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Procedure
for
Equipment Commissioning

REVISION HISTORY

Rev No.	DCN No.	Change Summary	Release Date	DCN Initiator	Document Owner
15	DCN1846	Changed procedure to match EHS-00017-F1. Added information on Utility, Chemical, and Gas turn on. Update Logo and other references to NY CREATES.	2-11-20	J. Hellman	T. Diamond

Prior revision history, if applicable, is available from the Document Control Office.

1. INTRODUCTION

This procedure is for use at [NY CREATES / SUNY Polytechnic Institute \(SUNY Poly\)](#) sites such as but not limited to the Albany campus and Rochester to assist in the equipment commissioning process. The content of the Equipment Commissioning [Inspection Record \(EHS-00017-F1\)](#) form is intended to stimulate [relevant](#) code, environmental, [health and safety \(EHS\)](#) review for [the equipment and its installation](#) and address the [regulatory and EHS considerations](#) as seen fit by [NY CREATES / SUNY Poly EHS](#) and other parties such as the Equipment Owner and/or Engineer.

2. PURPOSE

- 2.1 To ensure that equipment within the scope of this procedure are designed, [engineering changed](#), installed and [commissioned](#) in a manner consistent with applicable codes, regulations, [NY CREATES / SUNY Poly procedures](#), and sound engineering practices.
- 2.2 To proactively address safety, health and environmental concerns related to the design, installation, [engineering change](#), startup, operation and maintenance of equipment within the scope of this procedure.
- 2.3 The Equipment Commissioning [Inspection Record](#) provides a record of each equipment [commissioning](#) and the associated review process for [NY CREATES / SUNY Poly](#).

3. SCOPE

This [Equipment Commissioning Inspection Record form \(EHS-00017-F1\)](#) is for use in [reviewing and](#) approving the equipment (e.g., [laboratory, semiconductor, test](#)) to be used at [NY CREATES / SUNY Poly](#). The [Inspection Record form](#) is divided into [three \(3\)](#) parts. Part 1 covers the conditional use of the equipment's electrical, mechanical, non-HPM chemicals and facilities [services used for troubleshooting and debug purposes](#). Part 2 covers the release and conditional use of the equipment's Hazardous Production Materials (HPMs) and Physical Hazards for equipment operation. Part 3 covers the final acceptance and approval of the equipment. The Attachment 1 to [EHS-00017-F1](#) is posted on the equipment to indicate the status on the use and/or commissioning of the equipment. This [Inspection Record form](#) must be completed prior to releasing the equipment to the Equipment Owner for process transition and operational use. This procedure applies to but is not limited to equipment owned by [NY CREATES / SUNY Poly](#), tenants on site, and [NY CREATES / SUNY Poly industry partner programs](#).

4. ASSOCIATED DOCUMENTS

EHS-00017-F1 – Equipment Commissioning [Inspection Record](#)

EHS-00017-F2 – Tool Owner Matrix Form, is to be filled out and **placed on the [equipment](#)** to satisfy Tool Owner labeling requirements.

EHS-00017-F3 – EHS Equipment Safety Compliance Inspection Checklist, an optional form created to assist those involved in factory source inspections or final install locations [for equipment](#). While comprehensive, it is not intended to be all inclusive and should be used to [review](#) the equipment to ensure proper [EHS](#) compliance.

[EHS-00031](#) – Toxic Gas Monitoring System (TGMS) Operation and Maintenance Procedure

[EHS-00048-F1](#) – Requirements for Class 3B and 4 Lasers

[EHS-00064](#) – Requirements for Specifications for Support Equipment (e.g., Chemical, Gas, Waste, Pollution Control) for Semiconductor, Laboratory and Facility Equipment

[EHS-00066-F2](#) – Radiation Device Inventory

[EHS-00066-F4](#) – Non-Ionizing Radiation Equipment Inventory

[EHS-00066-F5](#) – Laser Inventory

[EHS-00072](#) – Specification For Lift Stations

5. DEFINITIONS

The following definitions apply to this procedure and the corresponding Equipment Commissioning [Inspection Record \(EHS-00017-F1\)](#).

