 00:00:14,920
impactor in

4
00:00:20,470 --> 00:00:18,160
2005 the instruments on the deep impact

5
00:00:24,230 --> 00:00:20,480
spacecraft were designed to be

6
00:00:25,910 --> 00:00:24,240
diagnostic in a flyby of a comet

7
00:00:28,230 --> 00:00:25,920
we got some fascinating results from

8
00:00:29,910 --> 00:00:28,240
comet tempo one but once we got past

9
00:00:31,669 --> 00:00:29,920
temple one we had plenty of fuel left

10
00:00:33,510 --> 00:00:31,679
the spacecraft was healthy then

11
00:00:35,110 --> 00:00:33,520
immediately everybody set to work on

12
00:00:37,510 --> 00:00:35,120
figuring out what new bodies we could

13
00:00:40,069 --> 00:00:37,520

get to that's what led to the proposal

14
00:00:42,150 --> 00:00:40,079
to come go to comet hartley 2. it's

15
00:00:44,389 --> 00:00:42,160
really a good deal for for nasa and for

16
00:00:45,110 --> 00:00:44,399
the american public to send a spacecraft

17
00:00:47,830 --> 00:00:45,120
to

18
00:00:50,549 --> 00:00:47,840
a whole new mission for maybe uh a small

19
00:00:52,389 --> 00:00:50,559
fraction of what the a new mission cost

20
00:00:54,389 --> 00:00:52,399
we were able to re-target the spacecraft

21
00:00:55,990 --> 00:00:54,399
using a few flybys of earth take

22
00:00:57,590 --> 00:00:56,000
advantage of the gravity assist from

23
00:00:59,349 --> 00:00:57,600
earth to re-target ourselves change our

24
00:01:00,950 --> 00:00:59,359
trajectory just enough so that now we're

25
00:01:01,990 --> 00:01:00,960
able to get to comet hartley 2 in

26
00:01:03,910 --> 00:01:02,000
november

27
00:01:05,509 --> 00:01:03,920
because this wasn't what the spacecraft

28
00:01:06,310 --> 00:01:05,519
was planned for there's challenges and

29
00:01:08,149 --> 00:01:06,320
there's

30
00:01:10,550 --> 00:01:08,159
inevitably going to be surprises the

31
00:01:12,149 --> 00:01:10,560
geometry of the temple one flyby was

32
00:01:13,910 --> 00:01:12,159
such that we could look at the comet and

33
00:01:15,990 --> 00:01:13,920
take images at the same time that our

34
00:01:18,469 --> 00:01:16,000
high gain antenna was pointed at earth

35
00:01:20,950 --> 00:01:18,479
because of the geometry of the hartley 2

36
00:01:22,950 --> 00:01:20,960
flyby when we're pointed at the comet on

37
00:01:25,910 --> 00:01:22,960
approach our high gain antenna cannot

38
00:01:27,910 --> 00:01:25,920

see the earth so we cannot downlink data

39
00:01:29,350 --> 00:01:27,920
in real time so we have to design

40
00:01:31,190 --> 00:01:29,360
everything to

41
00:01:33,109 --> 00:01:31,200
for one thing protect that imaging

42
00:01:35,429 --> 00:01:33,119
sequence to make sure no matter what

43
00:01:38,230 --> 00:01:35,439
happens we're able to recover and keep

44
00:01:41,190 --> 00:01:38,240
taking images the things we will be

45
00:01:43,190 --> 00:01:41,200
looking for will be how different is the

46
00:01:45,190 --> 00:01:43,200
nucleus compared to the other comets

47
00:01:47,030 --> 00:01:45,200
that we've been to what does the nucleus

48
00:01:49,190 --> 00:01:47,040
look like that makes it so active can we

49
00:01:51,190 --> 00:01:49,200
see which parts of the comet are

50
00:01:53,109 --> 00:01:51,200
emitting so much gas and what's the

51
00:01:54,550 --> 00:01:53,119
nature of the chemicals the compounds

52
00:01:56,310 --> 00:01:54,560
that are coming off the comet the

53
00:01:57,910 --> 00:01:56,320
excitement about studying comets is

54
00:01:59,590 --> 00:01:57,920
really driven by getting a better

55
00:02:01,990 --> 00:01:59,600
understanding of the early phases and

56
00:02:03,350 --> 00:02:02,000
early formation of our solar system

57
00:02:05,030 --> 00:02:03,360
comets essentially have been in the

58
00:02:06,789 --> 00:02:05,040
refrigerator since the beginning of the

59
00:02:08,229 --> 00:02:06,799
solar system and so when we explore

60
00:02:10,150 --> 00:02:08,239
these objects and we find out what

61
00:02:12,150 --> 00:02:10,160
they're made of we get a look back at to

62
00:02:14,470 --> 00:02:12,160
the beginning of the formation of the

63
00:02:16,070 --> 00:02:14,480

solar system this mission is very

64
00:02:17,830 --> 00:02:16,080
economical and we're going to get