

THE NUCLEAR WEAPONS EFFECTS COMPUTER NO 21. Introduction

NRC Officers may be called upon to make appreciations of the likely damage effects resulting from the explosion of a nuclear weapon. The necessary data for such appreciations is provided by the Nuclear Weapons Effects Computer in a convenient form enabling the effects produced by a given set of circumstances to be easily determined. In using the Computer it must be remembered that it can only act as a guide. The actual effects of a weapon may be affected by many environmental influences.

2. Nuclear Weapons Effects Computer

The face of the computer provides the following data:

- a. Weapon Power scale;
- b. Distance scale;
- c. House damage - A B C and D rings;
- d. Debris;
- e. Static Overpressure;
- f. Casualties resulting from blast;
- g. Maximum ranges for various blast effects:
 - (1) collapse of bridges;
 - (2) severe displacement of vehicles;
 - (3) trees blown down;
 - (4) telephone communication disrupted.

(The above data are all for a ground burst only. In the case of an air burst, if the static overpressure is known, the other effects can be obtained from the computer. Failing this, a very rough approximation can be made by increasing the ground burst ranges by 30 per cent.)

- h. Crater dimensions in various types of soil;
- j. Maximum height for contaminating burst;
- k. Maximum fireball radius.

3. The reverse of the computer provides:

- a. Fire effects ranges;
- b. A 360 degrees protractor.

4. To obtain c, d, e, f and g above, the computer is set to the power of the weapon on the Weapon Power scale and the range can then be read on the Distance scale, the cursor being used for e, f and g. For h, j and k the computer is set to the power of the weapon and the required information can then be seen in the appropriate opening in the smaller disc.

5. Of particular importance is the construction on Display 'A' of damage rings produced from data provided on the computer. The NRC Officer will be principally interested in the outer limit of damage ring C, which is equivalent to a static overpressure of 1.5 pounds per square inch (10 kilo Pascals).

6. Summary

The Nuclear Weapons Effects Computer is a handy aid to NRC Officers in producing estimates of the possible blast and fire effects of a nuclear burst. Its main value will be in the preparation of displays and the answering of questions posed by customers.