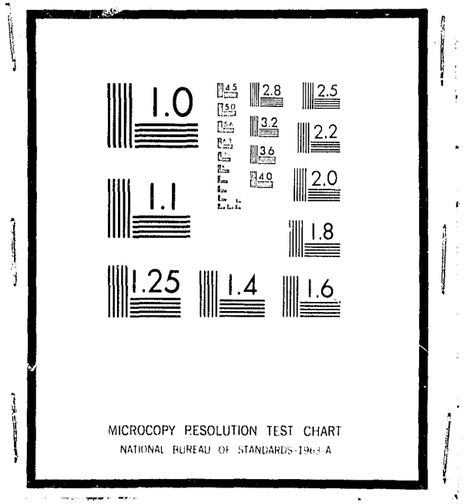

December 30, 1974
2.2

FINAL REPORT

DEVELOPMENT AND EVALUATION OF

FIRE ARMS TRAINING

JANUARY 1, 1971

TO

SEPTEMBER 30, 1974

This is the final report covering the progress of LEAA discretionary grant number 71-DF-572, Development and Evaluation of Firearms Training (DEFT), during the period from January 1, 1971 to September 30, 1974. Much of this report is a recapitulation of the quarterly reports previously submitted. Items not discussed fully in the quarterly reports will be discussed in depth in this report.

PROJECT GOALS

In 1969, with the construction of a new police training facility imminent, the Los Angeles Police Department determined to assess its training program and to explore the possibilities of adapting recent innovations in instructional technology for law enforcement training. It was found that traditional teaching methods had been stressed to the point that they might no longer meet the demands for training imposed by the dynamic nature of law enforcement and the acquisition of new personnel.

As a result of a previous study, the Department has adopted a new approach to the training of Police Officers which is based on self-paced, individualized multi-media instruction, allowing each trainee to proceed at his own pace. Various types of training materials such as films, slide-tape presentations, programmed instruction tests, and student workbooks are used as well as increased simulations and role playing.

Firearms Training was one of the areas of prime consideration which arose from the Training System Study. The DEFT grant was awarded specifically to develop advanced training in this field.

Through preliminary investigation by the Los Angeles Police Department, it was learned that an officer may not exercise best judgement in stressful field situations if he is not confident of his ability to successfully control the threats he perceives in these situations. Hence, shooting training must build the confidence of the individual officer to increase his resistance to the negative effects of stress, as well as acquaint him with the mechanical procedures of firing his weapons. This is accomplished by requiring each officer to repeatedly perform in simulated stressful field situations and by providing him with immediate feedback as to his success or failure.

The eventual goal of this project is to design and equip a facility where police officers may use their firearms in simulated stressful field situations. Decisions made by officers in these simulations will be coupled with immediate success-failure feedback. In addition, multi-media training packages have been designed and produced for the non-simulated portion of Firearms Training. The project was developed in three phases: Research, Design, and Production and Validation.

PLANNED APPROACH - Development Phases

Phase I - Research

Phase I, Research, consisted primarily in gathering the information necessary for the design of enactments for recruit training, and was sub-divided into six tasks:

1. Determination of Department Shooting Policy: Operational definitions of written policy would be developed and compiled.

2. Determination of Legal Requirements: Limitations, responsibility, and liability would be determined for the discharge of firearms by a peace officer.

3. Establishment of Shooting Performance Standards: Standards for determining the effectiveness of simulated shooting situations would be established, based on relationships between Department shooting policy and legal requirements.

4. Collection of Shooting Situation Data: Department shooting records and reports would be scrutinized, and critical incidents of shooting situations (or near shooting situations) compiled.

5. Analysis of Shooting Situation Data: Collected critical incidents would be categorized into classes and the relative characteristics and frequency determined.

6. Selection of Shooting Situations: The selected shooting situations, together with related descriptive material and performance effectiveness

standards, constituted Phase I completion. This material would be used in Phase II to develop multi-media training packages and the Firearms Training Facility, and to conduct experiments to determine the essential characteristics of a firearms training program.

Phase II - Design

Phase II, Design, would essentially develop simulation scenarios for each shooting situation selected, incorporating the following:

1. Conditions which are necessary to structure the shooting situation for the role playing officer.

2. Appropriate responses: e.g., whether or not the officer should draw his weapon and, if so, when to use it.

3. Resolution of the situation, if allowed to continue without action on the part of the officer; e.g., suspect shoots.

4. Officer's correct response time.

5. Critical clues.

6. Scenario for each situation.

7. Script for each situation, in accordance with the scenarios.

In addition, requirements for a shooting simulator would be determined, and design activities begun. It was probable that an outside contractor would build the actual simulation device and produce some of the supporting materials necessary for the simulator to operate, necessitating bid and contract activities as part of Phase II. However, material of a sensitive or confidential nature would be produced by the Department.

Phase III - Production and Validation

Phase III, Production and Validation, was to be divided into two major portions. Production would involve the preparation of film versions of the scenario scripts, with alternate

versions of each situation as appropriate for testing purposes. Design and construction of a shooting simulator would also be undertaken, with the device having the capability to present filmed sequences and permit a trainee to draw and fire his weapon as appropriate. A sensing mechanism coupled physically or electromagnetically with the officer's weapon would detect and record the point in the film frame sequence at which the officer fired his weapon, with instant feedback capability. A series of validation experiments would be performed using recruit trainees and, where appropriate, in-service trainees, to ensure the effectiveness of the proposed training program. This would be accomplished by measuring the degree to which trainee performance meets the standards of the applicable Terminal Performance Objectives (TPO's).

