


Challenges of Advanced Nuclear Weapon Development in Pakistan (U)

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Foreign Nuclear Programs Section
Z Division
NAI Directorate
Lawrence Livermore National Laboratory


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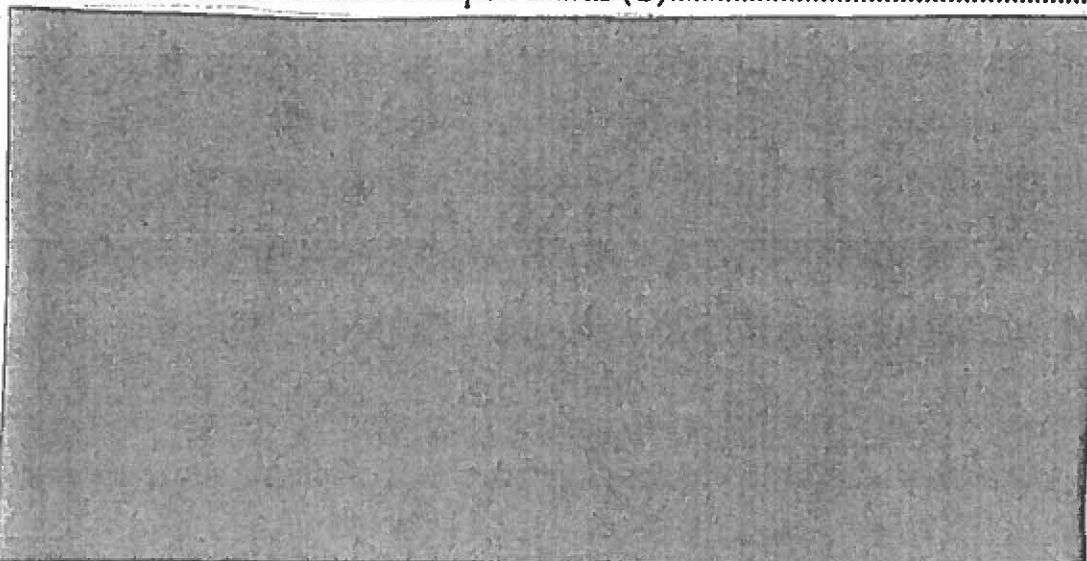
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Challenges of Advanced Nuclear Weapon Development in Pakistan (U)

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Executive Summary (U)

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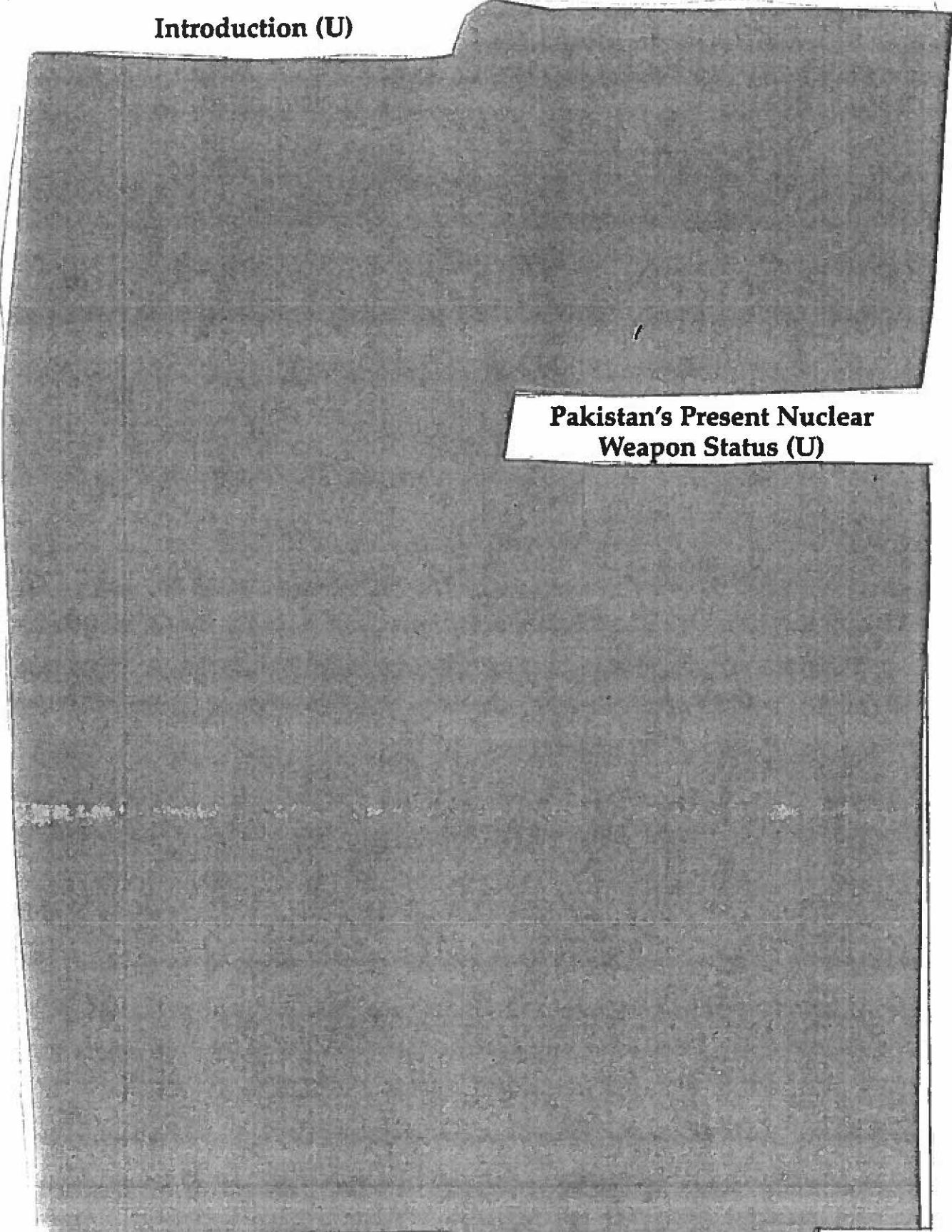
