

GUIDELINE	PERFORMANCE	EXCEPTIONS
<p>1) Status Change Authorization and Reporting</p> <ul style="list-style-type: none"> a) Operations supervisor is responsible for proper configuration and any changes b) Operations Supervisor must be the focal point of shift operations c) Authority for some minor changes may be delegated, but Operations Supervisor should remain informed d) Good communication should be maintained between Operators and Operations Supervisor e) 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"> a) Authorization is defined in OPM 1.1 "Authorization." The Operations Coordinator is responsible for proper configuration and any changes. b) The Operations Coordinator is the focal point for shift operations; see OPM Chapter 2, "Guidelines for the Conduct of Operations" c) 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 Log Book, and Operation Group Log Sheets, see OPM 1.2, "C-AD Documents," and in computer generated reports. TVDG changes are documented per OPM 12.10, "Operations Reporting and LogBooks." d) Operators and Operations Coordinators are located together in the Main Control Room to ensure information flow. A communication protocol between the C-AD MCR, RHIC Cryogenic Control Room, Sieman's Operator, CAS and the TVDG Control Room has been established. e) Individuals who authorize status changes report these changes to the Main Control Room. For example, see OPM 2.12.1, "Communication Of The Cryogenic System Status To The Operations Coordinator." 	<p>1) Status Change Authorization and Reporting</p> <p>None</p>

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<p>2) Equipment & Systems Alignment</p> <p>a) Check systems for proper alignment before placing them in operation</p> <p>b) Use alignment checklists to aid operators</p> <p>c) Include the proper nomenclature in the checklists, and have lists signed off at each step</p> <p>d) Check equipment in accordance with technical specifications and operational limits for start-up situations and after maintenance</p> <p>e) Maintain checklists for review and analysis</p>	<p>2) Equipment & Systems Alignment</p> <p>a) 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 and Accelerator Safety System Committee Check-off Lists, OPM 9.2.4 and OPM 9.3.2, are used to ensure outstanding conventional safety issues are closed out prior to experiment or accelerator system startup. TVDG equipment configuration is recorded in logbooks per procedures in OPM Chapter 12, "Tandem Van De Graaff."</p> <p>b) Checklist for specific equipment and tasks are documented in OPMs. Search the operations procedures for checklists, aids, lists, etc.</p> <p>c) Operators use the proper nomenclature for the accelerator complex. Terminology is found in OPM 1.2, "Documents," and used in procedures such as those found in OPM Chapter 8, "Detailed System Procedures," and in OPM Chapter 4, "Access Security Procedures." Sign-off steps are included.</p> <p>d) Accelerators do not employ "technical specifications" like nuclear facilities but have similar requirements in "Accelerator Safety Envelopes"; there are permissible operating ranges for specific certified equipment; for example, OPM 9.2.3, and the C-AD operates within ASE requirements which are translated into OPMs in OPM 2.5, OPM 2.5.1, OPM 2.5.2 and OPM 2.5.3. Operational Safety Limits are reviewed prior to an annual running period.</p> <p>e) Records of initial system alignments are maintained for review and analysis by the supervisor</p>	<p>Equipment & Systems Alignment None</p>
<p>3) Equipment Locking and Tagging</p> <p>a) All personnel should have training on responsibilities for locking and tagging and on manipulation of locks and tags</p>	<p>3) Equipment Locking and Tagging</p> <p>a) Equipment locking and tagging are covered for example in OPM 2.36, "Lock and Tag Program for Control of Hazardous Energy," OPM 2.6, "Lockout/Tagout Procedure for Personnel Entry into the AGS or Booster Ring," OPM 2.6.1, "Procedure for Lockout/Tagout for the AGS and Booster Rings During Accelerator Operations," OPM 2.6.10, "Lockout/Tagout Procedure for RHIC Main Power Supplies," and OPM 9.1.16 "Lockout/Tagout For Radiation Safety." All appropriate C-AD personnel have been trained in these procedures. These procedures are consistent with SBMS requirements. All appropriate persons have been</p>	<p>3) Equipment Locking and Tagging None</p>

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<p>4) Operational Limits Compliance</p> <p>a) Compliance with operational limits should be documented</p> <p>b) Documentation should include logs, status sheets, and checklists</p> <p>c) Operations personnel should be apprised of requirements of operational limits</p> <p>d) Compliance with limit should be reviewed</p>	<p>trained in these standards.</p> <p>4) Operational Limits Compliance</p> <p>a) Operational safety limits (OSL) have been established and documented in procedures (OPM Chapter 2)</p> <p>b) Logs, status sheets, and checklists are used to help ensure compliance. Search the operations procedures for checklists, logs, status sheets, etc.</p> <p>c) Operators, Operations Coordinators, Liaison Physicists, Access Controls Groups and other relevant personnel are trained in ASE procedures.</p> <p>d) Compliance with specific limits is reviewed; e.g., the ASE for energy flux is tracked each running period. Periodic management assessments (OPM 13.10.1, "Independent Assessment") are also used to review compliance with the ASE.</p>	<p>5) Operational Limits Compliance</p> <p>None</p>
<p>5) Equipment Deficiency Identification & Documentation</p> <p>a) Methods to identify, document, communicate, and control deficiencies should be established.</p>	<p>5) Equipment Deficiency Identification & Documentation</p> <p>a) 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 as defined in OPM 12.10, "Operations Reporting and Log Books."</p>	<p>5) Equipment Deficiency Identification & Documentation</p> <p>None</p>
<p>6) Work Authorization and Documentation</p> <p>a) Operations Supervisor should document and authorize all activities which effect operations, safety, or change the control of alarms</p> <p>b) Documentation of work in progress should be available for review</p>	<p>6) Work Authorization and Documentation</p> <p>a) 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 C-AD. 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, "Work Planning and Control for Operations" and OPM 2.29, "Procedure for Enhanced Work Planning for Experimenters."</p> <p>b) 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>	<p>6) Work Authorization and Documentation</p> <p>None</p>

