

# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #15

### GUIDELINES FOR BOATING SAFETY FOR FILM CREWS

These guidelines are intended to provide recommendations on boating safety for film casts and crews.

#### SEA SICKNESS

1. Determine if any cast or crew member is susceptible to sea sickness.
2. Advise any cast or crew member who is susceptible or is uncertain to consult their physician or obtain an over the counter medication to control sea sickness.
3. Stay on deck in the fresh air if you feel nauseous. Do not go below.
4. Eat soda crackers or plain bread and drink plain soda water.

#### WHAT TO WEAR

1. All persons should wear approved non-skid deck shoes when working on or around watercrafts.
2. Avoid clothing that can get caught in "on-deck" machinery, or clothing that will hamper boat-to-boat transfers.
3. Wear a sun-shading hat, sunglasses and apply sunblock.
4. Coast Guard regulations require that each watercraft be equipped with approved floatation devices or Personal Floatation Devices. If you are instructed to put on a Personal Floatation Device do so and be sure it is properly secured.

#### PRE-PLANNING

1. The Unit Production Manager and/or the First Assistant Director will ensure a safety meeting with all involved personnel is conducted prior to boarding to acquaint cast and crew members of possible exposure to hazards while on a watercraft.
2. Discuss emergency procedures to be followed while on a watercraft. These include procedures for abandoning the watercraft and rescue procedures.

3. The Unit Production Manager and/or the First Assistant Director will ensure a safety meeting with all appropriate personnel if the watercraft is to be used in a stunt or special effects sequence.

### **BOARDING**

1. Stand clear of the boat and dock edge during docking procedures. Do not attempt to board until the watercraft is securely tied to the dock and a member of the boat crew gives the command to board.
2. Never under any circumstances place arms, legs or any other part of the body between the boat and dock or between two boats.
3. When boarding, only the designated boarding area or device shall be used. Do not step over rails, gunwales or lifelines.
4. Do not block access to the watercraft's cleats or emergency access hatches. If you are unsure where to stow your gear or other equipment, ask one of the watercraft crew members.

### **ONCE ON BOARD**

1. Keep one hand free at all times to hold onto the watercraft or railing.
2. Wear a life jacket while on the watercraft unless you are specifically told you may remove it.
3. Operation of valves, switches, etc. is to be performed only by watercraft crew members.
4. No one should straddle the gunwale (side of the boat) or sit with their legs dangling over the side of the boat.
5. The watercraft will be crowded with film and boat equipment and people. Remain alert at all times while on the watercraft.
6. Place all trash in proper containers. Do not throw anything overboard. It may create a hazard for other watercraft or marine life.
7. The private quarters of the boat and the wheelhouse/bridge are off limits to the film cast and crew. If you are invited into the wheelhouse/bridge, do not touch any electronic or other equipment.

8. A no smoking policy should be maintained while on board watercraft. A fire on board while at sea poses a serious hazard.
9. Marine toilets are very delicate. It does not take much to damage them beyond what can be repaired at sea. DO NOT dispose of tampons, paper towels, or other objects in the marine toilet. They may damage or clog the toilet.
10. Yell, "MAN OVERBOARD" as loudly as you can if you see someone fall into the water and point in the direction of that person. DO NOT take your eyes off that person. Continue pointing until a boat crew member takes over your position.

### **BOAT TO BOAT TRANSFERS**

1. Stand clear of the area where the transfer craft is tying up.
2. Allow a watercraft crew member to assist in the transfer of bags and equipment first. This will allow you two free hands to steady yourself in transferring to the other watercraft.
3. Do not attempt to transfer until all watercraft involved are secured together. A boat crew member will give the command when to transfer to the other watercraft. Transfer only from the place where you are instructed to do so, do not attempt to transfer from any other point.

### **BOAT TO BEACH TRANSFERS**

1. Be prepared to get your feet wet if there is surf.
2. Plan your movements ahead when there is surf. Be prepared to move on command. The watercraft operator will advise the cast and crew what procedures need to be followed. Proper timing is essential for the watercraft operator to enter and exit from the beach.

### **WHEN AT ANCHOR OR AT SEA**

1. Restrict all personnel from the water when watercrafts are operating unless it is a planned part of the sequence being prepared or filmed.
2. Establish that the marine coordinator shall be in charge of all watercraft used. Operators of each watercraft shall take all orders from the marine coordinator.
3. Equip each watercraft operator with a radio or have the watercraft equipped with an authorized marine band radio so contact with the marine coordinator may be maintained at all times.

INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

**SAFETY BULLETIN #16**

**RECOMMENDED GUIDELINES FOR SAFETY WITH  
PYROTECHNIC SPECIAL EFFECTS**

**This Safety Bulletin applies to pyrotechnic materials such as explosives and flammable or combustible liquids, gases and solids when used to create pyrotechnic special effects.**

ALL USE, HANDLING, STORAGE AND TRANSPORTATION OF PYROTECHNIC MATERIALS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

**Pre-Production/Planning**

- When pyrotechnic materials are used on set, such use shall be under controlled conditions with due regard for the safety of all involved.
- The Production Company or Studio shall make sufficient advanced notification of the use of pyrotechnic materials to the appropriate departments (such as Special Effects, Stunts, Camera, Art, Construction, Hair, Make-up and Wardrobe), in order to safely plan pyrotechnic special effects. Any performer who may be involved in a pyrotechnic special effect shall be notified.
- Any required licenses and/or permits shall be obtained from proper Authorities Having Jurisdiction (AHJ) over pyrotechnic materials prior to using pyrotechnic special effects. Pyrotechnic Special Effects Operator(s) must hold valid State and Federal license(s), as applicable.
- Consideration of using remote control detonation devices should be discussed with Safety, Fire, Production, Stunts, and Special Effects prior to use.
- Prior to pyrotechnic special effects work, productions must develop emergency procedures and contingency plans, including identifying emergency fire suppression equipment and personnel needs. All equipment shall be checked to verify that it is in good operating condition. Individuals using this equipment must have proper training in its use and limitations.
- The need for personal protective equipment (PPE) should be identified during the planning stage.
- Special effects personnel must inform the Transportation Coordinator of what pyrotechnic materials will be transported. Vehicles must be properly placarded when

required by Federal or State law. All vehicles transporting pyrotechnic materials shall have an inventory of the materials being transported or stored readily available. Drivers must be qualified to transport pyrotechnic materials.

- Sets, equipment, props, wardrobe, make-up, wigs, hair supplies, etc. that will be in close proximity to planned pyrotechnic special effects must be prepared accordingly and/or should be made of flame retardant material. All sets, equipment, props, wardrobe, wigs, etc., must be made available in advance to the Pyrotechnic Special Effects Operator in charge for evaluation, to establish placement, and if necessary, for testing.

### **Clothing and Personal Protective Equipment**

- Cast and crew in close proximity to planned effects should wear appropriate protective clothing. Depending on the hazards involved, this clothing should include appropriate closed-toe footwear, long pants, and a long-sleeved shirt made of 100% cotton or material which provides equal or greater protection.
- Cast and crew must be notified by the Pyrotechnic Special Effects Operator in charge when there is potential for exposures to pyrotechnics, such as fireball, debris, and shock wave. PPE must be provided as appropriate for the hazard(s) involved and considerations must be made for head, hand, eye, ear and respiratory protection. Depending on the hazards involved, the AHJ may require full fire turnout gear and Self Contained Breathing Apparatus (SCBA). These guidelines will also apply to performers when appropriate. All users must have proper training in the use and limitations of such PPE.

### **Fire Protection**

- Pyrotechnic materials shall be kept a safe distance from open flames and other sources of ignition. Where required, such materials shall also be stored in approved, properly labeled containers.
- Smoking is prohibited in all pyrotechnic areas and "No Smoking" signs shall be posted in all appropriate areas of the premises or locations where pyrotechnic materials are stored and handled.
- Sufficient fire suppression equipment (such as charged extinguishers and fire hoses) must be manned, ready for use and placed at an appropriate safe distance from the effect, during testing, rehearsal and filming.
- Designated personnel performing fire suppression activities during testing, rehearsal and filming must be properly clothed and wear appropriate PPE.

## Personnel Using and Handling Pyrotechnic Materials

- Special effects personnel working with pyrotechnic materials (pyrotechnicians) should be dressed in appropriate clothing to protect them from potential hazards. At a minimum, clothing should consist of appropriate closed-toe footwear, long pants, and a long-sleeved shirt made of 100% cotton or material which provides equal or greater protection. PPE considerations must be made for head, hand, eye, ear and respiratory protection. Depending on the hazards involved, the AHJ may require full fire turnout gear.
- Intoxicating liquids, drugs and other controlled substances (except for prescription drugs not impairing the user's judgment and motor functions) shall not be used by any person handling pyrotechnic special effects at any time during transportation, set-up, firing or removal.
- Pyrotechnicians must be given sufficient time to safely perform the work (including the transporting, storing, creating, rigging, firing, striking and extinguishing of all pyrotechnic special effects materials). While conducting such duties, pyrotechnicians should not be rushed, interrupted or distracted from focusing on their work.
- The rigging of any type of pyrotechnic device to a performer shall be done by a qualified special effects operator.
- Pyrotechnic special effects shall not be fired unless the area involved with the firing is in the continuously unobstructed full view of the Pyrotechnic Special Effects Operator in charge or his or her designated representative at the time of firing, unless equal means of observation are used.

## Awareness

- When using pyrotechnic special effects on any set, notification shall be given to personnel by way of the call sheet, or other suitable means. The call sheet should also state the type of pyrotechnic special effects work that is planned.
- Before any pyrotechnic special effects or potentially hazardous sequence is to be performed, all persons involved shall be thoroughly briefed at a safety orientation meeting on the site.
- The safety orientation meeting shall include an "on site walk-through" and/or "dry run" with the Pyrotechnic Special Effects Operator in charge and all other persons involved in the event, including Stunt Coordinator if applicable. PPE should be in place at that time.

- No performer shall be rigged with a pyrotechnic device without his or her prior consent and consultation with the qualified Pyrotechnic Special Effects Operator in charge and, if applicable, Stunt Coordinator.
- If practical and upon a reasonable and timely request, the Pyrotechnic Special Effects Operator in charge may conduct a test firing of pyrotechnics when such are to be discharged in the vicinity of cast and crew.
- If at any time a significant change becomes necessary, the First Assistant Director will again call all persons involved in the event to another meeting to confirm everyone understands the proposed change(s).

### **Emergency Procedures**

- Emergency procedures and contingency plans, including appropriate signs and signals and the authority to abort the shot, shall be specified prior to engaging in any pyrotechnic special effects work.
- Before the performance of a pyrotechnic special effect, the First Assistant Director, or designee, shall clearly announce to all persons the location of exits, the primary escape route and alternate escape routes. Escape routes must provide a clear and unobstructed passage to a designated safe area.
- Each person should ensure their designated escape routes are clear and remain accessible. Any person who is unsure of their designated escape routes should check with the First Assistant Director and learn of the escape routes upon entering the work area.
- In the event of an emergency, only those designated with emergency response roles should enter the pyrotechnic special effects area.

### **Authorized Personnel in the Pyrotechnics Area**

- Access to areas where pyrotechnic materials are stored or handled shall be limited to authorized personnel only. All other personnel shall remain at a designated safe distance. If needed to prevent unintentional entry into hazardous areas, warning signs should be posted and/or other appropriate precautions taken.
- Prior to using pyrotechnic special effects with minors present, key production personnel, such as the Director, First Assistant Director, Pyrotechnic Special Effects Operator in charge, Stunt Coordinator and safety professional, should confer with the minor, minor's parent/legal guardian and Studio Teacher to review and discuss the planned activity. Only those minors under the age of 16 whose performance requires them to be on the set when pyrotechnic special effects are being handled are allowed on the set, and in some states may be prohibited altogether. Production should

check applicable state laws with respect to the employment of minors in these situations. The production shall consider any reasonable request from the minor, minor's parent/legal guardian, and/or Studio Teacher regarding the minor's proximity to any pyrotechnic special effect.

### **Use of Power Sources in Firing Pyrotechnic Materials**

- To protect against accidental firing, all electrically fired pyrotechnic devices shall be shunted at all times prior to firing.
- Power sources for firing pyrotechnic special effects devices shall be restricted to isolated ungrounded batteries or individually designated ungrounded generators (below 5 kilowatts to comply with non-grounding requirements) used exclusively for firing purposes only.
- Commercial or house power shall not be used directly for firing purposes.
- There should be no wireless transmissions in the area where electrically fired pyrotechnic devices are being used without prior consultation with the Pyrotechnic Special Effects Operator in charge. In addition, caution should be taken to avoid extraneous or induced electrical currents from sources such as power lines, radar/microwave transmitters, electrical cable, lightning, static electricity, etc. Note that static electricity is especially a problem during periods of low humidity.
- Whenever practical, pyrotechnic special effects should be hard wired from the effect to the firing system. When remote control firing is planned, special precautions must be taken to prevent accidents, including but not limited to the following:
  - Having familiarity with the system being used and its limitations;
  - Performing a risk analysis in the event of premature firing or firing failure; and
  - Testing the firing system under the anticipated conditions of use.

