

Safety Permits: A Risk-Management Process of Hazardous Operations

**Manuel B. Dominguez, M.S., CSP
NASA Glenn Research Center
Cleveland, Ohio**

Introduction

In this document, I will define NASA Glenn Research Center's (GRC's) primary risk management process—the Safety Permit. This process has been in existence for over 30 years at GRC. It was developed as a result of a major failure at one of our research facilities. Since its implementation, GRC has not had a Class A mishap (a property lost over one million dollars, a fatality or a multiple injury) or a Class B (hospitalization of an employee or property loss of less than one million dollars but over \$250,000) as a result of a research or a hazardous operation.

This program utilizes the hazard analysis process as the main tool to define hazards related to the operation. From this information, the operator mitigates the hazards using the established methods of engineering controls, substitution, and/or administration controls.

National Aeronautics and Space Administration (NASA)

We should begin our discussion with a proper setting. NASA Glenn Research Center is one of the National Aeronautics and Space Administration (NASA) ten Centers. It is one of the Agency's four research Centers. The other three are: Langley Research Center, VA, Dryden Flight Research Center and Ames Research Center in California.

NASA's vision is:

- To improve life here
- To extend life to there
- To find life beyond ¹

¹ <http://www.nasa.gov/centers/glenn/about/aboutgrc.html>

NASA's mission is:

- To understand and protect our home planet
- To explore the Universe and search for life
- To inspire the next generation of explorers...as only NASA can²

NASA conducts its work in four principle organizations, called mission directorates:

- Aeronautics: Pioneering and proving new flight technologies that improve our ability to explore and that have practical applications on Earth.
- Exploration Systems: Creating new capabilities for affordable, sustainable human and robotic exploration.
- Science: Exploring the Earth, moon, Mars and beyond; charting the best route of discovery and reaping the benefits of Earth and space exploration for society.
- Space Operations: Providing critical enabling technologies for much of the rest of NASA through the space shuttle, the international space station and flight support.³

NASA Glenn Research Center (GRC)

NASA Glenn Research Center (GRC) is located at Lewis Field, a 350-acre site, adjacent to Cleveland Hopkins International Airport, upon which the main campus is built. The Center comprises over 150 buildings, which contain a unique collection of world-class test facilities. Since the ground-breaking at Cleveland on January 23, 1941, for the then Aircraft Engine Research Laboratory of the former National Advisory Committee for Aeronautics (NACA), more than \$535 million has been invested in the Center's capital plant; estimated replacement cost is approximately \$2.2 billion.⁴

The Glenn Research Center mission is to work as a diverse team in partnership with government, industry, and academia to increase national wealth, safety, and security, protect the environment, and explore the universe. Glenn develops and transfers critical technologies that address national priorities through research, technology development, and systems development for safe and reliable aeronautics, aerospace, and space applications.⁵

As NASA moves forward to fulfill The Vision for Space Exploration, Glenn is focusing efforts related to Exploration Systems. Glenn leads NASA's research in the microgravity science disciplines of fluid physics, combustion science and the field of microgravity acceleration measurement. Glenn is applying this expertise to Bioscience and engineering. Many Shuttle and space station science missions have an experiment managed by Glenn. The Center also designs

² <http://www.nasa.gov/centers/glenn/about/aboutgrc.html>

³ http://www.nasa.gov/about/highlights/what_does_nasa_do.html

⁴ <http://www.nasa.gov/centers/glenn/about/aboutgrc.html>

⁵ <http://www.nasa.gov/centers/glenn/about/aboutgrc.html>

power and propulsion systems for space flight systems in support of NASA programs, such as the International Space Station, Mars Pathfinder, and Deep Space 1.⁶

NASA GRC Organization

The GRC organization is comprised of five operational directorates and six support directorates. We will concentrate our discussion on the Safety and Mission Assurance Directorate (SMAD). Its mission is to promote and advance the goals of the Center, NASA, and the Nation: to meet and exceed the expectations of those who rely on us to assure product safety and quality, program mission success and a safe, secure, environmentally sound and healthful workplace. We accomplish this through the development and application of value-added practices and services that identify, manage, and mitigate risk.⁷

The SMAD is comprised of two divisions: the Safety, Health, and Environmental Division (SHED) and the System Safety, Quality, and Reliability Division (SSQRD). The SHED is the organization responsible for the implementation and support of the Safety Permit Program. The SHED has three divisions: Safety Branch, Occupational Health Branch, and the Environmental Health Branch. These branches are responsible for the development and implementation of safety, health, and environmental programs at GRC.

