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SECURITY INFORMATION

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~~PROJECT CASTLE~~
OPERATION CASTLE (SECRET)

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Log 53-88

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DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEWER-DATE: <u>6/16/04</u>	DETERMINATION (CIRCLE NUMBER(S))
AUTHORITY: <u>10 USC 3504</u>	1. CLASSIFICATION RETAINED
NAME: <u>M. L. KELLEY</u>	2. CLASSIFICATION CHANGED TO: <u>SECRET</u>
2ND REVIEWER-DATE: <u>11/17/97</u>	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: <u>ADD</u>	4. COORDINATE WITH: <u>AEFAC</u>
NAME: <u>DP Cannon</u>	5. CLASSIFICATION CANCELLED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY):

PROJECT NUMBER: 7.1
PROJECT TITLE: Measurement of Fire-Ball Light at Distances
SPONSOR: Headquarters WAF ORGANIZATION: AFOSR-1

PROJECT OFFICER: Dr. Martin E. Olson
Agency: Headquarters WAF (AFOSR-1)
Address: Headquarters WAF
Office for Atomic Energy, DOD/O
ASTB: AFOSR-1
Washington 25, D. C.
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OBJECTIVE:

a. To investigate characteristics of the light-time curves for new designs of atomic weapons and experimental nuclear explosions; the results to be applied to the evaluation of any long-range fireball detection system in existence or contemplated at the time of Operation CASTLE.

b. To gain additional information on the mechanism of light transmission through the earth's lower atmosphere and to further investigate the ultimate distance at which interpretable light-time curves can be obtained.

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STATUS:

Long range optical measurements have been made during each series of atomic tests beginning with GRANDSLAM (Unclassified). The characteristic light curve has been recorded at a ground station about 550 miles from ground zero, and about 80 miles further from a plane flying above the cloud cover. The attenuation factors involved, and means of taking advantage of variations in attenuation under different conditions, are imperfectly known.

PROCEDURE:

The ultimate design of this experiment will depend upon the results obtained from Operations TYE (Secret) and WASBUT/KROTCHOK (Secret) and upon the type of devices to be detonated in Operation CASTLE. Light

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW DATE: <u>11/21/97</u>	DETERMINATION (CIRCLE NUMBER(S))
AUTHORITY: <u>10 USC 3504</u>	1. CLASSIFICATION RETAINED
NAME: <u>R. Schmidt</u>	2. CLASSIFICATION CHANGED TO:
2ND REVIEW DATE:	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: <u>ADD</u>	4. COORDINATE WITH:
NAME:	5. CLASSIFICATION CANCELLED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY): <u>AFAC memo</u>

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measuring equipment will be operated at two ground stations; one distant station outside of the Task Force Area and one at a suitable location on Kwajalein. A third set of equipment will be installed in an aircraft and operated at an altitude of approximately 15,000 feet over Kwajalein at the time of detonations. This will require the use of one 4-engine cargo aircraft at Kwajalein on each shot day and for a period of two days previous to each shot day for installation of equipment.

SUPPORT REQUIRED:

The distant station referred to above will be outside of the area defined as coming under the jurisdiction of the Task Force. An essential requirement in support of this project is listed below as Item (f).

a. Personnel: Forward echelon - two (2) officers, four (4) airmen, one (1) civilian.

b. Instrumentations: None

c. On-Site Construction: None

d. Air and Rail Transportation: Air and rail transportation from the East Coast of the U.S. to Kwajalein for two (2) officers, four (4) airmen, and one (1) civilian, and two (2) tons of equipment.

e. Funds:

	<u>R&D</u>	<u>Extra-Military</u>
Total Estimated Cost	\$80,000	0
Funds Available	0	0
Test Agency Funds Required	\$80,000	0

f. Other: Accurate alert and timing information by radio will be needed somewhat similar to that furnished during IVI. Briefly, alerts are needed up to -5 sec. before detonations and after-the-fact time of detonations in world time with 1 ms accuracy.

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