### **Safety on the Set After Use of Pyrotechnic Material**

- After each pyrotechnic event, no one shall enter the pyrotechnic area other than the Pyrotechnic Special Effects Operator in charge, or his or her designated representative(s), until it is declared safe. This includes testing, rehearsals, and filming.
- Appropriate fire watch, as determined by the AHJ, should be maintained after each pyrotechnic event.



# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #17

### WATER HAZARDS

The following procedures are recommended for all water work, including, but not limited to ponds, rivers, lakes, swamps, bogs, oceans, pools, and tanks, or any other unduly wet work environment.

1. When working on a body of water is contemplated, the Producer should identify and make known prior to actual filming, all available knowledge regarding: currents; and natural and man made hazards, including sub-surface objects, underwater life and contamination. Upstream activities, such as dams, waste disposal sites, agriculture, chemical plant dumping sites, flash flood dangers, etc. should also be evaluated

If a potential safety hazard is found to exist, the Producer should take appropriate steps to mitigate the hazard.

2. Prior to personnel entering a body of water, a determination should be made that the water quality meets the applicable regulatory standards for "recreational full body contact." This determination may be made by one or more of the following: Direct water sampling, contact local health authorities and/or detailed other knowledge of the uses and water sources supplying the body of water. Water sampling results and acceptable water quality criteria shall be made available upon request.

**NOTE:** When it is determined that a body of water is contaminated or hazardous, the contamination or hazard should be neutralized or the site shall be avoided.

3. Extreme care should be taken regarding dangerous marine life, including reptiles.
4. When necessary for personnel to work in fast-moving rivers, downstream safety pickup personnel and safety equipment should be stationed for downstream emergency rescue.
5. Where boating traffic is anticipated, all precautions, including those mandated by the appropriate authorities, will be enforced. (See Safety Bulletin #15, "Guidelines for Boating Safety for Film Crews.")
6. All personnel scheduled for water work shall be notified in advance via the Call Sheet. Personnel who are uncomfortable working in or around water should notify their supervisor prior to that day's call.

7. All personnel working in or around water shall be provided with the appropriate water safety devices. (See Safety Bulletin #7, "Scuba Equipment Recommendations for the Motion Picture Industry.")
8. The Producer should take steps to prevent hyperthermia (elevated body temperature) and hypothermia (reduced body temperature).
9. All personnel should be advised to keep all potential contaminants away from the water, including paints, thinners, repellents, gasoline, oils, etc.
10. Provisions for post-immersion washing should be available.
11. When necessary, the Producer should implement a plan to account for personnel in the water, such as a "buddy" or a check in/check out system
12. Special care must be used whether AC or DC electricity is used in or around water. All electrical cables and lights in close proximity to water shall be properly secured to prevent tipping and falling. All wiring, electrical equipment and devices that will, or may be, subject to a submerged condition should be approved for underwater use, be watertight, have no exposed live connections and be constructed such that there is no shock hazard under any likely conditions of use. All applicable provisions of the National Electric Code should be followed. Local regulations may be more restrictive and should be consulted.
13. AC electrical-supplied equipment which will be used in or around water should be protected by an approved ground-fault circuit-interrupter (GFCI) intended for the protection of personnel.
14. All electrical connections should be made by, or under the supervision of, a qualified person.

## INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

### SAFETY BULLETIN #18

#### GUIDELINES FOR SAFE USE OF AIR BAGS

These guidelines are intended to provide recommendations on the safe use of air bags.

1. The stunt coordinator shall provide the following information to the manufacturer/supplier of air bags so the proper air bag can be obtained:
  - a) The type(s) of stunt(s) to be performed.
  - b) The height(s) of the jump(s).
  - c) The weight that will impact the air bag.
  - d) The number of jumpers.
  - e) A description of the area where the bag will be placed.
  - f) Any unusual conditions which can be anticipated.
2. The stunt coordinator shall obtain information pertaining to the age of the air bag and its structural integrity. All air bags should be of good quality material and stitching.
3. Inspect the stitching, seams and vents before each use.
4. The stunt coordinator and the stunt performer shall inspect the air bag(s) prior to use.
5. Fans must be in safe and good mechanical condition. Inspect before use.
6. Utilize the proper size generator so there is sufficient voltage for the fan(s).
7. Place the generator no more than 50 feet from the fan(s) if at all possible.
8. Tape or seal all electrical connections so they do not become loose or disconnected while the air bags are in use.
9. Set up of each air bag shall be performed by a qualified stunt/safety person who is experienced in air bag set up.

10. Utilize a sufficient number of spotters, designated by the stunt coordinator, around each air bag to ensure the safety of the jumper.

The duties and equipment for Spotters should include the following:

- a) Individual crash pads to protect the stunt performer(s) in case the performer(s) becomes misaligned during the high fall.
  - b) Observation for any unusual changes in atmospheric conditions, particularly wind which may affect the performer's fall.
  - c) Lifting and moving the airbag should the performer become misaligned during the fall.
  - d) Continuous inspection and awareness of all power operated equipment, namely generators and fans.
11. Implement additional pre-planning if two jumpers are to use the same bag at the same time. This is particularly dangerous when the two jumpers are significantly different in weight.
  12. Prior to the stunt, conduct a planning meeting at the site with all personnel involved to review the procedures to be followed. Include an inspection of the site.
  13. Conduct a walk-through or dry run of the stunt sequence with all appropriate personnel on the day of the stunt. Assure that all have a clear understanding of the intended action and possible deviations and who has the authority to abort the stunt and signal to abort. Every individual must clearly understand their function and exactly what is to take place.
  14. If any change in the set-up or a stunt is required, the Director shall have all persons involved called back together and recommendation number 13 above is to be repeated.
  15. Provide appropriate equipment to eliminate or control the chance of injury to personnel and damage to equipment.
  16. Allow only safety personnel and personnel necessary for assisting, directing or performing the stunt in the area of the air bags during the stunt. All other persons must be cleared from the area.
  17. Utilize only stunt performers experienced in the use of air bags that have the special skills required to perform the particular stunt sequence.

# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #19

### RECOMMENDED GUIDELINES FOR THE USE OF OPEN FLAME ON PRODUCTION

**These guidelines are intended to give recommendations on the use of open flame on production. This Safety Bulletin does not apply to full or partial body burns, fire breathing, or other fire performance work (See Safety Bulletin #4 "Stunts").**

ALL USE, HANDLING, STORAGE AND TRANSPORTATION OF BULK FUEL, COMPRESSED GAS CYLINDERS AND OTHER MATERIALS USED TO CREATE OPEN FLAME SHALL BE IN COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

#### **Pre-Production/Planning**

- When torches, candles, fireplaces or other open flames are used on set, such use shall be under controlled conditions with due regard for the safety of all involved.
- A responsible person (such as a Special Effects Operator in charge or other qualified individual) shall be designated for the daily handling, placement, safe use and securing of any open flame devices.
- The Production Company or Studio shall make sufficient advanced notification of the use of open flame to all appropriate departments in order to safely plan the sequences. Any performer who may be working around an open flame shall be notified.
- Prior to use, any required licenses and/or permits for open flame shall be obtained from the appropriate Authorities Having Jurisdiction (AHJ).
- Prior to work with open flame, productions must develop emergency procedures and contingency plans, including identifying emergency fire suppression equipment, venting of low lying areas and personnel needs. All equipment shall be checked to verify that it is in good operating condition. Individuals using this equipment must have proper training in its use and limitations.
- The need for personal protective equipment (PPE) should be identified during the planning stage.
- Special effects personnel must inform the Transportation Coordinator as to the types of bulk fuel and/or compressed gas cylinders that will be transported.

Vehicles must be properly placarded when required by Federal or State law. All vehicles transporting bulk fuel or compressed gas cylinders shall have an inventory of the materials being transported or stored readily available. Drivers must be qualified to transport these materials.

- Sets, equipment, props, wardrobe, make-up, wigs, hair supplies, etc., that will be in close proximity to open flame must be prepared accordingly and/or should be made of flame retardant material. All sets, equipment, props, wardrobe, wigs, etc., must be made available in advance to the designated responsible person for evaluation, to establish placement, and if necessary, for testing.

### **Clothing and Personal Protective Equipment**

- Cast and crew in close proximity to open flame should wear appropriate protective clothing. Depending on the hazards involved, this clothing should include appropriate closed-toe footwear, long pants, and a long-sleeved shirt made of 100% cotton or material which provides equal or greater protection.
- Cast and crew must be notified by the designated responsible person when there is potential for exposures to open flame. PPE must be provided as appropriate for the hazard(s) involved and considerations must be made for head, hand, eye, ear and respiratory protection. Depending on the hazards involved, the AHJ may require full fire turnout gear and Self-Contained Breathing Apparatus (SCBA). These guidelines will also apply to performers when appropriate. All users must have proper training in the use and limitations of such PPE.

### **Fire Protection**

- All stationary open flame devices should be firmly secured.
- Flammables and combustibles, including bulk fuel, compressed gas cylinders and highly concentrated dust effects, shall be kept a safe distance from open flame and other sources of ignition. Where required, such materials shall also be stored in approved, properly labeled containers.
- All lines and fittings used in the delivery of fuel gas to open flame devices shall be appropriate for the fuels being used, (i.e., natural gas usage requires different hoses and fittings than liquid petroleum gas).
- "No Smoking" signs shall be posted in all areas where fuel and compressed gas cylinders are stored and handled.
- Sufficient fire suppression equipment (such as charged extinguishers and fire

hoses) must be manned, ready for use and placed at an appropriate safe distance from the open flame during testing, rehearsal and filming.

- Designated personnel performing fire suppression activities during testing, rehearsal and filming must be properly clothed and wear appropriate PPE.

### **Personnel Using and Handling Open Flame**

- Personnel working with open flame should be dressed in appropriate clothing to protect them from potential hazards. Depending on the hazards involved, clothing should consist of appropriate closed-toe footwear, long pants, and a long-sleeved shirt made of 100% cotton or material which provides equal or greater protection. PPE considerations must be made for head, hand, eye, ear and respiratory protection. Depending on the hazards involved, the AHJ may require full fire turnout gear.
- Intoxicating liquids, drugs and other controlled substances (except for prescription drugs not impairing the user's judgment and motor functions) shall not be used by any person involved in open flame effects at any time during transportation, set-up, use or removal.
- Personnel working with or around open flame must be given sufficient time to safely perform the work (including the transporting, storing, creating, rigging, igniting, striking and extinguishing of all open flame devices and materials). While conducting such duties, personnel should not be rushed, interrupted or distracted from focusing on their work.
- The rigging of any type of open flame device to a performer shall be done by a qualified special effects operator, with the consultation of the stunt coordinator if applicable.
- When igniting and maintaining an open flame, it must be continuously observed and controlled by the designated responsible person, unless equal means of observation are used.

### **Awareness**

- When using open flame on any set, notification shall be given to personnel by way of the call sheet, or other suitable means. The call sheet should also state the type of open flame work that is planned.
- Before any open flame effects or potentially hazardous sequence is to be performed, all persons involved shall be thoroughly briefed at a safety orientation

meeting on the site.

- The safety orientation meeting shall include an "on-site walk-through" and/or "dry run" with the designated responsible person and all other persons involved in the event, including Stunt Coordinator if applicable. PPE should be in place at that time.
- If practical and upon a reasonable and timely request, the designated responsible person may conduct a test of the open flame when it is in the vicinity of cast and crew.
- If at any time a significant change in open flame use becomes necessary, the First Assistant Director will again call all persons involved in the event to another meeting to confirm everyone understands the proposed change(s).

### **Emergency Procedures**

- Emergency procedures and contingency plans, including appropriate signs and signals and authority to abort the shot, shall be specified prior to engaging in any open flame work.
- Before the use of open flame on set, the First Assistant Director, or designee, shall clearly announce to all persons the location of exits, the primary escape route and alternate escape routes. Escape routes must provide a clear and unobstructed passage to a designated safe area.
- Each person should ensure their designated escape routes are clear and remain accessible. Any person who is unsure of their designated escape routes should check with the First Assistant Director and learn of the escape routes upon entering the work area.
- In the event of an emergency, only those designated with emergency response roles should enter the open flame area.

### **Authorized Personnel in the Open Flame Area**

- Access to areas where open flame is rigged or present should be limited to authorized personnel only. All other personnel shall remain at a designated safe distance. If needed to prevent unintentional entry into hazardous areas, warning signs should be posted and/or other appropriate precautions taken.
- Prior to using open flame with minors present, key production personnel, such as the Director, First Assistant Director, designated responsible person, Stunt



Coordinator and safety professional, should confer with the minor, minor's parent/legal guardian and Studio Teacher to review and discuss the planned activity. The production shall consider any reasonable request from the minor, minor's parent/legal guardian, and/or Studio Teacher regarding the minor's proximity to any open flame.

### **Safety on the Set After Use of Open Flame**

- After each use of open flame, no one shall enter the area other than the designated responsible person(s), until it is declared safe. This includes testing, rehearsals and filming.
- Appropriate fire watch, as determined by the AHJ, should be maintained after each open flame event.

# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #20

### GUIDELINES FOR THE USE OF MOTORCYCLES

1. The motorcycle operator should hold a current, valid motorcycle operator's license. The operator should be familiar with the techniques for safely performing the requirements of the sequence to be photographed, taking into consideration the terrain, driving surface and other conditions.
2. Extreme caution in the use of motorcycles should be exercised at all times both by the operator and by persons in the vicinity. No persons should be in the vicinity unless their assignment requires them to be there.
3. Protective clothing and equipment such as a helmet, gloves, etc., should be worn at all times, the only exception being scene requirements while actually being photographed. In such situations, protective clothing should be worn under the costume if possible.
4. Motorcycles, ramps and other equipment shall be examined prior to use to determine if they are in proper operating condition.
5. The sequence to be photographed, including ramps, jumps, lay-downs, endos, and other potential hazards, should be clearly set forth and discussed by all persons who are immediately involved.
6. All picture motorcycles shall be equipped with a grounded cut-off switch (deadman switch). When a stunt is to be performed, this switch shall be attached to the handlebars and the wrist of the operator in such manner that the engine shuts off when the rider separates from the motorcycle.
7. A person qualified under the circumstances to administer medical assistance on an emergency basis shall be present or readily available at all rehearsals and all performances during which planned potentially hazardous motorcycle riding and motorcycle stunts are performed.
8. Picture motorcycles are not to be used for transportation. No one other than the designated operator should be permitted to operate or ride on a motorcycle unless the rider is required in the sequence to be photographed.

## INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

### SAFETY BULLETIN #21

#### GUIDELINES FOR APPROPRIATE CLOTHING AND PERSONAL PROTECTIVE EQUIPMENT

The purpose of this Safety Bulletin is to provide guidance in the selection of appropriate clothing and certain types of Personal Protective Equipment (PPE).

This bulletin does not include or apply to clothing or PPE for persons subject to the bloodborne pathogens standard (Safety Bulletin #24, "Cal-OSHA Safety Requirements for Handling of Blood and Other Potentially Infectious Materials"). Additionally, personnel working with or around pyrotechnics and/or open flame on production should refer to Safety Bulletin #16, "Recommended Guidelines for Safety with Pyrotechnic Special Effects" and/or Safety Bulletin #19, "Recommended Guidelines for the Use of Open Flames on Production" for guidance.

Suitable and effective PPE shall be provided and used where an activity presents a significant risk to health and safety and the risk cannot be reduced by any other means.

In particular, employers shall inform employees engaged in any of the following activities of specific PPE requirements by OSHA and/or other authorities:

- Working with electricity (see Safety Bulletins 23, 23A, 23B and 23C)
- Working with hazardous materials
- Welding or cutting
- Working around boats and water (see Safety Bulletin 15)
- Working with special effects, pyrotechnics, open flames, or hazardous objects (see Safety Bulletins 1, 2, 12, 16, 19, 27, 30, and 31)
- Construction, including alteration, painting, repairing, maintenance, renovation, removal or wrecking (see Safety Bulletin 39)
- Working around traffic (see Safety Bulletins 8, 8A, 8B, 8C, 20, 28, and 40)
- Working at heights

PPE must not significantly increase other risks by reducing visibility or interfere with other safety measures. Employees must be given appropriate instruction and training

on how to use any PPE issued. Once issued, PPE must be worn as required and any defects must be reported to the employer.

### **CLOTHING**

- Clothing determined by the employer to be appropriate for the work being done shall be worn.
- Jewelry, loose sleeves, exposed shirt tails, neckties, lapels, loose cuffs or other loose clothing shall not be worn around machinery in which it might become entangled.
- Long hair shall be tied back when working around machinery and/or equipment with moving parts.
- Costumes should be selected and prepared in anticipation of the potential risks and hazards.

### **FOOT PROTECTION**

- Appropriate foot protection shall be worn by employees who may be exposed to foot injuries from hot surfaces, corrosive materials, hazardous substances, falling objects, crushing or penetrating actions which may cause injuries, or who are required to work in abnormally wet or cold locations.
- Personnel working around open flame and pyrotechnic material must always wear appropriate closed-toe footwear.

### **HAND PROTECTION**

- Hand protection (gloves) shall be worn by employees whose work exposes them to potential injuries, such as exposure to cuts, burns, harmful physical hazards, chemical agents or electrical hazards which are encountered and capable of causing injury or impairments.
- Hand protection should not be worn if there is a danger of it becoming entangled in moving machinery.
- Hand protection should be appropriate for the type of exposure.
- Gloves should be properly discarded when they become worn, contaminated, saturated or otherwise no longer usable.

## **EYE AND FACE PROTECTION**

- Employees working where there is a risk of receiving eye injuries shall wear appropriate eye or face protection.
- Side shield protection shall also be utilized when employees are exposed to the risk of flying objects/particles/materials entering the eyes from the side.
- Suitable screens or shields isolating the hazardous exposure may be used if they provide adequate safeguarding for nearby employees.
- Specialized forms of eye protection are required for certain types of work, such as welding.
- The use of sunglasses or prescription eye glasses may not provide appropriate eye protection.

## **HEARING PROTECTION**

- When operating or near loud equipment, amplified sound, pyrotechnics or gun fire, consideration should be given to wearing appropriate hearing protection suitable for the hazards encountered.

## **HEAD PROTECTION**

- Employees exposed to flying or falling objects and/or electric shock and burns shall be safeguarded by means of approved head protection.
- Operation of vehicles, such as motorcycles, all terrain vehicles, bicycles, etc., may require the use of a helmet. (see Safety Bulletins 20 and 40)

## **SAFETY VESTS**

Federal, State and local laws require safety vests to be worn and visible when working on active public roadways.

Safety vests shall always be properly worn by employees under the following circumstances:

- During set-up, rigging, filming or striking activities performed in or near an active public roadway, unless production has obtained full closure and control of the

roadway. **NOTE:** Alternative safety considerations should be made when wardrobe requirements would prevent cast from wearing safety vests while working in or near an active public roadway without full closure and control.

- When directing traffic or responsible for lockup during partial lane closures where intermittent traffic control is used to control traffic.

Other conditions and locations may require the use of safety vests, such as railroads, subways, construction sites, airports, docks, etc.

The color of the safety vests must be either fluorescent orange-red or fluorescent yellow-green. The retro-reflective material shall be orange, yellow, white, silver, yellow-green or a fluorescent version of these colors.

### **RESPIRATORY PROTECTION**

The need for respiratory protection is unique to the hazards of the workplace. Consult your employer regarding their specific respiratory protection policy.

### **SANITATION OF PPE**

- PPE shall be kept clean and in good repair.
- PPE not capable of being easily cleaned or disinfected shall be disposed of after use.
- PPE must be properly stored when not in use.

## INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

### SAFETY BULLETIN #22

#### GUIDELINES FOR THE USE OF ELEVATING WORK PLATFORMS (SCISSOR LIFTS) AND AERIAL EXTENSIBLE BOOM PLATFORMS

(Also see "Addendum A" – Power Line Distance Requirements)

1. These guidelines are applicable to vertically operated elevated work platforms or "Scissors Lifts" and boom mounted, telescoping and rotating, elevating work platforms, such as "Condors."
2. Only persons trained in the safe use of elevating work platforms are authorized to operate these devices. The Industry-Wide **Safety Pass Training Course**, sponsored by Contract Services Administration Training Trust Fund (CSATTF), provides safety training for employees. Successful completion of the training will be reflected on Online Roster, and an employee will receive a certificate stamp from CSATTF in his or her **Safety Passport**.
3. Aerial/elevating equipment is designed to position employees and tools at the worksite. Within manufacturer's defined limits, lighting, camera and diffusion equipment may be rigged in the basket; in such case additional training is required, and specific aerial/elevating equipment is required for this procedure. Consult the manufacturer's "Operators Supplemental Manual for Authorized and Trained Set Lighting Technicians and Studio Grips."

#### **IF THE MANUFACTURER DOES NOT PROVIDE WRITTEN GUIDELINES, DO NOT RIG BASKET WITH THE EQUIPMENT.**

4. Equipment shall be inspected prior to operation for satisfactory condition, damage and defects. This shall include all operational controls, which shall be in proper functioning condition.
5. Operators shall report all discrepancies to their supervisors.
6. Operators shall consider the job to be performed and shall evaluate the job site location for potential hazards.

This equipment shall not be operated within **10 feet** of an energized, high voltage source unless danger from accidental contact with that source has been effectively guarded against.

The operation of aerial devices/work platforms OVER energized, high-voltage sources of any sort is prohibited at all times.

7. Appropriate measure should be taken to ensure that the job site's surface is stable and will support the equipment and that there are no hazardous irregularities or accumulation of debris, which might cause a moving platform to overturn.

Survey the route to be traveled, checking for overhead obstructions; traffic; holes in the pavement, ground, or shoulder; ditches, slope of road, etc. Operation of these devices on inclined surfaces shall NOT exceed manufacturers' ratings.

Wheel chocks shall be used on inclined surfaces.

Aerial/elevating equipment is designed to be used on "firm level surfaces only." Within manufacturer's defined limits, cribbing can be used to create a firm level surface. Training is required for the construction and use of such cribbing. Specific aerial/elevating equipment is required for this procedure. Consult the manufacturer "Cribbing Instructions" and/or "Supplemental Manual for Authorized and Trained Studio Technicians for Cribbing."

**IF THE MANUFACTURER DOES NOT PROVIDE WRITTEN GUIDELINES, DO NOT USE CRIBBING WITH THE EQUIPMENT.**

8. An employee, while in an elevated aerial device, shall be secured to the boom, basket or tub of the aerial device through the use of a safety belt, body belt or body harness equipped with a safety strap or lanyard. (Cal-OSHA Title 8, Subchapter 7, Group 4, Article 24, "Elevating Platforms and Aerial Devices.")
  - (a) The personal fall protection equipment shall be securely attached to the boom basket, tub or platform to an approved attachment point.
  - (b) Safety belts/body belts are prohibited for use in personal fall arrest systems, but may be used as part of a fall restraint or positioning device system.
  - (c) Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall for more than 2 feet.
  - (d) A body harness may be used in a personal fall restraint, positioning or fall arrest system. When a body harness is used in a fall arrest system, the lanyard shall be rigged with a deceleration device to limit maximum arresting force on an employee to 1,800 pounds, prevent the employee from hitting any levels or objects below the basket or platform, and shall limit free fall to a maximum of 6 feet.



- (e) Attaching the personal fall protection equipment to an adjacent pole, structure or equipment while working from the basket, tub or platform is **NOT PERMITTED**.
  - (f) Objects or production equipment, which could fall from the aerial basket/platform, shall be secured with an adequate safety lanyard.
9. The basket, tub or platform shall **not** be loaded beyond its rated capacity.
  10. Ladders, planks or other objects shall NOT be placed in, or on top of the platform or guardrail to gain greater height. Employees shall NOT sit or climb on the edge of the basket/platform.
  11. "Climbers" (pole climbing equipment) shall NOT be worn while performing work from an aerial device. The risk of falling while climbing in or out of the basket is too great.
  12. Workers shall NOT work from aerial work platforms when:
    - (a) Exposed to extreme weather conditions (thunderstorms, heavy rain, extreme heat or cold) unless provisions have been made to ensure protection and safety of the workers.
    - (b) Winds exceed 25 miles per hour.
  13. Aerial baskets, tubs or platforms shall NOT be supported by, or attached to, any adjacent structures.
  14. Where moving vehicles or pedestrian traffic is present, flags, signs, traffic cones or other means of traffic control, shall mark the work area around the aerial equipment.
  15. The braking system shall be set when elevating employees and when wheel chocks are used.

Never leave this equipment unattended if you have stopped it on a ramp, grade or incline until you have chocked at least one tire.

**NOTE:** These vehicles will creep if not on a level that can be set to prevent creeping. Avoid stopping on a grade if possible.

16. Outriggers must be on solid footing and shall be equipped with hydraulic holding valves or mechanical locks at the outriggers.

17. Operate all controls slowly to ensure smooth platform movement.
18. DO NOT use an aerial device as a welding ground. DO NOT weld on an aerial device without first disconnecting both positive and negative battery terminals. Refer to manufacturer's equipment manual.
19. DO NOT attempt to raise platform/basket beyond its rated maximum height or reach.
20. "TOWERING" (traveling with a worker in the basket) is NOT permitted.
21. Aerial platforms, when in operation, shall be solely under the control of the operator in the basket. At no time shall the equipment be moved, lowered, or otherwise controlled from the secondary (ground control) panel unless the operator in the basket makes a request that it be done, or the operator is ill or otherwise incapacitated.

**Switching controls and moving the equipment in any manner without the consent of the operator while the operator is in the basket is prohibited.**

22. Boom-mounted telescoping and rotating aerial platforms shall NOT be used as a crane (objects slung below the basket).
23. When moving scissor lift-type platforms, operators shall first position themselves on board the platform, and then conduct all moving operations from that position.
24. When moving this equipment forward, do not engage the REVERSE switch until the vehicle has come to a complete stop. Use the REVERSE only as an emergency measure should the equipment continue to crawl after releasing the stop switch.

Use the FORWARD only as an emergency measure should the equipment continue to crawl after releasing the stop switch.