GRC, as one of the NASA Centers, is required to establish its own policy on safety and health. Glenn Lewis Policy Directive 1702.1I establishes the Center Director as responsible for the Safety and Health Program at the Center. He, in turn, has delegated this responsibility to the Safety, Health, and Environmental Board (SHEB). The Board is responsible for the implementation of the program. The implementation arms of the program are the SHED and the Area Safety Committees (ASC).

The ASCs conduct third-party reviews of all proposed installations and operations in their assigned geographic areas to ensure that the proposed design and/or operation is consistent with the dictates of sound engineering judgment and acceptable health and safety standards. Committee membership includes individuals with engineering and operational expertise, as appropriate for that area's activities, and representatives from the Safety Branch, the Occupational Health Branch, and the Environmental Management Branch (as required).⁸

The Area Safety Committees:

- Review specific proposals for all research operations, for modifications or additions to facilities and equipment, or for any project that may affect safety within the assigned safety areas.
- Approve and issue Safety Permits for those proposals that meet Glenn Safety requirements.
- Maintain technical surveillance of and keep informed of current activities in assigned area of responsibility to anticipate problems and minimize safety-related conflicts between organizational elements.

⁶ <http://www.nasa.gov/centers/glenn/about/aboutgrc.html>

⁷ Annual Operating Agreement 2006, Safety and Mission Assurance Directorate SMA/Q

⁸ Glenn Safety Manual, Chapter 1A, Safety Permit System

- Recommend, subject to the review and approval of the SHEB, minimum acceptable safety standards within the scope of their charters.
- Obtain comments and advice from advisory panels and the Safety, Health, and Environmental Division concerning matters that fall within their areas of specialization.
- Ensure that activities presenting significant risk to persons or property have a formal readiness review by the requester's line management prior to issuing a Safety Permit.
- Notify the Electrical Applications Safety Committee or Process Systems Safety Committee when proposals are likely to impact the safety of electrical power or process systems.
- Submit to the SHEB significant concerns or unresolved questions regarding the granting of permits and the assessment of major risks.⁹

Safety Permit

The Safety Permit Program is the primary risk management process at GRC. The objectives of the Safety Permits are to avoid undue risks, injury to personnel, damage to property, or disruption of operations by:

- Assuring that a systematic approach is used to identify and control potential hazards.
- Obtaining an independent, thorough, and timely safety review of all technical designs, tests, and operations.
- Permitting the operation of facilities, systems/subsystems, and experiments within safe constraints.
- Controlling changes to permitted facilities system/subsystems and experiments to ensure continued safe operations.
- Instilling safety awareness in all employees, and ensuring that facility/test personnel have received the necessary training to safely and properly operate test facilities and research rigs.¹⁰

The Safety Permit constitutes a license to operate a facility or piece of equipment within the constraints listed on the Permit.

Safety Permit Process

The Safety Permit Process is defined in the following steps:

- Determination
- Application
- Review
- Issuance
- Maintenance

⁹ Glenn Safety Manual, Chapter 1a, Safety Permit System

¹⁰ Glenn Safety Manual, Chapter 1a, Safety Permit System

- Modification/Renewal
- Termination/ Phase Down
- Appeals

Determination

The first step in determining whether a permit is required is for the requester to define the process that he/she is going to use. If the process is going to use chemicals, pressure systems, high voltage, laser, etc., a Safety Permit is required. The specific list of conditions is described in the Safety Permit Guidebook.

The next step is to discuss the project with the respective Area Safety Committee Chair. The ASC Chair makes the final determination of whether a permit is required or not. Once the determination is made, the application process begins. In the event the ASC Chair determines that a Safety Permit is not required, he/she generates a memo for the requester with the decision and the reasons he/she used to reach that decision. Copies of the memo are kept by the Safety Branch as a record of the determination process for the operation.

