REMOVAL OF FALLOUT CONTAMINATION FROM A TENT ROOF

Charles E. Coner, Capt, MSC* and James T. Brennan, Lt Col, MC*

INTRODUCTION.

During the course of the FTX DOWNWIND, (24-27 May 1959), the extent to which a tent could be "dug in" in order to shield the occupants from fallout gamma rays was tested by the 128th Evacuation Hospital. Digging in gives excellent protection against gamma rays originating on the surface of the ground around the tent but does not decrease the dose received from active material deposited on the roof of the tent. This led to an increased interest in the dose received inside the tent from material deposited on the canvas.

Since the materials were at hand, and since the opportunity offered itself, a short experiment was improvised in order to study what personnel in dug in tents might possibly do to reduce tent roof contamination. All of the decontamination methods deemed feasible were arranged in what would be, from the combatant's point of view, in order of increasing difficulty. Thus, the simplest thing (beating on the underside of the tent roof) was tried first and the most difficult procedure (washing from the outside with soap and water) was tried last. An impression was gained to the effect that the more difficult procedures were the most effective in terms of percent of contamination removed but the design of the experiment did not permit firm conclusions on the last point.

METHOD.

A pyramidal tent (Fig I) was used.

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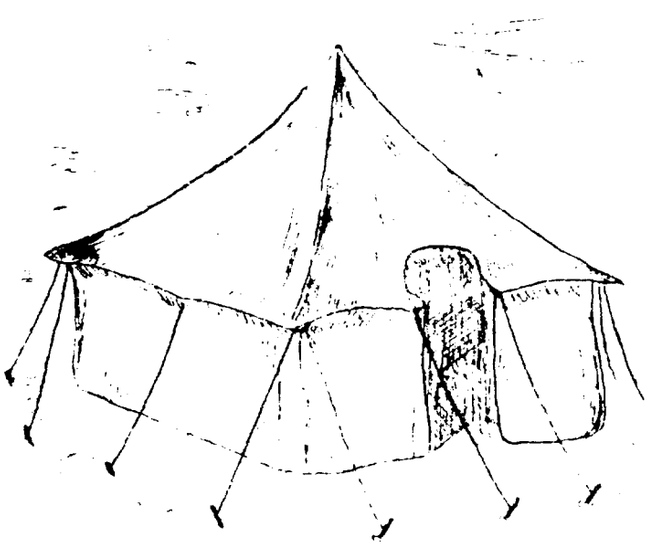
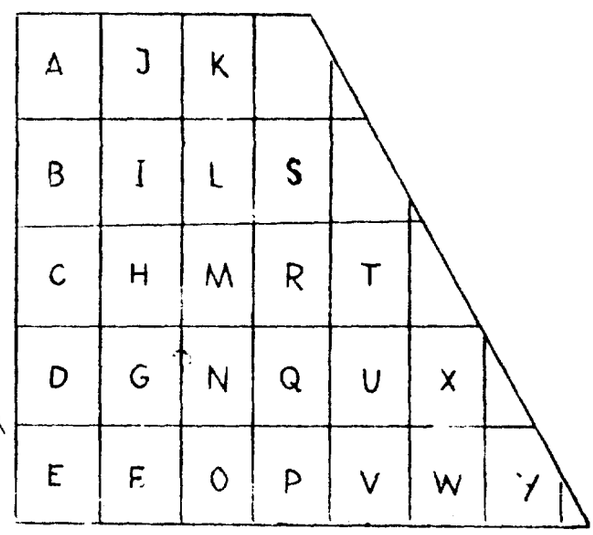


(Fig I, Pyramidal Tent)



(Fig 2, Contaminated Panel Viewed From The Inside)

* United States Army Nuclear Medicine Research Detachment, Europe, APO 180, US Forces

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DISCUSSION.

these are obviously crude measurements and the many deficiencies are recognized. For example:

1. The emission spectrum of the gamma rays used is different from that of fission products.

2. Because of the short distance between source and tent, the scattering events are not the same as they would be for widely distributed fission products.

3. The dose due to material deposited on the roof of the tent is not considered. Figures in the literature indicate that in this situation, for a tent which was not dug in, about 10 % of the total dose would come from material deposited on the roof of the tent.

4. The influence of material farther than five meters from the tent wall could not be assessed.

In view of these difficulties no great amount of confidence can be placed in the results of these exploratory measurements. The approximate agreement between measured and pre-exercise estimates must be regarded as fortuitous.

In general there are three possible ways in which the problem under discussion here can be attacked. There is first an all-out mathematical calculation. This requires a large computing machine and a staff of mathematicians, neither of which are available to the US Army in Europe. The second method is to put the structure in question out under an actual fall-out from a test weapon and measure the results directly. A few situations have been studied in this fashion and they do enable one to look at any given structure and make a guess on a comparative basis. This amounts to an educated guess. (In this present case our estimate was that the over all penetration would be about 10 % of the dose in the open).

