

GUIDELINE	PERFORMANCE	EXCEPTIONS & DEVIATIONS
<p>1. Status Change Authorization and Reporting</p> <ul style="list-style-type: none"> • Operations supervisor is responsible for proper configuration and any changes. • Operations Supervisor must be the focal point of shift operations. • Authority for some minor changes may be delegated, but Operations Supervisor should remain informed. • Good communication should be maintained between Operators and Operations Supervisor. • Status changes should have the proper authorization and should be communicated to the operators. 	<p>1. Status Change Authorization and Reporting</p> <ul style="list-style-type: none"> • Authorization is defined in OPM 1.1 "Authorization." The Operations Coordinator is responsible for proper configuration and any changes. • The Operations Coordinator is the focal point for shift operations, see OPM Chapter 2, "Guidelines for the Conduct of Operations." • Shift organizations have authority for changes; however, the Operations Coordinator is kept informed. Operators are required to document changes to accelerator devices in the Operations LogBook, and Operation Group Log Sheets, see OPM 1.2, "CAD Documents," and in computer generated reports. TVDG changes are documented per TVDG OPM 10026, Operations Reporting and LogBooks. • Operators and Operations Coordinators are located together in the Main Control Room to ensure information flow. A communication protocol between the CAD MCR and the TVDG Control Room has been established. • Individuals who authorize the change report changes in status to the facility to the Main Control Room. 	<p>1. Status Change Authorization and Reporting</p> <ul style="list-style-type: none"> • None.
<p>2. Equipment & Systems Alignment</p> <ul style="list-style-type: none"> • Check systems for proper alignment before placing them in operation. • Use alignment checklists to aid operators. • Include the proper nomenclature in the checklists, and have lists signed off at each step. • Check equipment in accordance with technical specifications and operational limits for start-up situations and after maintenance. 	<p>2. Equipment & Systems Alignment</p> <ul style="list-style-type: none"> • Initial system alignment checklists are given in OPM Chapter 5, "AGS Equipment Startup Procedures (pre-beam)." Radiation Safety Check-off Lists, OPM 9.1.2, are used to ensure outstanding radiation safety issues are closed out prior to operations. Experimental Safety Committee Check-off Lists are used to ensure outstanding conventional safety issues are closed out prior to experiment startup. TVDG equipment configuration is recorded in logbooks per TVDG OPM 10026. • Checklist for specific TVDG equipment and tasks are documented in TVDG OPM's, e.g. TVDG OPM 10006, 11DH02 Lockout Tagout Form and TVDG OPM 10008, Pulsed 860 Source Wiring. • Operators use alignment checklists such as those found in OPM Chapter 8, "Detailed System Procedures," and in OPM Chapter 4, "Access Security Procedures." Sign-off steps are included. • Accelerators do not employ "technical specifications" like nuclear facilities; however, there are permissible operating ranges for specific certified equipment; for example, OPM 9.2.3, and the CAD operates 	<p>2. Equipment & Systems Alignment</p> <ul style="list-style-type: none"> • None.