Application

Once the ASC Chair makes the determination that a Safety Permit is required, the requester fills out a Safety Permit Request Form (see Attachment 1). On this form, the requester describes the project and the hazards associated with the process to be used. This request has to be signed by the requester's supervisor. This ensures organizational support for the project. In addition to the Safety Permit request, a Hazard Analysis is required. The Hazard Analysis Work Sheet (see Attachment 2) defines all the hazards associated with the project and the individual processes. The worksheet also contains that mitigation processes to be used to reduce or eliminate the hazard. Another element of the Safety Permit Request is the Qualified Operator's List (see Attachment 3). This document lists all the operators and the training that is required to accomplish the task. The form must include the completion dates of required training for each operator.

For most application packages, there are other documents that are necessary for the ASC to properly evaluate the project and its hazards. These include drawings and schematics of the system, Material Safety Data Sheets (MSDSs) of the chemicals to be used, operational checklists, emergency procedures, and other technical information relevant to the process.

The application is submitted to the Safety Branch to be logged and tracked in the Safety Permit System. Normally, the ASC should take about 90 days to process, review and issue a safety permit to the requester. The Safety Branch is the repository of all the documents related to the applications and the permit.

Review

Once the Safety Branch logs the application in the Safety Permit System, it is forwarded to the ASC Chair. The Chair reviews the package and the Committee reviews the application. They check to ensure that it has all the information necessary to perform a review.

Each Committee has its own review process, depending on the type of project and the time it takes for the review. Sometimes, committees assign teams to perform the review and report back to the whole Committee. At other times, the whole Committee will participate in the review. The important point is that the Committee members reach a consensus on the decision to issue a permit.

As part of the technical review, the SHED member of the Committee (each Committee has at least one) ensures that any regulatory requirements are met before a permit is issued. This includes PPE requirements, environmental permits, a waste management plan, emergency plan coordination, etc. Any discrepancies that are raised during the review are discussed with the requester. These are documented and tracked by the Committee. No permit is issued until the discrepancies are resolved and closed.

In some instances, the Committee will issue restrictions on the permit because of factors that may affect the safety of employees and/or operational impact to the facility. For example, a project may be required only to test at night in order to reduce the impact on another test at a nearby test room or facility. In some cases, multiple tests use the same chemical dispensing system and cannot operate at the same time. All these restrictions will appear on the permit and will be discussed with the requester prior to the permit being issued.

Issuance

After the ASC completes the review and approves the issuance of a Safety Permit (see attachment 4), the ASC Chair will prepare the Safety Permit with appropriate operating conditions included. The chairperson signs the original Safety Permit. The SHED representative provides the appropriate NFPA Hazard Identification Code, indicating appropriate emergency response measures. This information is included in the Center's Pre-Fire Plans, Laboratory Safety Program and other compliance programs. The Safety Permit System is updated, and copies of the Permit and application package are returned to the Safety Branch office to be kept within the Branch's document management process.

At the project site, the signed Safety Permit, with the signed Qualified Operators List, emergency data and procedures is posted. It will remain posted until the permit is removed or the project is completed.

Maintenance

Now that the Safety Permit is issued and posted, the project begins its operation. The operation can proceed within the constraints outlined in the permit.

No personnel can enter a Permitted Area while in testing. This is considered a safety hazard to personnel and the operation. This action will result in disciplinary action to personnel responsible for this violation. In addition, coordination with the Permit Holder is required for entry into facilities conducting classified operations. Security, as well as safety safeguards, are required for all research operations.

Any deviation from the procedures stated on the Safety Permit must be reviewed by the ASC that issued the permit. Failure to comply with the procedures and operating conditions found on the Safety Permit and any accompanying documentation will result in termination of the operation by the ASC Chair and/or SHED personnel. Any employee can stop a permitted operation if the Permit Holder does not comply with permit's constraints.

