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QUARTERLY TECHNICAL PROGRESS REPORT

1 November 1970 - 31 January 1971

Technical progress in this period was as follows:

- 1) Acquisition and review of applicable reports and data,
- 2) Preliminary organization of a systematic approach to the problem of personnel incapacitation, and
- 3) Two ad hoc evaluations of proposed incapacitation systems.

1. Thirty-eight unclassified and twenty-five classified documents are now on hand, covering a wide range of electrical, chemical, sensory and physical means of restraint or behavior control. Each of these documents has been screened by one or more staff members.

2. On 18 November 1970, a report on an [] flashblindness simulation proposal was forwarded to [] It was concluded that it might not be possible to extrapolate the proposed simulation results to levels of flash intensity that would be useful operationally. The risk of permanent eye damage at high light levels, furthermore, would not be clarified by the tests. The performance tasks proposed were not detailed sufficiently to determine their relevance to real situations. Several operational drawbacks of the flash blindness technique itself were pointed out, for example, the critical positioning of flares with respect to the subject by reason of the inverse square law, and the limited usefulness during the daytime, and the conspicuity of the technique at night. The short time of effectiveness makes this technique more useful as an adjunct system than as a primary behavioral control technique. Primate studies were suggested as a means of establishing damage thresholds and performance decrements under actual (rather than simulated) flash conditions.

3. On 31 December 1970 a memorandum on the [] non-lethal electrified net system was forwarded to [] Unfortunately, the data provided by the manufacturer are not completely explicit. Based on certain assumptions

about the device, it was concluded that a) under some conditions the [] could cause partial incapacitation by paralyzing the subject's arms; and that b) it would be unlikely to kill healthy people. Disadvantages of the system stem from the extreme variability of the skin resistance factor -- depending on surface contact area, humidity, body sweat, etc., the likelihood of the net shorting itself out, the ineffectiveness against fully clothed subjects (who might even be wearing gloves), and the probability that the subject, even though his arms were immobilized, could still run and free himself from the net. The effectiveness of the [] therefore, is open to question. A rough circuit diagram of a device which fulfills the specifications of the [] was prepared.

4. Consideration has been given to a systematic approach to the incapacitation problem. There is a spectrum of situations or scenarios in which immobilization or restraint systems would be desirable. These range from a situation in which there is a single assailant (such as a hijacker) who must be subdued in the presence of a large number of innocent bystanders, to a one-to-one confrontation between individuals, to an individual (such as a diplomat) or small group surrounded by a large hostile crowd, to a full-scale riot situation. Each of these situations has different technical requirements for an optimum system.

Incapacitation systems can be categorized in several other ways. They may be grouped according to the general method used:

Psychological

Impact

Chemical

Sensory

Restraining

Electrical

or they may be categorized according to the agent employed

Projectiles

Bases

Sound

Light
Shock wave
Nets
Bolas
Polymers
Drugs, etc.

Regardless of what type of device is used, certain attributes of each system need to be considered, as they apply to different scenarios:

Degree of incapacitation
Delivery System
Length of incapacitation
Speed of action
Requirement for antidote
Residual effects
Lethality risk
Risk of system failure/countermeasures
Range
Covertness
Suitable for individual (or group)
Safety of user
Size and weight
Environmental requirements
Shelf life
Training requirements

Plans for future work

Definitive work on a systematic evaluation of known and promising personnel incapacitation techniques awaits a conference with [redacted] tentatively scheduled for March, 1971.

The following steps will be taken in the meantime:

1) Literature search will be carried out as follows:

[redacted] Document Collection

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Document Library (computer search)
Medical Library
Library and

Medical School Library

- 2) Schematics for a type device will be forwarded *
- 3) An evaluation of a patent of an electrified projectile will be forwarded *



* These reports are enclosed

