Procedure for Mapping Station

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The proper method to map a plug plate. More detailed mapping and inventory software information is available.

All window shades and the interior elevator bay door needs to be closed during mapping. Room lights can remain on and the entrance door can be opened and closed with no problem. However, if a shade is opened or both inside and outside bay doors are opened, mapping will automatically stop. The problem will have to be rectified and mapping will have to start over.

The profilometer is an instrument used to measure the depression slope of the plate mounted on a cartridge

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CAUTIONARY NOTES:

You must be properly trained to accomplishing this procedure; see training list.

A CLASS II LASER LIGHT IS PRESENT DURING OPERATIONS; DO NOT LOOK DIRECTLY INTO THE LASER LIGHT. This is a low hazard laser,. It is in the visible portion of the spectrum and requires more than 0.25 s to cause a minimal retinal injury. Therefore, we can depend on the natural "aversion response" to prevent inadvertant injury (i.e., people will automatically blink in less time than it takes to get hurt). This is the same hazard class as visible wavelength laser pointers and some scanners. Be careful not to point the beam at people's eyes (or shiny objects) and do not stare into the direct, or specularly reflected beam. The light is observed by closed circuit monitor.

TRIPPING HAZARDS are present. Clear the general work area.

CRUSH HAZARDS are present. Be sure to allow for enough room to accomplish the task.

THIS OPERATION CAN BE ACCOMPLISHED BY ONE PERSON; TWO PERSONS ARE REQUIRED IF THERE IS A HEAVY WORKLOAD.

SAFETY WEAR: (recommended) rubber-soled shoes, eyewear

EQUIPMENT INVOLVED IN THIS PROCEDURE

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; 400 lbs. each.

Light defuser; Location: stowed on top of computer printer, southwest corner; Appearance: round, white, opaque plastic sheet smae diameter as plate.

Manipulator arm; Location: mounted on a rail both inside and outside, adjacent to the elevator bay; Appearance: grey main body and double-pivot, articulated fork (arm) with two tines; weight supported

Mapping station; Location: mounted on the west wall; Appearance: metal table mounted on swing arms below the window.; two laser heads attaached by expandable cords; laser camera and mirror mounted in ceiling directly above table.

Plate inventory computer; Location: on top of work bench, southwest corner; Appearance: Gateway, 17" monitor with keyboard.

Plug plate; Location: stored in racks under work table on south wall ,or recently received freight shipment; Appearance: flat aluminum, approx 4.5' dia. X 1/8" thick, guide holes around outer surface, small guide tab on outer edge, mounting hole in center.

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

Profilometer; Location: resting on the pink marble Starrett flat surface, southwest corner; Appearance: five gauges mounted on a metal bar. Each of the five gauges is connected by cable to a MIG box which is connected to a computer.

Small hand tools; Location: free-standing red tool boxes; Appearance: as described in procedure.

PROCEDURE: accomplish in numerical order

Setup

1. Pull on the handle of the mapping station and swing it toward the computer as far as it will go.

2. Attach the laser heads to the cartridge.

3. Turn on the laser using the toggle switch on the box mounted on the west wall above the mapping station.

4. Place the light defuser on top of the plate mounted in the cartridge.

Mapping

Using the plate inventory computer, open Netscape and choose the "Home" icon. Under "Mapper Links," choose "Plate Inventory Database"; choose "Production Database."

At the login prompt, choose your name and enter your password. Click on "Enter" box; DO NOT press the "Return/Enter" key. If login procedures are correct, a box appears showing "Login Verified", click on "OK". If you have problems contact APO's Computer Systems Manager.

If the same plate is used in the same cartridge, choose "Routine Commands" and click on "Plan a night's observing". This brings up a screen listing cartridges and which plates are in them. Click on that particular cartridge number, then click "Unload". If this step is not done the computer will recognize the previous map which is not the correct map.

To map new and previous cartridges, go to the bottom of the computer screen and click on the area marked "Xterm". This will bring up a black window with a prompt marked "plate-mapper%" in the upper left hand corner of the window. Enter in lower case "idtest". This will return a message showing the cartridge number and the cartridge number +32. If this is incorrect it needs to be fixed.

If correct, type in lower case letters, "map" and then press "Enter." You are given a series of prompts:

- your last name; the computer will accept any last name; press "Enter"

- the plate number; type in the plate number and press "Enter"

- which speed to map in; extreme is the fastest, simply type "e" and press "Enter"

Mapping takes approximately twenty minutes. Once mapping begins the next cartridge can be brought out and preparations started on it or other duties can be performed.

Verification

When mapping is completed, the computer generates and prints a sheet marked "unplugged hole fiber scan." Listed across the top are the plate number, modified Julian date (MJD), and the version number (i.e., 412-51933- 01.par). There is also a replication of the plug plate including holes. Red stars indicate "dead" holes. If there are no red stars, this is a perfect map.

If there are red stars, fibers could be dirty, dead, unplugged, not plugged, or broken. Check each of the red stars for the following:

- unplugged or not plugged, then replug

- end of fiber is dirty, clean with isopropyl alcohol and a kimwipe EXL; use a gentle motion and rub the end of the fiber

- dead/broken fibers exist when cleaning and replugging are unsuccessful

After servicing the red stars, the plate must be re-mapped.

1. Remove the laser slit heads from the cartridge. Cover the slit heads with the white plastic head covers.

2. Click on the database and make it active. Click on "Enter new plate map". This will open a page which asks for plate number, MJD, the Version # and the cartridge number. Use the numbers printed across the top of the "unplugged hole fiber scan" (example: 412-51933-01.par). Click once on the area for plate number. Next type in the plate number (example 412). Go to "Enter New Plate Map," click on "plate id," and enter the plate number. Once completed, click on "Fetch latest map info," which automatically enters the MJD, version, and cartridge number. Compare and insure this information is correct.

3. Remove the light defuser and place it back on top of the printer.

4. While the profilometer is setting on the flat stone, turn on all five indicators, making sure they all read zero. If they don't, press the "origin" or the "zero" button.

5. Facing the mapping table, set the profilometer on the plate with the gauges pointing to your right. The bar contains one knob on the end that is to your right and two knobs on the end that is to your left. Make sure the bar is mounted correctly: all three knobs should be setting on the plate. The center set screw should also be visible from the hole in the bar to the left of the first indicator.

6. The readings on the indicator are displayed below each indicator; this number should be a negative. If the numbers do not match, first loosen each cap screw in the bending ring 1/2 to 3/4 turn using the red t-handle wrenches. Re-tighten the cap screws in the approved method. If more adjustment is needed, loosen the thumb screw on the center pin and rotate the center pin until the proper adjustment is achieved. Total perfection may not always be achieved. Try to get the outer three indicators as close as possible to the standard. This is important as they cover a larger area of the plate than do the areas closer to the center.

7. Once the numbers are as close as possible to the standard, click on the areas marked "North", "East", "South", and "West" as the profilometer is moved to those areas. This records the profiles in the database.

8. Once all four profiles are entered into the database and you are satisfied with the results, scroll down and click on "Commit" button. A message that the database has been updated or that an error has occurred is generated. Correct the error before closing out or click "OK". Once everything in this block is completed, print a copy of this screen.

9. Click on "Plan a night's observing" and make sure the correct cartridge, plate, and plate map is entered.

10. Place the white disk cover over the top of the cartridge and replace the front cover.

11. Swing the mapping station to your right. Using the manipulator arm, pick up the cartridge and place it on the elevator rack ready for use.

12. Stow the manipulator arm

END OF PROCEDURE