Safety Permits are typically issued for a one-year period. Facilities-related permits are usually issued for a three-year period, as long as there are no major modifications to the facility during this period. The decision to issue a multi-year Permit is at the discretion and control of the ASC Chair.

Modification

If there are any changes in the purpose, procedures, operational limits, qualified operators, or design of the activity while the existing permit is in force, a modification of the Safety Permit must be requested. The Permit Holder must notify the ASC Chair as soon as possible of the proposed change (in writing). Based on the proposed change, the ASC will conduct a review of the permit. For minor changes (with no new or different hazards), the ASC Chair will issue a memo with the approved change. For major changes, a Safety Permit Renewal/Change Request Form must be submitted by the Permit Holder to the ASC for a completed review. All related documentation must be included. The Review and Issuance processes will be completed by the ASC.

Renewal

The Safety Branch will send a notification of expiration to the Permit Holder 60 days prior to expiration. Expiration notices are also sent to the ASC Chair. It is the responsibility of the Permit Holder to be aware of the permit conditions and expiration date and to initiate a renewal process prior to the 60-day notice. The 60-day notice is a courtesy. Regardless of notification, it is the Center's policy to forbid conducting operations with an expired Safety Permit.

The Permit Holder can request an extension if the project will be completed within a short period of time from the expiration date. If there are no changes to the operation, the ASC could issue an extension for a period not to exceed 90 days. If there are changes in the operation, the Permit Holder is required to submit a new Safety Permit Request or a Safety Permit Renewal/Modification Request (see Attachment 5). The ASC will follow the same procedure outlined in the Review and Issuance described above.

Termination/Phase Down

Upon completion of the permitted operation, the Safety Permit Holder will remove the permit from its operational location and return it to the Safety Branch to be archived. A notification will be sent to the ASC Chair that the permit was terminated and archived.

The Safety Permit also can be terminated if the holder fails to meet the guidelines included in the permit. A member of the ASC or SHED will notify the Permit Holder of the problem and the termination of the permit. Permits also will be terminated if the operation is involved in a Class A (fatality, multiple injury or over one million dollar loss in property damage) or a Class B mishap (employee is hospitalized or property damage of less than one million dollars but above \$250,000).

The "former" Permit Holder will coordinate the phase out of the operation, the disposition of equipment, and removal and proper disposal of all hazardous material in accordance with the established Center guidelines. The "former" Permit Holder is responsible for ensuring that these tasks are completed. The ASC is not responsible for or involved in this process.

Appeals

If, during the review process, a permit request is denied or the Hazard Analysis indicates that the risks cannot be mitigated without excessive expense or unacceptable time constraints, the requester can appeal to the Safety, Health and Environmental Board (SHEB). This step is reserved for situations in which the Risk Management decision must be made by an authority above the ASC. All appeals to the SHEB are requested through its Secretary: the Chief, Safety, Health and Environmental Division (SHED).

If the Safety Permit is approved by the SHEB, the Chief SHED will coordinate the issuance of the permit. The Chair, SHEB, will sign the Permit. If declined, the sponsoring organization needs to reassess the need of this operation and the hazards within and re-apply when the hazards concerns are resolved.

Does the Process Work?

Let's provide some statistics related to this process:

- There are 15 Area Safety Committees:
 - Nine geographical committees
 - Six Specialty Committees—Electrical Applications, Process Safety, Biological Safety, Aviation Safety, Laser Safety, and the Reactor Decommissioning Safety Committee.
- There are over 125 employee members of safety committees; for all of them, this is an additional duty. Each spends over 220 hours a year supporting this program.
- The ASC meet about two to three times a month, depending on the number of requests.
- On the average, an ASC will take about 60 days to process a Safety Permit Request.
- There are 382 Active Safety Permits at the Center.
- On the average, 194 Safety Permit Requests are processed every year.
- GRC has not had a Class A mishap (a property lost over one million dollars, a fatality or a multiple injury) or a Class B (hospitalization of an employee or property loss of less than one million dollars but over \$250,000) as a result of a research or a hazardous operation.

It has been proven over the years that the axiom “one ounce of prevention eliminates a gallon of blood” is very true at GRC. The Safety Permit process is the primary prevention program at the Center. The work that the ASC members, the Safety Permit Holders and the support staff do every day is outstanding and the primary reason that we have a safe place to work.

