COLUMBIA SCIENTIFIC BALLOON FACILITY

BALLOON GROUND SAFETY PLAN

OPERATIONS SUPPORT FOR THE NASA BALLOON PROGRAM
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Goddard Space Flight Center
Wallops Flight Facility
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NOTICE: This document is based on the NASA/GSFC/WFF-provided Range Safety Manual, identified as RSM 2002. A copy of NASA approvals of the original issue document is also included.

BALLOON GROUND SAFETY PLAN

Rev-

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ABBREVIATIONS

AIAA	American Institute of Aeronautics and Astronautics
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
BGSP	Balloon Ground Safety Plan
BPO	Balloon Program Office
Category A Hazard	Meets all the following requirements: 1) Initiation of the system could lead to a chain of events that result in injury, death, or property damage 2) Sufficient energy exists to start the chain of events 3) The energy output of the system is not controlled or contained.
Category B Hazard	Those systems which: 1) Are highly improbable of being initiated 2) Do not cause injury or property damage by their own direct initiation or the sequence of events they initiate.
CFR	Code of Federal Regulations
CSBF	Columbia Scientific Balloon Facility
DOT	Department of Transportation
GHB	Goddard Handbook
GMI	Goddard Management Instruction
GPD	Goddard Policy Directive
GPG	Goddard Procedures and Guidelines
GPR	Goddard Procedural Requirements
GSFC	Goddard Space Flight Center
IEEE	Institute of Electrical and Electronics Engineers
L Band	US standard industry RF band from 1000 to 2000 MHz
MSDS	Material Safety Data Sheet
NASA	National Aeronautics and Space Administration
NLSA	Nuclear Launch Safety Approval
nm	nautical mile
NOHD	nominal ocular hazard distance
NPD	NASA Policy Directive
NPG	NASA Procedures and Guidelines
NRC	Nuclear Regulatory Commission
NSS	NASA Safety Standard
psig	pound per square inch gauge
RAC	Risk Assessment Codes
RF	radio frequency
RSM	Range Safety Manual
RSO	Radiological Safety Officer
RSQA	Reliability, Safety, and Quality Assurance
S Band	US standard industry RF band from 2000 to 4000 MHz
TDRSS	Tracking and Data Relay Satellite System
UHF	ultra high frequency, US standard industry RF band from 300 to 1,000 MHz
VHF	very high frequency, US standard industry RF band from 30 to 300 MHz
WFF	Wallops Flight Facility

1 SCOPE

This document is the Balloon Ground Safety Plan (BGSP) for operations performed by the Columbia Scientific Balloon Facility (CSBF). The BGSP is derived from the NASA Goddard Space Flight Center (GSFC) Wallops Flight Facility (WFF) Range Safety Manual, identified as RSM 2002.

The CSBF BGSP applies to all balloon operations performed by the CSBF personnel at Palestine, Texas, Fort Sumner, New Mexico, or any remote sites.

The ground safety goal of the CSBF is to minimize risks to personnel and property in conducting operations and to prevent mishaps that might result in embarrassment to CSBF, NASA, and the United States Government.

It is the policy of the GSFC/WFF and CSBF that all systems be designed such that a minimum of two independent unlikely failures must occur to expose personnel to a hazard.

2 SAFETY RESPONSIBILITIES

The CSBF Operations Department Head (campaign manager at remote sites) is responsible to ensure compliance with the provisions of the BGSP for CSBF operations and for science user operations.

The CSBF Reliability, Safety, and Quality Assurance (RSQA) is responsible for institutional support for the CSBF and providing any special safety equipment to support the requirements of the BGSP.

The CSBF Radiological Safety Officer (RSO) is responsible for the receiving and provisions of appropriate storage for all radioactive sources brought to CSBF, Fort Sumner, or remote sites. The RSO insures that procedures, handling, and storage of sources comply with CSBF policy and criteria and the Nuclear Regulatory Commission (NRC).

The Experimenter is responsible for supplying documentation to CSBF identifying hazards and control methods. The typical payload hazards can be identified in the Balloon Flight Support Application and the Ground Safety Data Entry Form (Attachment 1 at the end of this BGSP). Other hazards shall be identified by filling out the Special Payload Safety Plan Form (Attachment 2 at the end of this BGSP). The user is also responsible for obtaining licenses from other agencies (e.g. a license for radioactive sources and removal of the source). Hazards will be identified in the user request for support, and reviewed and approved by CSBF safety personnel.

