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QUARTERLY TECHNICAL PROGRESS REPORT

1 February 1971 - 30 April 1971

Technical progress in this period was as follows:

- 1) Submission of possible schematics for a [redacted] type device.
- 2) Evaluation of a patent of an electrified projectile.
- 3) Completion of literature search of the following libraries:

Document collection
Document Library
Medical Library
Library

Medical Library
Police Academy Library

- 4) Presentation of a group of status reports to the Project Monitor during his visit [redacted] on 20 April 1971. The items presented were:
 - a) a general outline of the Behavioral Control Support programs to date.
 - b) a summary of the Behavioral Control literature review
 - c) Brief descriptions of several real-life situations and possible incapacitating agents applicable to each (preliminary only)
 - d) Suggestions for future activities under Behavioral Control Support Project.

1. This report was submitted on 12 February 1971. The possible schematics for the [redacted] are essentially:

- a) an auto ignition system and
- b) a DC to DC converter

An output voltage of only 4000 volts is specified in the postulated system (as opposed to 20 Kv for the [redacted] system) because of the extremely short battery

life and arcing problems that would exist with the higher voltage system.

2. U. S. Patent 3, 523, 538 describes an electrical shock-producing projectile. The projectile would be incapable of producing the "false epilepsy," as claimed by the inventor, would have a limited range, and besides being ineffective it could possibly harm the victim.

3. A description of the literature search is given under 4(B).

4. The status reports presented to the Project Monitor will be found in attachments A, B, C and D.

BEHAVIORAL CONTROL SUPPORT

General Outline of Program

1. Review Literature

- | | |
|---------------------------|----------------------------------|
| a) Police and criminology | c) Patents and proposals |
| b) Medical and scientific | f) Science fiction, comics, etc. |
| c) Military | g) Other |
| d) International | |

2. Describe the factors which constitute the generalized conflict/control situations of interest:

- a) number of antagonists
- b) number of protagonists
- c) intensity range of hostilities (actual or predicted)
- d) time scale
- e) location/mobility/environmental factors
- f) availability of additional support
- g) effects desired
 - i) offensive (calm, disperse, arrest, subdue, incapacitate, immobilize)
 - ii) defensive (avoid hostilities, self-protection, escape/flight)

3. Prepare brief, representative real-life situations to serve as examples and help generate ideas:

- | | |
|--------------------------|---|
| a) Surrounded automobile | d) the crowd |
| b) Lone individual | e) Pursuit |
| d) The snatch | f) Protection of individuals and property |

4. Study available and proposed weapons/devices and strategies in light of desired effects and user-criteria dictated by various situations.

5. Compile lists of as yet undeveloped devices/weapons and recommend design and bench testing of those judged most valuable. Some possible examples:

- a) [or similar agent for rapid, transcutaneous administration of drugs
- b) Synchronized strobe lights and sound stimuli at critical frequencies
- c) Various undetectable (or subthreshold) physiological insults
- d) Low-velocity, high-mass, low psi projectiles: "jet-propelled medicine ball"
- e) []

6. Respond to ad hoc requests for evaluation of concepts, proposals, patents, etc

- a) []
- b) []
- c) Japanese patent
- d) Others

BEHAVIORAL CONTROL LITERATURE REVIEW

To date, our search for behavioral control literature has included the following local libraries, all of which yielded some information:

Department

- document library
 - medical library

- general library
 - medical library

Police Academy

The original 50 documents received at the start of the contract have been thoroughly reviewed by Drs. / Those publications, by nature of their pre-selection, pertinence and variety, are still the core of our incapacitation literature. Several of them were used in a pilot run in order to devise the evaluation form, shown in Attachment A. This form will be used later to provide quick reference to factors from selected proposals and techniques.

In February 1971, all the literature then in our possession was screened for bibliographic references to other works. A master list was made, from which library searches were conducted. By March it had become obvious which material was not available locally, and those items remaining on the list were then ordered through the / (28 unclassified documents) or through Washington (26 classified items). As of April 19, sixteen unclassified documents were still on order, along with the classified material.

The library work also included a search of card catalogs and indices of ~~abstracts for 33-40 pertinent topics~~, as well as a search of recent volumes of approximately 15 journals. All of the locally available literature has been procured, cross-indexed, screened and filed (the cross-index categories are given in Attachment B). The collection consists of 135 items at this time.

Conclusions

Our literature search has been comprehensive enough to draw the following conclusions:

1. As expected, the open literature does not mention any innovative hardware which could be easily adapted to our purposes.
2. The greatest concentration of published material has been in the categories of light (flashblindness), sound (all frequencies), electricity (shock, electronarcosis, electromagnetic radiation) and chemicals (drugs and gases). Very little open literature is available on biological weapons, odor, temperature, vibration or applicable psychological methods of incapacitation.
3. It appears that certain gaps in the literature can be filled only by obtaining classified documents through Washington.
4. The police literature is mainly concerned with riot control. The police appear to be the recipients rather than the initiators of research into new techniques of behavioral control.
5. Our group now has a broad and general conception of current incapacitation devices and techniques. The most profitable course for further search of the literature would be to narrow our fields of interest (as proposed in the program for the coming months), and collect information in those specialized areas.
6. An ongoing, general survey of published material concerning personnel incapacitation will be maintained ~~regardless of the focus or direction taken in our future program.~~

