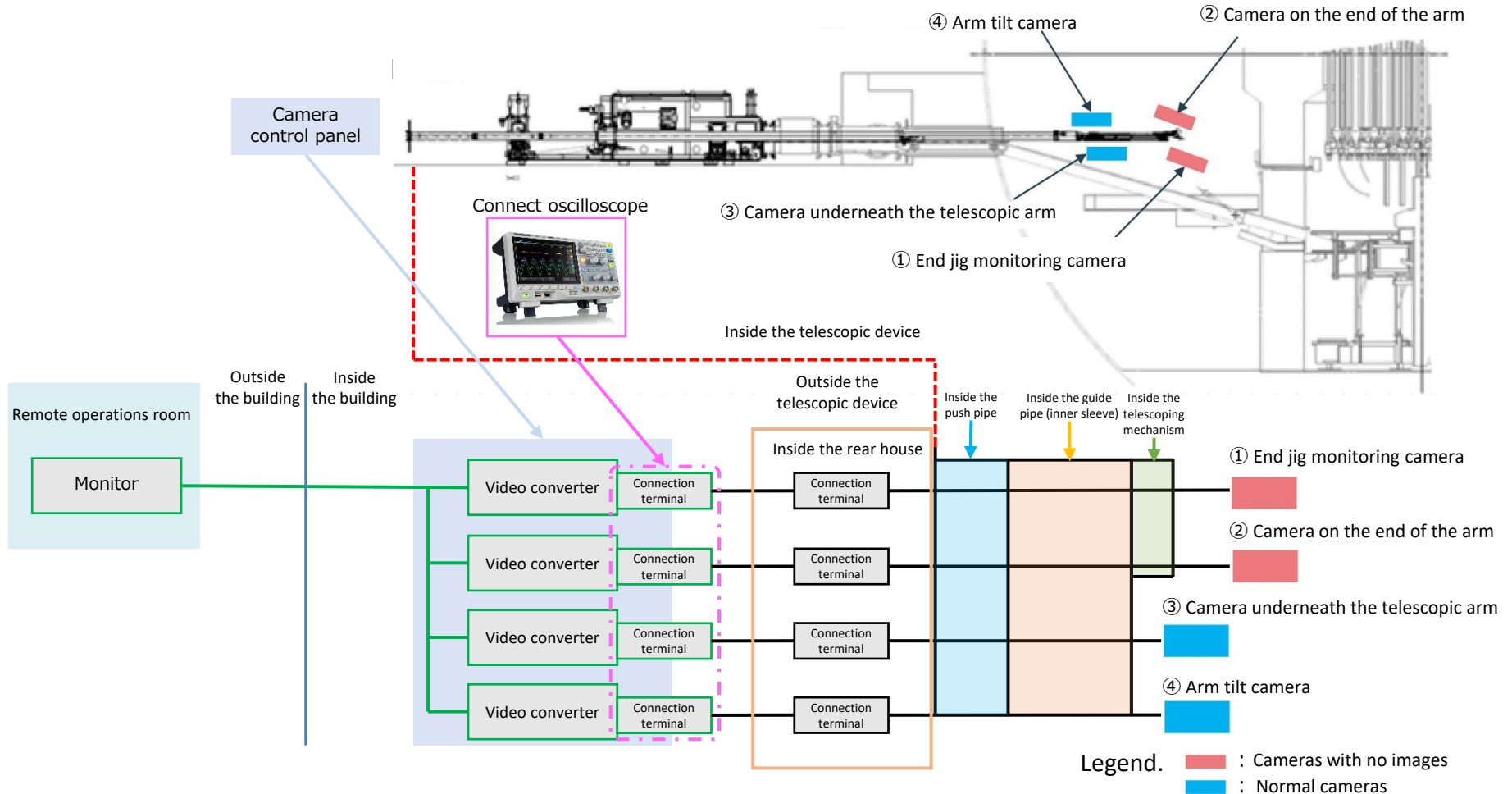


Status of the Investigation into Camera Malfunctions during the Trial Retrieval of Fuel Debris at Unit 2