No less than six months prior to flight, the CSBF is responsible to provide notice to the NASA Balloon Program Office of any intent to fly radiological sources. The NASA Balloon Program Office will submit requests for approval from the Nuclear Launch Safety Approval (NLSA). NLSA approval is prerequisite to use of any radiological source in flight. CSBF will provide information as to the number of sources, to include type, total activity, and packaging for each source intended to be flown on any balloon mission.

The crew chief is responsible to direct the movement and operation of all heavy equipment used in balloon launch operations in such a way as to ensure safety and minimize the number of

personnel exposed to hazards associated with this equipment. The crew chief shall verify that all launch equipment is configured in accordance with the approved mechanical certification provided by the CSBF Engineering Department.

3 HAZARDOUS SYSTEMS CONTROL

The BGSP addresses the hazardous systems and operations shown in Table 1 and identifies the subsection where these hazards and their controls are addressed.

Table 1 Hazardous Systems and Operations

HAZARD	SECTION	PAGE
Ionizing Radiation	3.1	6
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3.1 IONIZING RADIATION

All operations conform to the standard of the NRC, 10 CFR, and applicable regulations for the state or country in which operation occurs.

The Experimenter provides the CSBF RSO with applicable Material Safety Data Sheets (MSDS) for each source being used.

The Experimenter will provide the CSBF RSO a Ground Safety Data Entry Form (Attachment 1) with the following information:

- Sources to be used
- Total activity
- Packaging
- Custodian

Prior to start of all operations, the MSDS will be read and reviewed by all involved personnel.

Procedures for the use, handling, and storage of the radioactive materials will comply with the specific procedures and policies identified in the CSBF Health and Safety Plan. A copy of these procedures must be posted in the work area.

Only persons officially approved by the CSBF RSO may handle radioactive sources.

No source shall be transported outside the designated storage/use area except by authorization of the CSBF RSO.

Eating, drinking, and storage of personal items is permitted where sources are sealed.

A mishap such as fire, source rupture, or damage requires immediate notification to the responsible safety person for this operation. The safety person and the method of communication (phone, walkie-talkie, etc.) will be identified prior to the start of any operation.

3.2 LASERS

The experimenters will provide the following information in the Ground Safety Data Entry Form (Attachment 1).

- Laser system
- Laser class
- Wavelength
- Nominal ocular hazard distance [1] (NOHD)
- Optical density

The following personnel restrictions will be in place for ground operations (e.g. calibration or alignment) of Class III or IV lasers.

- Personnel within the NOHD shall wear protective goggles with an optical density as submitted by the experimenter.
- Items will be removed from the beam path and personal items (such as watches or other jewelry) will be removed that may cause specular reflections.
- The laser will be operated below eye level.
- There will be a target termination point for the beam.
- All personnel not directly involved in laser maintenance or calibration must evacuate the area during laser operations. A safety observer shall determine the beam path is clear at the beginning of the operation, and maintain the beam path clear for the duration of the laser operation.
- The area will be roped off or traffic cones will be placed around the beam path.
- Laser operation warning signs will be posted around the beam path area.

[1] The experimenter shall seek direction from CSBF if unfamiliar with calculating nominal ocular hazard distance (NOHD) or optical density.

3.3 CHEMICALS

A general description of hazardous chemicals will be provided in the Ground Safety Data Entry Form. More complete safety information is given in the MSDS.

- Personnel shall become familiar with the hazards posed by hazardous chemicals by reading the MSDS.
- One MSDS set will be posted in the work area.

The Experimenter/Scientist submits procedures for the safe storage, handling, transfer, spillage, and use of chemicals to the CSBF RSQA for approval.

Hazard areas will be determined and properly roped off or use traffic cones.

Appropriate personnel protective equipment such as clothing, face shields, or safety goggles will be worn when handling hazardous chemicals.

In the event of spillage, trained personnel will respond to clean up per the Chemical Spill Procedure in the CSBF Safety and Health Plan. These procedures will be reviewed prior to the start of a normal operation and posted in the work area.

Eye wash stations will be available when required.

All tanks and transfer lines will conform to applicable ASME (American Society of Mechanical Engineers) and DOT regulations.

The Special Payload Safety Plan Form will be filled out when controls fall outside normal operations.