Today's Challenges

NASA, like any other government or industrial company, faces many challenges in this ever-changing technological world. In NASA GRC's case, there are three main challenges that we face today:

- Change in the Agency's Vision/Mission
- Loss of Corporate Knowledge
- Aging Facilities

Change in the Agency's Vision/Mission

In January of 2004, the President announced the new vision for NASA. This vision gives the Agency a new direction in the area of Space Exploration. It defines the need to complete the Space Station, replace the Space Shuttle, return to the Moon, and go to Mars within the next 20

years. This change in the Agency's vision and mission impacts the GRC's areas of research and development. The Safety Permit system may have to be modified to meet this new direction.

Loss of Corporate Knowledge

Like many agencies in the federal government, NASA GRC has an aging work force. Many of our more experienced Committee members are retiring or moving into other positions with the Center or the Agency. We are having difficulty finding the experienced personnel in many specialties to replace the corporate knowledge that we have lost. This could create the problem of having Committees without the skills necessary to evaluate many of these very complex projects and systems. If we cannot replace some of the people that we have lost, within five years it will be difficult to continue the program that we have today.

Aging Facilities

Many of the facilities at GRC are over 40 years old. They require constant maintenance and upgrading to meet the Agency's needs. Each time one of these permitted facilities is modified, it needs to be reassessed and a new permit issued. These are complex facilities requiring some time for a permit to be reviewed and issued. Because they are aging facilities, the Safety Permit process assists the facilities manager, operators, and safety professional to concentrate their time and effort in ensuring that the hazardous systems are properly maintained to prevent any failure that will result in loss of life or loss of the facility.

Bibliography

National Aeronautics and Space Administration, *Center Overview*, Available at: <http://www.nasa.gov/centers/glenn/about/aboutgrc.html> . [Accessed 7 March 2006].

National Aeronautics and Space Administration, *What Does NASA Do?*, Available at: http://www.nasa.gov/about/highlights/what_does_nasa_do.html . [Accessed 7 March 2006].

NASA Glenn Research Center, *Annual Operating Agreement 2006*, Safety and Mission Assurance Directorate SMA/Q, October 2006.

NASA Glenn Research Center, *Chapter 1a – Safety Permit System*, Glenn Safety Manual, May 2005.

