

Procedures for Testing Fibers

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The proper method to use the boroscope and troubleshoot bad optic fibers in a cartridge. The boroscope is used as an analyzing tool. Some results will be subjective and some results will be objective. Work is accomplished in the Support building.

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CAUTIONARY NOTES

You must be properly trained to accomplishing this procedure; see [training list](#).

THIS PROCEDURE CAN BE ACCOMPLISHED BY ONE PERSON. ONE ADDITIONAL PERSON CAN MAKE THE TROUBLESHOOTING FASTER.

Incorrect application of this instrument is dangerous and could result in serious injury. The scope end must never be used in a hazardous flammable or explosive atmosphere. The scope must not be inserted into moving or electrically live equipment.

TEMPERATURE HAZARD: Do not leave the boroscope unattended when connected to a light source which is turned ON. The light emitted may scorch materials and cause a fire if the distal end is in contact with the material for a long period of time.

LIGHT HAZARD: Never look directly at the light emitted from the light source or from the distal end of the scope. High intensity light may result in temporary blindness.

TRIPPING HAZARD: Work is accomplished in the dark. Use a small flashlight in order to identify tripping hazards. Equipment and cables present.

WATER HAZARD: To prevent electric shock, stay away from water and never touch with wet hands.

EQUIPMENT INVOLVED IN THIS PROCEDURE

Boroscope: Location: generally in Jon Davis' office in Ops building; Appearance: long, metal spiral tube, with a light-emitting lensed scope (distal end) on one end and light guide connector on the other end, scope adaptor, stored in black carrying case.

Data cartridge; Location: stored on racks inside elevator bay, plugging station, or mapping station; Appearance: approx 4.5' dia X 3' thick., fiber optic wire interior, plate top, protected sides, top, and bottom; nine total; 320 lbs. each.

Light Source: Location: generally in Jon Davis' office in Ops building; Appearance: cream-colored box marked "High Intensity Light Source,"

Plugging station; Location: free-standing; Appearance: large, grey, 2-standard mechanism, with turn wheel to raise and lower cartridge clamps.

PROCEDURE: accomplish in numerical order

Preparation

1. Using a cleared space on the workbench above the stored plug plates, carefully unpack the borsocope (costs approximately \$20,000). To reduce optical damage, care must also be taken to keep any part of the boroscope from crimping, especially the ends of the cable. It is easily damaged if misused.
2. Plug in the light source into the plug strip mounted on the wall above/behind the workbench; always ground the light source.
3. Plug the light guide connector into the "output" of the light source.
4. Using the adjustment knob to the left of the "output", set the light intensity to about 1/2 of full.
5. Turn on the light source. A cooling fan will automatically engage to cool the light source. Leave the light source on until all fibers needing to be analyzed

are completed. Turning the light source on and off at short intervals may cause damage to the light source.

6. Mount the cartridge with optic fibers needing to be analyzed to the plugging station and elevate the cartridge to about chest height.
7. Using the boroscope mounting bracket jig, mount the distal end of the cable onto the cartridge.
8. Attach the small adaptor over the distal end.
9. Take a bad optic fiber and plug it into the small adaptor.

Testing

1. Turn off all room lights.
2. Examine the slit heads for escaping light. If you see light, try and judge its intensity. This part is subjective and may also require adjusting the boroscope's light intensity (see 1.0.4).
3. If there is no light from the slit head, try to determine where else light may be escaping. EXAMPLE: The optic fiber could be broken and light will exit at the break. Also part of the slit head end could be broken, again light will exit at the break. This procedure could take some time as the entire length of the optic fiber may need to be examined.

4. Problem optic fibers are marked with black tape.
5. Record your results on paper. This will later be recorded in a yet to be established database or spread sheet.

Disassembly

1. When all bad/damaged optic fibers have been examined and results recorded, turn off the light source and allow to cool.
2. Remove the distal end and adaptor from the cartridge.
3. Remove the light guide connector from light source. **Be careful when handling, connector will be hot and may burn your hand.**
4. Once the boroscope and light source have cooled down, replace in case and return to Jon Davis' office.

END OF PROCEDURE