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<ul style="list-style-type: none"> Maintain checklists for review and analysis. 	<p>within Operational Safety Limits prescribed in the Accelerator Safety Envelop, OPM 2.5. Operational Safety Limits are reviewed prior to an annual running period.</p> <ul style="list-style-type: none"> Records of initial system alignments are maintained. 	
<p>3. Equipment Locking and Tagging</p> <ul style="list-style-type: none"> All personnel should have training on responsibilities for locking and tagging and on manipulation of locks and tags. 	<p>3. Equipment Locking and Tagging</p> <ul style="list-style-type: none"> Equipment locking and tagging are covered in OPM 2.6, "Lockout/Tagout," OPM 2.6.1, "Removal of Locks and Tags by Others," and OPM 9.1.16 "Lockout/Tagout For Radiation Safety." All appropriate CAD personnel have been trained in these procedures. These procedures are consistent with BNL ES&H Standards 1.5.0 "Electrical Safety" and 1.5.1 "Lockout/Tagout Requirements." All appropriate persons have been trained in these standards. TVDG OPM 10023, Lockout-Tagout, requires all operators to be trained in Lockout/Tagout 	<p>3. Equipment Locking and Tagging</p> <ul style="list-style-type: none"> None.
<p>4. Operational Limits Compliance</p> <ul style="list-style-type: none"> Compliance with operational limits should be documented. Documentation should include logs, status sheets, and checklists. Operations personnel should be appraised of requirements of operational limits. Compliance with limit should be reviewed. 	<p>4. Operational Limits Compliance</p> <ul style="list-style-type: none"> Operational safety limits (OSL) have been established and documented in procedures (OPM Chapter 2). Logs, status sheets, and checklists are used to help ensure compliance. Operators, Operations Coordinators, Liaison Physicists, Access Controls Groups and other relevant personnel are trained in OSLs. Compliance with specific limits is reviewed; e.g., the OSL for energy flux is tracked each running period. Periodic Management Assessments (QAP 901) are also used to review compliance with OSLs. 	<p>4. Operational Limits Compliance</p> <ul style="list-style-type: none"> None.

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<p>5. Equipment Deficiency Identification & Documentation</p> <ul style="list-style-type: none"> • Methods to identify, document, communicate, and control deficiencies should be established. 	<p>5. Equipment Deficiency Identification & Documentation</p> <ul style="list-style-type: none"> • Equipment deficiencies are identified and communicated via the Trouble Reporting program (OPM 2.9). Controlling equipment deficiencies is via use of Lock-out Tag-out or Do Not Operate Tags, and both these control systems are covered by written procedures. TVDG equipment problems, which do not impact the complex, are documented in the TVDG Problem Report Log as defined in TVDG OPM 10026, Operations Reporting and Log Books. 	<p>5. Equipment Deficiency Identification & Documentation</p> <ul style="list-style-type: none"> • None.
<p>6. Work Authorization and Documentation</p> <ul style="list-style-type: none"> • Operations Supervisor should document and authorize all activities which effect operations, safety, or change the control of alarms. • Documentation of work in progress should be available for review. 	<p>6. Work Authorization and Documentation</p> <ul style="list-style-type: none"> • Permit systems for activities affecting fire alarm, fire protection, radiation safety, radiation alarms, access control, digging, enhanced work control, welding and cutting and electrical safety are in use at CAD. The Maintenance Coordinator documents scheduled maintenance activities and operations personnel are notified. All work is documented in formal work control system (see OPM 2.28 and OPM 2.29). • Work in progress is tracked and documented by Supervisors and the Maintenance Coordinators, and is available for review by looking at local work-control-system records. 	<p>6. Work Authorization and Documentation</p> <ul style="list-style-type: none"> • None.
<p>7. Equipment Post-Maintenance Testing & Return to Service</p> <ul style="list-style-type: none"> • Equipment should be tested after maintenance to demonstrate its proper operation. • Testing should be documented. 	<p>7. Equipment Post-Maintenance Testing & Return to Service</p> <ul style="list-style-type: none"> • Equipment is returned to service in accord with procedures and work controls. Post-maintenance testing and return-to-work formalities are documented for safety significant structures, systems and components. Each running period, the alarm panel lights are tested for all consoles in MCR. Deficiencies are repaired prior to operations. • Testing is documented in accordance with applicable procedures and work controls. 	<p>7. Equipment Post-Maintenance Testing & Return to Service</p> <ul style="list-style-type: none"> • None.

