

See "Instructions for Filling out the Work Permit" contained in the Work Planning and Control for Experiments and Operations Subject Area.

1. Work request WCC fills out this section.

Standing Work Permit

Requester: Don Lynch	Date:	Ext.: 2253	Dept/Div/Group: PO/PHENIX
Other Contact person (if different from requester): Carter Biggs			Ext.: 7515
Work Control Coordinator: Don Lynch	Start Date: 09/07/2012		Est. End Date: 12/01/2012
Brief Description of Work:			
Building: 1008 +	Room: PHENIX GMH, IR, * RPC3	Equipment: RPC3 Gas System	Service Provider PHENIX Support Staff

2. WCC, Requester/Designee, Service Provider, and ESS&H (as necessary) fill out this section or attach analysis

ESS&H ANALYSIS							
Radiation Concerns	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Activation	<input type="checkbox"/> Airborne	<input type="checkbox"/> Contamination	<input type="checkbox"/> Radiation	<input type="checkbox"/> NORM	<input type="checkbox"/> Other
<input type="checkbox"/> Special nuclear materials involved, notify Isotope Special Materials Group				<input type="checkbox"/> Fissionable/Radiological materials involved, notify Laboratory Nuclear Safety Officer			
Radiation Generating Devices:	<input type="checkbox"/> Radiography		<input type="checkbox"/> Moisture Density Gauges		<input type="checkbox"/> Soil Density Gauges		<input type="checkbox"/> X-ray Equipment
Safety and Security Concerns	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Explosives		<input type="checkbox"/> Transport of Haz/Rad Material		<input checked="" type="checkbox"/> Pressurized Systems	
<input type="checkbox"/> Adding/Removing Walls or Roofs	<input type="checkbox"/> Critical Lift	<input type="checkbox"/> Fumes/Mist/Dust*		<input type="checkbox"/> Magnetic Fields*		<input type="checkbox"/> Railroad Work	
<input type="checkbox"/> Asbestos*	<input type="checkbox"/> Cryogenic	<input type="checkbox"/> Heat/Cold Stress		<input type="checkbox"/> Nanomaterials/particles*		<input type="checkbox"/> Rigging	
<input type="checkbox"/> Beryllium*	<input type="checkbox"/> Electrical	<input type="checkbox"/> Hydraulic		<input type="checkbox"/> Noise*		<input type="checkbox"/> Silica*	
<input type="checkbox"/> Biohazard*	<input type="checkbox"/> Elevated Work	<input type="checkbox"/> Lasers*		<input type="checkbox"/> Non-ionizing Radiation*		<input type="checkbox"/> Security Concerns	
<input type="checkbox"/> Chemicals/Corrosives*	<input type="checkbox"/> Excavation	<input type="checkbox"/> Lead*		<input type="checkbox"/> Oxygen Deficiency*		<input type="checkbox"/> Suspect/Counterfeit Items	
<input type="checkbox"/> Confined Space*	<input type="checkbox"/> Ergonomics*	<input type="checkbox"/> Material Handling		<input type="checkbox"/> Penetrating Fire Walls		<input type="checkbox"/> Vacuum	
* Safety Health Rep. Review Required	<input type="checkbox"/> Haz, Rad, Bio Material Exceed DOE 151.1-C Levels - Contact OEM					<input type="checkbox"/> Other	
Environmental Concerns							
<input checked="" type="checkbox"/> None				<input type="checkbox"/> Work impacts Environmental Permit No.			
<input type="checkbox"/> Atmospheric Discharges (rad/non-rad)		<input type="checkbox"/> Land Use Institutional Controls		<input type="checkbox"/> Soil Activation/contamination		<input type="checkbox"/> Waste-Mixed	
<input type="checkbox"/> Chemical or Rad Material Storage or Use		<input type="checkbox"/> Liquid Discharges		<input type="checkbox"/> Waste-Clean		<input type="checkbox"/> Waste-Radioactive	
<input type="checkbox"/> Cesspools (UIC)		<input type="checkbox"/> Oil/PCB Management		<input type="checkbox"/> Waste-Hazardous		<input type="checkbox"/> Waste-Regulated Medical	
<input type="checkbox"/> High water/power consumption		<input type="checkbox"/> Spill potential		<input type="checkbox"/> Waste-Industrial		<input type="checkbox"/> Underground Duct/Piping	
Waste disposition by: <input type="checkbox"/> Other							
Pollution Prevention (P2)/Waste Minimization Opportunity:				<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes			
FACILITY CONCERNS							