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Introduction (U)



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Pakistan's Present Nuclear
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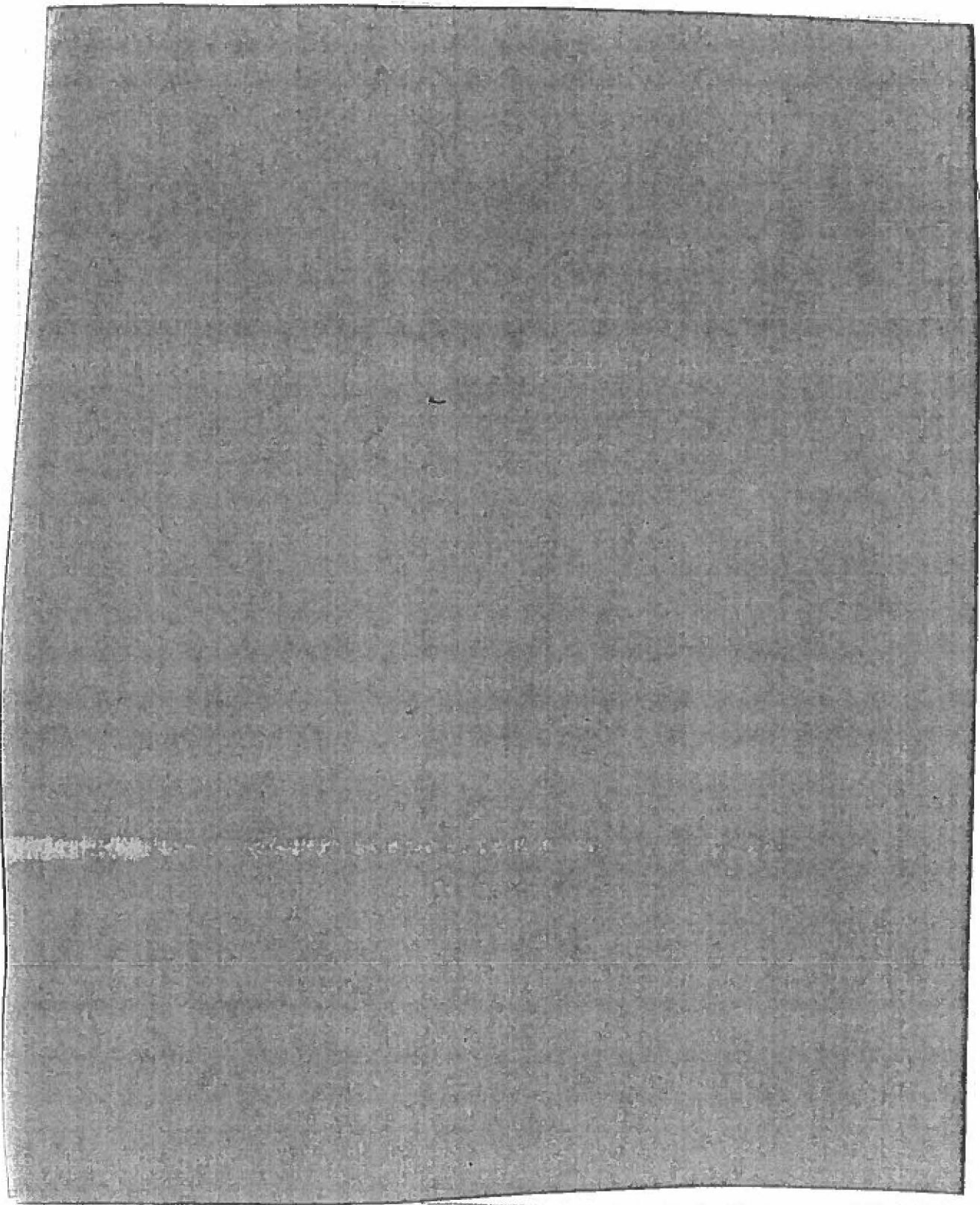
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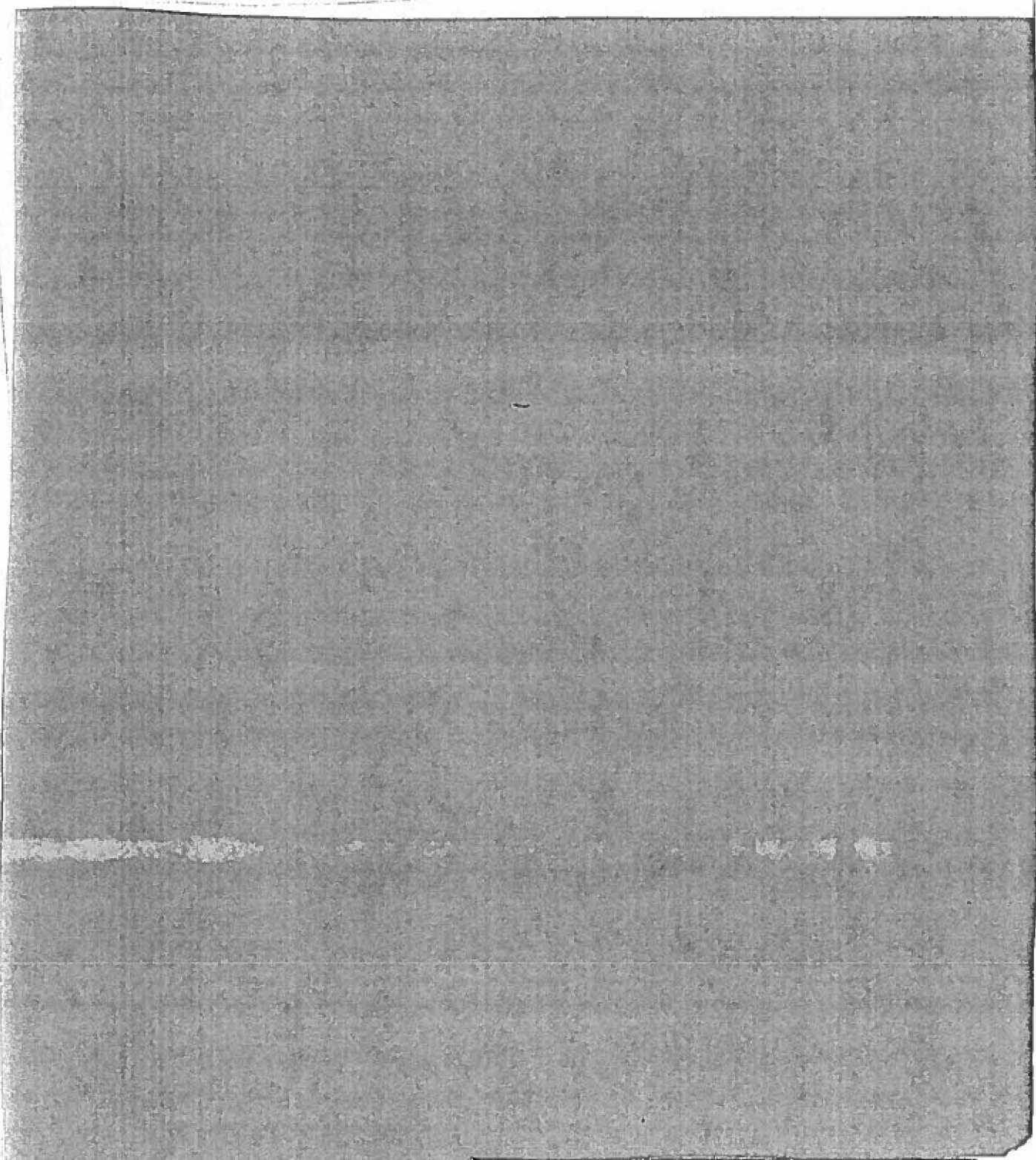
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* (U) Temperature in thermonuclear work is usually expressed in terms of equivalent kinetic energy:
 $1 \text{ keV} = 1.16 \times 10^7 \text{ K}$.

