

Introduction from the PGI Display Fireworks Operator Certification Course Study Guide

Copyright © 2019 by the Pyrotechnics Guild International, Inc. (PGI)

Introduction

Background

The PGI Display Fireworks Operator Certification Course, and this *Study Guide*, provide a background for and an introduction to display fireworks. The focus will be on the fireworks, equipment and methods typically used in the United States because the majority of those who will use this *Study Guide* are in the United States; however most of the basic information will be the same or similar to that in other countries as well.

Safety is the primary concern of all pyrotechnists at all times!

Artistry, economics, ease of setup and operation and other issues are important too, but they are secondary concerns to safety.

The PGI Display Fireworks Operator Certification Course and this *Study Guide* do not provide a comprehensive training program for display fireworks or pyrotechnic special effects. Such a program must include mentoring by qualified and experienced display operators in the field over many shows, at different venues, and involving a broad spectrum of fireworks, equipment and methods.

Qualifications

The qualifications to attend the PGI Display Fireworks Operator Certification Course are:

- The lectures for each course may be taken by anyone, including minors.
- The courses can be taken as often as one likes. Frequently people will take the course every few years to make sure they keep current and because it never hurts to review the basics. Retaking the course satisfies one of the recertification requirements.
- One must be 18 years of age or older to participate in the actual “live fire” demonstrations or to be an Assistant or an Operator at a fireworks display.

- One must be 21 years of age or older to become a Display Operator and to be licensed in states that require licenses.

To receive certification as completing the PGI Display Fireworks Operator Certification Program one must:

1. Attend all elements of the course, including the lectures and “live fire” demonstrations.
2. Score 80% on the course examination.
3. Be 18 years of age or older.*
4. Document previous successful experience assisting on at least 5 different fireworks displays, with at least 1 of these displays in the capacity of the Operator or lead operator while supervised by a qualified Operator.
5. Recertification is required every three years.

The written examination is based on the Chapters, Appendices and Glossary contained in this *Study Guide*, and consists of seventy-five questions with multiple-choice answers. You must choose the best answer of the choices to each question, although there could be more than one correct answer to any question.

Experience may be documented by completing the form found in the back of this *Study Guide*, or by simply sending a letter listing the date of each qualifying display, the type of work done by the applicant, and the name and contact information of the Operator(s). It is desirable, but not mandatory to have the Operator(s) sign the documentation submitted.

Completed application forms or letters should be mailed to the name and address on the application form with the request for certification. You may also request a certificate of attendance only. You must also note the date and location of the course you completed.

The Certification Director of the PGI may, at his/her discretion, delay issuance of the certificate attesting to completion of the training process pending verification of the documentation submitted.

How to Use this Study Guide

This *Study Guide* is just that, a guide to study. It is packed with a tremendous amount of information from a variety of sources so that anyone young or old, a rookie or an experienced pyrotechnist can look here for ideas or guidance. A comprehensive Table of Contents has been included to assist whenever one wishes to look up a particular subject and a thorough glossary for definition of terms, when needed, is included at the end of the text.

The *Study Guide* shows how to plan, set up, operate and clean up a fireworks display efficiently and safely, using the typical equipment, fireworks and methods available today. It reflects the collective experience of an entire organization, based upon the real world experiences of hundreds of pyrotechnists developed over time.

New developments in equipment and fireworks will lead to some changes, as will what is learned from real world experiences. In some cases what was the standard is changed as more information becomes available.

Most people will sit down and read this *Study Guide* a little bit at a time, rather than from cover to cover. This way they can read a bit and think about it before moving on. The margins are wide so you can write notes or comments in them and keep them in one place.

Many pyrotechnists have a binder or file folder with the regulations and standards inside that they take with them whenever they do a show so they have them available if needed. It is suggested that you take this manual with you whenever you do a show for the same reason.

The titles of people who are involved with a display will have their positions capitalized (Example: Operator, Assistant, Shooter) so it is clear who is responsible for what or who is doing what.

There are three different types of fireworks discussed in this *Study Guide* and the *Official Fireworks Safety Guidelines*:

- Consumer Fireworks
- Display Fireworks, and
- Pyrotechnic Articles (proximate pyrotechnics)

These are defined in the Glossary and you should refer there for the specifics of any unique terms.

The *Study Guide* will be used by a variety of people with a wide variety of fireworks experience. Some people may have never seen a fireworks display being set up while others may have been involved in hundreds or even thousands.

National Fire Protection Association (NFPA)

The National Fire Protection Association (NFPA) develops and revises the generally accepted industry standards for fireworks and pyrotechnic displays. They are:

- NFPA 1123, *Code for Fireworks Display.*
- NFPA 1124, *Code for the Manufacture, Transportation, Storage and Retail Sales of Fireworks and Pyrotechnic Articles*
- NFPA 1126, *Standard for the Use of Pyrotechnics Before a Proximate Audience.*
Other standards that contain information pertinent to fireworks and pyrotechnic displays are:
 - NFPA 160, *Use of Flame Effects Before an Audience*
 - NFPA 701, *Flame Propagation of Textiles and Films*
 - NFPA 306, *Control of Gas on Vessels*

Many state and local governments adopt these codes and standards in whole or in part, officially or unofficially. Given the importance of these documents many of the terms and recommendations in this *Study Guide* will mirror those found in the NFPA documents.

Please note: NFPA documents may set minimum standards without explaining how to meet them, so there may be some variations or inconsistencies.

The PGI and a number of our members have been involved in the development of these documents over the years, along with other fireworks organizations and federal, state and local regulatory officials.

The NFPA documents are copyrighted and are available for purchase. Current editions of NFPA 1123, 1124 and 1126 are strongly recommended as resource materials. For these (inquire as to cost) you may contact:

National Fire Protection Association (NFPA)

One Batterymarch Park
P.O. Box 9101
Quincy, MA 02169-7471
Customer Service: 800-344-3555
Telephone: 617-770-3000 Fax: 617-770-0700
Internet: www.nfpa.org

Conclusion

It cannot be emphasized enough that a great deal of experience must be acquired as one proceeds from novice, to Assistant, to Operator. You will learn something new or useful every time you participate in a display.

You should gain experience in as many site types as possible: fields, piers, barges, buildings and rooftops, bridges, etc. You should become familiar with both manual, electrical and computer firing, and with the variety of equipment for each, plus the wide variety of fireworks used in displays of all sizes and types. Even as an Operator, you will continue to master increasing levels of difficulty, complexity and artistry.

* Federal regulations currently require that you must be 21 years of age or older to be an Operator. Some states (e.g. South Carolina) require you to be 21 years of age or older for any crew role, or to be licensed.