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Note Containing an Assessment of the Parameters of a Device with Yields of 150 Megatons and One Billion Tons of TNT

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Summary:

A report on the material requirements and design specifications of nuclear devices with yields of 150MT and one milliard tons TNT between Soviet officials. Specifically, the use of lithium-6 deuteride and natural uranium in varying degrees is discussed.

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To comrade Pavlov N.I,

We bring to you an assessment of the parameters of a product with a yield of 150 megatons TNT.

A device enriched with (…)% lithium[-6] deuteride could be, apparently, made within the following dimensions:

Option 1: Diameter: approximately 4 meters.

. Length: 8-10 meters.

. Total weight: approximately 100 tons.

Thus, the following quantities of active material would be required: U235: approximately (…) kg.

. Lithium-6 deuteride: (…) kg.

. Natural uranium (can be depleted): (…) kg.

Option 2:

A device with lesser amounts of Lithium-6 which uses natural uranium as well could be made within the following dimensions: Diameter: 6-7 meters.

. Length: 18-20 meters.

. Total weight: approximately 500 tons.

The active materials required: U235: approximately (…) kg.

. Lithium Deuteride: approximately 6 (…) tons.

. Natural Lithium Deuteride: approximately (…) tons.

. Natural Uranium (can be depleted): (…) tons.

The device with a yield of one milliard tons TNT can be prepared on the basis of both options, as long as the weights of the Deuterium and the natural uranium would be increased by 6-7 times, while the weights of the fissile materials-approximately by 3 times.

(…)

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2 February 1956.