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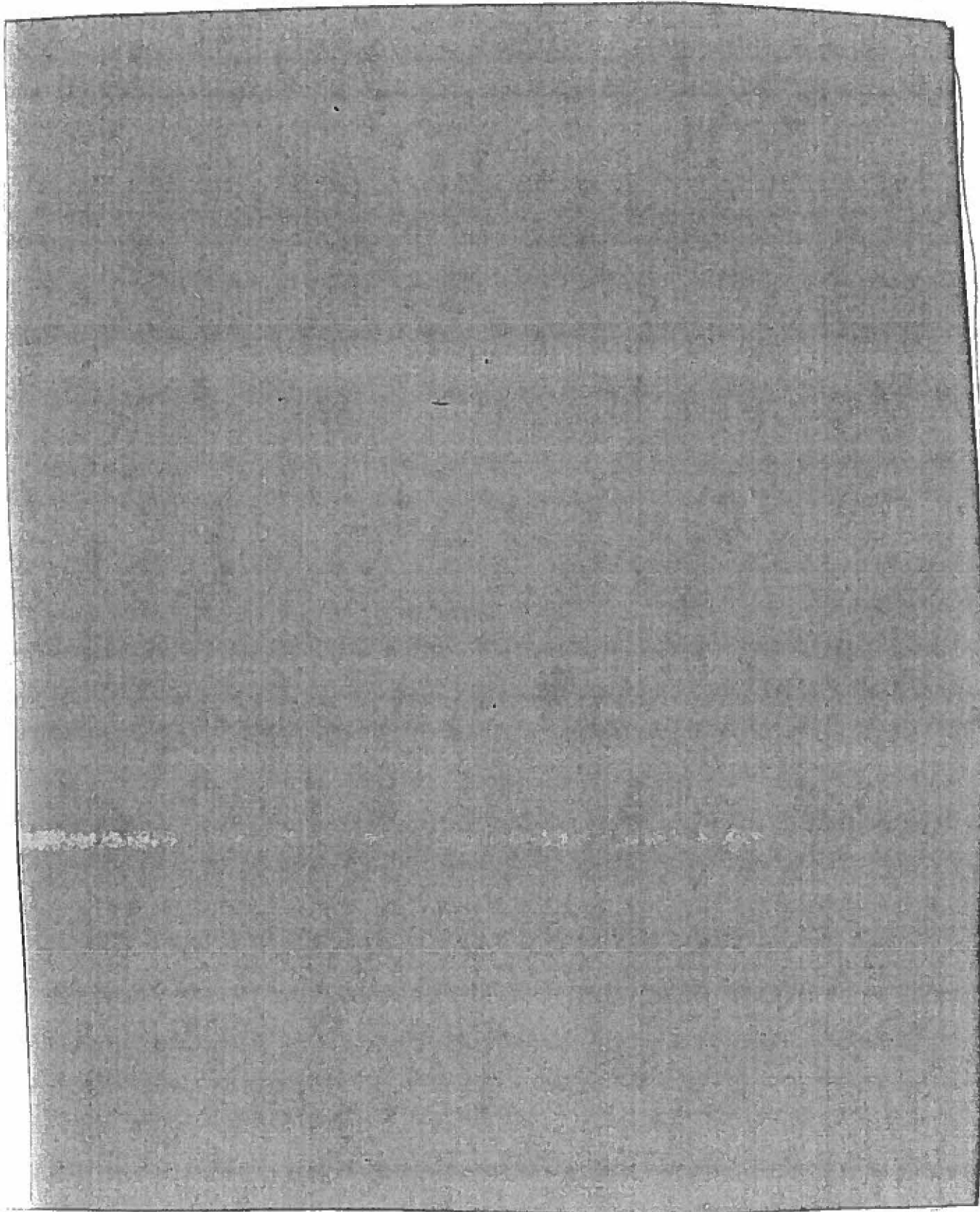
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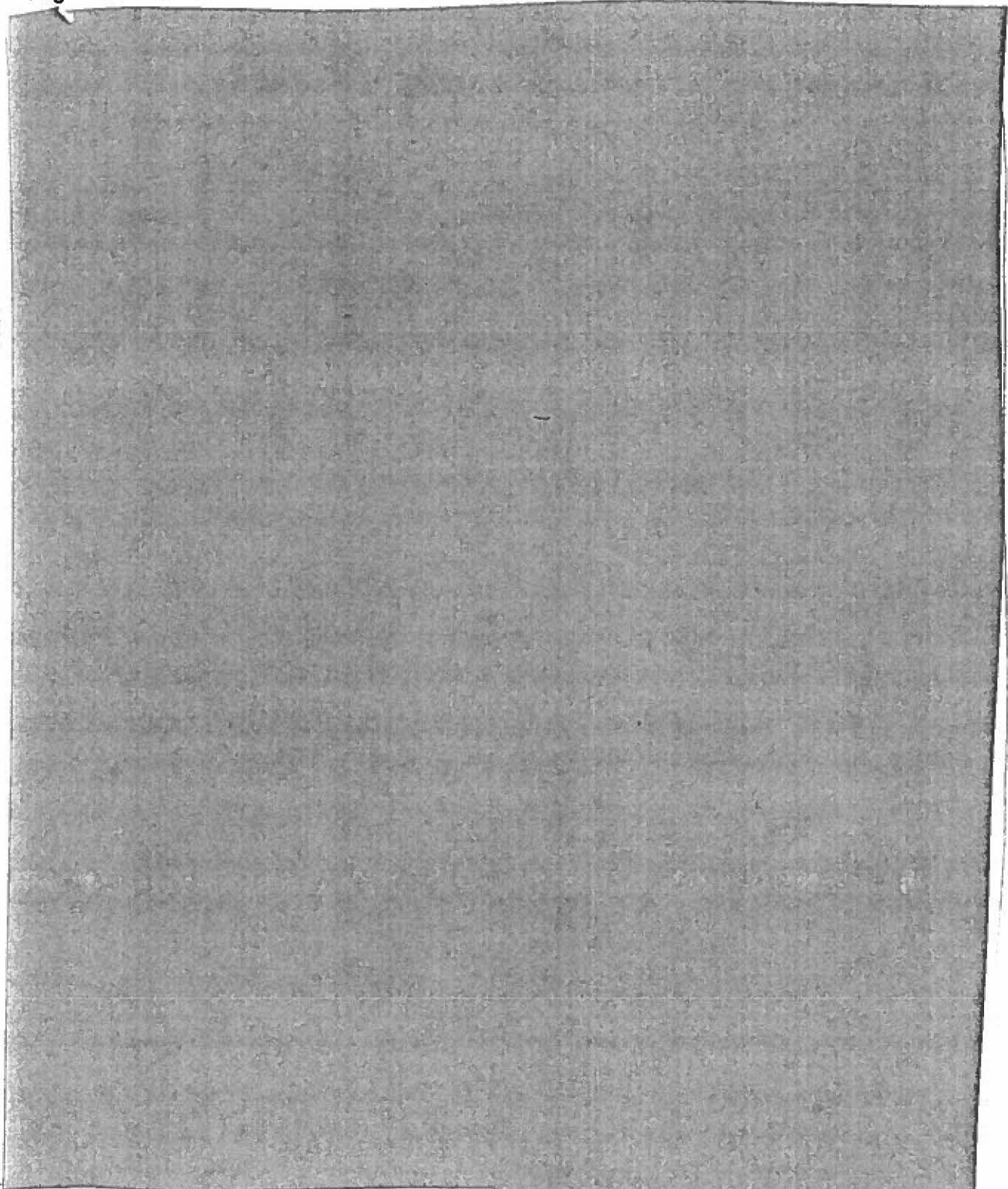
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* (U) The correct detailed chemical formula for this lithium hydride or lithium "salt" is $({}^6\text{Li}_x {}^7\text{Li}_{1-x})(\text{D}_y \text{T}_{1-y})$ where x and y are isotopic fractions ≤ 1 . For natural Li (${}^n\text{Li}$), $x = 0.075$. For equal mass DT, $y = 0.6$ and for equimolar DT, $y = 0.5$.