5.1 **Bulk Chemical Delivery System** - A system that consists of chemical storage vessels located outside of the fabrication area from which chemicals are delivered, via distribution piping, to equipment located in the fabrication area.

5.2 **Equipment Owner** - As it relates to this procedure, the [Equipment Owner](#) is the person listed as the "Applicant" on the Equipment [Commissioning Inspection Record form](#). In the event that a more appropriate party exists, it shall be the responsibility of the "Applicant" to designate the person who will fulfill the responsibilities of the [Equipment Owner](#) during the [commissioning](#) process.

- 5.3 **Equipment-Specific** - An item is considered to be equipment-specific if it is installed specifically to accommodate, either wholly or in part, the presence of the equipment being installed or is installed internally to the equipment itself.
- 5.4 **Hazardous Energy** - Hazardous energy includes, but is not limited to, electrical, mechanical, hydraulic, pneumatic, chemical, thermal, ionizing radiation, non-ionizing radiation, and other types of energy. Lockout/tagout procedures must consider all hazards associated with all types of energy that may be related to the activity to be performed.
- 5.5 **Hazardous Production Materials (HPM)** - A solid, liquid, or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability, or reactivity of Class 3 or 4 as ranked by the National Fire Protection Association (NFPA 704 – 2007) and is used directly in research, laboratory or production processes that have as their end products materials that are not hazardous.
- 5.6 **Local Dispense Chemical Delivery System** - A local dispense chemical is one that is stored in and/or dispensed from a vessel that is internal to the equipment or is delivered to the equipment from storage vessel(s) located in a dispensing cabinet that is remote from the equipment but located within the fabrication area.
- 5.7 **Non-HPM** - A solid, liquid or gas that has a degree-of-hazard rating in health, flammability, or reactivity of Class 0, 1 or 2 as ranked by the National Fire Protection Association (NFPA 704). Non-HPM chemicals are those that pose minimal, if any, hazards to personnel who may be exposed to them. They are the only chemicals that may be introduced to the equipment upon Part 1 sign-off of the Equipment Commissioning [Inspection Record](#).
- 5.8 **Point-of-use** - The point-of-use is considered to be that point on the external surface of the equipment that is nearest to the point of connection of gas, liquid, or vacuum supply lines to the equipment. Point-of-use labels are intended to identify all gas, liquid, and vacuum lines, and electrical cords at the point of connection to the equipment.
- 5.9 **Fan Filter Unit (FFU)** - A type of air filtering equipment used to supply purified air to microenvironments by filtering out harmful airborne particles from recirculating air.
- 5.10 **Clean Environment** - An engineered enclosure system used to maintain low-particulate environment around a semiconductor production-related process using FFU's. Temperature, overpressure, relative humidity, air flow and make-up air may be controlled. Interfaces are carefully designed to maintain the conditions inside the enclosure.

- 5.11 **Chemical Dispense Unit (CDU)** - A fully enclosed, noncombustible enclosure used to provide an isolated environment for liquid chemical in storage or in use.
- 5.12 **Chemical Valve Manifold Box (CVMB)** - A fully enclosed, noncombustible enclosure with branch valving used to provide multiple outputs from a single supply chemistry.
- 5.13 **Make-Up Air Unit (MAU)** - A HVAC unit used to control temperature, humidity, and, as required, cleanroom pressurization air and replenish outside air lost through exhaust systems.
- 5.13.1 **Lift Station Design A** - The simplest unit designed for just water applications. Typically design A is used for condensation from equipment such as a MAU (make-up air unit) or janitorial slop sink.
- 5.13.2 **Lift Station Design B** – A unit used for single chemistry (only one specific chemical drain system) or drain from a point of use (POU) abatement unit where all the chemistries are compatible with one another.
- 5.13.3 **Lift Station Design C** – A unit used for multiple chemical drain systems where there is a potential of incompatible chemicals mixing in the lift station.