The third method, is the artificial source method used in these measurements. With a larger source, a more sensitive detector and more careful measurements it is possible to make a determination which is better than a guess.

Donald A Behrens Jr
JAMES T. BRENNAN
Lt Col, MC
Commanding

2 Incl:
1. Dose Rate vs Distance Data
2. Table I

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TABLE I

Point A - Open Trench

	S_1 = 70 cm 180 mr/hr		S_2 = 170 cm 25 mr/hr		S_3 = 270 cm 10 mr/hr		S_4 = 370 cm 4.4 mr/hr		S_5 = 470 3.5 mr/hr		
Height in Feet	mr/hr	%	mr/hr	%	mr/hr	%	mr/hr	%	mr/hr	%	%
5	100	56	17	68	3	33	.02	.5	.05	.02	31
4	90	50	2	8	.02	.5	X	X	X	X	11.7
3	70	39	.02	.1	X	X	X	X	X	X	8
2	50	28	X	X	X	X	X	X	X	X	5.6
1	25	14	X	X	X	X	X	X	X	X	2.9
0	22	12	X	X	X	X	X	X	X	X	2.5
											10.3

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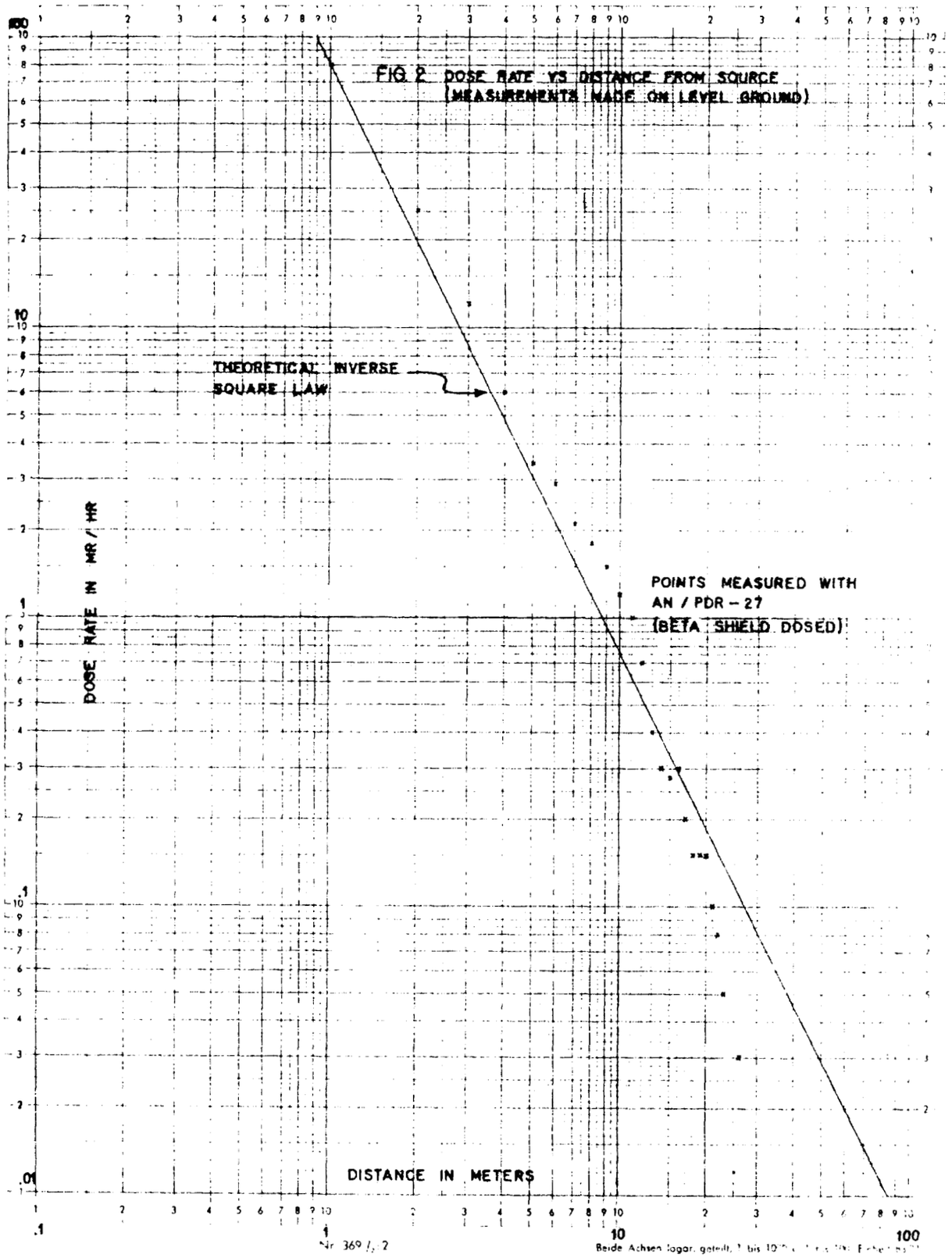

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