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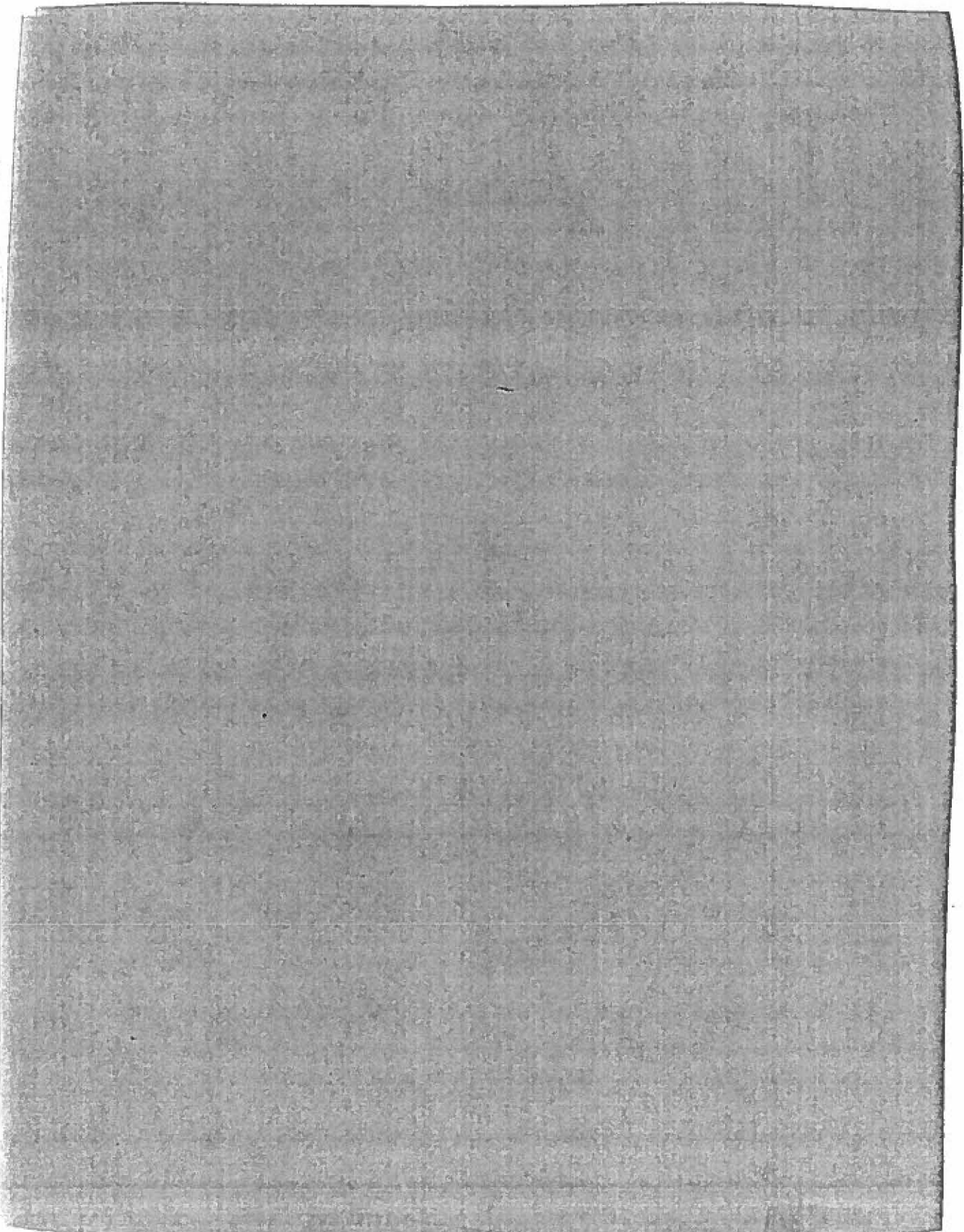
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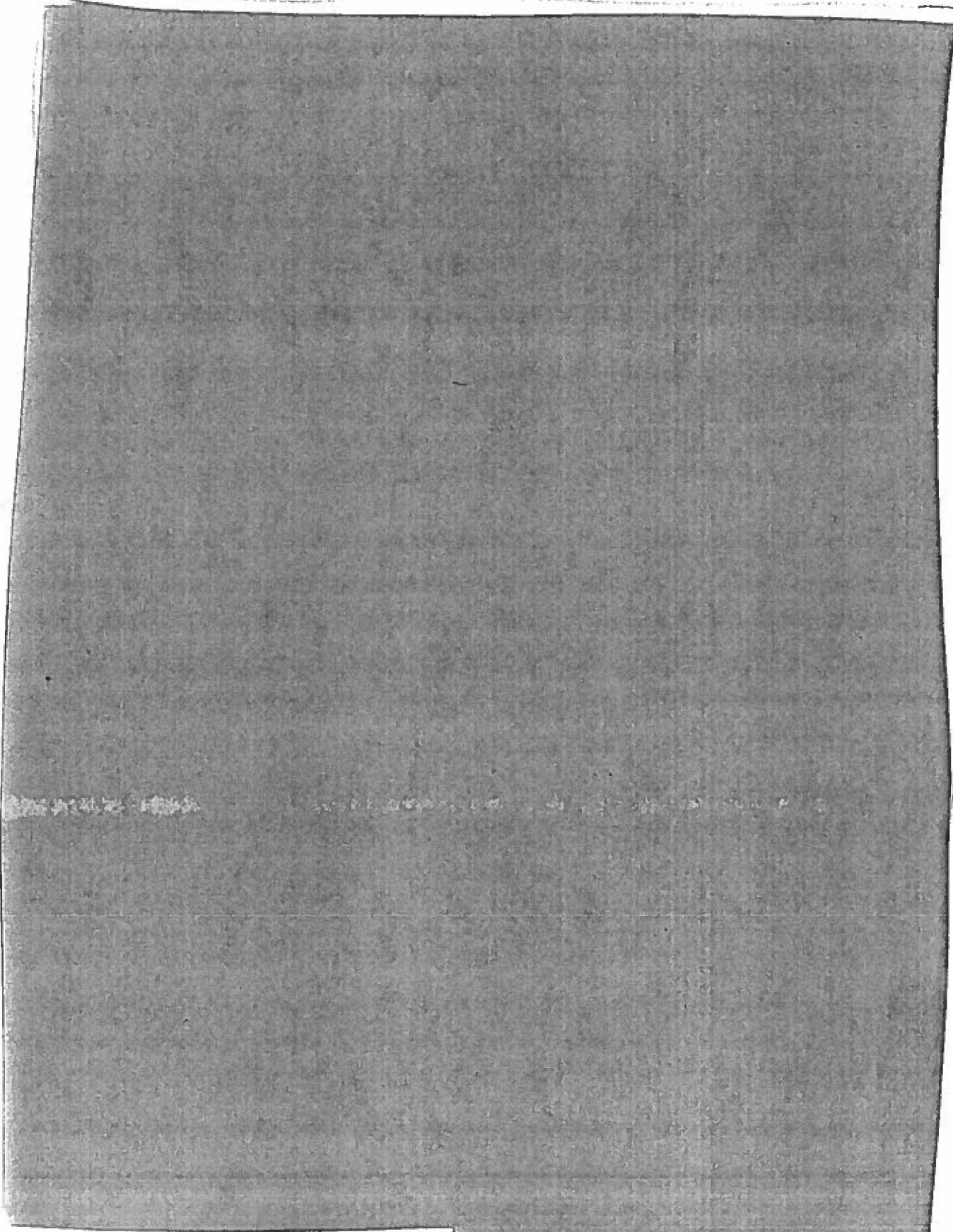
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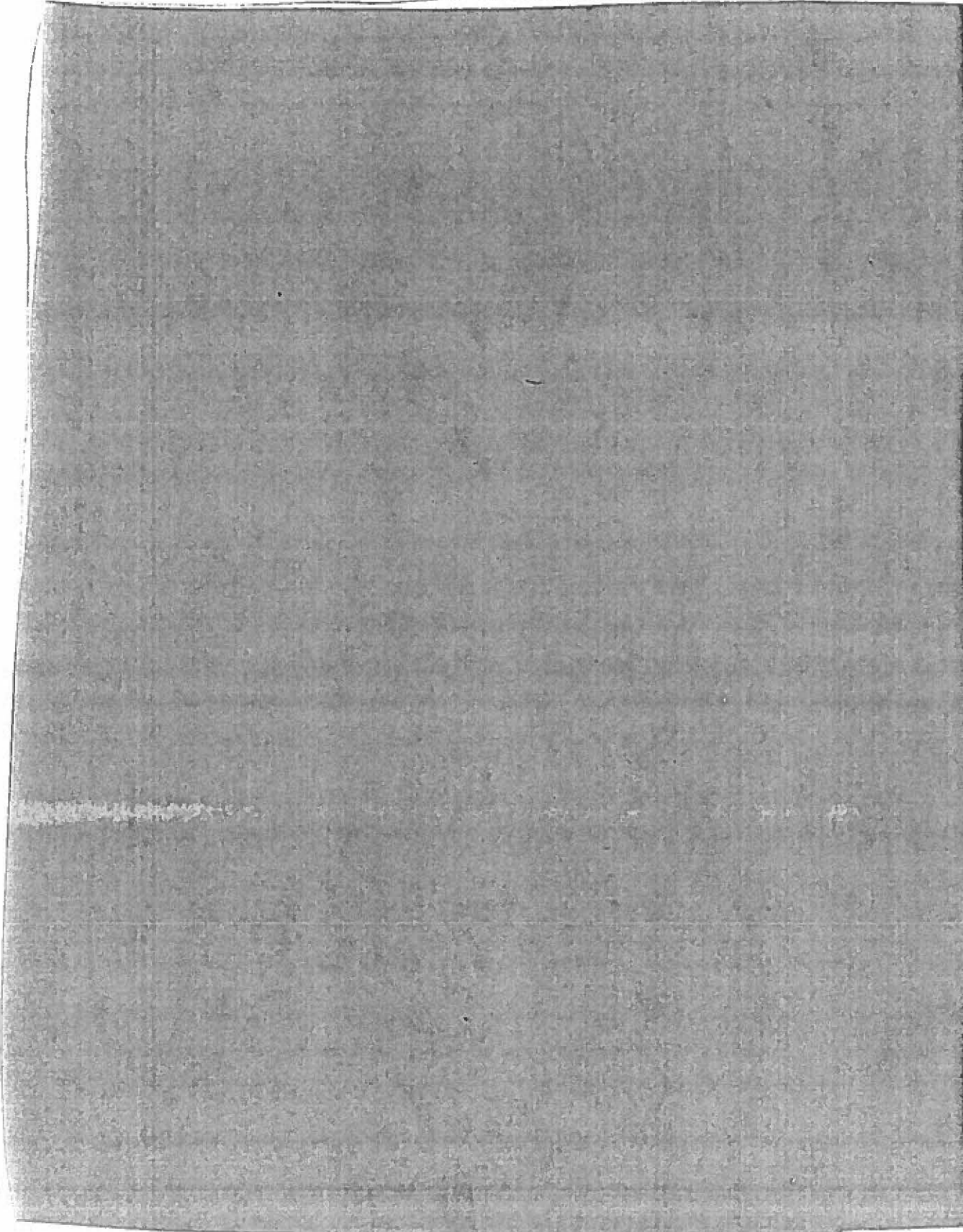