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<p>7) Equipment Post-Maintenance Testing & Return to Service</p> <p>a) Equipment should be tested after maintenance to demonstrate its proper operation</p> <p>b) Testing should be documented</p>	<p>7) Equipment Post-Maintenance Testing & Return to Service</p> <p>a) 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.</p> <p>b) Testing is documented in accordance with applicable procedures and work controls</p>	<p>7) Equipment Post-Maintenance Testing & Return to Service</p> <p>None</p>
<p>8) Alarm Status</p> <p>a) Status and control and alarm panels should be available and include information on:</p> <p>b) Alarms which have been disabled</p> <p>c) Inputs which have been disabled</p> <p>d) Alarms with set-point changes</p> <p>e) Actions of alarms with multiple inputs</p> <p>f) Appropriate actions should be taken to unmask simultaneous alarms from multiple sources</p>	<p>8) Alarm Status</p> <p>a) 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. Similar controls and alarm panels are in the Siemen's Control Room, TVDG Control Room, Cryogenic Control Room and the CAS Building.</p> <p>b) Critical alarms cannot be disabled, or set points changed, by operations personnel</p> <p>c) Radiation monitor alarm inputs may not be disabled by operators, and if disconnected an alarm sounds</p> <p>d) Safety related audible alarms cannot be adjusted to different set points or different sound levels</p> <p>e) Actions by operators in response to multiple radiation monitor alarms are documented in OPM 6.1.2, "Responding to Chipmunk Interlocks", and OPM 6.1.3, "Responding to Chipmunk Alarms"</p> <p>f) Simultaneous alarms are unmasked by the system and multiple radiation-monitor alarms are conspicuous</p>	<p>8) Alarm Status</p> <p>None</p>

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<p>9) Temporary Modification Control</p> <p>a) Provide administrative controls for temporary changes in configuration and procedures</p> <p>b) Controls should provide the following:</p> <p>i) Technical oversight</p> <p>ii) Formal approvals</p> <p>iii) Safety reviews</p> <p>iv) Installation approval</p> <p>v) Independent verification of installation or removal</p>	<p>9) Temporary Modification Control</p> <p>a) Administrative controls for temporary modifications are 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 quality assurance procedures in the OPM Chapter 13. A temporary procedure system and a hand-processed procedure-change system are used to control changes to existing procedures.</p> <p>b) Formal controls and procedures provide the following:</p> <p>i) Technical oversight is provided via reviews conducted by the Chief Engineers, the Radiation Safety Committee, the Experimental Safety Review Committee, the Accelerator Systems Safety Review Committee, the ALARA Committee and the system experts.</p> <p>ii) 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).</p> <p>iii) Safety and environmental protection reviews are performed as follows: 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. NEPA reviews are performed according to SBMS requirements and specific jobs are reviewed for safety via the work planning program.</p> <p>iv) Experiments are approved by the Department Chair prior to each running period. See OPM 9.2.4, "Procedure for Preparing an ESRC Checkoff List and for Assuring Recommendations are Completed." The Head of the Main Control Room and the Head of the Collider Accelerator Support Group, prior to initial startup, approve new accelerator systems. See OPM 2.27.a, "Operations Acceptance of New and Modified Equipment/Systems Checklist."</p> <p>v) Independent verification of installation or removal of the access control system or shielding is performed by the Radiation Safety Committee.</p>	<p>9) Temporary Modification Control</p> <p>None</p>

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<ul style="list-style-type: none"> vi) Documentation of modification vii) Updating of operating procedures viii) Training in modifications ix) Periodic audits of outstanding modifications 	<p>Fire alarm/protection system installation and removal is controlled by BNL support organizations. The Chief Electrical Engineer or his designate independently verify electrical safety systems such as Kirk Keys.</p> <ul style="list-style-type: none"> vi) Documentation associated with modifications is retained in accord with OPM procedures vii) Updating of temporary operating procedures is controlled in OPM 1.4.4 "Procedure for Implementing or Canceling Temporary Procedures" viii) Training requirements are defined in the temporary procedure itself ix) 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. 	
<ul style="list-style-type: none"> 10) Distribution & Control of Equipment & Systems Documents <ul style="list-style-type: none"> a) Provide system for distribution of controlled documents 	<ul style="list-style-type: none"> 10) Distribution & Control of Equipment & Systems Documents <ul style="list-style-type: none"> a) OPM Chapter 1 procedures, OPM 13.6.2, "Configuration Management" and OPM 13.4.1 "Records Management" provide for control of plans, procedures, engineering specifications and drawings 	<ul style="list-style-type: none"> 10) Distribution & Control of Equipment & Systems Documents None