**CAUTION:** Do not use either of these emergency measures if doing so will endanger anyone in the vicinity.

These are only guidelines. Refer to the Manufacturer's operating manual on each type of equipment you operate. Operational differences, location of controls, safety devices and load capacity may vary to each model or equipment manufacturer.

INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

**SAFETY BULLETIN #22**

**GUIDELINES FOR THE USE OF ELEVATING WORK PLATFORMS  
(SCISSOR LIFTS) AND AERIAL EXTENSIBLE BOOM PLATFORMS**

**"ADDENDUM A" – POWER LINE DISTANCE REQUIREMENTS**

**AVOID POWER LINES.** This includes, but is not limited to, the placement of equipment such as ladders, scaffold, booms, forklifts, aerial lifts, sets, cranes or other rigging. At a minimum, the following overhead clearances must be observed (California Code of Regulation, Title 8, Section 2946):

The operation, erection, handling or transportation of tools, machinery, materials, structures, scaffolds, or any other activity where any part of the above or any part of an employee's body will come closer than the minimum clearances from energized overhead lines as set forth in Table 1 shall be prohibited.

**Table 1**

**General Clearances Required from Energized Overhead High Voltage Conductors**

Nominal Voltage (Phase to Phase)		Minimum Required Clearance (Feet)
600 .....	50,000	6
over 50,000 .....	345,000	10
over 345,000 .....	750,000	16
over 750,000 .....	1,000,000	20

Boom-type lifting or hoisting equipment: The erection, operation or dismantling of any boom-type lifting or hoisting equipment, or any part thereof, closer than the minimum clearances from energized overhead high-voltage lines set forth in Table 2 shall be prohibited.

**Table 2**

**Boom-type Lifting or Hoisting Equipment Clearances Required from Energized Overhead High Voltage Conductors**

Nominal Voltage (Phase to Phase)		Minimum Required Clearance (Feet)
600 .....	50,000	10
over 50,000 .....	75,000	11
over 75,000 .....	125,000	13
over 125,000 .....	175,000	15
over 175,000 .....	250,000	17
over 250,000 .....	370,000	21
over 370,000 .....	550,000	27
over 550,000 .....	1,000,000	42

# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #23

### GUIDELINES FOR WORKING WITH LIGHTING SYSTEMS AND OTHER ELECTRICAL EQUIPMENT

Also refer to Safety Bulletin #23: Addendum A – "Power Line Distance Requirements"  
Addendum B – "Basic Electric Safety Precautions for Motion Picture and Television Off Studio Lot Location Productions"  
Addendum C – "Working With 480 Volt Systems"

All electrical systems and electrically energized equipment are potentially hazardous whether AC or DC: whether 50 volts, 120 volts or higher.

Only employees authorized by the employer to do so should connect, disconnect, or operate electrical systems or equipment.

This Safety Bulletin is intended to identify potential hazards and to recommend safe practices for trained personnel. This Safety Bulletin is not intended as a design specification or as an instruction manual for untrained persons.

The City of Los Angeles Department of Building and Safety has published **BASIC ELECTRICAL SAFETY PRECAUTIONS FOR MOTION PICTURE AND TELEVISION OFF STUDIO LOT LOCATION PRODUCTIONS**. Those Guidelines are included with this Safety Bulletin for your information.

#### GENERAL SAFETY MEASURES

##### 1. Plugging and Unplugging Electrical Equipment

Visually inspect the condition of the plug, cable, and equipment for any signs of excess wear, frayed cables or exposed current-carrying parts. **DO NOT USE** any equipment in this condition. Return this equipment for repair.

All grounded equipment should be tested for continuity between the ground pin on the plug and the metal parts of the lighting equipment before it is put into service.

Turn off power whenever possible. Be sure that all equipment that is being plugged and unplugged is in the off position to avoid creating an arc at the receptacle. Wear protective gloves to avoid getting burned from a flash created by short-circuit in the equipment.

Do not pull on the cord when unplugging equipment. This can cause the ground wire to pull out of its termination in the plug. Always grasp the plug firmly to unplug.

Check to be **certain** that you are not plugging Alternating Current (AC) to Direct Current (DC).

## 2. **Replacing Fuses and Circuit Breakers**

Over-current protection is one of the most vital parts of the electrical circuit since improper protection leads to fire and/or damage to equipment.

When replacing a blown fuse, be sure to select a fuse of proper voltage, interrupting capacity, and amperage for the application. Fuses come in a wide variety (*i.e.*, one-time, time delay, slo-blow, dual element, etc.) and you should obtain fuse catalogs to become familiar with the different types.

Over-current protection must be sized according to the ampacity of the conductors and equipment served. Use table 310.16 of the National Electrical Code for selecting the proper size for interior permanent wiring. Use table 400.5A or B for flexible cords and cables.

If a circuit keeps tripping or blowing fuses, then you have an overload or equipment failure. You must correct the problem by adding more circuits, balancing the load, or repairing the equipment. NEVER use oversized fuses or circuit breakers or use a copper slug or tubing to replace fuses.

Proper over-current protection must be used whenever there is a change in wire or cable size or receptacle rating in the distribution system. Adapters that reduce the receptacle rating from the plug that feeds them, such as a 100 amp "Bates" to 5-20 amp "Bates", must contain a 20 amp fuse or circuit breaker for each of the 20 amp receptacles.

There is one exception to this rule which allows the over-current device to be located 25 feet after a change in cable size. This rule is commonly referred to as the "25 foot tap rule." (See Sections 240.21, 210.19(a), and 520.69 of the NEC)

## 3. **Power Tools**

Power tools are dangerous unless they are handled with care and respect. If a power tool is treated roughly, dropped, banged around, or gets wet, the insulation may weaken and present the possibility of a shock hazard. If the operator is standing on a wet conductive surface, the shock can be fatal. Secondary wounds can occur even during mild shocks if the operator loses control of his tool.

Power tools should never be carried by their cords and they should never be shut off by yanking the cord from the receptacle. This puts too much stress on the cord and other connections. Insulating platforms, rubber gloves, and rubber mats provide an additional safety factor when working with electrically powered tools in damp locations.

Regular inspection and maintenance is important. Check the tool over before using it. Is it clean? Is it grounded? The answer to both these questions should be "yes." Make sure the cord is in good condition. Check the trigger. Make sure it works easily, that it doesn't stick, and that the power goes off quickly when the trigger is released.

When using power tools during construction, Ground Fault Circuit-Interrupter (GFCI) protection is required. Test the GFCI device to see if it is functioning properly. Portable GFCI devices are available and should be used when operating tools while standing on an outdoor grade or damp concrete.

## **ELECTRICAL SYSTEMS SAFETY MEASURES**

### **1. Rigging a System**

Use proper lifting techniques when lifting or moving heavy objects such as cable or lighting equipment. Do not step directly on equipment such as cable. It can roll underfoot and cause a slip or fall.

When rigging the power distribution equipment, do so with all power off whenever possible. Start at the point furthest from the power source and work your way back. Ring out the system with a continuity tester to check for short circuits or crossed wires before tying on to the power source.

### **2. Connecting Order of Single Conductors**

All single conductor connections shall be made in the following order:

- |                 |   |  |
|-----------------|---|--|
| 1 <sup>st</sup> | - | Grounds (all AC, and on DC where used) |
| 2 <sup>nd</sup> | - | Neutrals                               |
| 3 <sup>rd</sup> | - | Hots                                   |

Disconnect in the reverse order:

- |                 |   |  |
|-----------------|---|--|
| 1 <sup>st</sup> | - | Hots                                   |
| 2 <sup>nd</sup> | - | Neutrals                               |
| 3 <sup>rd</sup> | - | Grounds (all AC, and on DC where used) |

All multi-pole connectors used on AC shall provide for "first make, last break" of the ground pole.

### 3. Color Coding

Portable cables and conductors should be color coded in such a way that the equipment cannot be improperly connected.

Neutral conductors shall be permitted to be identified by marking at least the first 6 inches from both ends of each length of conductor with white or natural gray. Grounding conductors shall be permitted to be identified by marking at least the first 6 inches from both ends of each length of conductor with green or green with yellow stripes.

Phase conductors (hots) shall be permitted to be identified by marking at least the first 6 inches from both ends of each length of conductor with any color other than green, green with yellow stripes, white, or natural gray.

Where more than one nominal voltage exists within the same premises, each ungrounded system conductor shall be identified by system. This can be done by separate color coding, marking tape, tagging, or other equally effective means.

Where color coding is used to distinguish between different lengths or owners of cable, it must be done so that there is no confusion created.

***Yellow should not be used, as it appears white under sodium lighting.***

### 4. Devices and Cables

Cables and devices must be protected from foot and automobile traffic.

All electrical distribution systems should be elevated in such a manner that they will not come in contact with running or standing water.

When it is necessary to have electrical distribution systems which come into contact with water, such systems shall be designed and approved for use in water.

Alligator clips or clamps shall not be used in conjunction with any electrical system or equipment.

Two-wire, non-polarized DC plugging boxes, paddle plugs, and porcelain boxes are not permitted on AC systems. This applies even with the use of an external ground.

All gang boxes that are supplied by a connector plug that is rated higher in ampacity than the receptacles in the gang box shall contain fuses sized according to the ampacity of those receptacles.

All AC multi-pole connectors shall be grounded and polarized.

All cable shall be listed by an approved testing laboratory. Only types "G", "W", or Entertainment Industry Stage Lighting Cable (EISL, SC, SCE) is acceptable for single conductor feeder cables. Welding cable can be used only for equipment grounding conductors.

Single conductor connectors used on "hots" and "neutrals" shall be connected to the conductors by means of solder, set-screw, or crimping. Some methods of preventing pull on a cable from being transmitted to joints or terminals are: (1) winding with tape, (2) applying heavy-duty heat shrink, or (3) fittings designed for the purpose.

Equipment Grounding conductor connection devices or fittings that depend solely on solder shall not be used.

## 5. Guarding of Live Parts

Any part that is live or non-insulated must be covered with appropriate insulation material or protected or barricaded to protect it from any possible contact by person or objects to a point of danger.

When branching off a system that is tied in, shut off the power, if possible and lock-out/tag-out all switches that may energize the circuit that you are working on.

Appropriate precautions shall be taken when tying on to an energized system. Be sure that all equipment being hooked up is in the "off" position. Be sure to tie on in the same order as shown above. Wear safety glasses and gloves, and use insulated "T" wrenches and tools. Have someone at the main switch standing by in case of an emergency when doing the actual hook-up.



## 6. Portable and Vehicle Mounted Generators

Read thoroughly any operational manuals provided with the generator. If you do not understand any of the instructions, do not attempt to operate the generator. Only a qualified operator shall operate a generator with amperage rating in excess of 200 amps. Contact your supervisor. The generator should have as much open space as possible on all sides to allow maximum ventilation and minimum interference. It is important that all generating sets be protected from the elements and from unauthorized access.

Extra precaution must be taken when re-fueling the generator. Use U.L. listed fuel nozzles to prevent the build-up of static electricity, which could create a spark and explosion. Make sure that all exhaust fumes are ventilated away from closed areas, personnel, and air conditioning intake ducts. Be aware of hot surfaces and moving parts when servicing the generator.

One of the most obvious and serious dangers associated with electrical generating equipment is the potential for electric shock. Even a small current can produce severe shock or can prove fatal. There should be suitable barriers between buss-bars, and a substantial mat of non-conductive material or cover over the completed connections to prevent accidental contact.

When tying on to a portable AC generator, the non-current carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles shall be bonded to the generator frame. The Neutral conductor shall be bonded to the frame, and if the generator is mounted on a vehicle, the frame of the generator shall be bonded to the frame of the vehicle.

Generators mounted on trucks or trailers shall be completely insulated from earth by means of rubber tires, rubber mats around metal stairways and rubber mats under any type of lift gate or jacking device. Metal supports for trailers shall be insulated by means of wooden blocks. Safety tow chains shall be secured so as to not touch the ground. If complete insulation is not possible, a grounding electrode system shall be installed per the National Electrical Code, Article 250.52.

## 7. Generator Grounding Connections (when required)

Interior water pipes, interior metal fixtures, metal frames of buildings, and the building grounding electrode system SHALL NOT BE USED as a grounding connection for mobile generators supplying power EXCLUSIVELY to location production systems.

When mobile generators supply power to location production systems IN ADDITION to the building's electrical system, the generator's grounding connection **SHALL BE BONDED TO THE MAIN BUILDING GROUNDING ELECTRODE SYSTEM AT THE SERVICE.**

Multiple generators shall have their grounding connections bonded to each other when located within 20 feet of each other or when one supplies equipment which might possibly come within 20 feet of equipment supplied by the other(s).

Bonding conductors shall be sized per the National Electrical Code, Article 250.66.

As the generator operator, you are responsible to ensure that all personnel are clear of the equipment before the distribution system is energized.

#### **8. Grounding Direct Current/DC Systems and Equipment**

Direct current supplied equipment, operating at not over 150 volts between the hot and neutral does not have to be grounded, although it is not prohibited. Care should be taken to provide a barrier, either of material or space, between grounded and non-grounded devices.

It is recommended that direct current supplied HMI ballasts be bonded together if they are operated within 10 feet of each other.