3.3.1 TYPICAL CHEMICAL HAZARDS AND EMERGENCY RESPONSES

The guidance given in the following table is meant to be very general in nature, and will not substitute for a better familiarity of the hazardous chemical obtained by reviewing the MSDS. Personnel who may be exposed to hazardous chemicals shall review the MSDS; especially review information in the MSDS addressing first aid and fire response.

Table 2 Chemical Hazards and Emergency Responses

MATERIAL	HANDLING	FIRST AID
Caustics / Acidics	Can cause skin bums if it contacts exposed skin. Can cause severe eye damage if it gets in the eye.	1. Remove contaminated clothing and flush affected body part(s) with large amounts of water. 2. Get medical attention as soon as possible.
Cryogens	Handle in a manner that will prevent frostbite or injury to personnel. • When handling cryogenic liquids, personnel shall wear a face shield, apron, gloves, and closed-toed shoes. Pant legs are to be worn outside footwear. • Tongs shall be used when handling dry ice.	**Eye Contact** 1. Immediately flush eye(s) for at least 15 minutes. **Skin Contact** 1. Warm the frostbite area with warm water. Do not use dry heat. 2. Remove any contaminated clothing. 3. Get medical attention as soon as possible.

MATERIAL	HANDLING	FIRST AID
Flammable Liquids and Gases	The relative degree of flammability of a substance is determined from its flashpoint temperature; that is, the lower the flashpoint temperature, the more flammable a substance should be considered. • Perform pre-test leak checks and generate chemical leak test procedures prior to starting any operation. • If a leak occurs, operations will be suspended until the cause has been addressed and resolved.	In general, dry chemical fire extinguishers (i.e. Class ABC) are acceptable for fighting fires for all flammable substances. The fire extinguisher shall be available in the work area in the event of a fire.
Toxics	The hazard of a toxic chemical leak is addressed by periodic system leak checking. If the hazard of exposure to the toxic chemical is considered severe by CSBF, additional measures may be taken such as continuous monitoring of the toxic chemical and/or secondary containment of the toxic chemical.	**Inhalation** 1. Remove the victim from the contaminated environment, and allow victim to breathe fresh air. Put the victim on oxygen (if available) if the symptoms indicate a high level of exposure. 2. Keep the victim warm, comfortable, and quiet. 3. Seek immediate medical attention **Skin or Eye Exposure** 1. Remove all contaminated clothing and flush affected area for at least 15 minutes. 2. Seek immediate medical attention.

3.4 PRESSURE SYSTEMS

If the experimenter is supplying his/her own pressure system, the following information for their pressure shall be supplied on the Ground Safety Data Entry Form (Attachment 1).

- Gas bottle pressure
- Regulator pressure
- Tank design standard
- Safety factor (other components: lines, fittings, regulator, valves, etc.)

Fill out the Special Payload Safety Form (Attachment 2) for pressure systems that do not meet standard DOT or ASME pressure vessel requirements, and exceed 19,130-Joules (14,240 ft-lbs), or have operating pressures greater than 100-psig for gases and 1000-psig for liquids. Tanks in these systems shall be designed to a standard agreed upon by CSBF, such as AIAA (American Institute of Aeronautics and Astronautics) S-080 or AIAA S-081.

Pressure system assembly and operating procedures shall be submitted to CSBF RSQA for review and approval. CSBF has a certification and approval process for gondola/payloads having pressure systems.

3.5 PYROTECHNICS

All CSBF pyrotechnics are rated Class 1.4S explosives and are self-contained. CSBF personnel who store, handle, or install pyrotechnics have had approved training.

All electro-explosive devices must be 1-amp, 1-watt, no-fire.

The experimenter will provide the following to CSBF in the Ground Safety Data Entry Form (Attachment 1):

- Device
- Quantity
- Function
- Resistance
- Pin-to-case resistance
- No-fire power and current
- All-fire current

The experimenter will identify hazards and develop installation procedures to be submitted to the CSBF RSQA for approval.

3.6 HEAVY EQUIPMENT OPERATION

All CSBF lifting devices will conform to NASA-STD-8719.9.

When using pins to suspend payload, two safety related cables will be attached between launch head and truck plate, which restrains truck plate.

Regular inspections are performed according to procedures in Tiny Tim Cleaning and Inspection (OF-524-00-P). A copy of these procedures will be on Tiny Tim.

