

Simultaneous Theater Reproduction of Four Languages

By LORIS M. GARDNER

Presentation of the scientific films which were prepared for the Atoms for Peace Conference at Geneva required multilingual sound. In order to provide a sophisticated performance, a four-theater complex was planned to present each film with simultaneous sound in the four official languages. Planning which led to the selection of the method is discussed.

IN ARRANGING AND PREPARING the films presented at the Atoms for Peace Conference in Geneva, a strict dividing line was drawn between films for entertainment and scientific films. It was felt that any attempt at entertainment would detract from the serious purpose of the technical films. Effects were used only for the purpose of enhancing or clarifying the content of the film and the use of music was limited to title and finale. Each film was carefully inspected to make sure of the scientific accuracy of the content.

The films program covered such general areas as reactor technology, high-energy particle accelerators, and controlled fusion. Most of the films dealt with reactor technology and covered such subjects as fuel fabrication, research and power reactors, medical reactors, chemical processing, tracer diagnostics, brachiotherapy and teletherapy. A 30-min film told the story of the high-energy accelerator program in the United States, and a 55-min film on controlled fusion, based upon the Sherwood program, told the story of controlled-fusion experiments in America.

The selection and preparation of 45 films (90 reels) within a year demanded detailed planning. It was necessary to schedule reviews close to deadlines in order to assure that the films were suitable for showing at Geneva. The following steps were used in review: review of outline and rough script; review of narration script; check of the rough cut; check of the answer print; and final reproduction and sound transfer.

Special attention was paid to the visual and narration script. Each script was reviewed by a technical advisor either from the Atomic Energy Commission or from the staff of one of the National Laboratories. One of the members of the film branch worked with the advisor on the reviews. In unusual circumstances, where borderline information was involved, the technical director of the Office of International Conferences reviewed the

script, the rough cut, or the answer-print. These were detailed reviews, in which words were weighed and paragraphs often rewritten to correct faulty narration. During the period of rough-cut check and answer-print check, it was necessary for film branch personnel and the technical advisers to travel widely. Some of the best material originated on the Pacific Coast and was reviewed there. In many cases makers of the films were requested to make last-minute changes, and the transmission delays were frustrating, but the producers all cooperated to a remarkable degree.

As originally planned, the release print preparation would have been identical to that used in the first Conference at Geneva. By this method four release prints were made and each optical soundtrack contained a translation of the narration for the film in one of the four official United Nations languages. This plan was discarded because of the expense of four release prints, plus back-up prints in each of the languages, and also because the use of an integral or interlock sound technique would increase the film showing per minute of viewing time by a factor of three. It was decided that an integral or interlocked system would be economical and, at the same time, achieve a higher degree of sophistication. An internationally recognized expert, Ellis D'Arcy, was retained to survey the field and to make recommendations. His basic recommendations were used as outlined below.

The General Plan

First, a 35mm projector was to be provided for projecting color release prints with conventional CinemaScope magnetic striping, the sound record being reproduced by a CinemaScope penthouse head. Four small theaters were planned, seating about 12 to 15 people. According to the plan, the projector would beam the visual via a front-surface mirror upon a back-projection screen of a special design and the language could be selected by the viewer by means of selector switches installed in a chair-side pillar. The volume could also be controlled from the chair. The only major change from the original suggestions was the substituting of 16mm for 35mm projection,

and the use of an interlocked rather than a single system. This change was made necessary because of the cost of enlarging many existing films from 16mm to 35mm and, since the screen would have a maximum area of 30 in. by 40 in., the resolution gain from the 35mm format would not be fully realized. For these reasons, it was decided to use 16mm methods.

The field was surveyed to discover methods which were presently available to provide an integral language reproduction with the visual of a 16mm film. The use of the new multitrack integral system devised by Auricon was suggested. A prototype system, consisting of a four-channel magnetic soundhead fitted to a JAN projector and driven by a four-channel amplifier was demonstrated. The four-head sound system operated within the width of the normal 100-mil stripe on the 16mm release Kodachrome print. The system worked well, and, if it had not been that it was, at that time, a prototype it would have been selected for use overseas. It was considered risky to use a prototype system in a site remote from the producer of the system.

It was finally decided to interlock a projector and a magnetic film reproducer, which would have four languages recorded upon it and four heads reproducing. In the ensuing months, Magnasync Manufacturing Co. made four reproducers and one recorder-reproducer interlocked with RCA projectors. The system was engineered by the Lytle Corp. which also contracted to provide operation and maintenance at Geneva.

Presentation

Two types of scientific films were planned for the Atoms for Peace Conference. First, there were "program"-type films that were presented to the United Nations for their showing in their Salles de Cinema. Ranging in viewing time from 20 to 55 min, they were planned as a survey of the entire subject rather than a study of a detail or process. By an arrangement with the UN, the four-channel sound reproduction was used in these films, as well as in the shorter films which were to be shown as one of the United States exhibits. The UN asked that the office of the International Conference establish a standard which would define the parameters of the four tracks upon the magnetic film. In cooperation with Lytle and Magnasync, this standard was established so that the films prepared in the United States and recorded upon the United States recorder, could be played back upon the United Nations re-

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producer. In spite of the fact that the UN machine was procured from a different source, arrangements with Stancil-Hoffman Co. insured that the recorder and reproducer matched. As it turned out, the sound reproduction resulting from the use of this method in Geneva was very satisfactory. Other nations supplied their films narrated in their own languages.