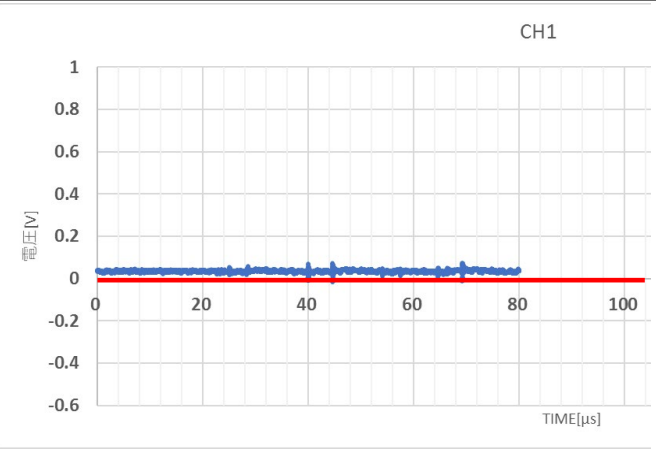
- Since it was detected that footage from the cameras on the end of the telescopic device (① End jig monitoring camera, ② Camera on the end of the arm) was not being sent properly to the monitors in the remote operations room during the trial retrieval of fuel debris from Unit 2, instruments were used to measure the intensity of the camera signal between September 20~21.
- The investigation into the cause is still underway. The current status of this investigation is as follows.



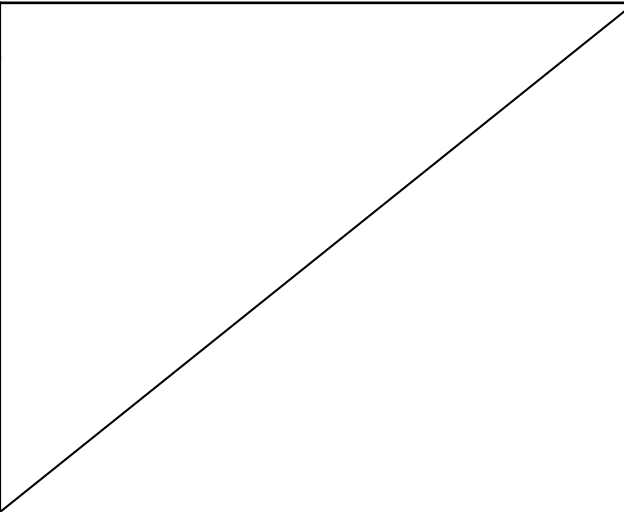
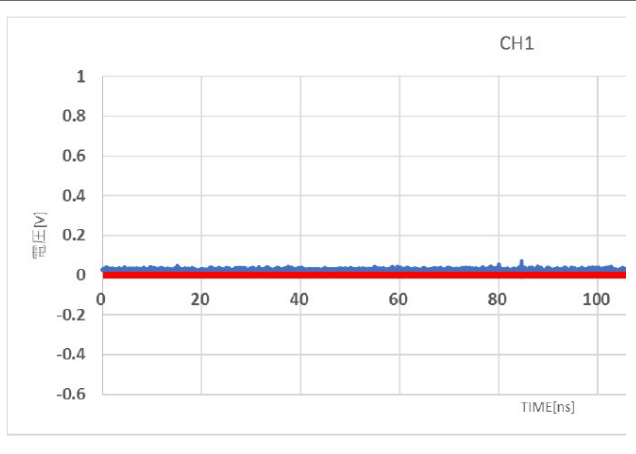
Results of camera signal intensity measurements taken with instruments

■ When measuring the intensity of the camera signals on the end of the telescopic device (① End jig monitoring camera, ② Camera on the end of the arm) and other cameras, we confirmed a difference in signal behavior between of the cameras on the end of the device and other cameras.