<input checked="" type="checkbox"/> None		<input type="checkbox"/> Intermittent Energy Release					
<input type="checkbox"/> Access/Egress Limitations		<input type="checkbox"/> Electrical Noise		<input type="checkbox"/> Potential to Cause a False Alarm		<input type="checkbox"/> Vibrations	
<input type="checkbox"/> Configuration Management		<input type="checkbox"/> Impacts Facility Use Agreement		<input type="checkbox"/> Temperature Change		<input type="checkbox"/> Other	
<input type="checkbox"/> Maintenance Work on Ventilation Systems		<input type="checkbox"/> Utility Interruptions					
WORK CONTROLS							
Work Practices							
<input type="checkbox"/> None		<input type="checkbox"/> Exhaust Ventilation		<input type="checkbox"/> Lockout/Tagout		<input type="checkbox"/> Spill Containment	
<input checked="" type="checkbox"/> Back-up Person/Watch		<input type="checkbox"/> HP Coverage		<input type="checkbox"/> Posting/Warning Signs		<input type="checkbox"/> Time Limitation	
<input type="checkbox"/> Security (see Instruction Sheet)		<input type="checkbox"/> Other		<input type="checkbox"/> Warning Alarm (i.e. "high level")		<input type="checkbox"/> Electrical Inspection Required	
<input type="checkbox"/> Barricades		<input type="checkbox"/> IH Survey		<input type="checkbox"/> Scaffolding-requires inspection		<input type="checkbox"/> Electrical Inspection Required	
Personal Protective Equipment							
<input type="checkbox"/> None		<input type="checkbox"/> Ear Plugs		<input checked="" type="checkbox"/> Gloves as appropriate		<input type="checkbox"/> Lab Coat	
<input checked="" type="checkbox"/> Safety Glasses as appropriate		<input type="checkbox"/> Ear Muffs		<input type="checkbox"/> Goggles		<input type="checkbox"/> Respirator*	
<input type="checkbox"/> Safety Harness		<input type="checkbox"/> Disposable Clothing		<input type="checkbox"/> Face Shield		<input type="checkbox"/> Hard Hat	
<input type="checkbox"/> Shoe Covers		<input checked="" type="checkbox"/> Safety Shoes		<input type="checkbox"/> High visibility cloths/vest		<input type="checkbox"/> Other	
Permits Required (Permits must be valid when job is scheduled.)							
<input checked="" type="checkbox"/> None		<input type="checkbox"/> Cutting/Welding		<input type="checkbox"/> Impair Fire Protection Systems			
<input type="checkbox"/> Concrete/Masonry Penetration		<input type="checkbox"/> Digging/Core Drilling		<input type="checkbox"/> Rad Work Permit-RWP No			
<input type="checkbox"/> Confined Space Entry		<input type="checkbox"/> Electrical Working Hot		<input type="checkbox"/> Other			
Dosimetry/Monitoring							
<input type="checkbox"/> None		<input type="checkbox"/> Heat Stress Monitor		<input type="checkbox"/> Real Time Monitor		<input checked="" type="checkbox"/> TLD for work in tunnels	
<input type="checkbox"/> Air Effluent		<input type="checkbox"/> Noise Survey/Dosimeter		<input type="checkbox"/> Self-reading Pencil Dosimeter		<input type="checkbox"/> Waste Characterization	
<input type="checkbox"/> Ground Water		<input type="checkbox"/> O ₂ /Combustible Gas		<input type="checkbox"/> Self-reading Digital Dosimeter		<input type="checkbox"/> Other	
<input type="checkbox"/> Liquid Effluent		<input type="checkbox"/> Passive Vapor Monitor		<input type="checkbox"/> Sorbent Tube/Filter Pump			
Training Requirements (List specific training requirements)							
CA User or CA Access & PHENIX Awareness, Other skills training as appropriate							
Based on analysis above, the Review Team determines the risk, complexity, and coordination ratings below:				If using the permit when all hazard ratings are low, only the following need to sign: (Although allowed, there is no need to use back of form)			
ESS&H Risk Level:		<input checked="" type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High		WCC:		Date:	
Complexity Level:		<input checked="" type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High		Service Provider:		Date:	
Work Coordination:		<input checked="" type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High		Authorization to start		Date:	
(Department/Division, or their equivalent, Sup/WCC/Designee)							