Reviewed By: _____ Serial No. PI- Doc. No. _____

Date: _____ Title _____

Techniques: _____

Incapacitation degree of _____

length of _____

Speed of Action _____

Residual Effects _____

Lethality Risk _____

Dependability _____

Countermeasures _____

Range _____

Delivery System _____

Size/Weight _____

Covertness _____

Shelf Life _____

Safety/Training of User _____

Individual vs. Group _____

Environmental Dependence _____

Public Image _____

Remarks:

Scenarios:

Attachment A

UNCLASSIFIED

Attachment B

CROSS-INDEX CATEGORIES

- AD number
- Authors
- Bibliography
- Biological
- Central Nervous System
- Chemical
 - drugs
 - gases
- Electrical
- Facilities
- History
- Impact
- PI- number
- Proposal
- Psychological
- Restraining
- Sensory
 - light
 - odor
 - pressure
 - shock
 - sound
 - temperature
 - vibration
- Theory -
- Titles
- Tolerance/Antidote

REAL-LIFE SITUATIONS

Surrounded Automobile (Diplomat; Police; Stop and Search)

This situation entails one or two individuals inside their car, surrounded and outnumbered by a hostile group, in a potentially unfriendly environment such as a foreign country, riot area or inspection checkpoint. The confined space of the automobile can be an asset and must not become a trap. Pre-installed incapacitation equipment can be utilized providing the individuals remain in their own car, otherwise portable equipment would be required. The least amount of force needed, either to calm the hostile group or to make a "getaway," would be highly desirable from the standpoint of good will; trying to calm the group can be expected to consume more time than getting away by car from a group which is on foot. Safety for innocent bystanders may be of limited concern.

Incapacitators

persuasion (loudhailer)
lures (hand-outs etc.)
dyes
stench
tear gas;
aerosols; skin penetrants
car-top sprinkler
fire extinguisher
blown sand, heat or smoke
marshmallow barrage
extendable booms: with oil, foam,
bubbles, chemicals, smoke
~~extendable rotating sticks~~
car-top light
loud sound
insects (released outside car)
slick ground surface
electrified car

Protection*

bullet proofing
ear defenders
electric ground
gas mask
goggles
independent air supply
sealed car

* Protection is for the operators; some items listed could also be used by antagonists as countermeasures.

Lone Individual

Perhaps the most vulnerable situation is that of a single person who may have numerical odds against him, with no vehicle nor any other source of aid, who must protect himself outdoors. His immediate need is for small, unobtrusive equipment (and possibly protective gear) which he can instantly utilize and rely on for complete incapacitation of his-assailant(s). If the general environment is unfriendly, he may need to re-use the equipment in order to reach safety.

Incapacitators

stench
 smoke screen
 combined smoke and gas
 tear gas
 aerosols; skin irritants
 impact balls that break:
 smoke, stench, Mace
 darts with drugs
 marshmallow barrage
 raffy pellets
 night stick/baton
 shock
 karate/judo
 stun gun
 big net
 adhesives
 bolas
 slick foam (sprayed or hurled)
 heat-seeking device to trip, tackle
 lead sound
 light
 instant barrier
 radio-controlled barrier

Protection

bullet-proof vest
 car defenders
 gas mask
 goggles
 inflatable plastic helmet
 inflatable plastic shield
 pocket bicycle

The Snatch

In this situation the advantage is with several persons who wish to incapacitate one or two others, in an outdoor environment such as a war zone. Because the operation must be swift and perhaps surreptitious, it may well be nocturnal. Protection of bystanders or property is probably unnecessary. Incapacitation techniques must be fast-acting, may require protection for the operators, and should leave the victim in a subdued but moveable condition. Any devices used should be portable or -- if the location is known beforehand -- deployable.

Incapacitators

instant barrier fence
 radio-controlled barrier with heat,
 light, smoke, stench
 plastic cocoon
 taffy pellets
 nets, snares, adhesives
 darts with drugs
 water hose
 karate/judo
 dogs
 night stick/baton
 dyes (including infrared)
 chemicals/smoke
 tear gas
 Mace
 aerosols
 blown sand, dust
 swarm of insects
 sound
 night

Protection

beekeeper's suits
 camouflage suits
 ear defenders
 gas masks
 goggles

The Crowd

Behavioral control of a crowd is probably the most complex situation to be considered. Many individuals, potentially hostile as a "mob", must be controlled but not particularly harmed. In addition, fringe participants and adjacent property should be protected. A primary method of control is through dispersal of the crowd, which means they must retain their mobility to some degree. Techniques of control which allow gradations of intensity of action and an expandable time frame are recommended. Methods of control are more limited if the crowd is gathered indoors. Devices should be portable although their deployment beforehand may, in some cases, be possible, and pre-installed devices on official vehicles may be available. Overt techniques have positive and negative aspects: they may intimidate the crowd or they may become targets for the crowd's hostility. Selective incapacitation of the crowd's leaders is an effective technique. The operators in this situation often consist of a large, trained group such as the police; in any case, safety of the operators may depend on their protective gear.