6. RESPONSIBILITIES

- 6.1 The [Equipment Owner](#) or [Equipment Engineer](#) requesting permission to [commission equipment](#) at the [NY CREATES / SUNY Poly site](#) will complete the Equipment Commissioning [Inspection Record form](#).
- 6.2 The [Equipment Owner](#) or [Equipment Engineer](#) is responsible to ensure that each item listed on the [Equipment Commissioning Inspection Record form](#) is complete and will initial all items that are not marked N/A. The designated [NY CREATES / SUNY Poly](#) personnel from the EHS, [Facilities Engineering](#), and [Facilities Operations Group](#) Departments will review and approve the [Inspection Record form](#) and required documentation in order to [approve use of the equipment and its systems, facilities services and chemicals](#).
- 6.3 The groups to be represented on the Equipment Commissioning [Inspection Acceptance and Sign-off Team](#) are as follows:
- Installation Coordinator (IC) / [Construction Manager](#)
 - [Equipment Owner \(EO\)](#)
 - [Equipment Engineer \(EE\)](#)
 - [NY CREATES/SUNY Poly Facilities System Owners \(as applicable\)](#)
 - [NY CREATES/SUNY Poly Operations Manager \(as applicable\)](#)

- NY CREATES/SUNY Poly Equipment Engineering Manager)
- NY CREATES/SUNY Poly Environmental, Health and Safety (EHS)
- NY CREATES/SUNY Poly Facilities Tool Hook-up Manager

6.4 The number of responsible parties will vary depending on [connections required for the equipment](#) installed at the NY CREATES / SUNY Poly site. The responsible parties' acceptance and approval signatures indicate that all the checklist items that they are responsible for are complete.

6.5 The Equipment Commissioning Inspection and Acceptance and Approval Team members will meet at the site as necessary to complete their assigned [Inspection Record](#) responsibilities. Each [Inspection Record](#) item will be verified and initialed by the Equipment Owner or Equipment Engineer and a representative from EHS.

7. PROCEDURE

The Attachment 1 to [EHS-00017-F1](#) is posted on the equipment to indicate the status on the use and/or commissioning of the equipment.

7.1 Equipment Commissioning [Inspection Record](#): Part 1

Part 1 of the [Inspection Record](#) form is designed to ensure the equipment is ready to be energized for conditional use for electrical and/or mechanical debug purposes. Once the equipment is set, leveled, and electrical and facilities connections are made, a review of the installation to that point will be performed using the Part 1 [Inspection Record](#).

Upon completion of the Part 1 [Inspection Record](#) electrical power, vacuum, and non-HPM gases and liquids may be supplied to the equipment. Completion of the Part 1 [Inspection Record](#) allows equipment system checks to be performed that are necessary prior to the introduction of hazardous production materials (HPMs) or other hazardous energy sources associated with the equipment.

7.1.1 Electrical Matrix

All sources of electricity to the equipment must be listed. [These sources can either be listed](#) in the electrical matrix or on an attachment. All sources of electricity may be energized upon completion of the Part 1 [Inspection Record](#).

7.1.2 Electrical Safety Requirements

The electrical portion of the installation must be checked for correct connections, voltages, proper grounding, [verified to be free from short circuits \(megger tested\)](#), fully labeled showing the source panel(s) and

circuit number(s), the presence of lockable disconnects, correct panel, switch, disconnect and tool status indicator labeling, as well as other requirements. Documentation from the person performing these checks shall be provided prior to Part 1 sign-off.

7.1.3 Lockout / Tagout and Control of Hazardous Energy Source(s)

Lockout / Tagout procedures must be developed specific to the equipment being installed. The Equipment Owner or Equipment Engineer is responsible for the development of such procedures and providing a copy to EHS. Prior to Part 1 sign-off, all hazardous energy sources, including electric, non HPMs, and HPMs, should be locked out

7.1.4 Radiation and Laser

All sources of ionizing (Gamma, X-ray, and sealed sources) and non-ionizing (Ultra-Violet, Infra-Red, Microwave, and Radio Frequency) radiation must be enclosed, interlocked and properly labeled. All sources of ionizing radiation must be registered with New York State Department of Health (NYSDOH) by the NY CREATES / SUNY Poly Radiation Safety Officer.