If you are using 2-wire, ungrounded equipment on DC, be sure that when you rig a set that you do not unintentionally ground any metal surface such as hanging green beds from water pipes, etc. This can be tested by checking continuity between a "known" ground and any metal surfaces that you are likely to come into contact with during normal working duties. A "no continuity" reading on the meter indicates that there is no ground to that piece of equipment.

#### **9. Grounding Alternating Current/AC Systems and Equipment**

All AC systems used by the motion picture and television industry shall be grounded. This generally means that the neutral conductors of the various systems shall be the conductor that is permanently grounded.

All AC supplied equipment shall have all non-current carrying metal parts grounded by a continuously connected equipment grounding conductor, back to the source of power. This conductor shall be sized according to Table 250.122 of the National Electrical Code.

When tying onto house power, the grounding conductor must originate from the ground bus in the same panel board or switchboard that you tied in to for power.

## 10. Connecting to Premises/House Electrical Power Source

Connecting (tying onto) a premises/house electrical power source such as a panel board or switchboard can create the risk of a serious or fatal accident. Such connections should only be made by a qualified person specifically authorized to do so.

In most cases, an electrical permit must be obtained before such work is done. If the building employs a house electrician, the connection should be done by or under the direction of that electrician.

First, you must calculate the existing demand on the electric panel and determine if there is sufficient capacity left for your equipment. This will prevent overloading the panel, tripping the main, and shutting down the building.

Use a spare circuit breaker or disconnect switch whenever possible. Use only approved lugs or devices when tying on to the panel bus. "Alligator" clamps are not an acceptable device for this work. NEVER tie on ahead of the main circuit breaker, fuse box, or meter.

Remember, when removing a panel cover, there will be exposed, live parts. Use suitable matting of non-conductive material and barriers to protect against accidental contact.

Attach the cables in the proper order: GROUND, first; NEUTRAL, second; LINE or HOT, last. Disconnect in the reverse order.

Be sure that your portable distribution system has a sufficient interrupting rating in the event of a short circuit. Fault currents due to ground faults or short circuits from premises/house power can be at extremely high levels. Be certain your distribution equipment, including the overload protection, is sufficient to handle such high currents.

After you have finished with the house power and you have disconnected your cables, put back all covers and screws that you removed.

INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

SAFETY BULLETIN #23

GUIDELINES FOR WORKING WITH LIGHTING SYSTEMS  
AND OTHER ELECTRICAL EQUIPMENT

"ADDENDUM A" – POWER LINE DISTANCE REQUIREMENTS

**AVOID POWER LINES.** This includes, but is not limited to, the placement of equipment such as ladders, scaffold, booms, forklifts, aerial lifts, sets, cranes or other rigging. At a minimum, the following overhead clearances must be observed (California Code of Regulation, Title 8, Section 2946):

The operation, erection, handling or transportation of tools, machinery, materials, structures, scaffolds, or any other activity where any parts of the above or any part of an employee's body will come closer than the minimum clearances from energized overhead lines as set forth in Table 1 shall be prohibited.

Table 1

**General Clearances Required from Energized Overhead High Voltage Conductors**

Nominal Voltage (Phase to Phase)		Minimum Required Clearance (Feet)
600 .....	50,000	6
over 50,000 .....	345,000	10
over 345,000 .....	750,000	16
over 750,000 .....	1,000,000	20

Boom-type lifting or hoisting equipment: The erection, operation, or dismantling of any boom-type lifting or hoisting equipment, or any part thereof, closer than the minimum clearances from energized overhead high-voltage lines set forth in Table 2 shall be prohibited.

Table 2

**Boom-type Lifting or Hoisting Equipment Clearances Required from Energized Overhead High Voltage Conductors**

Nominal Voltage (Phase to Phase)		Minimum Required Clearance (Feet)
600 .....	50,000	10
over 50,000 .....	75,000	11
over 75,000 .....	125,000	13
over 125,000 .....	175,000	15
over 175,000 .....	250,000	17
over 250,000 .....	370,000	21
over 370,000 .....	550,000	27
over 550,000 .....	1,000,000	42

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August 01, 2000

BASIC ELECTRICAL SAFETY PRECAUTIONS FOR MOTION PICTURE AND TELEVISION  
OFF STUDIO LOT LOCATION PRODUCTIONS

PART A  
GROUNDING

GENERAL

All electrical equipment (required to be grounded) is to be grounded back to the point where the electrical system receives its source of power. Even though Direct Current equipment operating at less than 150 volts to ground is not required to be grounded, it is highly recommended for safety purposes.

METHODS

Electrical equipment grounding conductors are to be continuous from the load being served back to the source of power. Approved cable connectors and devices will be considered as part of the continuous conductor. The grounding conductors are to be sized according to the rating of the overcurrent device protecting the circuit supplying the individual piece, or group, of equipment. (20 Amp - #12, 30/60 Amp - #10, 100 Amp - #8, 200 Amp - #6, 300 Amp - #4, 400 Amp - #3, 500 Amp - #2, and 600 Amp - #1 AWG)

CONNECTORS

Flexible cord or multiple conductor cable (enclosed in an overall jacket) supplying circuits or equipment are to be connected by use of a polarized plug and receptacle. Larger single conductor cables may be connected with listed single pin plugs or connectors. So called alligator clamp connectors should never be used for grounding connections. The basic design of these alligator types of connectors does not provide a suitable grounding connection. Unless designed for the purpose, connectors or splices shall be suitably isolated from contact with live vegetation, damp or wet locations.

GENERATORS, TRUCK OR TRAILER MOUNTED

Generators mounted on trucks or trailers shall be completely insulated from earth by means of rubber tires, rubber mats around metal stairways and rubber mats under any type of lift-gate or jacking device. Metal supports for trailers shall be insulated by means of wooden blocks. Safety tow chains shall be secured so as to not touch the ground. If complete insulation is not possible, a grounding electrode system shall be installed per the California Electrical Code, Article 250-83 (c) or (d).

### GENERATOR GROUNDING CONNECTIONS (WHEN REQUIRED)

Interior water pipes, interior metal fixtures, metal frames of buildings, and the building grounding electrode system shall not be used as a grounding connection for mobile generators supplying power exclusively to location production systems.

When mobile generators supply power to location production systems in addition to the building's electrical system, the generator's grounding connection shall be bonded to the main building grounding electrode system at the service.

Multiple generators shall have their grounding connections bonded to each other when located within 20 feet of each other or when one supplies equipment which might possibly come within 20 feet of equipment supplied by the other(s).

Bonding conductors shall be sized per the California Electrical Code, Article 250-95.

## PART B OVERCURRENT PROTECTION

### GENERAL

Conductors and cables should never be loaded in excess of 100% of their actual ampacity. The rating of the overcurrent device (i.e., fuse or circuit breaker) should never be confused with the rating of the conductors or cables.

### RATING FOR CONDUCTORS AND CABLES

The California Electrical Code assigns ampacity ratings for conductors and cables used in motion picture production which are higher than the commonly used ratings. These ratings are found in table 400-5(B), apply only to cable types SC, SCE, SCT, PPE, G and W, and requires that the cable be installed per the footnotes. Ampacities for the commonly used distribution cables are AWG 4/0-360 amps, AWG 2/0-265 amps, AWG #2-170 amps. Note that ampacities listed in column D in the 75 degree C (167 degree F) section are used because 75 degrees C is the maximum rating of termination points.

### RATING OF OVERCURRENT DEVICES

The California Electrical Code requires conductors and cables to be protected by overcurrent devices rated at not more than 400% of the ampacity given in table 400-5(B). Some generators have overcurrent devices rated as high as 1200 amps. Suitable overcurrent devices must be installed to protect the smallest size conductor or cable between the generator and the distribution box (typically AWG #2 "banded" cable).

The 400% rating of the overcurrent device does **NOT** mean that the cable or conductor may be loaded beyond the ampacity rating given in the table!

EQUIPMENT

The California Electrical Code requires equipment to be protected at its ampacity. A branch circuit of any size supplying one or more receptacles shall be permitted to supply stage set lighting loads. A branch circuit is defined as the circuit conductors between the final overcurrent device protecting the circuit and the outlet(s). Twenty amp circuits supply equipment rated up to 2000 watts (16 amps), fifty amp circuits supply 5K's, hundred amp circuits supply 10K's. Some equipment is marked with the maximum overcurrent protection permitted.

PART C  
GENERAL EQUIPMENT REQUIREMENTS

EQUIPMENT

All equipment, new and existing, shall comply with the minimum requirements for safety of the Los Angeles Municipal Code. All existing equipment shall be maintained in an electrically safe condition with NO exposed live parts that in any way will present a potential shock or fire hazard.

All equipment shall be provided with overcurrent protection as required by the California Electrical Code. All cables and flexible cords shall be of the types permitted by Articles 400, 520 and 530 of the California Electrical Code and those specifically approved by City of Los Angeles. Welding cable **shall not be used.**

All Alternating Current (AC) supplied HMI fixtures and ballasts shall be grounded by a continuously connected equipment grounding conductor back to the source of power. These shall not be grounded to the nearest available water pipe connection. This also applies to Direct Current supplied units where grounded. All electrical equipment required to be grounded shall be grounded only by the California Electrical Code required methods and devices.

All electrically powered equipment (except cameras, radios, audio equipment and the like that have self-contained power sources) **shall be** listed by a laboratory approved by this department. Equipment that does not bear the listing mark of an approved laboratory shall not be used.

PART D  
GENERAL SAFETY PRECAUTIONS

INSTALLATION CONNECTIONS AND DISCONNECTIONS

Connections shall be made in the following order: a. Equipment grounding conductor. b. Grounded conductor (i.e., neutral). c. Ungrounded conductors (i.e., hot conductors). Disconnection shall be in the reverse order.

All connections shall be made from the farthest load connection first, and then progressively toward the source of supply. All disconnections shall be made in the reverse order.

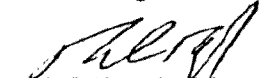
GUARDING OF LIVE PARTS

In any part of a location distribution system that may potentially have exposed live parts, precautions shall be taken to assure they are covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of any contact by objects or persons.

These guidelines are based upon the 1998 California Electrical Code.

OTHER ELECTRICAL SAFETY AND RELATED ITEMS MAY BE ADDED AS NEEDED  
DEPENDING ON THE REQUIREMENTS AND ADVANCEMENTS WITHING THE FILMING INDUSTRY

Robert England.



Chief Electrical Inspector,  
City of Los Angeles



# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #23

### GUIDELINES FOR WORKING WITH LIGHTING SYSTEMS AND OTHER ELECTRICAL EQUIPMENT

#### "ADDENDUM C" – WORKING WITH 480 VOLT SYSTEMS

As 480 volt systems become more common on production, employees working with them should be aware of the potential hazards which are greater than 120 volt systems. Such hazards include, but are not limited to, greater arc flash potential, arc blast explosions, significantly greater shock hazard, and a greater ability to arc between conductive surfaces.

Only qualified employees who have been properly trained and authorized by the employer should connect, disconnect, or operate 480 volt systems or equipment.

This Safety Bulletin is intended to identify potential hazards and to recommend safe practices for trained personnel. This Safety Bulletin is not intended as a design specification, nor is it intended as an instruction manual for untrained persons.

For additional information, please refer to the following:

- Safety Bulletin #23, GUIDELINES FOR WORKING WITH LIGHTING SYSTEMS AND OTHER ELECTRICAL EQUIPMENT
- Safety Bulletin #23, Addendum A – POWER LINE DISTANCE REQUIREMENTS
- Safety Bulletin #23, Addendum B – The City of Los Angeles Department of Building and Safety, BASIC ELECTRICAL SAFETY PRECAUTIONS FOR MOTION PICTURE AND TELEVISION OFF STUDIO LOT LOCATION PRODUCTIONS
- National Fire Protection Association ("NFPA") 70 (aka National Electrical Code ("NEC"))
- NFPA 70E: Standard for Electrical Safety in the Workplace

#### GENERAL SAFETY MEASURES

##### IDENTIFYING SOURCE VOLTAGE FOR CORD AND PLUG CONNECTED DEVICES

Distribution board, panel board and disconnect switch enclosures can only be opened by qualified and designated person(s). Prior to connecting onto or energizing any 480 volt system, the source voltage must be identified and verified. Proper and safe meter techniques must be observed to prevent arcing. An appropriately rated voltage meter

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ISSUED: March 12, 2008

Page 1 of 4

SAFETY BULLETINS ARE RECOMMENDED GUIDELINES ONLY. CONSULT ALL APPLICABLE RULES AND REGULATIONS

SAFETY BULLETINS MAY BE VIEWED OR DOWNLOADED FROM THE WEBSITE [WWW.CSATF.ORG](http://WWW.CSATF.ORG)

must be used. Employees using test equipment on 480 volt systems shall receive proper training prior to metering the source power.

### **COLOR CODING FOR VOLTAGE AND PHASE IDENTIFICATION**

Portable cables and conductors **MUST** be color coded to ensure that 120 volt equipment is not mistakenly connected to a 480 volt system.

Neutral conductors shall be identified by marking at least the first 6 inches from both ends of each length of conductor with GRAY (white is to be used for 120 volt neutral conductors).

Grounding conductors shall be identified by marking at least the first 6 inches from both ends of each length of conductor with GREEN or GREEN WITH YELLOW STRIPES.