The CSBF Operations and Mechanical Systems Department is responsible for providing mechanical certification of the spool, spool restraining vehicle, flight train, and launch vehicle for each launch configuration used at CSBF and remote sites. Guidelines for certification will be to ensure mechanical integrity of the entire system at the maximum planned gross inflation should the system be exposed to a 20-knot wind directly behind the balloon bubble at the completion of inflation.

3.7 "HOT" FLIGHT TERMINATE SYSTEM

"Hot" is defined as mating of pyrotechnic squib, motor, or actuator to the connector going to the initiator device—continuity plug—prior to start of inflation of balloon.

For this specific operation, only trained personnel will be allowed in this hazard area. CSBF staff assembling and installing electro-explosive devices will be trained and certified to perform electro-explosive device installation.

Electric wiring and power source will be completely independent and isolated from all other systems. All electro-explosive devices will be connected with approved shorting devices until assembled on the launch pad.

3.8 NON-IONIZING RADIATION

Compatibility tests with CSBF flight systems will have been performed for all radio frequency (RF) sources brought to CSBF or remote sites.

Experimenters will provide all requested information pertaining to their RF system so that CSBF may coordinate frequency uses and authorizations.

Experimenters will fill out the RF Pyrotechnic Hazard Distance Worksheet in Attachment 1:

- To determine the RF hazard distance between an irradiating emitter and a pyrotechnic device
- To determine the safe separation distance between an irradiating emitter and personnel

Particular attention will be paid to high-power emissions of:

- TDRSS Omni antennas and high-gain antennas
- Science-provided emitters greater than 1-watt for L/S Band
- Any L/S Band emitters greater than 1-watt.
- Any UHF/VHF emitters greater than 1-watt.

More specific guidance (if required) for RF hazards to personnel may be found in IEEE C95.1-1999, listed in the references in Section 5.0.

3.9 ELECTROSTATIC DISCHARGE

Precautions are taken to reduce electrostatic discharge during balloon inflation.

- Static dissipating fluid will be applied to the balloon ground cloth.
- A drag chain will be installed on launch vehicle to eliminate static charge.

Prior to removal, alteration of configuration, or opening of any electronic initiator system, ensure that pyrotechnic devices are electrically separated from such initiators and placed in a safe configuration with shorting plugs.

3.10 ELECTRICAL STORM

Balloon inflation will not begin if an electrical storm is detected within 10-nm of the launch site, in accordance with CSBF Thunderstorms and Launch Restrictions policy (OF-695-31-P).

If no equipment is available to detect electrical storm activity, inflation will be halted and hazardous areas cleared upon hearing thunder or observing weather conditions that have an immediate potential of producing an electrical storm.

4 OPERATIONAL CONTROLS

4.1 PRE-INFLATION PHASE

This phase extends from the time that the payload is physically attached to the balloon launch vehicle prior to leaving the assembly area and extends to the point that inflation of the balloon commences.

Hard hats are required for personnel from the pre-inflation operations phase through the launch operations phase.

4.1.1 TINY TIM OPERATION

Vehicle engine will be off when attaching the "Tim" fitting.

No personnel will be permitted to walk out on the jaws of Tiny Tim when its engines are running.

The hydraulic safety column is a secondary support when the payload is suspended from the jaws of Tiny Tim.

No personnel will be allowed under the suspended payload while the Tiny Tim vehicle is holding the payload.

4.2 INFLATION PHASE

This phase starts when lifting gas is applied to the balloon, after it is connected to the complete flight system. The phase is complete when all lifting gas has been transferred to the balloon and all preflight preparations are complete.

Hydrogen gas will not be used for balloon inflation except under special procedures that have been specifically reviewed and approved by the CSBF Operations Manager, CSBF RSQA, CSBF Site Manager, and NASA Balloon Program Office.

A Category A hazard condition results when the CSBF flight terminate system is made "hot" by inserting the continuity plug and balloon inflation begins. This Category A hazard continues through balloon launch, or until helium is released from the balloon envelope, or until the continuity plug is removed from the CSBF Flight Terminate System.

The Category A hazard area is defined as extending from the CSBF parachute cutaway device to the launch spool. This area extends 10 feet on either side of the package and balloon up to the launch spool with a 50-ft radius around the center of the launch spool. The only personnel allowed within this Category A hazard area are CSBF launch personnel trained to perform the following operations:

- Strip protective wrap from the balloon at a position behind the launch spool
- Strip protective wrap from the balloon base fitting to the spool from a position on either side of the balloon
- Inspect and document the balloon and associated flight hardware from either side of the parachute and balloon

- Install the balloon collar (the launch crew chief and support technicians)
- Deploy the terminate box assembly as slack is taken out of the system during inflation

Personnel will not straddle or remain under any portion of the parachute or balloon at any time when this Category A hazard exists.