Radiation baseline surveys must be performed the first time radiation is produced by the equipment. All necessary radiation surveys must be scheduled to ensure that they are performed in a timely manner to support equipment installation. No radiation may be produced until approved in the Part 2 section.

Equipment that contains lasers must certify compliance with 21 CFR 1010 and 1040, and with ANSI Z136.1. This equipment must be labeled properly, must have properly functioning interlocks, have the laser surrounded by protective housing, be reviewed by the NY CREATES / SUNY Poly Laser Safety Officer and be added to the SUNY Poly Laser Inventory Form (using EHS-00066-F5). Additional protective measures must be implemented in cases where there is open beam exposure potential to Class 3 and 4 Lasers (see EHS-00048-F1 Requirements for Class 3 and 4 Lasers).

7.1.5 Non-HPM Gas/Liquid & Vacuum Facility Lines

A listing of all facility lines delivering non-HPM gases or liquids (waters), natural gas, or supplying vacuum to the equipment, shall be provided. generally accepted abbreviations (e.g., CDA, UPW, etc.) may be used, if preferred. The Equipment Engineer or Equipment Owner shall also list all non-process chemicals used in the tool and/or its peripherals.

7.1.6 Labeling and Guarding

This is a review of the applicable labels, guards, and shields that shall be installed on the equipment. Labels shall be placed on the equipment at appropriate, easily visible, locations indicating hazards within the equipment. Equipment Owner contact information shall be clearly visible on the equipment.

7.1.7 Personal Protective Equipment (PPE)

The Equipment Owner or Equipment Engineer is responsible for assessing the equipment operation and/or maintenance tasks to determine if hazards are present, or are likely to be present, which necessitate the use of Personal Protective Equipment (PPE). If hazards are present or likely to be present, the Equipment Owner or Equipment Engineer must select and provide the types of PPE that will protect the employee(s) from the hazards identified in the hazard assessment before operation and maintenance tasks. The selection of PPE shall be provided to EHS for review.

7.1.8 Seismic Restraints

Ensure appropriate seismic restraints are installed prior to Part 2 signoff.

7.1.9 Part 1 Interim Sign-Offs

This section serves three functions:

- 1) Allows EHS to provide approval for electrical and Non-HPM turn on for electrical and mechanical debug of the equipment
- 2) Allows Facilities System Owners to give approval for electrical and Non-HPM turn on. It also ensures Facilities System Owners are aware of new loads on electrical and non-HPM systems prior to being turned on.
- 3) Provides a location for Install Coordinator, Equipment Owner, and Equipment Engineer to certify that the equipment is ready for electrical and non-HPM turn on.

7.1.9.1 Upon completion of Part 1 Sign-Off, electricity and non-HPMs can be requested to be turned on.

7.1.10 Preliminary Utility Turn On

Preliminary Utility Turn On shall be made for the purposes of testing and commissioning of non HPM systems. Preliminary Utility Turn On is

performed prior to completion of the Part 1 signoff and is only a temporary turn on to allow for pressure testing and documentation.

The Tool Install Coordinator shall make requests for Preliminary Utility Turn On by email to the ListServ listed in the 'Tool Utility Turn-on Matrix' in 'Appendix A'. Requests shall be made a minimum of 24 business hours in advance. Requests shall include the system, building, level, column line and POC.

IMPORTANT: Requests for utility turn on should NOT be made via CNSEFix@sunypoly.edu.

Utilities will be energized as expeditiously as possible. The availability of individuals to accommodate the equipment commissioning schedule is dependent upon many factors including current work assignments and available staffing.

The Install Coordinator shall coordinate turn on dates and times with the contacts listed on the 'Tool Utility Turn-on Matrix' in 'Appendix A'. The Install Coordinator or a representative shall be present at the time of Preliminary Utility Turn On.