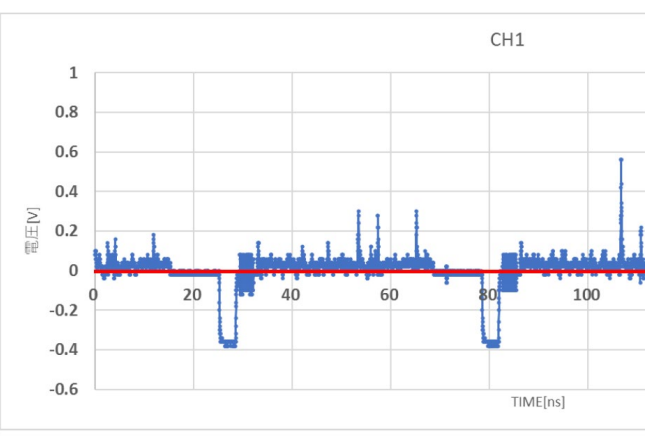
① End jig monitoring camera



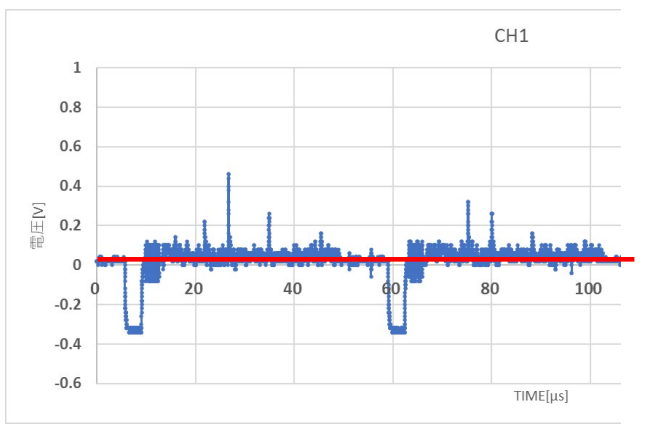
② Camera on the end of the arm



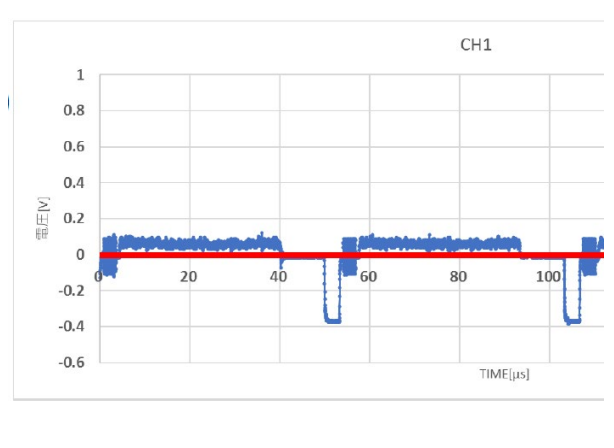
③ Camera underneath the telescopic arm



④ Arm tilt camera



Reference: Spare camera

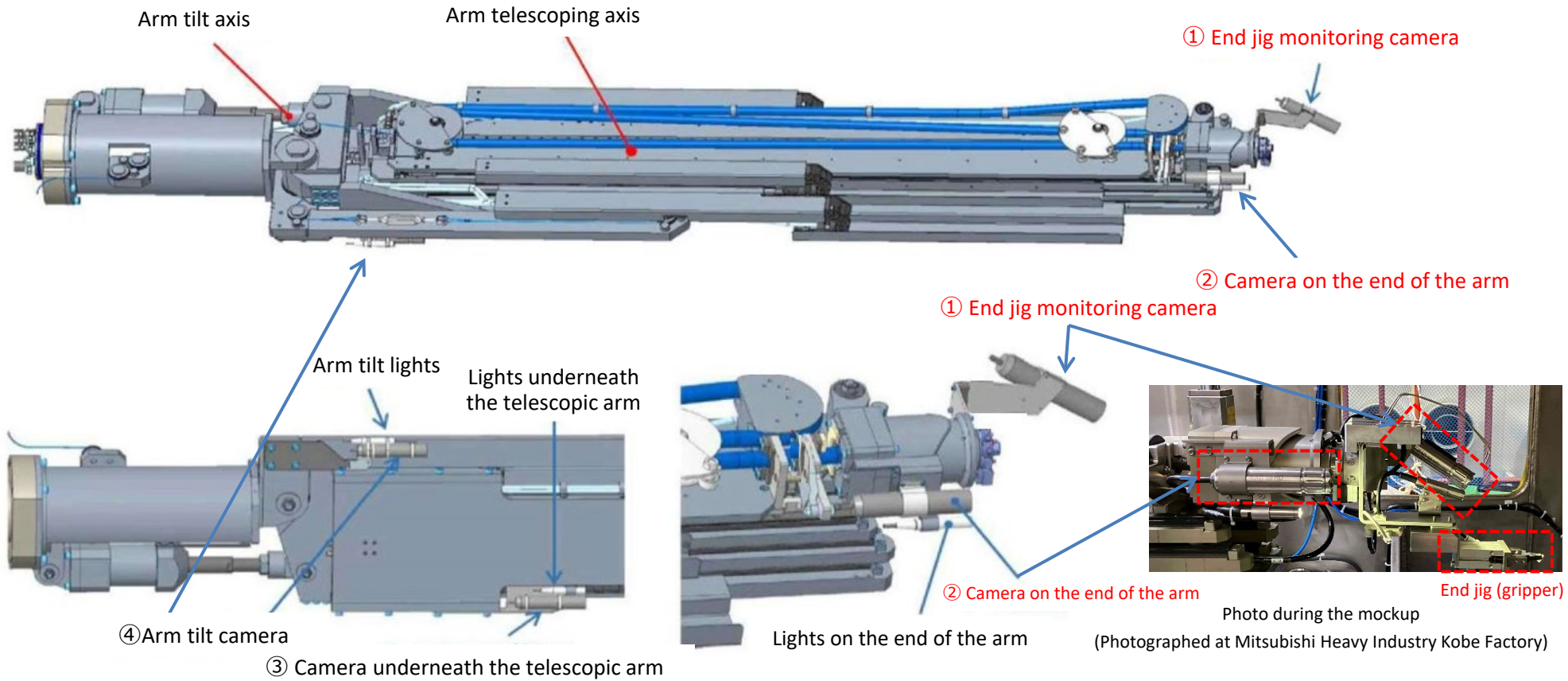


Reference: Telescopic device investigation status to date

■ Investigations of electrical and communications systems have been implemented as shown in the chart below. At current time, we have not been able to confirm any cause-effect relationship between the results of each investigation and the malfunctioning cameras, so we will continue our investigation.

Target system	Investigation results
Cables/ connection terminals	<ul style="list-style-type: none"> ■ Severed wires/short circuits, insulation defects <p>Resistance measurements have shown that the resistance for cameras 1~4 are the same (approximately $110\Omega\sim116\Omega$), and there is little discrepancy with the sum of actual measurements for the spare camera and theoretical cable values (approximately $117\Omega\sim119\Omega$). Furthermore, electrical current measurements have confirmed that there are no conductor interruptions, short-circuits, or insulation defects. (Electrical systems have not been compromised by water intrusion or condensation)</p>