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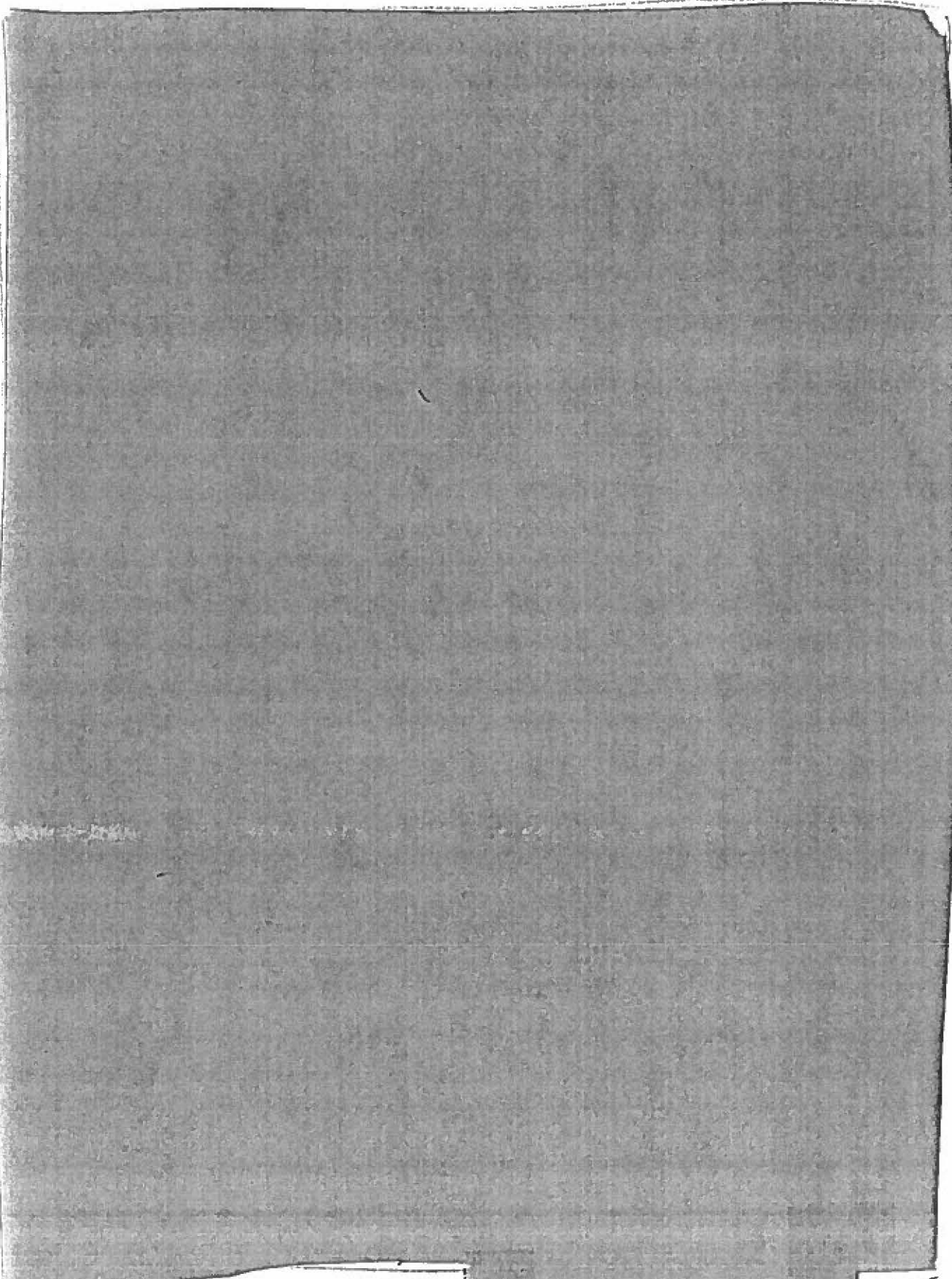
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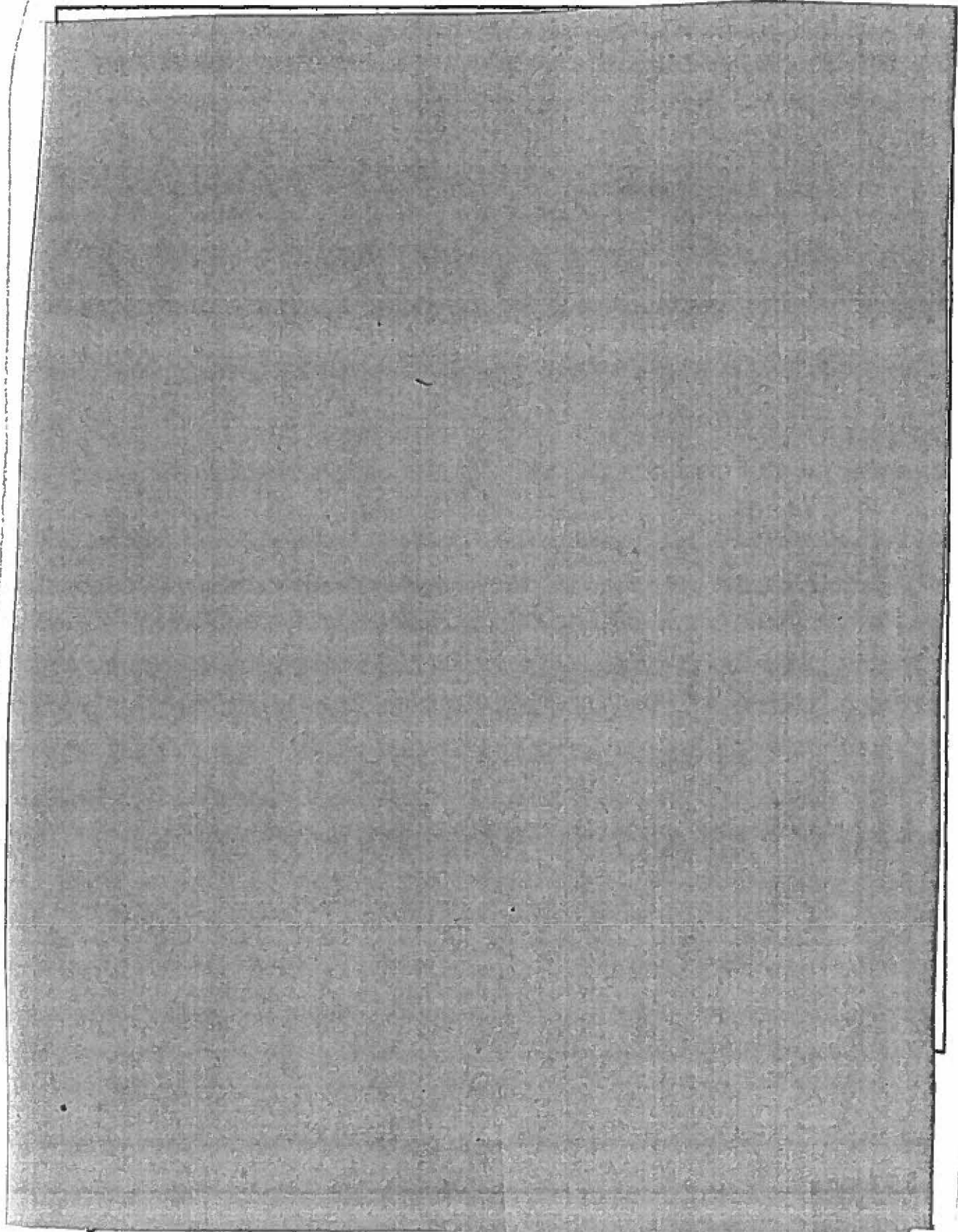
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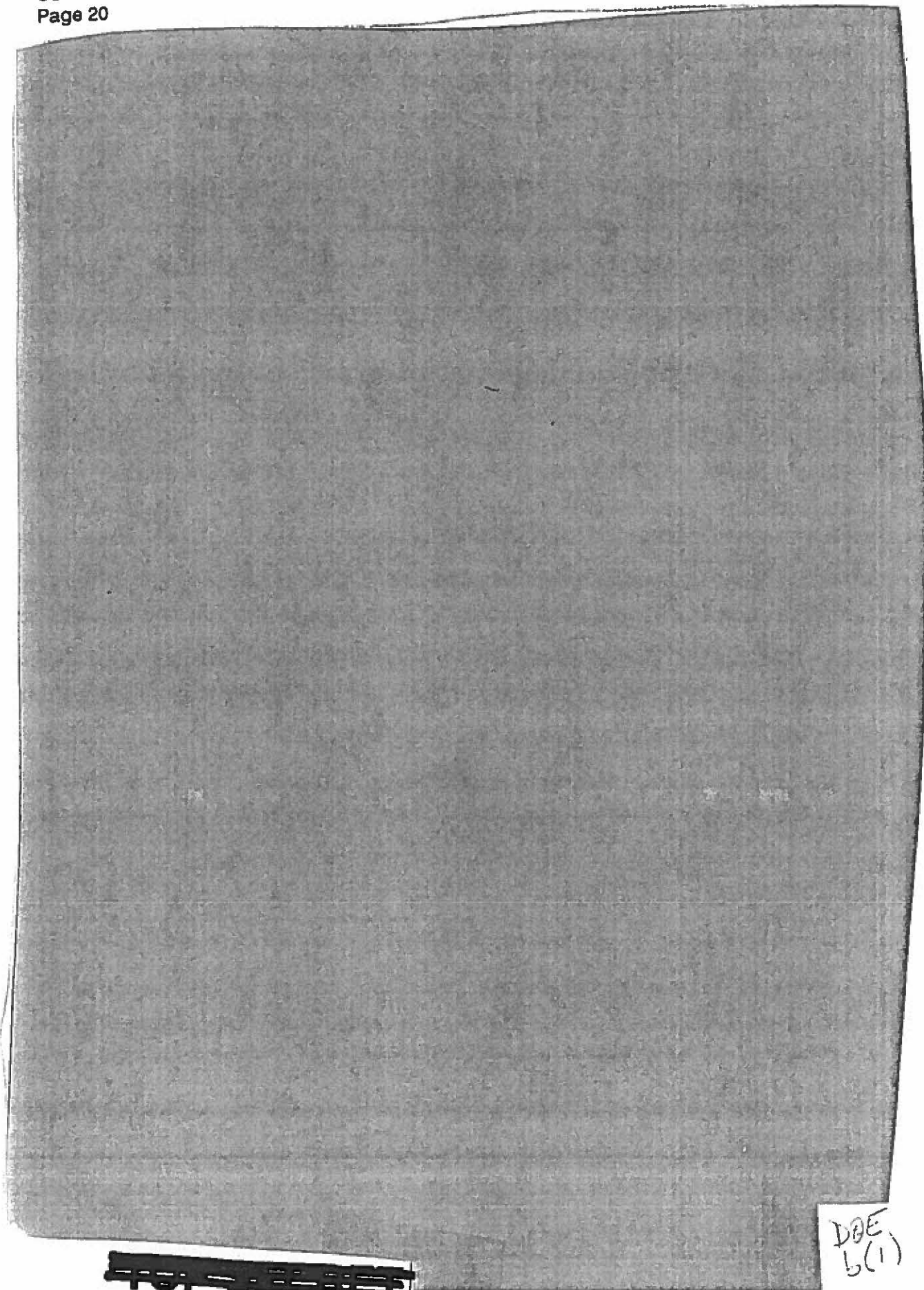