7.1.11 Final Utility Turn On

Final Utility Turn On shall be made for the purposes of releasing systems and equipment for development.

The Equipment Engineer or Equipment Owner shall make requests for Final Utility Turn On by email to the ListServs listed in the 'Tool Utility Turn-on Matrix' in 'Appendix A'. Requests should be made as far in advance as possible, preferably 24 business hours in advance. Requests shall include the system, building, level, column line and POC.

IMPORTANT: Requests for utility turn on should NOT be made via CNSEFix@sunypoly.edu.

Utilities will be energized as expeditiously as possible. The availability of individuals to accommodate the equipment commissioning schedule is dependent upon many factors including current work assignments and available staffing.

The Equipment Engineer or Equipment Owner shall coordinate turn on dates and times with the contacts listed on the 'Tool Utility Turn-on Matrix' in 'Appendix A'. The Equipment Engineer or Equipment Owner shall be present at the time of utility turn on.

7.1.11.1 Utility 'turn offs' shall follow the same request procedure.

7.2 Equipment Commissioning [Inspection Record](#): Part 2

The Part 2 [Inspection Record](#) is used to verify that the equipment is ready for HPM use and other [potential](#) hazards (e.g., radiation, laser, etc.) associated with the equipment are ready to be energized. Upon completion of the Part 2 review, the equipment may be approved to become fully functional, and is released for process qualification and commissioning for use at [NY CREATES / SUNY Poly](#).

7.2.1 [General](#)

General safety topics that are not normally mentioned otherwise, such as: [informing](#) the ERT Coordinator and ERT Leaders about the installation and associated emergency procedures, [discussion of](#) new hazards, equipment or conditions [that](#) exist that would require the ERT to be [specially trained](#), [identification and labeling of](#) any confined spaces, [completion of](#) a noise survey [if necessary](#), and [appropriate illumination of the work area](#).

7.2.2 [Exhaust Ventilation](#)

The [evaluation of](#) exhaust ventilation [is](#) to ensure that the exhaust ducts are properly tested, balanced, and labeled. It also ensures that exhaust ducts carrying HPMS have continuous monitoring devices installed. Where lab hoods or wet benches are utilized a face velocity between 80 – 120 feet per minute must be attained.

7.2.3 [Vacuum Pumps](#)

While all vacuum pumps can be checked during Part 1 sign-off, only those vacuum pumps associated with non-HPM gas or liquid, process vacuum, and exhaust ventilation may be energized upon completion of the Part 1 Equipment Commissioning [Inspection Record](#). All pumps handling toxics, Pyrophorics, or other HPMS must remain locked-out until completion of the Part 2 sign-off.

7.2.4 [Chemicals and Gases](#)

All chemicals, [not listed in the non-HPMs section in Part 1 \(including gases\)](#) that are supplied to the equipment [or on board](#) must be listed in this form. The form asks for an indication of the type of container in which the chemical is stored prior to or during use by the equipment. For the purposes of this procedure, the following definitions apply:

- **A bath** is a container that is normally open on top during normal operation of the equipment.

- **A tank** is any other type of container that is normally completely enclosed during normal operation of the equipment. All bulk chemicals are assumed to originate from a tank.
- See the Definition section of this procedure for explanation of Local Dispense, and Bulk Chemical Delivery Systems.

7.2.5 Chemical and Gas Systems Requirements

The systems requirements ensure that all the supply lines and containment piping are properly labeled and tested and are double contained, where required. It also sets forth requirements for testing and verification of leak detection systems, specific requirements for pressurized chemical containers, [HPM delivery lines, HPM shut-off valves and separation of flammable and combustible materials](#), and access to emergency eyewashes and/or showers. [This also sets forth the requirements to ensure all gas and chemical delivery systems internal and external to the tool are leak checked and that the completed Leak Check documentation is submitted to the appropriate NY CREATES / SUNY Poly Facility System Owner.](#)

7.2.6 Detection/Monitoring Requirements

[This section confirms that all detection points have been installed as required and all detectors have been tested and signed documentation of the testing has been provided.](#)

7.2.7 Chemical Disposal Requirements

Drain lines must be [labeled and](#) leak checked prior to use in accordance with the New York State Plumbing Code. [The drain system, the material it is constructed of, the leak check results and whether the piping is properly labeled must be listed in this section.](#) The Equipment Engineer is responsible for preparing and submitting chemical drain emission calculations to [NY CREATES / SUNY Poly EHS](#) demonstrating that the concentration of chemicals that are being discharged and treated by the water treatment plant are below [the](#) required permit limit.

