



## THE STEPS IN PLANNING AND EXECUTING A FIREWORKS EVENT



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### 1) Engage the Services of a Reputable Fireworks Company

- For ultimate safety and enjoyment ensure that the fireworks used by the display company are reliable, consistent, have large, high breaks, vivid colours and dynamic effects. Please note: only fireworks approved by the Explosives Regulatory Division (ERD) are allowed.
- Ensure the display design team is experienced and creative. They have created and safely executed memorable events for many clients with shows similar in size and scope.
- The supervisor assigned to your event:
  - Assists in the planning of the display, the execution of the set up, and firing and clean up of the display site.
  - Holds a valid Display Fireworks Supervisors Card issued by Natural Resources Canada, Explosives Regulatory Division.
- Explosives regulations specify that display fireworks may only be sold to a person who has been approved by the Chief Inspector of Explosives. Approval may be granted to a competent and responsible person who by training or experience has acquired the skill and ability to safely set up and supervise the discharge of fireworks at public displays.

### 2) Order Placement

- Receive a firm quotation from your display company.
- Orders should be placed well in advance to secure desired date.
- Place your order early to ensure adequate time for the specialized site checks, meetings, approvals, design and staging.
- Normal payment terms are within 30 days of event. For some events a deposit may be required.

### 3) Selecting a Firing Site

- The site must conform to specifications as outlined in the Natural Resources Display Fireworks manual.
- The site must be inspected and approved by the supervisor and local authority, (Authority having Jurisdiction) to:
  - Ensure that the firing plan conforms to all aspects of regulation and public safety.
  - Establish the type or size of fireworks that would be suitable to the site.
- You should attain written permission of the landowner, as well as, the owners of adjacent properties upon which debris might reasonably be expected to fall.

### 4) Fireworks Selection

Choices incorporate as much variety as possible in terms of colour, sound, action and altitude  
Choices reflect:

- Sizes and types deemed safe for the firing site.
- Suitable fireworks for visibility in accordance with spectator location and sight lines.
- Firing style capabilities as expressed by the supervisor.

## 5) Design

The most entertaining display will be progressive and incorporate an ever-changing presentation of images. When designing, a contrast between one item and the next needs to be created. Significant contrasts may include colour changes, altitude changes, sound effect insertion, or rhythm variations. While each item is enjoyable when fired on its own, a very different effect can be created if multiple items are fired simultaneously.

- The firing design lists the firework items in order of appearance and therefore enables the supervisor to establish ignition times and the approximate show duration. If your display is designed and fired pyrodigitally the exacting details of your show are established.
- A ground plan should be created to assist in the set up. If any part of the event is to be hand fired, a safe route is established.

## 6) Insurance for a fireworks event is imperative

- If the sponsoring organization or the hosting town or city holds a comprehensive general liability insurance policy, it may be possible to extend coverage for a single event that includes fireworks.
- Fireworks display company must hold a \$5,000,000 insurance policy.

## 7) Notification regarding the date, time, location and type of fireworks display

This information may be significant to any or all of the following:

- Fire Department
- Air, Harbour or Roadway Control Departments
- Police Department
- Forestry Authorities or Parks and Environmental Authorities

## 8) Advertising

- If you have chosen items in accordance with a special theme, a storyline can be created to enhance that theme.
- If you have chosen special components for your display, you may wish to advertise using the names of products that support your theme.
- Regardless of the advertising approach that you choose, it is imperative to provide the correct information regarding the date, time and optimum viewing location. If spectators are directed to the best viewing location, it may alleviate possible crowd control problems.

## 9) Fireworks Staging and Delivery

- All the set up equipment, firing equipment and computer equipment (if required) is thoroughly cleaned, checked and tested.
- Fireworks and equipment are checked against a design plan and loaded into the delivery vehicle.
- Fireworks are delivered to the documented shipping address.
- The Transportation of Dangerous Goods Act governs the transport of fireworks. Your fireworks display company must have hazardous goods licensed drivers transporting the fireworks to the show site. The act details specific safety regulations, in addition to, the requirement for vehicle 1.3G explosive warning placards. You will notice that the delivery vehicle displays 4 placards (one for each side of the vehicle). Once the product is removed from the vehicle the placards must also be removed.
- A site check is performed and the supervisor once again ensures that the number of items on hand match the quantity detailed on the design documents.