Phase conductors (hots) shall be identified by marking at least the first 6 inches from both ends of each length of conductor with BROWN, ORANGE or BRIGHT YELLOW tape.

Where more than one voltage system exists within the same location, each system shall be identified by voltage and system. This can be done by additional color coding, marking tape, tagging, or other equally effective means.

Where color coding is used to distinguish between different lengths or owners of cable, it must be done so that there is no confusion created.

**To avoid confusion between different nominal voltage systems, YELLOW SHOULD NOT BE USED IN PORTABLE 120 VOLT SYSTEMS.**

### **GROUNDING PROCEDURES**

All 480 volt systems shall be grounded in accordance with NEC Article 250 and additional requirements, if any, of the Authority Having Jurisdiction ("AHJ").

Special attention should be taken when using multiple power sources whose energized systems may come into contact with each other. Ensure systems are bonded together with the appropriately sized bonding jumper and connected to a common grounding electrode to ensure that no potential exists between the system grounds.

If grounding rods are required, use proper sized grounding rods and connectors as per the NEC.

Before driving grounding rods into the earth, an underground service company should be contacted to make sure the area is clear of hidden hazards such as water pipes, gas lines, buried cable, and other obstructions.

Grounding conductors from portable 480 volt sources used in buildings should be connected to the grounding connection at the service entrance or main power source.

### **DEVICES AND CABLES**

All cable shall be listed for its intended use by an approved testing laboratory.

Dual jacketed type "W" or equivalent cable is recommended for single conductor feeder cables on 480 volt power systems since small punctures and fractures in the insulation may not be seen during visual inspection.

Single conductor connectors used on "hots" and "neutrals" shall be connected to the conductors by means of solder, set-screw, or crimping. Equipment grounding conductor connection devices or fittings that depend solely on solder shall not be used. Single conductor connectors shall be of the single pole and locking type.

Spider boxes, splicing blocks, and other distribution equipment shall be rated and identified for use on 480 volt systems in conformity with the provisions of the NEC. When more than one voltage system is used on the same premises, the equipment shall be marked in a suitable manner to identify the system to which they are connected.

Cables and devices must be protected from foot and automobile traffic. When using elevated truss crossovers, the metal structure must be grounded to the source ground.

When 480 volt equipment is mounted, suspended, or otherwise attached to any structure which uses metal in its construction (e.g., scaffold, truss, greenbeds, or pipe grids), the metal components of the structure must be grounded to the source ground.

480 volt systems should be elevated and/or protected in such a manner to avoid contact with water.

When 480 volt systems may be used in or around water, such systems shall be designed and approved for use in water or wet conditions (e.g., NEMA 3R enclosures, GFCI devices).

### **PLUGGING AND UNPLUGGING ELECTRICAL EQUIPMENT**

Visually inspect the condition of the plug, cable, and equipment for any signs of excess wear, loose parts, frayed cables, cracked/punctured insulation, pinched/crushed outer jacket, exposed current-carrying parts or any other signs of damage. **DO NOT USE** equipment in any of these conditions. Label and return this equipment for repair.

All grounded equipment should be tested for continuity between the ground pin on the plug and the metal parts of the lighting equipment before it is placed into service.

**Turn off the power when connecting to, or disconnecting from, 480 volt systems. When branching off an energized system, shut off the power and lock-out/tag-out all switches that may energize the circuit being worked on. All equipment that is being plugged and unplugged shall be in the off position to avoid creating an arc**

**at the receptacle. Verify with the appropriate meter that the power is turned off.** Proper Personal Protection Equipment (PPE), including protective gloves and clothing, shall be worn to avoid getting burned from a flash created by a short-circuit in the equipment.

### **CONNECTING ORDER OF SINGLE CONDUCTORS**

All single conductor connections shall be made in the following order:

- 1<sup>st</sup> – Grounds
- 2<sup>nd</sup> – Neutrals
- 3<sup>rd</sup> – Hots

Disconnect in the reverse order:

- 1<sup>st</sup> – Hots
- 2<sup>nd</sup> – Neutrals
- 3<sup>rd</sup> – Grounds

All multi-pole connectors shall provide for "first make, last break" of the ground pole.

### **GUARDING OF LIVE OR NON-INSULATED PARTS**

Any part that is live or non-insulated must be covered with appropriate insulation material or protected or barricaded to prevent accidental contact by persons or objects.

### **EMERGENCY RESPONSE**

Electrical accidents are very serious and care must be taken to ensure that potential rescuers do not become victims. If an electrical accident occurs, follow proper emergency procedures and have Emergency Medical Services ("EMS") contacted immediately. **DO NOT APPROACH ANY ELECTRICAL ACCIDENT UNTIL YOU HAVE BEEN NOTIFIED BY QUALIFIED PERSONNEL THAT IT IS SAFE TO APPROACH.** Properly secure the accident area to prevent the possibility of additional victims.

DO NOT touch a victim of electrical shock while he or she is connected to the circuit. If safe to do so, turn off the power.

While waiting for EMS to arrive, and if trained, follow proper procedures for Cardiopulmonary Resuscitation ("CPR"), including the use of an Automated External Defibrillator ("AED"), if available.

Since the possible effects of electrical shock can manifest hours after the event, **ANY VICTIM OF ELECTRICAL SHOCK MUST BE EVALUATED BY A QUALIFIED MEDICAL PROFESSIONAL.**

## INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

### SAFETY BULLETIN #24

#### CALIFORNIA OSHA SAFETY REQUIREMENTS FOR HANDLING OF BLOOD AND OTHER POTENTIALLY INFECTIOUS MATERIALS

The California Department of Industrial Relations ("Cal OSHA") Bloodborne Pathogen Standard is a series of regulations to protect workers from contracting disease through direct contact with contaminated blood and other potentially infectious materials<sup>1</sup> ("OPIM"). This Safety Bulletin highlights certain provisions or requirements from the regulations. (See Title 8, California Code of Regulations Section 5193 for the complete text of the regulations.) See applicable Federal and other state and local regulations for other requirements when outside California. The Bloodborne Pathogens standard requires employers to protect those employees reasonably at risk (employer designated medical care providers and other employees who are assigned responsibility for responding to incidents involving blood or OPIM) from exposure to bloodborne pathogens<sup>2</sup>. Your employer is required to have a written exposure control plan which is required to be accessible to employees. (Title 8, CCR § 5193 (c)(1))

Universal Precautions is an approach to infection control. According to the concept of Universal Precautions, "all human blood and certain human body fluids are treated as if known to be infectious for Hepatitis B virus (HBV), Hepatitis C (HCV) Human Immunodeficiency Virus (HIV), and other bloodborne pathogens." (Title 8, California Code of Regulations § 5193.) "Universal Precautions shall be observed to prevent contact with blood or OPIM. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials." (Title 8, CCR § 5193 (d)(1).)

The following methods of compliance shall be observed under the Cal OSHA regulations:

1. Treat all blood and body fluids as if they are known to be infectious with HBV, HCV or HIV (Title 8, CCR § 5193(b)).
2. Use appropriate personal protective equipment (PPE) as required including gloves, face masks, eye shields, protective gowns, disposable resuscitation devices, etc. (Title 8, CCR § 5193(J)(4)(a).)

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<sup>1</sup> "Other Potentially Infectious Materials" include the following human body fluids: Semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, and any other body fluid that is visibly contaminated with blood such as saliva or vomitus, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids such as emergency response. (Title 8, CCR § 5193(b))

<sup>2</sup> "Bloodborne Pathogens" means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, Hepatitis B virus (HBV), Hepatitis C virus (HCV) and Human Immunodeficiency Virus (HIV). (Title 8, CCR § 5193(b))

3. Efficient hand washing is the single most effective practice to prevent the spread of infection. Wash your hands immediately or as soon as feasible, after removal of gloves or other personal protective equipment (PPE). When provision of hand washing facilities is not feasible, the employer shall provide either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes. When antiseptic hand cleansers or towelettes are used, hands shall be washed with soap and running water as soon as feasible. (Title 8, CCR § 5193(l)(2))
4. Treat all needles and other sharp implements as if they are known to be contaminated with infectious material. (Title 8, CCR § 5193(b))
5. Be sure that ALL biohazard waste including contaminated PPE and sharps are disposed of properly and safely (dispose of sharps in puncture-proof containers). Refer to your employer's written exposure control plan for details. (Title 8, CCR § 5193 (g))
6. If you have an "Occupational Exposure"<sup>3</sup> or if you have an "Exposure Incident"<sup>4</sup> and are accidentally exposed to blood or other potentially infectious materials, a

<sup>3</sup> "Occupational Exposure" means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties (Title 8, CCR § 5193(b)).

The employer shall make available the Hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up for bloodborne pathogens exposure to all employees who have had an exposure incident. When an employer is also acting as the evaluating health care professional, the employer shall advise an employee following an exposure incident that the employee may refuse to consent to post-exposure evaluation and follow-up from the employer-healthcare professional. When consent is refused, the employer shall make immediately available to exposed employees a confidential medical evaluation and follow-up from a healthcare professional other than the exposed employee's employer.

**EXCEPTION:** Designated first aid providers who have occupational exposure are not required to be offered pre-exposure Hepatitis B vaccine if the following conditions exist:

1. The primary job assignment of such designated first aid providers is not the rendering of first aid.
  - a. Any first aid rendered by such persons is rendered only as a collateral duty responding solely to injuries resulting from workplace incidents, generally at the location where the incident occurred.
  - b. This exception does not apply to designated first aid providers who render assistance on a regular basis, for example, at a first aid station, clinic, dispensary, or other location where injured employees routinely go for such assistance, and emergency or public safety personnel who are expected to render first aid in the course of their work.
2. The employer's Exposure Control Plan, subsection (c)(1), shall specifically address the provision of Hepatitis B vaccine to all unvaccinated first aid providers who have rendered assistance in any situation involving the presence of blood OPIM (regardless of whether an actual exposure incident, as defined by subsection (b), occurred) and the provision of appropriate post-exposure evaluation, prophylaxis and follow-ups for those employees who experience an exposure incident as defined in subs (Title 8, CCR § 5193(f)(1)).

<sup>4</sup> "Exposure Incident" means a specific eye, mouth, or mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious material that results from the performance of an employee's duties. (Title 8, CCR § 5193(B))

series of Hepatitis B vaccinations and post-exposure evaluation and follow-up will be offered to you at that time, free of charge. The cost of these vaccinations is the responsibility of your employer. If you have an exposure, report the incident immediately to your supervisor and to first-aid personnel. (Title 8, CCR § 5193 (f))

**The key to protection and prevention is compliance with regulations and universal precautions. Your health and safety may depend on it!**

# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #25

### CAMERA CRANES

This Safety Bulletin pertains to the safe assembly and usage of powered and manually operated, counterbalanced camera cranes used for the purpose of television and film production. This Safety Bulletin may also be applicable to jib arms and similar types of units. Please consult Safety Bulletin #8, "Guidelines for Insert Camera Cars" when camera cranes are used in conjunction with insert cars, tow dollies or process trailers.

1. Each camera crane should be accompanied by an assembly/usage manual supplied by the manufacturer/vendor. The manual should clearly show assembly instructions, maximum payload and maximum gross weight in all configurations, safety precautions and maintenance procedures. Where different, manufacturer's/vendor's instructions shall supersede this Safety Bulletin. Read and follow all manufacturers' placards on the equipment.
2. Only persons trained in the safe use of camera cranes should assemble and/or operate these devices.
3. When used, camera cranes should be inspected daily by qualified personnel (e.g., key grip, camera crane/dolly grip, vendor's representative or other qualified personnel as determined by the Producer), following an inspection protocol supplied by the manufacturer/vendor. If components are missing, damaged or improperly fitted, the equipment should be removed from service. Missing or damaged components are to be replaced or repaired in accordance with the manufacturer's/vendor's procedures prior to the equipment being returned to service.
4. Using the largest base that is practical increases the stability of the unit. The appropriate base for a crane is determined by the height, length and total load. Refer to the operating manual.
5. The camera crane base should be on a flat and level surface, platform or track system capable of supporting the intended load. The weight of all personnel, equipment and the camera crane should be taken into consideration.
6. The payload on the boom arm should not exceed that which can be balanced by the counterweight system supplied with the equipment. Additional counterbalance weight that is above and beyond that specified by the manufacturer/vendor should not be used. The manufacturer/vendor should be consulted regarding all extension configurations that are not explicitly specified in the operating manual.



7. Seat belts are to be provided on all camera cranes where passengers are required for operation. Seat belts should be maintained in good condition, and used by all passengers.
8. Pushing camera cranes across slopes or over uneven surfaces such as cables, speed bumps, or curbs can cause the unit to tip over.
9. When operating a camera crane, qualified personnel should ensure that there is adequate clearance for operation. Potential obstructions or hazards, such as power lines, helicopter rotors, fire sprinkler heads, etc. should be considered. Qualified personnel and the designated on-set safety coordinator should establish a safe operating zone. The designated on-set safety coordinator should maintain the safe operating zone. Special attention should be given to working around high voltage power lines.