SAFETY PERMIT REQUEST			DATE RECEIVED <small>(Completed by Committee Chair)</small>	PERMIT NUMBER <small>(To be provided by Committee)</small>		
TITLE: _____ _____ <small>(Limited to 70 characters including blank spaces)</small>						
TO: _____ SAFETY COMMITTEE <small>(Provide area number or special committee name)</small>		FROM: _____ <small>(Safety Permit Requester, print name)</small>				
EMERGENCY CONTACTS	<small>(Provide information below for an emergency contact and alternate knowledgeable of activity. The Safety Permit Requester can be an Emergency Contact)</small>		ORGANIZATION	WORK PHONE		
	MAIL STOP					
NAME	WORK PHONE	HOME PHONE	LOCATION OF ACTIVITY: _____ <small>(Indicate facility name, number, cell)</small>			
			EXPECTED DURATION <small>(mm/yyyy)</small>			
ACTIVITY SCHEDULE <small>(Check all that apply)</small>			START:	COMPLETE:		
<input type="checkbox"/> Workday <input type="checkbox"/> Night <input type="checkbox"/> Weekend			TEST RUN LENGTH (Hours, days):			
DESCRIBE ACTIVITY <small>(If a precedence exists for this activity, provide details including related safety permit numbers(s)).</small>						
Check all Supporting Documentation Attached: <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"> <input type="checkbox"/> Technical Description <input type="checkbox"/> Schematics, Drawings <input type="checkbox"/> Parts List <input type="checkbox"/> Plot Barricade Plan <input type="checkbox"/> Hazards Analysis <input type="checkbox"/> Operating Procedures/Check Sheets <input type="checkbox"/> Lockout / Tagout Procedures <input type="checkbox"/> Material Safety Data Sheets </td> <td style="vertical-align: top;"> <input type="checkbox"/> NASA C-580 Qualified Operators List <input type="checkbox"/> NASA C-197 Users Radiological Training & Experience Record <input type="checkbox"/> Compliance with NASA Recertification Program (See Ch. 7 of Glenn Safety Manual) <input type="checkbox"/> List of Alarms and Shutdowns <input type="checkbox"/> Emergency Response Plan/Shutdown Procedures <input type="checkbox"/> Laser Documentation <input type="checkbox"/> Radiation or Radioactive Material Information <input type="checkbox"/> Other (Specify) _____ </td> </tr> </table>					<input type="checkbox"/> Technical Description <input type="checkbox"/> Schematics, Drawings <input type="checkbox"/> Parts List <input type="checkbox"/> Plot Barricade Plan <input type="checkbox"/> Hazards Analysis <input type="checkbox"/> Operating Procedures/Check Sheets <input type="checkbox"/> Lockout / Tagout Procedures <input type="checkbox"/> Material Safety Data Sheets	<input type="checkbox"/> NASA C-580 Qualified Operators List <input type="checkbox"/> NASA C-197 Users Radiological Training & Experience Record <input type="checkbox"/> Compliance with NASA Recertification Program (See Ch. 7 of Glenn Safety Manual) <input type="checkbox"/> List of Alarms and Shutdowns <input type="checkbox"/> Emergency Response Plan/Shutdown Procedures <input type="checkbox"/> Laser Documentation <input type="checkbox"/> Radiation or Radioactive Material Information <input type="checkbox"/> Other (Specify) _____
<input type="checkbox"/> Technical Description <input type="checkbox"/> Schematics, Drawings <input type="checkbox"/> Parts List <input type="checkbox"/> Plot Barricade Plan <input type="checkbox"/> Hazards Analysis <input type="checkbox"/> Operating Procedures/Check Sheets <input type="checkbox"/> Lockout / Tagout Procedures <input type="checkbox"/> Material Safety Data Sheets	<input type="checkbox"/> NASA C-580 Qualified Operators List <input type="checkbox"/> NASA C-197 Users Radiological Training & Experience Record <input type="checkbox"/> Compliance with NASA Recertification Program (See Ch. 7 of Glenn Safety Manual) <input type="checkbox"/> List of Alarms and Shutdowns <input type="checkbox"/> Emergency Response Plan/Shutdown Procedures <input type="checkbox"/> Laser Documentation <input type="checkbox"/> Radiation or Radioactive Material Information <input type="checkbox"/> Other (Specify) _____					
ENVIRONMENTAL DISCHARGE PRODUCTS <small>(Provide below the names(s) and estimated amounts of the discharge product(s), what it will be discharged to (e.g., air, sewer), plans for abatement /treatment, the method of detection used to measure the amount/type of discharge, and the frequency of discharge sampling. Indicate if none.)</small>						
SAFETY PERMIT REQUESTER <small>(Sign and date)</small>		SUPERVISOR OF REQUESTER <small>(Print name, sign and date)</small>		WORK PHONE		
NASA TECHNICAL SUPERVISOR <small>(Required if Safety Permit Requester is a contractor. Print name, sign and date)</small>		WORK PHONE	INSTRUCTIONS: Send this request and all supporting documentation to the Glenn Safety Office. Refer to the Glenn Safety Manual, Chapter 1, for additional information.			

Attachment 1

SAFETY PERMIT HAZARD ANALYSIS WORKSHEET

Permit No.