[The Equipment Engineer ensures that appropriate waste collection equipment is provided, as needed, and the equipment is ready for use.](#)

7.2.8 Post-Process Exhaust Treatment Systems

[This section is to ensure that any required post-process exhaust treatment systems are operational. The Equipment Engineer ensures that post-process exhaust treatment systems are operational and are sufficient to abate exhaust. The Equipment Engineer is responsible for preparing and submitting air emission calculations to NY CREATES / SUNY Poly EHS](#)

demonstrating that the concentration of chemicals/gases that are being discharged are treated effectively by the assigned post process exhaust treatment system.

7.2.9 Fire Protection Requirements

This section applies to all equipment-specific fire detection, monitoring, suppression, and alarm systems. This includes systems internal to the equipment itself and systems that are installed to accommodate, either wholly or in part, the presence of the equipment that is being installed (e.g., sprinklers in the bay ceiling that service the area occupied by the equipment). Installations that are required by the [International Fire Code](#) that are tied to the Building Fire System must be approved, installed and verified by a New York State certified installation contractor. [This is a checkpoint to ensure the necessary tests have been conducted, and documents provided by the fire system\(s\) installers.](#)

7.2.10 Interlocks and Emergency Machine Off (EMO)

[The supplier of the equipment must provide an interlock matrix, listing all interlocks that are specific to the equipment. This matrix should be attached to the Equipment Commissioning Inspection Record. All interlocks listed on the matrix must be verified to be functional. Interlocks present on peripheral equipment \(i.e., vacuum pumps, exhaust treatment systems, gas detection systems, etc.\) are to be tested and the test must be documented. It is important to ensure that any changes to the equipment or the operating system do not affect the functionality of any interlock\(s\). Interlocks must be re-tested and verified to ensure functionality after every such change.](#)

[In case of an alarm, area alarm control panels connected to the gas detection system must have interlocks to stop the gas flow into a gas cabinet. Any other interlocks, like an EMO being pressed or a status signal from the tool or process chamber/module is not mandatory to have connected to the area alarm control panel, but will be utilized if connections are available on the system.](#)

The equipment may be powered up to test EMO functionality only after all other Part 1 Equipment Commissioning [Inspection Record](#) items have been verified. The tool must then return to a completely locked-out state until sign-off is approved.

7.2.11 Radiation Requirements

All [ionizing and non-ionizing](#) radiation producing equipment must be surveyed [by the Radiation Safety Officer or designate](#) the first time it is [powered](#) on.

7.2.12 Clean Environments

Installation of a new clean environment must include an evaluation of the requirements for installation of sprinkler protection within the clean environment. A maintenance plan for filter cleaning/replacement must be provided to EHS.

7.2.13 Lift Station Design

Prior to the use of a lift station, the lift station must meet all the requirements for the design of lift station. (for additional information see **EHS-00072 Specification For Lift Stations**).

7.3 **Part 2 Interim Sign-offs**

This section serves two functions:

- 1) Allows EHS to provide partial approvals in phases as the equipment is prepared for use.
- 2) Allows the Facilities System Owners to provide approval to turn on applicable facility services. It also ensures Facilities System Owners are aware of new loads on applicable systems prior to being turned on.

7.4 **Part 2 Punchlist Items**

Any deficiencies that are discovered during the Part 1 and Part 2 reviews that do not directly impact the safety of the equipment or the installation are to be listed in the Punchlist at the end of the Equipment Commissioning **Inspection Record**. The party responsible for completing each Punchlist item will be listed in the Punchlist, as well. Punchlist items **must** be completed in a timely manner and must be completed before the **Inspection Record** is signed off.

