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2 May 1945

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A-84-019
40-17

Parsons

JB 2/5/45

CLASSIFICATION CANCELLED
DOC REVIEW JAN. 1973

To: Members of The Weapons Committee
From: N. F. Ramsey
Subject: Physical Requirements for Components of the Gadget

FINAL DETERMINATION
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L. M. Redman
FEB 4, 1981

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JA Blinn 85-16 3/25/81

1. There is an urgent need for a centralized specification of the physical requirements which components of the gadget should satisfy. For this reason a sub-committee of the Weapons Committee headed by R. B. Brode has been appointed to formulate these requirements and to provide centralized information as to the extent to which different components can meet the requirements.

2. If it were possible for all components to satisfy the standard Army and Navy specifications for military equipment without undue delaying developments it would be simple to formulate these conditions. In this case merely the standard Army and Navy specifications would apply. It is very difficult, however, to determine the extent to which these conditions may be relaxed without jeopardizing reliability. For this reason, final decisions as to acceptable conditions will depend upon the results of several tests now in progress and upon a compilation of information as to specifications which the different components may reasonably be expected to fulfill.

3. The purpose of this memorandum is to

- a. Initiate the collection of data as to the specifications which the different components may reasonably be expected to fulfill.
- b. List preliminary physical requirements for components of the gadget to serve as a guide prior to the formulation of final specifications.

4. The physical requirements listed in this memorandum are in most cases in the form of two alternatives, one known as preferred and the other as probably acceptable. Wherever possible the conditions listed as preferred should be met. These are based on standard Army specifications for electronic equipment with a reduction in the stringency of certain requirements which are obviously too severe for our case. However, if it becomes evident for any component that the conditions listed as preferred cannot be met without undue sacrifice, the less stringent conditions listed as probably acceptable will in many cases be authorized provided a request for such authorization is made in writing to the Weapons Committee stating the conditions which will be met by that component and the reasons that more stringent conditions cannot be met. The same memo should state whether the conditions are the result of experiment or of guess. In cases where it is impossible to meet even the conditions listed as probably acceptable, authorization for meeting even less stringent conditions may be granted by the Weapons Committee, but the request for such authorization should be fairly rare. Copies of the requests for authority to meet conditions less stringent than those listed as preferred should be sent to Captain Parsons, N. F. Ramsey, R. B. Brode and Comdr. Birch (for components of gun gadget) or Comdr. Bradbury and Roger Warner (for components of 1560).

5. Each member of the Weapons Committee is responsible to see to it that all components coming under his jurisdiction either satisfy the requirements listed here as preferred or are listed in memos to the committee requesting authorization for satisfying less stringent specifications. The individual responsibility of the committee members applies even though actual development of components is the responsibility of a different group or division.

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Physical Requirements for Components of the Gadget

6. Maximum temperature specifications (if internal heat is generated by the component the temperature differential should be added to the values below)

A. Preferred

- (1) Operation: +50°C (122°F)
- (2) Non-operation: +70°C (158°F)

B. Probably Acceptable

- (1) Operation: +45°C (113°F)
- (2) Non-operation: +55°C (131°F) and in very special cases +50°C (122°F)

C. Probably Acceptable - In rare cases such as tamper sphere where very special handling is possible. If at all possible the allowed maximum should be raised above this temperature.

- (1) Operation: +45°C (113°F)
- (2) Non-operation: +45°C (113°F)

7. Minimum Temperature Specifications

A. Preferred

- (1) Operation: -55°C (-67°F)
- (2) Non-operation: -55°C (-67°F)

B. Probably Acceptable - If component is completely internal to the outermost cork layer of the sphere.

- (1) Operation: -25°C (-13°F)
- (2) Non-operation: -25°C (-13°F)

- In the case of the tamper sphere, an even less severe requirement will probably be acceptable.

C. Probably Acceptable - If component is in all or in part external to outermost cork layer of the sphere but is internal to the ellipsoid.

- (1) Operation: -40°C (-40°F)
- (2) Non-operation: -40°C (-40°F)

D. Probably Acceptable - If component is in all or in part external to ellipsoid.

- (1) Operation: -55°C (-67°F)
- (2) Non-operation: -55°C (-67°F)

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1) Operation: 70% at 40°C (104°F)
2) Non-operation: 70% at 40°C (104°F)

B. Probably Acceptable

- 1) Operation: 70% at 40°C (104°F)
- 2) Non-operation: 70% at 40°C (104°F)

9. Minimum humidity specifications:

A. Preferred

- 1) Operation: 0%
- 2) Non-operation: 0%

B. Probably Acceptable

- 1) Each case to be determined on its own merits.

10. Minimum pressure specifications:

A. Preferred

- 1) Operation: 3.5 inches of mercury or 50,000 feet altitude
- 2) Non-operation: 3.5 inches of mercury or 50,000 feet altitude

B. Probably Acceptable

- 1) Operation: 5.5 inches of mercury or 40,000 feet altitude
- 2) Non-operation: 5.5 inches of mercury or 40,000 feet altitude

11. Maximum vibration specifications:

A. Preferred

- 1) Operation: When mounted as planned in attachment to the gear or as in shipment the equipment should stand vibration of its mounting at frequencies of 10 to 150 cycles a second and amplitudes of 0.03 inches (total excursion 0.06 inches) except that above 40 cycles per second the amplitude should be reduced corresponding to a 10g maximum acceleration of the mounting or shipping boxes.

- 2) Non-operation: Same as for operation

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to...
...
... two (2) ...
...
... should be capable ...
... accelerations used ...
... Navy bombs which are 7 ...
... end aft. and 2 g side case

B. Probably Acceptable:

- (1) Each case to be determined on its own merits

I. F. Ramsey

NFR:de

- cc: Oppenheimer
- Parsons
- Lockridge
- Lauritsen, C
- McMillan
- Bachar
- Lockridge
- Kistiakowsky
- Alvarez
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