Incapacitators

lures (spectacle elsewhere etc.)
 rumor control/oratory
 loudhailer (persuasion - drowning
 noise - synchronized sound)
 synchronized strobe + sound, pulses
 robot rovers that emit flashes, heat,
 chemicals, smoke, stench, or
 broadcast
 extendable beams that emit same
 light
 foam; foam grenades
 bubbles
 slick surface/oil
 stench
 dye
 smoke
 chemicals: tear gas, Mace
 balls that break, emitting chemical
 aerosols
 drug darts for ring leaders
 car-top sprinkler
 night sticks/batons

marshmallow barrage
 nets/snares
 barricades
 dogs/horses
 insects

Protection

beekeeper's helmet
 ear defenders
 earphones
 gas masks
 goggles
 rubber boots

Pursuit

This situation may follow that of the "Surrounded Automobile:" one or two persons in a car are being pursued by the occupants of another car, in what must be considered an unfriendly environment. The advantages to be exploited are: maneuverability of the vehicle (to utilize wind direction, for example); pre-installation of devices; protection afforded by the car's own shielding. Devices should be covert when not in use, quick acting because the pursuers may have lethal weapons, and capable of stopping the chase. This may be accomplished by: incapacitating the following driver, immobilizing the pursuit car, obscuring its path, barring its path, or disguising the operators' car or occupants. Re-use of the chosen techniques may be required if more than one vehicle joins the pursuit.

Incapacitators

Protection

- license-plate change
- external change in car's color, etc.
- pop-up people in lead car
- smoke screen
- blown sand
- paint on windshield
- foam (on road or windshield)
- oil slick
- light beam (nighttime)
- instant barrier
- wire across road, about 48" high
- extendable boom (if close behind)
- pop-up deterrent shapes
- tetrahedrons
- nails strewn on road
- rolling shapes strewn on road
- rolling barrier attached by wires to lead car
- explosion under car
- gas grenade

- bullet proofing
- goggles

Protection of Individuals and Property

A preventive and defensive situation occurs when the locale of a person (public speaker) or a piece of property (store subject to looting) must be protected. Assailants can approach from any direction but the protected object remains stationary. One or more "bodyguards" provide the defense against one or more assailants. A reasonably friendly environment can be supposed, which limits the useable techniques to those which will not seriously affect bystanders (nor the operators, the protected individual or the property). The devices should be aimed directly at the offenders only, and should reliably incapacitate them. The degree of incapacitation can depend on the severity of the attackers' intended crime. In all cases it seems desirable that the devices be quick-acting, portable and covert, so that they can be used in a variety of "stay-put" circumstances.

Incapacitators

rhetoric
electrical shield
light beam
taffy pellets
hurled foam, smoke
Mace
dart with drug
jet-propelled medicine ball
bola
karate/judo
night stick/baton
stun gun
balance disruption

Protection

instant plastic shield

BEHAVIORAL CONTROL SUPPORT

Proposed Program for Continuation of Work

1. Consider overall goals and strategy. Our inclination is to pursue an innovative or creative approach to the problem rather than to devote our energies to compiling yet another systematic review of currently available incapacitation and behavioral control techniques. There is, of course, a possibility that no useful new ideas would be produced, but a systematic approach, it would seem, would practically guarantee that result.

2. Proceed with further literature review. It appears that something like 90% of the information to be had in the ordinary literature is now in hand. Rather than waste much more time in assembling and screening masses of literature for a diminishing yield, the following steps are proposed:
 - a) continue general screening and search on a maintenance or low-effort basis.
 - b) spend a week browsing through allied fields: anesthesiology, psychology, psychiatry, physiology, optics, etc. for fresh ideas.
 - c) consider spending several days to a week of intensive research at one or two of the best criminology or medical-legal collections or libraries available (FBI? Harvard? Justice? LEAA?).
 - d) consider examination of far-out literature: occult, science fiction, comic books, etc. on a low-effort basis.
 - e) consider foreign sources of information

3. Approach people with expertise and/or talent-if feasible, e. g.

Authorities on pertinent subjects

(Lt. Col.; Riot Control Specialist)
(self defense)

Army Research Centers, such as Edgewood Arsenal (projectiles)

4. Consider holding an interdisciplinary workshop with individuals having technical expertise in appropriate areas such as criminology, weapons, psychoic etc.

5. Conduct feasibility studies of promising new approaches. For example, one potentially fruitful research area, probably worth evaluating, involves chemicals such as [redacted] which rapidly penetrate the skin and may serve as carrier vehicles for chemical agents for behavioral control. The control agent (e. g., irritant, anesthetic, synaptic blocker, etc) could be mixed with the skin penetrant and delivered in liquid, gel or aerosol form via projectiles, for accurate delivery to individuals, or via sprayers, for group administration. Other techniques, such as [redacted] could also be evaluated.

6. Exploratory animal studies. Brief, preliminary studies with promising chemical or physical techniques may be attempted if time permits and conditions justify such an effort.