

## GOOD READING FOR PYROS

*Lecture Notes for Fireworks Display Practices* ("Pyrotechnic Reference Series No. 3"), K. L. and B. J. Kosanke, published by *Journal of Pyrotechnics*, 2005, ISBN 978-1-88952617-1

### Reviewed by Tom Handel

The latest edition of this venerable work on fireworks and their display is in 8½ x 11-inch format, perfect bound with a clear plastic front cover. The "lecture notes" contained within are reproductions of portrait-formatted viewgraphs used by the authors to illustrate classroom presentations of the material. These are laser-printed, two side-by-side to a (landscape formatted) page, resulting in excellent quality graphics, easily readable text and good gray-scale reproduction of photographs.

It is important to note that although the contents of this work are accurately described as "notes pages" or "viewgraphs," this should not be construed to mean that they are at all cryptic, incomplete or contain just enough material to jog the memory of the lecturer. While the earlier versions of this work could in some cases rightly be so criticized, in this new edition each page of "notes" includes a full treatment of the salient points of the subject at hand in complete sentences or other easily-understandable format. The reader needs not worry about what material is "missing" as compared to the full classroom presentation.

The *Lecture Notes* were first published in this country in 1995 and revised in 1997. This new edition represents a major expansion and update, including the addition of 100 new notes pages, 125 new photographs, 40 new illustrations and 15 new data tables and graphs. Additionally, so far as is possible the content has been brought into conformance with the new NFPA-1123 (2006), the earlier work having been based on NFPA-1123 (1995).

The material in the book is divided logically into 16 sections or chapters which correspond to classroom modules. The first – and shortest – of these sections is perhaps one of the most important, covering pyrotechnic hazards and risks and their management. This material presents an excellent model and intellectual framework for use by the pyrotechnician in recognizing, understanding, evaluating and controlling risks associated with fireworks and fireworks displays.

Four modules are devoted to the characteristics, construction, performance, and malfunctions of aerial shells, providing a comprehensive overview and a great deal of detail on these most common of

display fireworks. This is followed by a single module covering the characteristics of all other display fireworks types in a more cursory but nonetheless adequate fashion.

Next are three modules on display site considerations, display equipment and mortar placement, followed by two modules on time- and chain-fusing techniques and repairs to damaged fireworks shells. Setup of ground and low level fireworks is next discussed followed by manual display firing procedures. At first glance, the fusing and repair modules might seem out of place in the sequence, but since these are activities frequently – if not exclusively – conducted at the display site they fit well in the surrounding context.

The final three modules cover basic electrical concepts, setup and safety considerations associated with electrically fired displays and electrical firing techniques.

The title of this work does not do it full justice. While there is no doubt that it contains much indispensable practical information about "fireworks display practices," and is hence well suited to the training of display operators at all levels from primary to advanced, there is really much more to it. This work is also an outstanding reference, containing as it does a cornucopia of knowledge and experimental data which is otherwise not easily obtainable. This information has been made readily accessible, even to those not technically inclined, through distillation into easy to read and easy to understand charts and graphs.

That said, it is not entirely without fault. Occasionally, the material wanders into what, to this reviewer, seems to be the excessively obscure. For example, a lengthy and otherwise excellent discussion of mortars, mortar types and their relative merits includes dissertations on the characteristics of (e.g.) ABS (Acrylonitrile-Butadiene-Styrene) and PVC (Polyvinyl Chloride) which are every bit as detailed as the discussions of HDPE, and heavy steel. Although interesting as background and perhaps included for the sake of completeness, this seems to be more attention than they deserve as this reviewer has never encountered mortars constructed of these materials on a professional display site (though perhaps I've led a sheltered life).

Another minor fault is the lack of an index, which renders it more difficult than necessary to find particular specific information easily. Although the idea of indexing viewgraphs might seem strange, modern software exists which can relatively easily index nearly any textual material. A good index

would make a very welcome and relatively simple addition to the *Lecture Notes*.

Taken as a whole, there are few involved or interested in any aspect of display fireworks, from display company managers to junior display operators, from regulatory and law enforcement personnel to hobbyists, who will not find material of utility and interest in this publication, and it has my recommendation. The scope and extent of the update which has occurred since the last edition of the *Lecture Notes* make this an acquisition well worth considering, even if you possess an earlier version. TH