3. Both work requester and service provider contribute to work plan (use attachments for detailed plans)

Work Plan (procedures, timing, equipment, scheduling, coordination, notifications, and personnel availability need to be addressed in adequate detail):
See Attached

Special Working Conditions Required (e.g., Industrial Hygiene hold points or other monitoring)
None

Notifications to operations and Operational Limits Requirements: None

Post Work Testing, Notification or Documentation Required:

Job Safety Analysis Required: Yes No Review Done: in series team

Reviewed by: * Primary Reviewer signature means that the Review Team members were appropriate for the work that was planned, the Team visited the job site, hazards and risks that could impact ESS&H have been considered and controls established according to BNL requirements. In addition, this signature indicates that applicable JRAs, FRAs, as well as other planning documents have been reviewed and training requirements have been identified and recorded on this permit.

Title	Name (print)	Signature	Life #	Date
ES&H Professional				
F&O Facility Project Manager				
Service Provider				
Work Control Coordinator	Don Lynch		20146	
Safety Health Representative				
Research Space Manager				
Other				
Other (PHENIX Escort)				
Required Walkdown Completed				
*Primary Reviewer				

4. Job site personnel (Supervisor and workers) fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments) and all training required for this permit is current/complete. Job Supervisor/Contractor Supervisor signatures also includes verification that worker training required for this permit is current/complete.

Job Supervisor:		Contractor Supervisor:	
Workers:	Life#:	Workers :	Life#:

Workers are encouraged to provide feedback on ESS&H concerns or on ideas for improved job work flow. Use feedback form or space below.

5. Department/Division, or their equivalent, Line Manager or Designee

Conditions are appropriate to start work: (Permit has been reviewed, work controls are in place and site is ready for job.)

Name:	Signature:	Life#:	Date:
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6. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)

a) WCM/WCC: Are there any changes as a result of worker feedback? Yes No

Note: See Work Planning and Control for Experiments and Operations Subject Area section 2.6.

7. Post Job Review/Closeout: Work Control Coordinator (authorizing dept.) checks quality of completed permit and ensures the work site is left in an acceptable condition. (WCC can delegate clean up of job site to work supervisor.) The WCC ensures that the change process to update drawings, placards, postings, procedures, etc., is initiated, if necessary.

Name:	Signature:	Life#:	Date:
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Comments:

RPC3 Gas Recirculation Upgrade

INTRODUCTION

The RPC3 PHENIX detector subsystem has been operating for several years with a mixture of Isobutane, R134A and SF6 as the internal ambient moderating gas. The current system operates in a pass through mode venting the exhaust gases to atmosphere. In order to reduce the quantities of gases needed for both economical reasons and environmental reasons, a new recirculating system has been designed which is expected to reduce emitted gases by as much as 75% with an expecting cost savings of \$3000 per week when operational.