HAZARD CATEGORY	DESCRIPTION OF SPECIFIC HAZARDS	DESCRIPTION OF PLANNED HAZARD CONTROLS OR SAFETY PROCEDURES	RISK INDEX
COLLISION		Overspeed Control	
		Crane Proofloading	
		Guards	
		Lockout/Tagout Procedures	
		Barricade Plan	
		Blast Shield	
		Critical Speed Analysis	
		Triburst Calculations	
		Other	
CHEMICAL		Ventilation	
		Detectors	
		Proper Storage	
		Personal Protective Equipment	
		HazCom Training	
		Proper Labeling	
		Spill Resource Procedures	
		Respiratory Protection Program	
		Other	
ELECTRICAL SHOCK		Grounding	
		Guards	
		Designed per NEC	
		Current limiting devices	
		Lockout/Tagout Procedures	
		Other	
TEMPERATURE EXTREMES		Temperature Controls	
		Temperature Alarms	
		Personal Protective Equipment	
		Other	

Attachment 2

SAFETY PERMIT NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GLENN RESEARCH CENTER CLEVELAND, OHIO		Date Issued (mm/yyyy)	Expiration Date (mm/yyyy)	
TITLE: (Limited to 70 characters including blank spaces)		LOCATION OF ACTIVITY: (Indicate facility name, number, cell)		
PERMIT NUMBER:				
EMERGENCY CONTACTS				
Name (Knowledgeable person):		Work Phone:	Home Ph:	
Name (Alternate contact):		Work Phone:	Home Ph:	
<input type="checkbox"/> This permit covers identified PV/S. All required PV/S component (vessels, relief devices, etc.) have been identified and are in the GRC Pressure Systems Database (PSD). The PV/S RAC(s) have been assessed by the Pressure Systems Office (PSO) and are approved to be of acceptable risk. The PSO RAC acceptance letter and PV/S RAC assessment summary is attached.				
ACTIVITY DESCRIPTION:				
HAZARDOUS MATERIALS/OPERATION IDENTIFICATION & COMMUNICATION				
List predominate materials & approximate amounts	H	F	R	S
(Additional materials/chemicals listed in MSDS folder)				
SAFETY PERMIT REQUESTER (Print name)		ORGANIZATION	WORK PHONE	
SAFETY COMMITTEE CHAIRPERSON (Signature)		MAIL STOP		
		ACTIVITY COMPLETED - Requester sign and date below, then return to Glenn Safety Office (MS 6-3)		

Attachment 4

SAFETY PERMIT RENEWAL/CHANGE REQUEST			DATE RECEIVED (Completed by Committee Chair)	PERMIT NUMBER (To be provided by Committee)
TITLE (From Safety Permit to be renewed or changed. Note proposed title changes below. Limited to 70 characters including blank spaces)				
TO: (Provide area number or special committee name) SAFETY COMMITTEE			PERMIT ISSUE DATE	PERMIT EXPIRATION DATE
FROM: Requester Last Name	First Name	M	Organization	Work Phone
				Mail Stop
A review is required of the activities and supporting documentation associated with the safety permit to be renewed or changed. After conducting this review, check the appropriate box below.				
<input type="checkbox"/> This review identified no new hazards and no changes to the design, operations, constraints, information or supporting documentation from the original Safety Permit Request.				
<input type="checkbox"/> This review identified changes which are described in detail below.				
<input type="checkbox"/> This permit covers identified PV/S. All required PV/S component (vessels, relief devices, etc.) have been identified and are in the GRC Pressure Systems Database (PSD). The PV/S RAC(s) have been assessed by the Pressure Systems Office (PSO) and are approved to be of acceptable risk. The PSO RAC acceptance letter and PV/S RAC assessment summary is attached.				
DESCRIPTION OF CHANGES (Includes details of changes to the design, operations, constraints, information or supporting documentation from the original Safety Permit Request (e.g. Emergency Contacts) and changes to the supporting documentation (e.g., Qualified Operators List, the NASA C-923a Safety Permit Hazard Analysis Worksheet)				
SAFETY PERMIT REQUESTER (Sign and date)		SUPERVISOR OF REQUESTER (Print name, sign and date)		WORK PHONE
NASA TECHNICAL SUPERVISOR (Required if Safety Permit Requester is a contractor. Print name, sign and date)		WORK PHONE		INSTRUCTIONS: Attach a copy of the original Safety Permit, C-923a-Hazardous Analysis Worksheet, and C-580-Qualified Operators List, to this request along with any modified supporting documentation and send to the Glenn Safety Office. Refer to the Glenn Safety Manual, Chapter 1, for additional information.

NASA C-590 (REV. 6-2005)

Attachment 5