Hearing protection is required for the helium diffuser operators and all other personnel working within 75 meters of the balloon bubble during inflation.

4.3 LAUNCH PHASE

This phase begins upon completion of the inflation phase.

The Category A hazard area for the balloon launch phase is defined as a rectangular area on the ground from the payload on the launch vehicle to the launch spool and extending one half of this distance to either side of a line between the payload and launch spool. The area also consists of a semicircle in front of the launch vehicle with a radius equal to one-half the length of the total flight system.

A Category A hazard condition exists from the time that the balloon is released from the spool until the payload is released from the launch vehicle.

All personnel and vehicles are excluded from this area except for CSBF launch crew personnel assigned to duties on the CSBF payload launch vehicle and the spool operator, who will be located at the spool vehicle.

The number of personnel riding on the launch vehicle during an operation will be minimized to reduce hazards during launch. A minimum crew will consist of the crew chief, driver, one or two mechanical technicians to push the payload off at launch, and an electronics technician. The electronics technician will ride on the launch vehicle with an approved portable command system capable of terminating the flight upon command from the crew chief.

The crew chief shall be solely responsible for signaling the spool operator to release the balloon from the spool. An approved communication mechanism (handy talkie, launch vehicle light system, etc.) shall be employed by the crew chief to signal the spool operator to release the balloon.

If communications between the crew chief and the spool operator are lost, operations will be suspended until the communication problem is resolved.

The spool mechanism will be designed such that two actions are necessary to activate the spool and release the balloon (i.e. safety pin and lever release.)

An electronic intercom system will be installed on the launch vehicle such that at a minimum, the crew chief, driver, and electronics technician have voice communication. This system will be independent from other voice communication systems to eliminate the possibility of interference.

For crane-head launches, two safety cables will attach the truck plate to the crane head. The cable release mechanism to launch the balloon will be a CSBF mechanical engineer approved mechanical lever arm.

For Tiny Tim launches, the jaw release mechanism requires two actions to arm the crew chief `s launch button. On Tiny Tim, a separate jaw release switch will be located in the driver's cab should the crew chief's release button malfunction. This switch shall be protected from inadvertent actuation by a hinged cover until immediately prior to balloon releases.

The crew chief shall be responsible for deciding whether to initiate spool release and balloon launch. If at any point during an operation, the crew chief observes conditions that could result in danger to personnel, the decision will be made to destroy the balloon in the spool or terminate the flight prior to payload release.

Balloon collar release will be initiated by command of the campaign manager or his designee. The person issuing the command will be located in a safe area off to the side of the operation where the entire flight train is visible. Collar release will take place such that there is no danger of the collar, collar receiver or protective foam striking personnel riding on the launch vehicle.

4.4 RECOVERY

Trucks used for recovery will comply with applicable DOT regulations.

Scientific users will identify specific hazards and procedures associated with pick-up, disassembly, and transportation back to the launch site.

The recovery team will be briefed prior to the launch. Whenever possible, a representative of the scientific user will accompany the recovery team.

A special recovery plan is prepared as needed (superconducting magnets, lasers, radioactive materials, etc.). When applicable, pressure vessels and cryogenic dewars have the pressure relieved and rendered safe per approved procedures submitted on the recovery form. Lithium batteries will be disconnected and stored in approved shipping containers prior to transport back to launch site.

When required, the recovery team personnel shall wear protective clothing and equipment.

5 REFERENCES AND OPERATIONAL PROCEDURES

RSM-2002, NASA/GSFC/WFF Range Safety Manual

NSS-STD 1740.12, Safety Standard for Explosives, Propellants, and Pyrotechnics (NASA-STD-8719.12)

GMI 1710.6, Certification and Recertification of Lifting Devices and Equipment and Critical Lift Requirements (GPR 8719.1)

IEEE C95.1-1999, American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 30KHz to 100GHz

GHB 1860.2, Radiation Safety Handbook

GPG 1860.1, Radiation Protection—Ionizing Radiation

ANSI Z136.1-1993, American National Standard for the Safe Use of Lasers

GHB 1860.3, Radiation Safety—Laser

NPD 8710.5, NASA Safety Policy for Pressure Vessels and Pressurized Systems

NPG 1700.6, Guide for In-service Inspection of Ground Based Pressure Vessels and Systems