	<ul style="list-style-type: none"> ■ Poor terminal connections <p>Connection terminals were disassembled and visually inspected but no abnormalities were found, and there were no changes in resistance measurements taken before disassembly and after reassembly. Therefore, we have confirmed that the cause is not poor terminal connections.</p>
	<ul style="list-style-type: none"> ■ Poor terminal/cable connections <p>No changes were seen in the footage or resistance measurements after moving the cables by actuating the telescopic portion of the device, thus we have confirmed that the cause is not poor terminal/cable connections.</p>
Video converters	<ul style="list-style-type: none"> ■ Low input signal levels into video converters <p>There was no change to the conditions was seen when each video converter power was left on in order to check the signals from other cameras on different video converters, thus we have confirmed that the cause is not low signal levels.</p>
	<ul style="list-style-type: none"> ■ Hardware/software malfunctions <p>Since the video feeds displayed properly when the feeds from normal cameras were fed through the video converters used for the malfunctioning cameras, we confirm that there are no hardware/software malfunctions.</p>
Miscellaneous	<ul style="list-style-type: none"> ■ Noise interference <p>There is no change to the video feeds even when noise from other construction was eliminated, thus this was ruled out as the cause.</p>

Reference: Cameras placement status of telescopic device



Cameras installed on the telescopic device