## 10) Set Up and Safety Precautions

- The fireworks order, the firing style, equipment and supply stock, the site ground plan, the weather conditions and the firing chain are all important factors with regard to set up.
- Inadvertent public encroachment upon the firing area, safety zones or fallout zones must be prevented. This may entail fencing, rope or tape barricades, security personnel etc.
- Property or immovable structures that are susceptible to ignition or damage from sparks or burning embers must be protected and this may entail covering with non-flammables or spraying with water.
- Each firework item requires some type of stabilization or operation prior to firing;
  - Set pieces are attached to stationary supports or wooden poles
  - Low Level items are embedded or weighted by sandbags
  - Mid Level items are weighted by sandbags
  - Aerial shells are loaded into mortars and placed in sandboxes, racks or rails
- Fireworks are assembled to accommodate electrical, hand or dual firing styles.
- With each set up style, the fireworks and equipment are protected against moisture damage. Items are protected by covering with plastic sheeting. (This should be removed prior to ignition). Items that are subjected to excess ground moisture are protected by wrapping in plastic sleeves.
- Firework items are spaced and protected to ensure that one item emitting sparks or burning debris will not cause premature ignition of another.
- Wind direction and speed are closely monitored during set up, prior to and throughout the show firing.
  - Wind should be travelling away from the spectator location; this will carry burning embers and smoke over the fallout zone (which is clear of spectators).
  - If wind speed nears or exceeds 40 km/hr or if wind direction shifts and threatens to carry ascending fireworks over the spectator location, then firing must be terminated or postponed.
  - For weather reports or wind speed/direction information, the local weather office or airport may provide assistance.
- All items that are projected into the air should be angled 10-15° off the perpendicular and away from spectators or structures vulnerable to sparks and fire. A greater angle may be necessary in accordance with the prevailing winds.

## 11) Firing

A supervisor should always have an assistant at the firing site. This assistant should stand by and take action if problems should arise.

- All persons at the firing site should be outfitted with protective clothing. A hard hat, face protector, ear protectors, safety boots or shoes, and gloves are recommended.
- For hand firing the glowing end of the portfire must contact the firework match or igniter cord. In this case, the supervisor should protect him/herself from the dangers of fuse ignition sparks and the firework motion.
- For electrical or remote firing, the supervisor may distance him/herself from the firework ignition but still must be wary of the firework action or performance failure of an item.

- Regardless of the firing style, the supervisor and firing crewmembers should pay close attention to the fireworks as they are ignited and as they perform, as well as maintaining an overview of the display site.
- If a firework item has failed to ignite or perform, it is not recommended that the item be approached for at least 1/2 hour. A wet or broken fuse might cause a delay but firework ignition may still occur. After the required waiting period the problem item should be noted and reported and destroyed under supervised conditions.

### 11) Clean Up

- At the conclusion of the display, it is the responsibility of the supervisor and firing crew to fully inspect the firing site and surrounding area. The search should ensure that hazardous remnants (labeled "EXPLOSIVE") are collected, noted and reported and then destroyed under supervised conditions.
- A second inspection of the site should be made during daylight hours, to ensure that all hazardous debris was collected at the conclusion of the display.
- In accordance with the landowner's wishes the site should be restored to the pre-arranged conditions.

### 12) Show Report

Most display companies require a report that details all aspects of the display;

- The report includes product review and client feedback.
- Items that have failed to ignite or perform must be reported, so that an investigation and correction can take place.
- The show report provides historical data with regards to supervisor experience and display sites (set up problems and solutions).
- All reported information is invaluable in planning for future designs, systems, training and site recommendations.

### Things to Remember

- Hands provides expert services that range from design to special assembly and item selection, professional set-up, electrical or computerized firing and precision timing and thorough site inspection and cleanup.
- Hands manufactures a full line of "family" and "display" fireworks and supplies the necessary equipment and supplies for the safe discharge of their product.
- Fireworks display companies firing Hands product are located across Canada and are available for consultation with regard to regulations, safety procedures and product selection.
- Hands will provide design advice for organizations who wish to customize their display or basic firing chains for those who prefer to follow a suggested order.
- Hands has unparalleled expertise in the popular "pyromusical extravaganzas". Display fireworks may be choreographed to a musical theme and fired with pyrotechnic timing devices that provides precise synchronization to the musical broadcast.