

Dynamic Compression Sector (DCS)
User Guidelines for Impact Experiments
August 29, 2022

General Preparation Guidance:

- PI shall be responsible for experimental communications with DCS.
- Upon receiving confirmation of experimental time at the DCS, review the [User Actions Timeline](#) and ensure weekly deadlines are met.
- [COVID Rules and Regulations](#)
- Understand DCS Conduct of Operations Manual, User Guidelines for Impact or Laser, and the Impact or Laser Hutch Capabilities.

Target and Projectile Preparation:

- Assemble samples at your home institution using the [DCS Target Fabrication Instructions](#).
- Users will not be permitted to build their target samples while onsite. However, one day prior to experiments, users may perform final target assembly, attach target components, and confirm any target parameters (fiber throughput, measure TOBB/PZT distances and target plate thickness, or take pictures).
 - The DCS does not provide consumables such as target plates, beam-stops, TOBB optics, or interferometry optics. The users must procure their own in advance.
- Assemble (glue into a probe holder) and optimize all interferometry probes.
 - Number and bundle PDV probe fibers according to the Target Fabrication Instructions and bundle all fibers into one cord.
 - Optimize VISAR probes (if used).
- We recommend optimized interferometry probes with fibers bundled and the brass target plates with samples mounted be separately secured during travel to DCS.
- Users are solely responsible for their targets and all target handling except connecting/disconnecting optical fibers during experimental setup.
- The DCS staff cannot be held responsible for mishandling targets or for the quality of data obtained. As a precaution, users should provide extra targets. We recommend building 5 targets for every 4 experiments planned.
 - NOTE: Due to many factors, fewer shots than planned might be completed and/or the experiment could end unexpectedly due to changing conditions. Please prioritize shots accordingly.

Inbound & Outbound User Shipments:

- [DCS Address and Shipping Instructions: Hazardous or Non-Hazardous Materials](#)
- Note: Onsite users must pack all materials for return shipping prior to their departure with return shipping labels attached by 12PM on the day following their allocated experimental time.

Onsite Requirements:

- All users shall bring with them:
 - Face covering – if required by the [COVID Rules and Regulations](#)
 - [Acceptable forms of identification](#)

- Laptop with the [Globus](#) data transfer software installed with endpoint created.
- Personal safety glasses
 - Required for lab work in F030 or when working with solvents.
 - Users are to provide their own or a personal pair may be purchased from the stock room with your APS user account. [Set up your account.](#)
- Headset/Earbuds with microphone
 - Required for use of Zoom at the user workstation. Everyone, including onsite users and DCS staff, will be logged into Zoom to communicate.
- Upon initial arrival for any experimental series, users must check-in at the ANL Information Center. (8:30 a.m. – 1:30 p.m.)
 - All onsite users shall acquire an ANL user badge and proxy card. You must provide [acceptable forms of identification.](#)
 - Then go to the APS User Office to have badge activated before arriving at DCS.
- Onsite users may arrive one day before experiments begin to post ESAF, receive onsite sector orientation (if applicable), and inspect/perform final target assembly (1PM arrival time recommended). Your arrival date/time should be conveyed to [dc.admin@wsu.edu](mailto:dcadmin@wsu.edu) well in advance.
 - Unpacking of materials and target preparation may not occur until the ESAF is posted.
- Use of the main office area (438, F001) within the DCS LOM is prohibited, except to obtain water from the DCS filtration system. Please utilize the refrigerator and microwave in the kitchen down the hall from DCS. You may bring food/beverage for this location.
 - [Onsite Dining Options](#)
 - Vending machines are available at APS.
- Before departing the DCS, users must remove all personal items from the user area and ensure it is clean and sanitized for the next user.