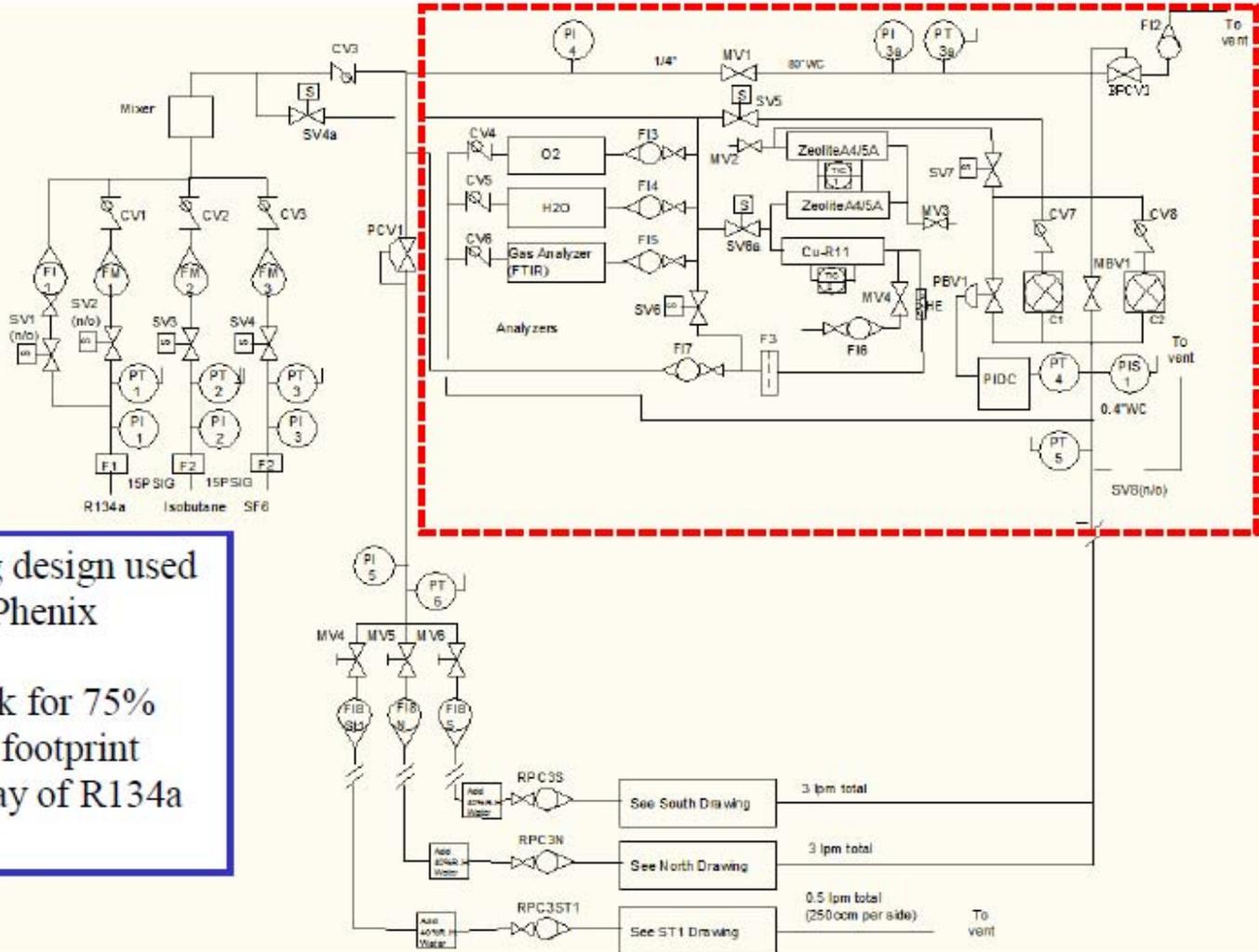
It is planned to upgrade the existing gas delivery system to this improved recirculating system during the 2012 summer shutdown.

Procedures

All work described herein shall be coordinated and performed by PHENIX technicians and PHENIX gas system experts. In addition to standard training requirements (PHENIX Awareness and C-A User Training), all working personnel shall have appropriate skills and training to accomplish the work described herein. All workers shall have and wear the appropriate personal protective equipment (PPE) for each task.

1. All piping and fittings shall be thoroughly cleaned dried prior to installation. All cut segments of piping shall be thoroughly cleaned and deburred at the cut edges.
2. Piping shall be run as efficiently and directly as possible in accordance with the attached illustrations. (Worker planned work). Care shall be taken to locate piping so as to minimally interfere with access to and/or the operation, maintenance, testing, etc. of the RPC3 subsystem other systems and/or equipment. Piping shall be routed so as to preclude any creation of tripping hazards, inefficient use of space, intrusion into required clearances, etc.
3. After installation, piping shall be thoroughly leak tested.
4. Upon completion of installation all tools, consumable, materials, waste products, etc. shall be thoroughly cleaned from the site such that the site is restored to its pre-installation state.
5. PHENIX gas system experts shall install the operational components in the PHENIX gas mixing house, attach gas supply services and perform operational tests as appropriate to demonstrate specified operational characteristics.
6. Upon completion of this project, all work permit paperwork shall be completed, all unexpected problems and their solutions shall be recorded along with any other appropriate observations.

Recirculating Upgrade to RPC Gas System



- Based on working design used for many years at Phenix
- Save money
 - \$3k per week for 75%
- Reduces lab CO₂ footprint
 - 60 lbs per day of R134a

Return Line Possible Path