ACCOMPLISHMENTS

Although the major task of the DEFT project was the construction of a shooting simulator, considerable effort was directed to other aspects of firearms training.

The Los Angeles Police Academy overall training program utilizes multimedia classroom methods (MILE - Multimedia Instruction for Law Enforcement) and simulated "field" situations when appropriate. In conjunction with the DEFT project, scripts were written on subjects concerning service revolvers, shotguns, and the Department's shooting policy. Following approval of these scripts, they will be video taped for use in the MILE program. These tapes will inform the recruits on subjects of care, cleaning, and safety aspects of the weapons as well as the official Department attitudes regarding their use.

In reference to the technical or mechanical aspects of firearms training, the Department designed and constructed a field problems range. The Field Problems Range is comprised of five mini-ranges, each depicting a simulated field situation. Each mini-range or problem is equipped with pop-up or moving targets and gunshot sound effects controlled by an instructor. As a trainee approaches a problem he is briefed by the instructor regarding the information he would receive in the field (i.e., radio call, information by citizen, etc.). The trainee then moves into the situation and the instructor exposes the targets. The student and instructor later critique the student's performance not only in terms of accuracy but for his choice of cover, logical response to fire, reloading speed, awareness, etc.

necessary extension of the grant and contracts were achieved. Because of this delay and late deliveries of equipment to both the City and the contractor, extensions of grant period and contract were necessary. On September 30, 1974, the liquidation of encumbrance period came to a close. The City terminated the contract with SI&D on September 15, 1974, to provide time to process invoices prior to September 30.

SI&D accomplished the majority of contractual tasks before termination of the contract and requested permission to continue work on the project for 90 days. Prior to the contract termination SI&D completed the following tasks:

1. Designed and constructed the projection screen in accord with the selection of the optimum projection technique;

2. Conducted a search for "off the shelf" equipment: projection optics, projector, audio system, video systems, infra-red systems, computer and related subsystems, etc.;

3. Developed subtense tables as related to the "taking geometry" for the enactment filming and produced the filmed enactment;

4. Delivered, as unique items, control consoles, projection screen, marker generator, impact advisory panel, interface system between computer and advisory panel, sensor correlation interface, and the filmed enactment.

SI&D failed to complete the following contractual tasks prior to termination:

1. Post-delivery check out of system;

2. Training of L.A.P.D. staff including training manual, presentation material, and functional demonstration;

3. Assessment of system performance;

4. Final total system check-out;

5. Interfacing of infra-red subsystem and computer for hit assessment;

6. Delivery of specifications for City purchase of memory disk for computer systems and other necessary computer assessories;

During the "shake-down" of familiarization period, experienced field officers were exposed to the range. Their response was enthusiastic and they expressed a desire to have all field officers go through the field problems range training. Arrangements are being made to train all the Department's sworn personnel on this range.

The major task of the DEFT project was to build a prototype shooting simulator wherein, a trainee could be exposed to a motion picture of a simulated situation in which he may have to use his service revolver or shotgun. The trainee's actions and shooting accuracy would be video taped for critique purposes but there would be immediate feedback regarding his shooting accuracy.

The simulator building was constructed by the City's Bureau of Public Buildings at the Police Academy. The Department went to a private contract to develop the technical or operational portion of the simulator.

The Department contracted with System Innovation and Development Corporation of Palos Verdes Estates, California (David T. Liu, president and principle engineer on the project), to complete the simulator. Under the contract, SI&D would do the following:

1. Develop specifications for necessary "off the shelf" equipment to be purchased by the City;

2. Supply unique items (impact resistant screen, subsystem interface circuitry, impact assessment board, etc.);

3. Produce and deliver one filmed enactment of a simulated potential shooting situation;

4. Develop the computer program and interface all subsystems to make the simulator operational;

5. Develop specifications for the wax projectile to be used in the simulator.

Because of restrictions imposed by the California Council on Criminal Justice (now Office of Criminal Justice Planning) the Department could not enter a sole-source contract whereby SI&D would provide "off the shelf" equipment as well as the unique items. As a result, delays were encountered because of the City's purchasing process. These delays set the entire project progress back and the

7. Delivery of operating and maintenance manuals.

At the time of this report, SI&D has not given a functional demonstration of the simulator. However, Mr. Liu is still working on the project and since the termination of his contract with the City, he has expended much of his own time toward the simulator completion. He has also purchased, at his own expense, equipment necessary for the operation of the system. He is doing this at no expense to the City.

Upon completion of the project or in case of any significant related incident, a supplement to this report will be submitted.

PROBLEM AREAS

The initial draft contract between the City and SI&D would have required SI&D to purchase any equipment necessary for completion of the simulator including "off the shelf" items. Such provision would not require any bidding process. The California Council on Criminal Justice (now Office of Criminal Justice Planning) reviewed the contract and rejected it stating that the SI&D must submit specifications for "off the shelf" items to the City. The City would then have to purchase the items through normal bidding procedures. This demand by CCCJ necessitated the rewrite and review of the contract, a time consuming exercise during an era of increasing costs. More important than the delay of the contract is the problem of delays, resulting from the City's routine bidding process. These delays, coupled with delivery problems, created longer delays in the development of the simulator system. Had SI&D been permitted to purchase all the equipment under a sole source contract, the expense would have been less because of the rapid price increases. Also, SI&D may have been able to deliver a system in a more timely fashion.

END