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Brigadier General A. J. Fields, USA
Director of Military Application *June 22/58*

17 February 1953

Colonel V.G. Huston, USAF
Chief, Test Section

Notes on NIKE Effects

~~RESTRICTED DATA~~
~~[REDACTED]~~
or the [REDACTED]

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1. Thermal Effects:

a. Ball of Fire:

Maximum diameter, about 2.8 miles. (*later: 9,400 meters max*)

b. Maximum Posterior Temperature:

[REDACTED]

c. Radii of Thermal Damage:

(1) 11 cal/ sq. cm. is ignition point for wooden buildings, extends to about 3.5 miles, and includes an area of about 226 sq. mi.

(2) 3 cal/ sq. cm. is point where roughly half the people exposed would die from burns, presuming no shielding and whole body exposure. No reliable generalization is really possible in this case since burns vary so much with location, shielding, attitude of victim, etc. The 3 cal/ sq. cm. radius is just to give an indication of probable results under this particular set of assumptions.

2. Blast Effects:

a. Radii of Damage:

(1) 20 p.s.i. radius is point where virtually complete building destruction occurs, except for earthquake-proof construction, includes an area of about 31.5 sq. mi. with 3.5 mile radius.

(2) 2.5 p.s.i. radius is that up to which moderate destruction will occur, includes an area of 314 sq. mi. with 10 mile radius.

3. Radiation Effects:

a. Prompt Gamma:

At 4,000 meters (RUCHI ISLAND) the integrated dose of prompt gamma was 20,000 Röntgens during prompt gamma period, which extended to 11 seconds. Gamma are strongly attenuated in air (by a factor of 10,000 in 7,000'). Thus, the 400 R. integrated prompt gamma radius

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is indicated at about 3.25 miles. Note that this is the predicted figure; no experimental confirmation has yet been received. This radius includes an area of 33 sq. mi.

b. Residual Radiation:

Rates, in R per Hour, were:	Max.	
	H 1 Hr.	H 100 Hrs.
INGEBI	270	20
BIIJIRI	120	.7
NIQILI	18	.02
(w. side lagoon)		
RWIT	1.3	.02

There was no appreciable residual radiation on PARRY or ENDETOK Islands from HMF. Aircraft control tower was warned at H plus 30 minutes after shot for emergency landings and all shore based personnel were ashore by H plus 72 hours.

c. Radiation Intensity, Monitoring Aircraft:

Registered a maximum of over 500 R. per hour at 12,000' near the top of the cloud stem.

4. Field:

Still some discrepancy between rad-chemistry calculations and ball-of-fire calculations. [redacted] with the weight of technical opinion supporting 8 MT.

5. KING Shot:

Aircraft flight plan called for the B-36H drop aircraft to turn 140 degrees after drop and proceed away. Calculated load was not to exceed 63% of load limit on horizontal tail, but the aircraft failed to achieve the 65,100' slant range. It was rather, only 59,200' slant range from the burst at shock arrival time. Hence, it may have received close to limit load on horizontal tail. Crew testifies plane did receive severe load. One access plate in elevator was knocked out. Slight thermal damage was also evident in form of a small area of blistered paint under wing and burnt canvas seals between wing flaps and engines.

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2A: Col. Campbell
3A: TG Reader

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5A: File - DHA

V.G. Huston
Colonel, USAF
Chief, Test Section

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