The UN used an interesting method in interpreting and translating the narration from the films of other nations into the four languages. They were all recorded at the same time on the four tracks as a simultaneous interpretation. Four interpreters, provided with a reference script, viewed the film and interpreted the narration as if they were interpreting the speech of the speaker on the podium. This was quite successful, although a time lag was apparent.

It is pertinent at this point to mention that the Russian exhibitors prepared five-track CinemaScope film in English, French, Russian, Spanish and German of their presentations on 35mm film and provided two 35mm American CinemaScope machines. During its first testing, it became apparent that the perforation on the film did not accurately match the sprockets in the penthouse head, causing multiple breaks in the film and tie-ups in the machine. Howard Tremaine, act-

ing as our expert in Geneva, was able to help indicate a solution for this problem.

Since the UN had many films to present, a three-time showing of each of the films during the period of the conference was all that could be assured. Later, additional showings of these films were requested, and with permission of UN authorities we obtained the films and showed them in our own four small theaters.

The four theaters extended across a short side of the balcony of the exhibit hall. Each contained 14 chairs, each chair equipped with a control box on a pillar. This control box allowed the viewer to select any one of the four official languages, and to adjust volume of the track. The headphones were the conventional type, such as are used in radio work, so that complete exclusion of room noise could be obtained. The theaters were well designed and the chairs were comfortable. Back-projection screens provided brilliant high-resolution pictures. The projection rooms were staffed by four men and a supervisor. Later, it became necessary to run longer periods of time each day because of the popularity of the exhibit, so another projectionist and two part-time assistants were added to the staff.

Techniques were developed to allow

one person to operate two of the projectors and reproducers. This was possible only if one of the longer films was one of the two films being projected.

The other type of films were the short ones called Vignettes. They were extremely popular, both as to the character of the films and the method of presentation, which was called the Multivox system. Requests for rental or purchase of these films ranged from the entire selection of 90 reels to selected films, and came from many countries throughout the world. Libraries are now set up in Europe, and are planned for Asia and South America. The rigid scientific approach was pleasing to almost every one of our audience.

The number of persons in the audience during the period of the show totaled 15,186; total number of film showings was 1287. The magnitude of this effort may be appreciated by the fact that the small theaters each contained 14 seats and the average film run was about 12 minutes. The number of times that each film was shown varied from a minimum of five to a maximum of 119. The average was about 50. The film that was shown only five times was entered too late to include in the catalog. The film that was shown 119 times was *The Industrial Applications of Nuclear Explosives*.

A Multilingual Audio-Visual System

An audio-visual system has been designed with a 16mm rear-projection system, electrically interlocked with a 16mm magnetic film reproducer which carries a four-language soundtrack. A selector switch and headphones at each seat in the auditorium permit the auditor to select the desired language.

AS PART OF the United States participation in the Second International Conference for the Peaceful Uses of Atomic Energy at Geneva, four small theaters were constructed for showing 16mm films on the use of atomic energy in scientific and industrial applications. The theaters, built by Lytle Engineering and Mfg. Co., of Culver City, Calif., under a contract with the Atomic Energy Commission, were constructed in a semicircle and utilized a common projection area.

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Each theater (Fig. 1) contained 14 to 16 seats and a rear-projection system with separate facilities for reproducing the soundtrack from a 16mm magnetic film in the four official languages: English, French, Russian and Spanish. Selector switches at each seat permitted selection of the desired language.

The rear-projection equipment consisted of a metal framework supporting an RCA Model 400 16mm projector at one end and a front surfaced mirror at the other (Fig. 2). The picture, projected onto the surface of the mirror, reflected to a polarized-type screen (manufactured by Polacoat Inc.) to permit viewing in a high ambient light level.

A projector control box mounted at the rear of the projection stand contains an interlock switch for electrically interlock-

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ing the reproducer and projector motor systems, a pilot light to indicate when the system is in lock, and a start-and-stop switch. Two coding-decode switches associated with a go-no-go control system prevent the projectionist from inadvertently threading the wrong soundtrack. The go-no-go system may be bypassed, if desired, by a switch on the projection control box.

A decoding device which is part of the go-no-go control system, is mounted between the supply and take-up reels on the reproducer transport systems. The decoding device houses a group of microswitches which control the motor starting circuits. The placement of the decoder with reference to the threading path of the reproducer is shown in Fig. 3.

Figure 4 shows how the go-no-go code is punched in the leader of the magnetic soundtrack. The soundtrack to be coded is threaded through a special punching device containing a group of holes in its upper portion, representing 0 to 9 and 0 to 90. In practice, all holes *except* the desired code numbers are punched in the