CSBF Safety and Health Plan

CFR, Title 10, Parts 19 and 20

NASA-STD-8719.9, Safety Standard for Lifting Devices and Equipment

CSBF OF-695-32-P, Balloon Tracking and Recovery Procedures and OF-334-00-C, Recovery Report

CSBF OF-524-00-P, Tiny Tim Cleaning and Inspections

CSBF OF-695-25-P, Procedures for Ordnance Devices

CSBF OF-695-31-P, Thunderstorms and Launch Restrictions

CSBF OF-603-00-P, Launch Equipment Configuration Certification Process

Attachment 1 Ground Safety Data Entry Form

Ionizing Radiation (Reference Section 3.1)

Radioactive Source	MSDS Available	Total Activity	Custodian	Packaging

Laser (Reference Section 3.2)

Laser System	Laser Class	Wavelength	NOHD	Optical Density

Chemical (Reference Section 3.3)

Chemical Name	DOT ID No.	MSDS Available?	Type of Hazard (Cryogen, Flammable, Caustic/Acidic, Toxic, Other)	How is Hazard Controlled?	Controls in Place Verified?

Pressure System (Reference Section 3.4)

Bottle Pressure	Regulated Pressure	Tank Design Standard	Safety Factor of Other Components

Pyrotechnic (Reference Section 3.5)

Device	Quantity / Function	Bridgewire Resistance	Pin-to-Case Resistance	No-Fire Power and Current	All-Fire Current

RF Pyrotechnic Hazard Distance Worksheet (Reference Section 3.8)

System	P_t = Av. Power (W)	G = Ant. Gain (dBi)	f = Xmit Freq. (GHz)	$G_t = 10^{G/10}$	A = 1/f	$P_{eff} = P_t G_t$	$B = [P_{eff}]^{1/2}$	D (feet) = 1.851AB if $0.1 \le f < 20$ D (feet) = 0.093B if $20 \le f \le 100$

RF Personnel Hazard Distance Worksheet (Reference Section 3.8)

System	P_a = Av. Power (mW)	G = Ant. Gain (dBi)	f = Xmit Freq. (MHz)	$G_t = 10^{G/10}$	If 100 MHz ≤ f < 300 MHz, P_d = 1 mW/cm^2 If 300 MHz ≤ f < 3000 MHz, P_d = f/300 mW/cm^2 If f ≥ 3000 MHz, P_d = 10 mW/cm^2	$A = (P_A G_t)/(4\pi P_d)$	$D = A^{1/2}$ cm

Attachment 2 Special Payload Safety Plan Form

Hazardous system _____

How controlled? _____

To what extent is this system handled? _____

Who handles and/or assembles? _____

Describe the training/experience of the handler(s)/assembler(s) with this hazardous system _____

Are procedures available for the handling and/or assembly of this hazardous system? _____

Indicate this hazardous system's Risk Assessment Codes (RAC) for severity and probability in the following tables.

Hazard Severity

Label	Description	Severity			This System
		Personal Injury	Third-Party Property Damage	Equipment Loss	
I	Catastrophic	Death or permanent injury	> $500K	> $1M	
II	Critical	Injury requiring hospitalization	$25K to $500K	$250K to $1M	
III	Marginal	Minor injury	$1K to $25K	$10K to $250K	
IV	Negligible	Slight injury	< $1K	< $10K	

Hazard Probability

Label	Description	Probability	This System
A	High	> 0.3	
B	Fair	~ 0.03	
C	Slight	~ 0.003	
D	Remote	~ 0.0003	
E	Extremely Improbable	< 0.00003	

NOTE: *The following RACs will need to be reviewed by CSBF personnel: IA, IB, IC, ID, IIA, IIB, IIC, IIIA, III, and NA.*

CHANGE LOG

CHANGE SUMMARY	REVISION	DATE OUT FOR REVIEW
Baseline Release	Original Issue	March 2, 2004
· Changed "National Scientific Balloon Facility" to "Columbia Scientific Balloon Facility" and "NSBF" to "CSBF" throughout text · Added reference to GSFC/WFF Range Safety Manual in Notice section · Revised formatting · Updated Acronyms and References lists · Added signature page from original issue	B	November 21, 2006