7.5 **Equipment Commissioning Inspection Part 3 Final Acceptance and Approval Signatures**

Successful completion of all checklist items allows approval of the Equipment Commissioning **Inspection Record**. Only upon completion of all checklist items, including those designated as Deficient or Punchlist items, may the commissioning be approved. All parties must wait to sign the appropriate signature block until all checklist items, for which they are responsible, are verified. **NY CREATES / SUNY Poly** Environmental, Health and Safety must wait until all signatures **above it** have been affixed to the **Inspection Record**. The **NY CREATES / SUNY Poly Facilities Tool Hook-up Manager** will sign after all signatures have been **obtained**.

8. RECORDS

The Equipment Commissioning [Inspection Record](#) serves as documentation of the individual equipment [being commissioned and accepted](#) and will be archived for future reference by [NY CREATES / SUNY Poly](#) EHS Department.

Appendix A

TOOL UTILITY TURN-ON MATRIX

Utility	Request for Turn-on To:	Turn-on By	Primary Contact	Phone	Secondary Contact	Phone
Bulk Gas	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Maura Curtis	518-527-8957	Marty Edmonds	518-898-8150
CDA	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Maura Curtis	518-527-8957	Marty Edmonds	518-898-8150
CW	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Steve Castagna	518-514-8354	Stephen Gepfert	518-475-8325
ICW	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Steve Castagna	518-514-8354	Stephen Gepfert	518-475-8325
NG	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Maura Curtis	518-527-8957	Marty Edmonds	518-898-8150
PCW	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Steve Castagna	518-514-8354	Stephen Gepfert	518-475-8325
PVAC	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Maura Curtis	518-527-8957	Marty Edmonds	518-898-8150
UPW	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Steve Castagna	518-514-8354	Stephen Gepfert	518-475-8325
Waste Drains	TOOL_TURN-ON	Bulk Gas-UPW/WWT crew	Steve Castagna	518-514-8354	Stephen Gepfert	518-475-8325
Exhaust	Tool Install Coordinator	Balancing Contractor (MTI)	Tool Install Coord.	varies	Tool Install Coord.	varies
Electric	Tool Install Coordinator	Tool Install Coordinator	Tool Install Coord.	varies	Tool Install Coord.	varies
Spec Gas	CHEMSERVICE	HPM Contractor (A-L)	A-L Shift Phone	518-424-3833	A-L Shift Phone	518-339-4341
Chemicals	CHEMSERVICE	HPM Contractor (A-L)	A-L Shift Phone	518-424-3833	A-L Shift Phone	518-339-4341
Waste Collects	CHEMSERVICE	HPM Contractor (A-L)	A-L Shift Phone	518-424-3833	A-L Shift Phone	518-339-4341

TOOL_TURN-ON= TOOL_TURN-ON@LISTSERV.SUNYPOLY.EDU
 CHEMSERVICE= CHEMSERVICE@LISTSERV.SUNYPOLY.EDU

TERMINOLOGY:

CDA	Compressed Dry Air
CW	City Water (potable)
ICW	Industrial City Water (non-potable)
NG	Natural Gas
PCW	Processed Cooling Water
PVAC	Process Vacuum
UPW	Ultra Pure Water (DIW)
Waste Drains	Acid Waste, Fluoride Waste
Waste Collects	Solvent, Plating, etc.
A-L	Air Liquide
MTI	Mechanical Testing Inc.
AE	Acid Exhaust
BE	Base Exhaust
SE	Solvent Exhaust
HE	Heat Exhaust

Bulk Gases:

Ar	Argon
He	Helium
H2	Hydrogen
N2	Nitrogen
HPO2	High Purity Oxygen
LPO2	Low Purity Oxygen
	Low Purity
LPN2	Nitrogen
	High Purity
HPN2	Nitrogen