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<p>8. Alarm Status</p> <ul style="list-style-type: none"> • Status and control and alarm panels should be available and include information on: <ul style="list-style-type: none"> • Alarms which have been disabled • Inputs which have been disabled • Alarms with set-point changes • Actions of alarms with multiple inputs • Appropriate actions should be taken to unmask simultaneous alarms from multiple sources. 	<p>8. Alarm Status</p> <ul style="list-style-type: none"> • The MCR is arranged such that there are five separate control consoles plus one additional console devoted to monitoring and recording the actions of the access-control and fire alarm systems. The status of radiation monitor alarms is readily available to all operations personnel from any console. <ul style="list-style-type: none"> • Critical alarms cannot be disabled, or set points changed, by operations personnel. • Radiation monitor alarm inputs may not be disabled by operators, and if disconnected an alarm sounds. • Safety related audible alarms cannot be adjusted to different set points or different sound levels. • Actions by operators in response to multiple radiation monitor alarms are documented in OPM 6.1.2. • Simultaneous alarms are unmasked by the system and multiple radiation-monitor alarms are conspicuous. 	<p>8. Alarm Status</p>
<p>9. Temporary Modification Control</p> <ul style="list-style-type: none"> • Provide administrative controls for temporary changes in configuration and procedures. • Controls should provide the following: <ul style="list-style-type: none"> • Technical oversight • Formal approvals • Safety reviews 	<p>9. Temporary Modification Control</p> <ul style="list-style-type: none"> • Formality for temporary modifications is the norm. The accelerators are constantly under development as are the experiments. Safety significant systems, for example, are modified according to OPM Chapter 4, "Access Security Procedures." Non-safety systems are modified according to procedures in the Quality Assurance Manual. A temporary procedure system and a hand-processed procedure-change system are used to control changes to existing procedures. • Formal controls and procedures provide the following: <ul style="list-style-type: none"> • Technical oversight is provided via reviews conducted by the Chief Electrical, Cryogenic and/or Mechanical Engineers, the Radiation Safety Committee, and/or the ALARA Committee. • Formal approval systems are used such as the Radiation Safety Checkoff List (OPM 9.1.2), Experimental Safety Checkoff List (OPM 9.2.4), or Certification by Chief Engineers (OPM 9.2.3). • The Accelerator Systems Safety Review Committee reviews new accelerator systems. The Experimental Safety Review Committee reviews experiments. The BNL Cryogenic Safety Committee reviews cryogenic systems. All major operations and experiments are reviewed for radiation protection by the Radiation Safety Committee and for dose reduction by the ALARA Committee. 	<p>9. Temporary Modification Control</p> <ul style="list-style-type: none"> • None.

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<ul style="list-style-type: none"> • Installation approval • Independent verification of installation or removal • Documentation of modification • Updating of operating procedures • Training in modifications • Periodic audits of outstanding modifications 	<ul style="list-style-type: none"> • Experiments are approved by the Department Chair prior to each running period (OPM 9.2.4). The Head of the Main Control Room and the Head of the Collider Accelerator Support Group prior to initial startup approve new accelerator systems (OPM 2.27.a). • Independent verification of installation or removal of the access control system or shielding is performed by the Radiation Safety Committee. Fire alarm/protection system installation and removal is controlled by BNL support organizations. The Chief Electrical Engineer or his designate independently verifies electrical safety systems such as Kirk Keys. • Documentation associated with modifications is retained in accord with OPM procedures. • Updating of temporary operating procedures is controlled in OPM 1.4.4 "Procedure for Implementing or Canceling Temporary Procedures." • Training requirements are defined in the temporary procedure itself. • Temporary procedures are reviewed each running period by the Head of the MCR, and are removed or converted to permanent procedures. The Radiation Safety Committee periodically reviews temporary modifications to safety significant equipment, such as interlock bypasses. 	
<p>10. Distribution & Control of Equipment & Systems Documents</p> <ul style="list-style-type: none"> • Provide system for distribution of controlled documents. 	<p>10. Distribution & Control of Equipment & Systems Documents</p> <ul style="list-style-type: none"> • OPM Chapter 1 procedures and QAP-402, "Document Control", provide for control of plans, procedures, engineering specifications and drawings. 	<p>10. Distribution & Control of Equipment & Systems Documents</p> <ul style="list-style-type: none"> • None.