<b>Clearances Required from Energized Overhead High-Voltage Lines</b>		
<b>Nominal Voltage</b>		<b>Minimum Required Clearance (Feet)</b>
600 up to	50,000	10
over	50,000 to 75,000	11
over	75,000 to 125,000	13
over	125,000 to 175,000	15
over	175,000 to 250,000	17
over	250,000 to 370,000	21
over	370,000 to 550,000	27
over	550,000 to 1,000,000	42
Source: Title 8, California Code of Regulations, Subchapter 5, Group 2, Article 37, '2946 29 Code of Federal Regulations 1926.451 (F)(6)		

10. If the camera crane is equipped with outriggers/stabilizers, follow the manufacturers' instructions regarding their proper use. Care should be taken to ensure that the feet of the outriggers/stabilizers will not sink into soft soil or asphalt, otherwise, the unit may tip over. Adequate means of distributing the outrigger/stabilizer load should be used, when appropriate.
11. It is recommended that special care be used when operating camera cranes on curved track. For example, excess speed could cause the unit to tip over.

12. When moving a camera crane on or off the track, the arm weight should be reduced to allow for safe movement so as to reduce the chances of the unit tipping over. Consult manufacturer's/vendor's instructions.
13. When stepping on or off of a camera crane, do so only after approval from the person operating the unit. Stepping off of a balanced camera crane without providing a counterbalance (e.g., another person to replace the weight) can cause the arm to elevate rapidly and possibly cause serious injury.
14. Unattended camera cranes should be secured to prevent movement of the unit (e.g., adding or removing manufacturer-supplied weights from the weight bucket).
15. When handling un-coated lead weights you should wear appropriate protective gloves and wash hands after use.
16. When operating camera cranes, consideration should be given to wind, rain, extreme heat and cold and other atmospheric conditions, whether natural or manmade, which can affect the safe use of camera cranes.

INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

SAFETY BULLETIN #25

CAMERA CRANES

"ADDENDUM A" – POWER LINE DISTANCE REQUIREMENTS

**AVOID POWER LINES.** This includes, but is not limited to, the placement of equipment such as ladders, scaffold, booms, forklifts, aerial lifts, sets, cranes or other rigging. At a minimum, the following overhead clearances must be observed (California Code of Regulation, Title 8, Section 2946):

The operation, erection, handling or transportation of tools, machinery, materials, structures, scaffolds, or any other activity where any part of the above or any part of an employee's body will come closer than the minimum clearances from energized overhead lines as set forth in Table 1 shall be prohibited.

Table 1

**General Clearances Required from Energized Overhead High Voltage Conductors**

Nominal Voltage (Phase to Phase)		Minimum Required Clearance (Feet)
600 .....	50,000	6
over 50,000 .....	345,000	10
over 345,000 .....	750,000	16
over 750,000 .....	1,000,000	20

Boom-type lifting or hoisting equipment: The erection, operation or dismantling of any boom-type lifting or hoisting equipment, or any part thereof, closer than the minimum clearances from energized overhead high-voltage lines set forth in Table 2 shall be prohibited.

Table 2

**Boom-type Lifting or Hoisting Equipment Clearances Required from Energized Overhead High Voltage Conductors**

Nominal Voltage (Phase to Phase)		Minimum Required Clearance (Feet)
600 .....	50,000	10
over 50,000 .....	75,000	11
over 75,000 .....	125,000	13
over 125,000 .....	175,000	15
over 175,000 .....	250,000	17
over 250,000 .....	370,000	21
over 370,000 .....	550,000	27
over 550,000 .....	1,000,000	42

# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #26

### PREPARING URBAN EXTERIOR LOCATIONS FOR FILMING

Urban locations such as alleyways, beneath bridges, tunnels, abandoned structures, storm channels and other locations may present health risks and other hazards, which can be mitigated prior to the Production Company prepping and/or shooting at the location. These guidelines are intended to provide recommendations to prepare urban locations for filming. Safety bulletins are recommended guidelines only; consult all applicable rules and regulations including Title 8, California Code of Regulations.

#### Hazard Identification

The Production Company should conduct an assessment of the urban location to identify possible hazards to the health and safety of cast and crew. Potential hazards may include:

1. Biohazards

Human or animal waste, mold, fungus, bacteria, body fluids, vermin, insects, and other potential biohazards.

2. Chemical Hazards

Asbestos, lead paint, solvents, insecticides, herbicides, and other potentially harmful chemicals.

3. Physical Hazards

Rubbish, refuse, abandoned materials, broken glass, scrap metals, discarded needles, other waste or **utility/electrical lines** that can create a potential physical hazard.

The Production Company should evaluate the type and scope of hazards and, if necessary, create a plan to mitigate the hazards prior to the crew's arrival at the location.

Production should secure, if necessary, the services of an industrial hygienist or other appropriate professional capable of conducting necessary analysis to determine the type and scope of hazards present at the location.

### **Physical Mitigation**

The Production Company should take necessary steps to minimize exposure of cast and crew to the aforementioned hazards. Such steps may include, but are not limited to, power washing, steam cleaning, removal of refuse and rubbish, fumigation, and use of chemical disinfectant(s). Because of the nature of such locations, production should consider securing the location during and after mitigation procedures.

In some cases, the type and/or scope of hazards present at the urban location may necessitate the use of a licensed contractor certified in the proper handling and removal of the offending substances and materials.

Electrical cables, props, and other equipment used at the location should be protected where practical. Cables should be supported off the ground whenever possible. Protective ground cover, such as layout board or other material, should be positioned in work areas to minimize contact with potentially affected areas. Props and equipment that come in contact with the ground should be disinfected. Washing facilities should be available for the cast and crew - who should be reminded to wash periodically and before meals. Long pants, long sleeved shirts, and hard-soled shoes are recommended to minimize contact. Proper personal protective equipment should be provided and used.

### **Location Maintenance**

If possible, the urban location should be locked-off and secured to maintain the cleanliness of the set. If that is not practical, Production should conduct daily cleaning activities before crew call to remove any sources of exposure or hazards that accumulated during the Production Company's absence.

### **Additional Concerns**

Some mitigation procedures may cause objections from local authorities or the community. The Production Company should first check with local agencies to insure that their preparation activities do not violate local ordinances.

**NOTE:** Refer to a location "Safety Checklist." Contact the projects' Production Safety Coordinators for a copy of their companies' "Safety Checklist." If not available, a generic "Safety Checklist" can be obtained from the AMPTP.

## INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

### SAFETY BULLETIN #27

#### POISONOUS PLANTS

This bulletin addresses special safety considerations when working outdoors and exposed to nasty plants. Although the types of nasty plants may vary from region to region, basic safeguards should be taken to prevent serious injury or illness to crew members working at locations where these plants grow.

#### GENERAL INFORMATION

These plants (e.g., Poison Oak, Poison Ivy and Poison Sumac) cause an allergic reaction in about 90% of all adults. The oleoresin in the juice of these plants causes dermatitis in allergic people from contact from their clothes, tools, equipment, pet fur, or smoke of burning plants. The fluid from the resulting blisters **does not** contain oleoresin, and **cannot** cause dermatitis.

These irritating plants normally grow along fence rows, waste areas, open and cut over forest lands, stream banks, swamps, ponds and rocky canyons. In the fall, their leaves turn to brilliant red.

**NOTE: People who have allergic reaction to these types of plants should notify production company and/or set medic prior to entering an area that is known to have these types of plants.**

#### PROTECT YOURSELF

**Clothing Guidelines - in areas where nasty plants are likely:**

1. Wear long pants with your pant legs tucked into your socks or boots. A good boot above your ankle can help protect you better.
2. Wear long sleeves and a loose fitting shirt, and a ventilated hat.
3. Cover as much skin as you can. The less skin exposed, the less likely you may be affected.
4. All contaminated clothing should be washed separately with detergent.
5. Wear protective gloves when handling.
6. Wear practical change clothes and shoes before leaving the location. Work clothes should be placed in a bag and taken home for laundering.

#### GENERAL SAFETY PRECAUTIONS

1. Wash often. Wash hands before eating, smoking or applying cosmetics.
2. Identify the areas that may contain the plants and use the proper safeguards to avoid them.

## **IDENTIFICATION**

1. Both Poison Oak and Poison Ivy are readily identified by their trademarked three-leaf pattern.
2. Poison Ivy has its three leaflets with pointed tips, while Poison Oak has its three leaflets with rounded tips.
3. Leaflets range from a half-inch (1/2") to two (2") inches long.
4. Flowers are greenish white, about one-quarter (1/4") inch across and are borne in clusters on a slender stem.
5. The fruits are white, berry-like, glossy and dry when ripe; about one-sixth (1/6") of an inch in diameter in Poison Ivy and slightly larger in Poison Oak.
6. All parts of Poison Oak and Ivy are poisonous year round, except the pollen.
7. Burning is not recommended; as inhaling dust and ash from the smoke can result in poisoning of the lungs that can require hospitalization.

## **POISONING**

1. The poisonous sap is carried in the roots, stem, leaves and fruit.
2. The plant is bruised, the sap is released.
3. It is easier to contract the dermatitis in the spring and summer due to the tender nature of the leaves.
4. Sap may be deposited on the skin by direct contact with the plant or by contact with contaminated objects such as shoes, clothing, tools, equipment and animals.

## **SYMPTOMS**

1. The interval between contact and the appearance of dermatitis will vary considerably.
2. Most people will develop dermatitis 24 to 48 hours after contact.
3. Blistering will follow moderate itching or burning sensation.
4. Blisters usually rupture and are followed by oozing of serum and subsequent crusting.
5. Healed areas often remain hypersensitive to further contact for several months.
6. Although extremely irritating, most cases disappear in a week to 10 days.

## **TREATMENT**

1. Thoroughly wash the skin with soap and water (brown soap is best)
2. Apply anti-itch lotion, such as Calamine or Caladryl.
3. In severe dermatitis, cool wet dressings or compresses will be required. Heat releases histamines, which cause the intense itching.
4. A physician should examine severe rashes, especially those covering large areas or accompanied by abnormal body temperatures.
5. Medical treatment is most effective if applied before the oozing sores appear.
6. All exposures should be reported to the set medic.

## **OTHER POISONOUS PLANTS**

Other plants that can cause mild to severe dermatitis include:

1. Stinging nettle
2. Crown of thorns
3. Buttercup
4. May apple
5. Marsh marigold
6. Candelabra cactus
7. Brown-eyed Susan
8. Shasta daisy
9. Chrysanthemum



# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #28

### GUIDELINES FOR SAFETY AROUND RAILROADS AND RAILROAD EQUIPMENT

These guidelines are for your safety when working on-board trains, in railroad yards, or in the vicinity of railroad equipment. These guidelines do not discuss work on or around electric third rail trains or tracks of the type used in many rapid transit systems. Check local regulations for specific guidelines, regulations, and required training.

#### GENERAL SAFETY RULES

1. Remain alert and aware of your surroundings at all times. Trains and railroad yards can present hazardous situations with which you are not familiar.
2. Know the rules listed below. Railroad personnel are familiar with these rules and may assume that all personnel in the area are also familiar with them.
3. Do not attempt to cross in front of locomotives. Locomotives and railroad cars require long distances to stop and have blind spots where they cannot see pedestrians or vehicles.

#### WALKING IN A RAILROAD YARD

1. Listen for approaching engines or railroad cars. Walk at a safe distance from the side of the tracks. Avoid walking between the rails or on the railroad ties. Pay attention to footing. If it is necessary to turn your head or look backward, stop and look before proceeding.
2. Expect the unexpected. Engines, railroad cars or other equipment may move without warning on any track in either direction.
3. **DO NOT RELY ON OTHERS TO WARN YOU** of approaching engines, railroad cars or other equipment. Even if personnel have been assigned to provide warning, stay alert. You may not hear or see the warning.
4. Maintain a safe distance from passing engines, railroad cars or other equipment to avoid being struck by projecting or falling objects.
5. Do not sit, stand, step, walk or place coins or other objects on the rails, switches, guardrails or other parts of the track structure.
6. After looking in both directions to be sure there are no approaching engines or railroad cars, cross tracks immediately.

7. Take extra precautions if it is raining, snowing or if there are icy conditions. Snow may conceal trip hazards. Avoid walking or working under icicles. Keep all steps clear of ice, snow and other slippery substances.
8. Stand clear of all tracks when trains are approaching or passing in either direction. Do not stand on one track while trains are passing on other tracks.

### **WORKING IN A RAILROAD YARD**

1. Be aware of the surface on which you are walking or working.
2. Stand still and clear of the track when referring to paperwork or using portable communications devices.
3. When walking from behind or out of an engine, railroad car, building or other structure, look in both directions before approaching any railroad track.
4. Listen for the movement of engines, railroad cars or equipment.

### **RIDING EQUIPMENT**

1. Restrict riding on equipment to essential personnel whose duties require riding or are properly authorized. Riders must ride only in spaces provided for that purpose.
2. Restrict personnel from riding on the side of the car or engine. Observe that no one is doing so before passing structures and other engines or railroad cars.
3. Remain alert for conditions that can cause abrupt changes in speed. Examples include train braking, changes in grade, wet or icy tracks, and entering or leaving a rail yard or train station.
4. Protect yourself from abrupt changes in speed by:
  - a) Remaining seated as much as possible. Place both feet on the floor, on a footrest or firmly on the floor at the base of a wall or other stable structure in front of you.
  - b) If standing, stand with feet a shoulder's width apart, one foot slightly ahead of the other. Use your hands to brace against a wall or hold on to a grab rail.
  - c) If walking, have a firm grip on grab rails, bulkhead edges or an overhead grab rail. Halt until the abrupt change ceases.