Day 1 of Experiments: Pre-Job Brief

- The video conference (Zoom) will open and remain open for the duration of the experiments. The user is not expected to be in the video conference until the Pre-Job brief on the first day of experiments.
- All onsite users identified on the ESAF must login to the Zoom video conference and be present for the Pre-Job Brief. Remote users are welcome to attend, but not required.
- The DCS Person-In-Charge (PIC) will list and verbally confirm all users present in the brief.
- During the brief, DCS staff and the users will review relevant safety protocols, confirm setup parameters, and discuss plans for the anticipated experimental series.

Experimental Protocols and Communications:

- Communication will proceed via Zoom video conference between the users, DCS PIC, diagnostics operator, and x-ray operator. Note that each DCS staff member will be connected from their designated experimental workstations.
- The User PI workstation is in the control room near the PIC workstation. Only the PI or acting spokesperson may reside here. All other onsite users are to be stationed at the workstation behind C hutch.
 - Headset/Earbuds with microphone and personal laptop with Zoom and Globus installed are required for each user.
- The user PI (or a user designated to make experimental decisions) is on call during the entire campaign, with any departures from the videoconference discussed beforehand with the PIC.
- Users may change the team member participating on the call to allow for shifts on their side, but this should be clearly communicated to the PIC beforehand.

- Before onsite arrival and prior to the start of experiments, users must ensure Globus is functioning properly and confirm their ability to review, access, and process the data as needed. Users may contact the DCS administrative staff before their arrival to troubleshoot issues.
- Users and staff will update a common online spreadsheet with all pre- and post-shot parameters to facilitate communication and record keeping (accessed via Globus folder).
- The user will install the target in the target chamber and communicate with the X-ray staff to align the sample. To properly align the sample, the target plate to impact surface distance should be known to within 50 μm . This parameter can be sufficiently measured during target preparation with the available drop gauge at DCS.
- Via Zoom, users should view the shared screen of the Lightfield X-ray images and provide feedback throughout the experiment. DCS will request user confirmation of the final target alignment position, ambient images before and after pump-down, and the images prior to the shot and during the shot.
 - Post shot, users should review the Lightfield images to determine if the shot was successful.
- On the last day of the experiments:
 - The User PI is required to attend the Post-Job Brief via Zoom. The brief is led by the DCS PIC.
 - Prepare all materials for return shipping prior to departure – return shipping labels must be attached to the pelican cases/shipping containers. The user may finalize outbound shipments the morning after experiments, completing by Noon.

Staff Availability and Shift Changes:

- There will be a 10-minutes break after each gun experiment. Staff will be away from the videoconference and workstation during this break.
- Users should expect a pause in operations of about 5 minutes for each shift change.
- Three shift changes will occur during the day, as noted in the table below. Actual shift changes will be done between experiments whenever possible, so times listed below are approximate.
- Staff will not perform experiments without the user present or outside of the scheduled experiment time of the user.
- Administrative staff are available onsite, 8:00 AM – 4:30 PM, Monday – Friday.

Nominal Shift Schedule:

7:00 AM – 8:00 AM	Shift 1 User Experiment Prep
8:00 AM – 11:00 AM	Shift 1 User Experiments
11:00 AM	Shift 2 Arrives at DCS
11:00 AM	Shift Change
11:00 AM – 1:30 PM	Shift 2 User Experiments
1:30 PM	Shift Change and 30 min Meal Break for Shift 2
1:30 PM – 4:00 PM	Shift 1 User Experiments (Shift 2 IFS will inspect next day targets during this time)
4:00 PM	Shift Change (Shift 1 Departs DCS)
4:00 PM – 5:30 PM	Shift 2 User Experiments
5:30 PM – 6:00 PM	Shift 2 Meal Break
6:00 PM – 8:00 PM	Shift 2 User Experiments

Publications:

The [DCS Acknowledgment Statement](#) must be included in manuscripts for the work conducted at the Dynamic Compression Sector and published in journals, books, conference proceedings, or other printed scientific and technical media.

All DCS User Forms and helpful Experimental Planning links can be found on the DCS Website.

- [User Actions Timeline](#)
- [User Resources](#)
- [Overview of DCS Stations and Beamline Information](#)