## WORKING ON OR AROUND RAILROAD EQUIPMENT

1. Remain alert for the unexpected movement of equipment.
2. Observe the condition of equipment before using it. Look for loose, bent or missing stirrups, ladder rungs and brake platforms.
3. Use side ladder and face equipment as you ascend or descend equipment. Be alert for unexpected movement and observe for obstructions before ascending or descending.
4. Dismount or mount equipment only when it is in a stopped position.
5. Cross over standing equipment by using engines or railroad cars which are equipped with end platforms and hand rails. Never place any part of the body on or between the coupler and the end sill of the railroad car.
6. Restrict crossing from freight car to freight car while they are moving.
7. Cross between passenger cars by holding on to railings and grab bars. Remain aware of walking surface conditions.
8. Cross through equipment only when authority has been given. This to be done only when the selected car is equipped with a crossover platform and hand holds.
9. **DO NOT CRAWL UNDER ANY RAILROAD CAR**, including cars which are standing still, unless authorized to do so by the authority designated by the railroad.
10. At all times when any member of the cast or crew must work under any railroad car, a person trained in railroad signals shall act as a spotter. A flag or similar signaling device is to be displayed so as to be clearly visible to the train operator while work under any railroad car is being performed.
11. Allow sufficient clearance in front of, in back of, and to the side when walking around railroad equipment. Such equipment may move without warning.

# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #29

### GUIDELINES FOR SAFE USE OF HOT AIR BALLOONS

(Also refer to Safety Bulletin #29, Addendum A – "External Load Guidelines")

The flying accuracy of a Hot Air Balloon may be adversely affected by changing natural conditions such as wind, air density, humidity and time of day. Special precautions should be taken to ensure safety when working in any extreme temperatures or terrain, e.g., mountains and deserts. Manmade conditions such as weight, weight distribution and/or the discharge of pyrotechnics in close proximity can also affect the balloon's ability to fly.

1. **NOTE: Any Balloon that is inflated and standing must have a FAA certified pilot, with a commercial rating for lighter than air aircraft.** A qualified Pilot shall be utilized to pilot the balloon or dirigible.
2. There are three (3) certified pilot ratings:
  - c. Free Balloon with airborne heaters (usually propane fueled)
  - d. Gas filled Balloon (usually helium filled)
  - e. Dirigible (usually helium filled)
3. All **Aerial Coordinators and/or Pilots in Command** shall possess a current FAA approved **Motion Picture and Television Operations Manual** and accompanying **Waiver**.

The **Waiver** is specific to those Federal Aviation Regulations specified in the approved manual.
4. The **Pilot in Command** is at all times the final authority over his/her balloon and shall be in command over all **flight operations and/or related activities**. The **Pilot in Command** shall have the authority to abort any operation. Abort signals should be specified ahead of time.

5. Communications: The **Aerial Coordinator and/or Pilot in Command** will coordinate with the designated production representative and implement a plan for communications between the participants in the air and on the ground.

The plan will incorporate the following:

- a. Designated ground contact personnel
  - b. Air to ground radios (VHF or FM)
  - c. Assignment of discreet frequencies (channels)
  - d. Visual signals (flags, specified hand signals, or light) shall be used to halt filming in the event of lost communications or inability to utilize radios (**note: flares are not to be used in or around a balloon**)
  - e. Abort signals, audible and visual to halt filming in the event of unforeseen circumstances or safety hazards
6. Prepare plot plans and graphics to locate the intended landing area, intended flight paths, and designated emergency landing sites. Indicate the location and types of special effects.
7. MEETING for the production staff for those persons necessary for filming, including emergency, safety and security personnel.

NOTE: A subsequent briefing/**SAFETY MEETING** may also be required as necessary for an intended action.

Both meetings shall include the following:

- a. Pertinent items and the special provisions of the Aerial Coordinator and/or Pilot in Command along with any additional provisions issued by the local FAA Flight Standards District Office
  - b. Possible risk to personnel that are involved
  - c. Safeguards to personnel and equipment
  - d. Communications
  - e. Emergency procedures
  - f. Location of boundaries
  - g. Local governmental limitations or restrictions (if any)
8. The **Aerial Coordinator and/or Pilot in Command** shall designate one person as the Ground safety contact with no other responsibilities. The Balloon Crew Chief may be designated as the ground safety contact around the balloon, if qualified.

9. A preplanned stunt and/or special effect sequence, if any, will not be changed in any way once the Balloon has been launched. If there is a question as to safety of any aerial filming sequence involving low, over-the-camera shots, a briefing/**Safety Meeting** shall be held between the **Aerial Coordinator and/or Pilot in Command** and concerned persons as to whether the use of a locked-off camera is necessary.
10. Allow only personnel essential to the filming of the balloon to be in the area. All other personnel shall remain at least **50** feet away from the balloon.
11. No smoking is allowed within **100** feet of the balloon or any of its components, which includes the propane storage area.
12. There shall be a designated and approved area for the storage of propane fuel tanks (usually with or at the support vehicle location).
13. Check on predicted weather conditions in the areas of the launch site, flight paths, and landing site. Provide as much advance notice as possible to the **Aerial Coordinator and/or Pilot in Command** regarding any weather problems such as high winds, rain or lightning. Sudden changes in any of the above may require that the flight be delayed or canceled.
14. **Balloon support equipment is very important as parts are easily damaged while on the ground. Do not step on any part of the balloon or tether ropes.**
15. Keep all sharp objects, heat sources or open flames and non-essential equipment at least **100** feet from the balloon.
16. If a foreign object(s) falls into, on or against any part of the Balloon or rigging, report it immediately to the **Pilot in Command and/or Aerial Coordinator**.
17. A chase vehicle shall be assigned with no other duty than to support the balloon crew.
18. Before any stunt or special effects sequence is to be performed, all persons involved shall be thoroughly briefed as to any potential hazards and safety questions prior to the filming.
19. If an emergency occurs, **DO NOT TOUCH** any part of the balloon. A designated balloon ground crew member will take charge and coordinate rescue operations. Immediately call 911 or the designated emergency number for the area.

20. If you are unsure about any part of the balloon operation, ask the **Pilot in Command and/or Aerial Coordinator**.
21. The production company must notify all cast and crew members and the front of the studio call sheet shall contain a statement to the effect that:  
  
**"An aircraft is being used and will be flown in close proximity to crew and equipment. Anyone objecting will notify the production manager or 1st AD prior to any filming."**

**A COPY OF THIS BULLETIN SHALL BE ATTACHED TO THE CALL SHEET ON DAYS THE AIRCRAFT IS BEING UTILIZED**

# INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

## SAFETY BULLETIN #29

### GUIDELINES FOR SAFE USE OF HOT AIR BALLOONS

(Also refer to Safety Bulletin #29, Addendum A – "External Load Guidelines")

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12. There shall be a designated and approved area for the storage of propane fuel tanks (usually with or at the support vehicle location).
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INDUSTRY WIDE LABOR-MANAGEMENT SAFETY COMMITTEE

SAFETY BULLETIN #29

ADDENDUM "A"

EXTERNAL LOAD GUIDELINES FOR SAFE USE OF HOT AIR BALLOONS

GUIDELINES FOR ESSENTIAL PERSONNEL OR EQUIPMENT TO FILM OR BE FILMED WHILE ON THE EXTERIOR OF, ENTERING, OR EXITING A BALLOON BASKET OR GONDOLA IN FLIGHT

Traditional ballooning motion picture activities include air to ground transfers, air to surface vehicles or persons, rappelling, parachuting, long line and many other scenarios where essential personnel may be required outside of the balloon basket or gondola.

Stunt persons and camera operators are often called upon to stand outside of or hang from the basket or gondola, cargo hooks, trapeze devices, bungee cords, cables, ladders, long lines, etc.

Safe completion of these operations require the complete understanding and coordination of all parties involved, *i.e.* the **Aerial Coordinator and/or Pilot in Command, Designated Production Representative, Stunt Persons, Stunt Riggers, Balloon Riggers, Special Effects and Grip Riggers, and essential ground crew.** In performing these types of operations the following guidelines should be used:

1. The **Pilot in Command** is at all times the final authority over his/her balloon and shall be in command over his/hers **flight operations and/or related activities.**

The **Pilot in Command and/or Aerial Coordinator** shall have the authority to abort any flight operation **in the interest of safety.**

2. **Risk Management**

Participants will conduct a thorough evaluation of the operations to be conducted and the potential risks to essential personnel, **if any.**

3. **Personnel Involved**

**Aerial Coordinators and/or Pilot in Command (Waiver Holder)**, essential personnel to be flown, stunt persons, balloon rigging, safety and production personnel.

#### 4. **Briefing**

Briefings will be conducted by the **Aerial Coordinator and/or Pilot in Command (Waiver Holder)** specific to the scheduled balloon external load operations and in compliance with the approved **Motion Picture Operations Manual**, briefing provisions.

#### 5. **Communication**

Communication must exist at all times between the **Pilot in Command**, stunt person(s), camera operator and the essential personnel being flown. This can be accomplished through the use of radios, intercoms or pre-briefed hand signals.

Additionally, in the event of lost communications the pilot must be able to maintain visual contact with the stunt person or camera operator. If visual contact cannot be maintained, then a third party who can maintain visual contact will be used.

This person may be onboard the balloon, on the ground, or in a chase aircraft.

#### 6. **Attaching Methods and Devices**

Belts, harnesses, cables and safety lines will be attached to existing balloon basket or gondola hard points, cargo tie down points, basket or gondola bridles, or other suitable basket or gondola locations.

Attaching devices, cables, carabineers, braided nylon, climbing rope, nylon straps, steel clevises, body harnesses, etc. are normally provided by the motion picture special effects and stunt personnel.

All of the above devices have load ratings established by the manufacturer in compliance with various industry and government specifications and established Motion Picture Safety Guidelines.

**Note: A person will never be attached to a load release device.**

#### 7. **Weight and Balance**

Due to the nature of balloon external loads involving essential persons or equipment, diligent review and compliance with the manufacturer's maximum weight data is required.

This can also be accomplished through consultation with pilots having previous experience with similar balloon configuration or through a flight evaluation.

## 8. Pilot Check List

### A. Balloon

1. Load bearing capacity and method of securing of all attaching devices related to the external load.
2. Verification of load bearing capacity and anticipated loads on the basket or gondola attach points to be utilized.
3. Accomplish Weight and Balance of the external load, including, if necessary, the possible release or departure of the external load.

### B. Personnel

1. Verify that only essential personnel are onboard the balloon.
2. Confirm with essential personnel specific duties and responsibilities.
3. Verify all communications and check audio and/or hand signals.
4. Review emergency procedures specific to the external load operation with all essential personnel.
5. Review any potential risk factor, if any, with the essential personnel.
6. **No essential personnel may participate in airplane external load operations unless they have read, understood, and agreed to comply with the conditions of the Waiver Holders, Certificate of Waiver and its special provisions, if any.**

## 9. Parachutes

If parachutes are to be used, they must be of an FAA approved type and must have been packed and certified within the preceding **120** days.

While wearing a parachute the stunt person must not be attached to the balloon.

**An accidental parachute opening while attached to the balloon could have serious negative effect on the aircraft and parachutist.**

## 10. Rappelling

### A. Pilot Qualifications:

Qualifications on the basis of previous experience and safety record, or an actual light, demonstrating the pilot's knowledge and skill regarding rappelling, and operations.

### B. Rappellers Qualifications:

1. Rappellers and Spotters (Stunt Persons) will be required to demonstrate their ability during required familiarization flights.
2. The Waiver Holder and/or Pilot will have the authority to withhold approval of any rappeller or spotter (stunt person).

### C. Rappelling Special Provisions:

The **Pilot in Command (Waiver Holder)** has the authority to cancel or delete any activity or event, if in their opinion, the safety of persons, or property on the ground or in the air is at risk, or if there is a contravention to the provisions of the **Motion Picture Waiver**.

### D. Rappelling Equipment:

1. Rope size appropriate to the rappel (friction) device being used, will be required for all rappel operations.
2. Rope strength for each specific load, a safety factor of **10:1** between the strength of the weakest piece of attaching equipment and the load to be carried will be utilized.
3. The absolute minimum tensile strength of any rappel rope will be **5000 lbs.** Tested to NFPA and/or other regulatory standards.
4. Ropes will have a rubber jacket or other appropriate edge protection to give protection on basket or gondola edges when using basket or gondola attach points.
5. Carabineers, steel or aluminum must have a minimum tensile strength of **5000 lbs.**, be of a locking type and be tested to NFPA and/or other regulatory standards.
6. Cutting devices, knives, cable cutters, etc. shall be sufficient to cut any attaching device will be provided to the spotter or safety person(s) for use in an emergency.
7. Rappel ropes will have a minimum of two (2) attach points per rope with test strengths greater than or equal to **5000 lbs.** per rappeller.