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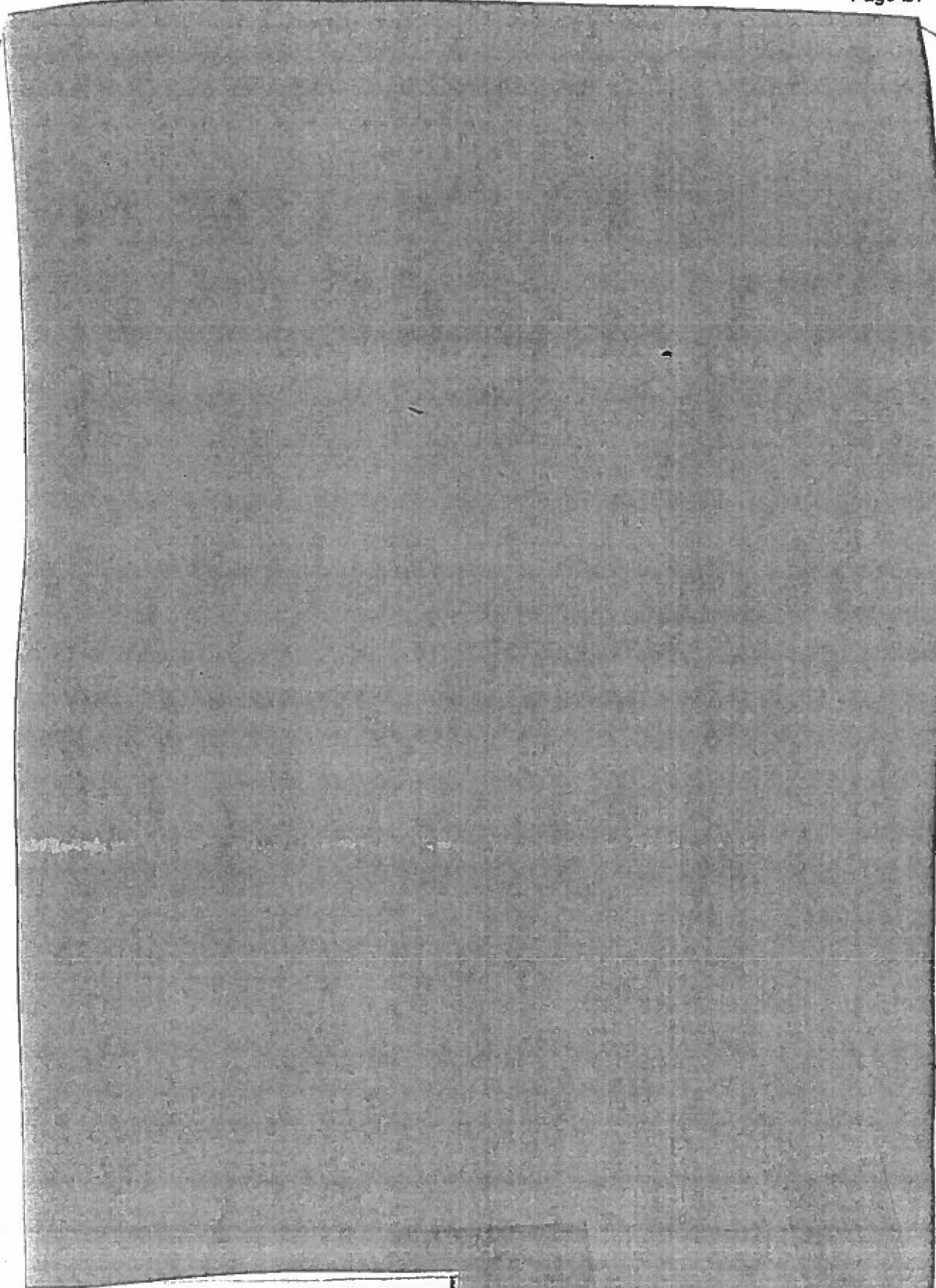
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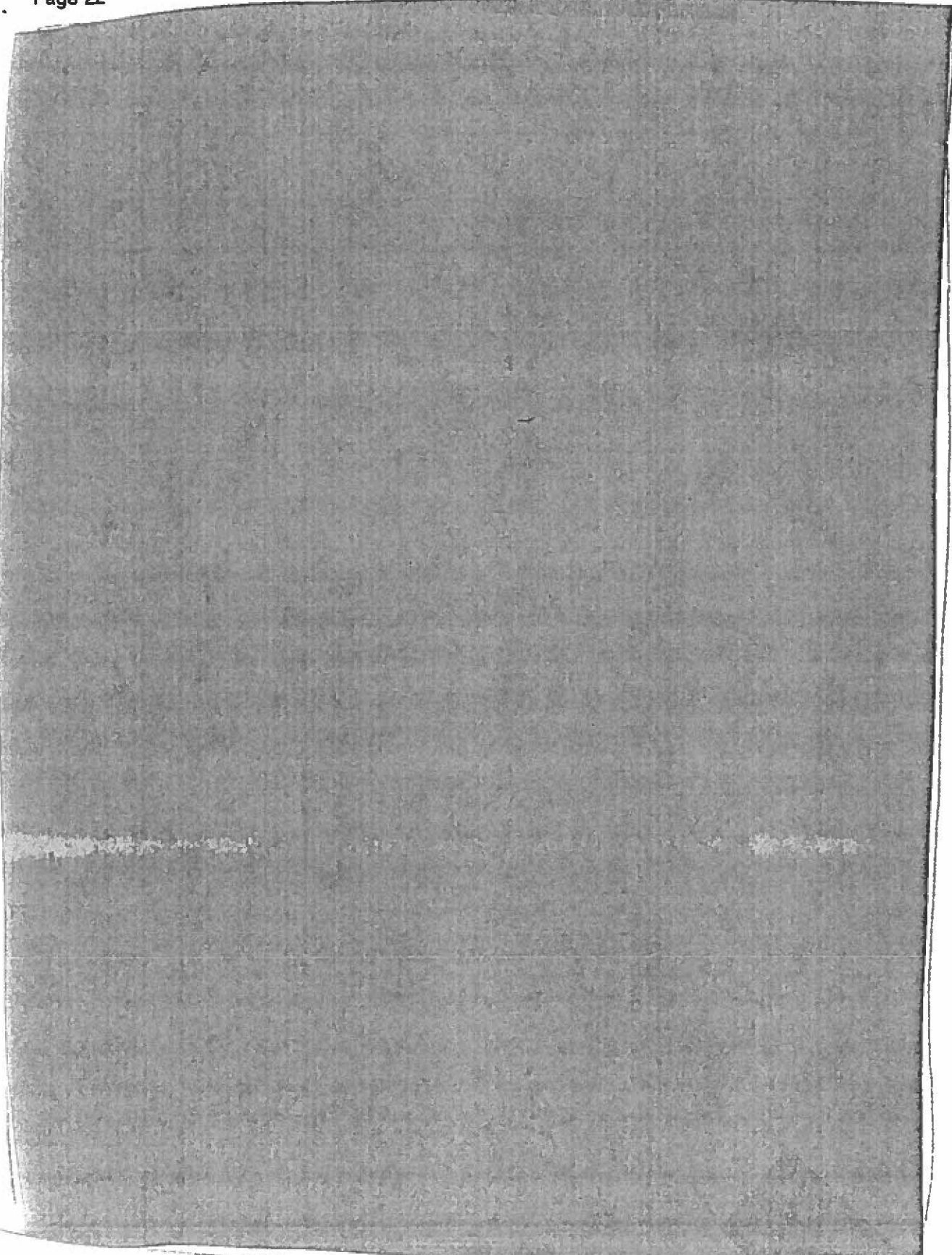
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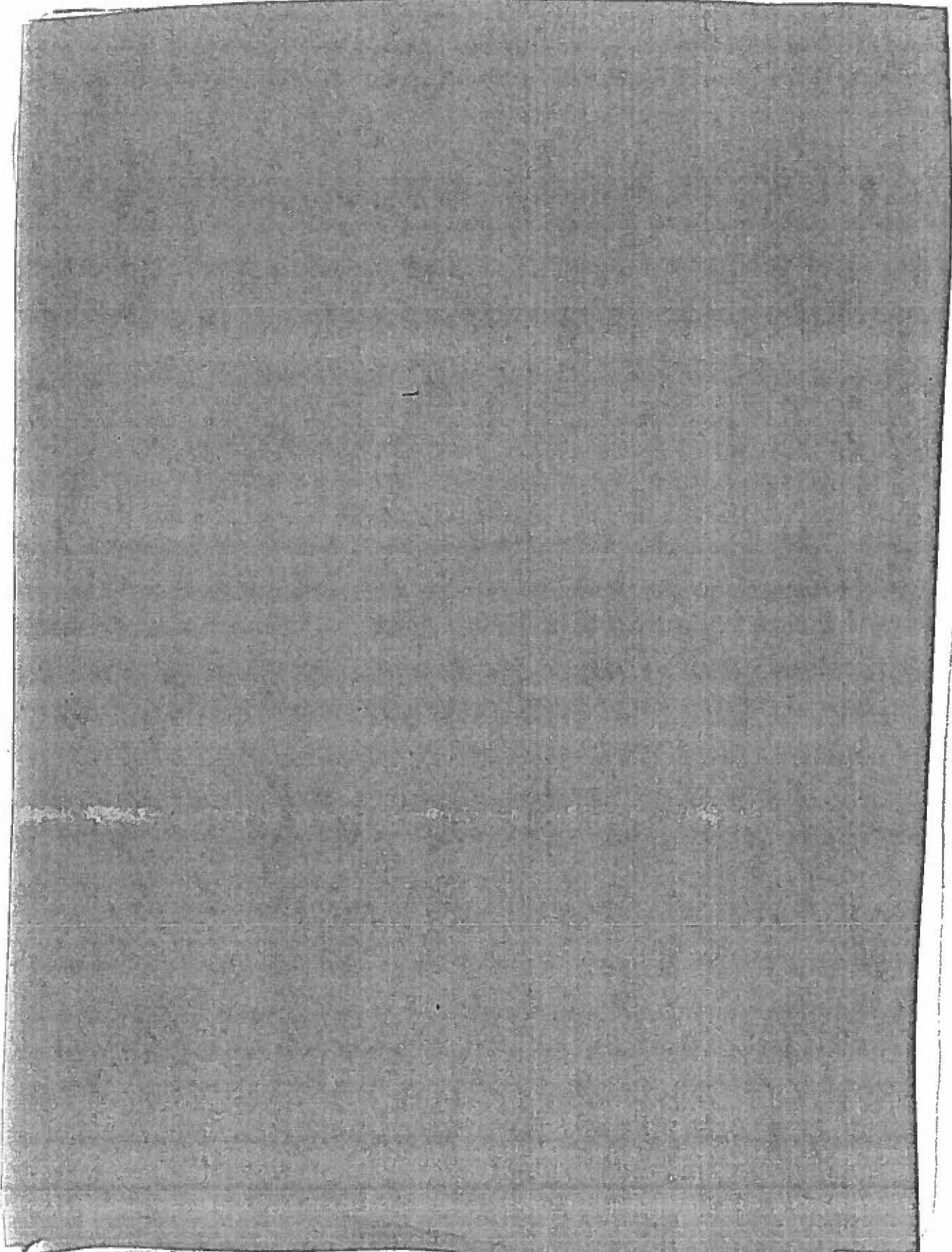
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* (U) Slifer stands for shorted location indicator by frequency of electromagnetic resonance, a way of measuring the rate at which a cable extending away from the shot point is shorted at the shot end by the expanding shock wave. Because the rate depends upon the yield, the latter can be determined. Gas sampling is a way of sampling the air in the shot cavity (minutes to days after the shot) by pumping through a preemplaced hose or permeable cable for gaseous fission products and chemical tracer gases to determine the number of fissions and thus the nuclear yield.

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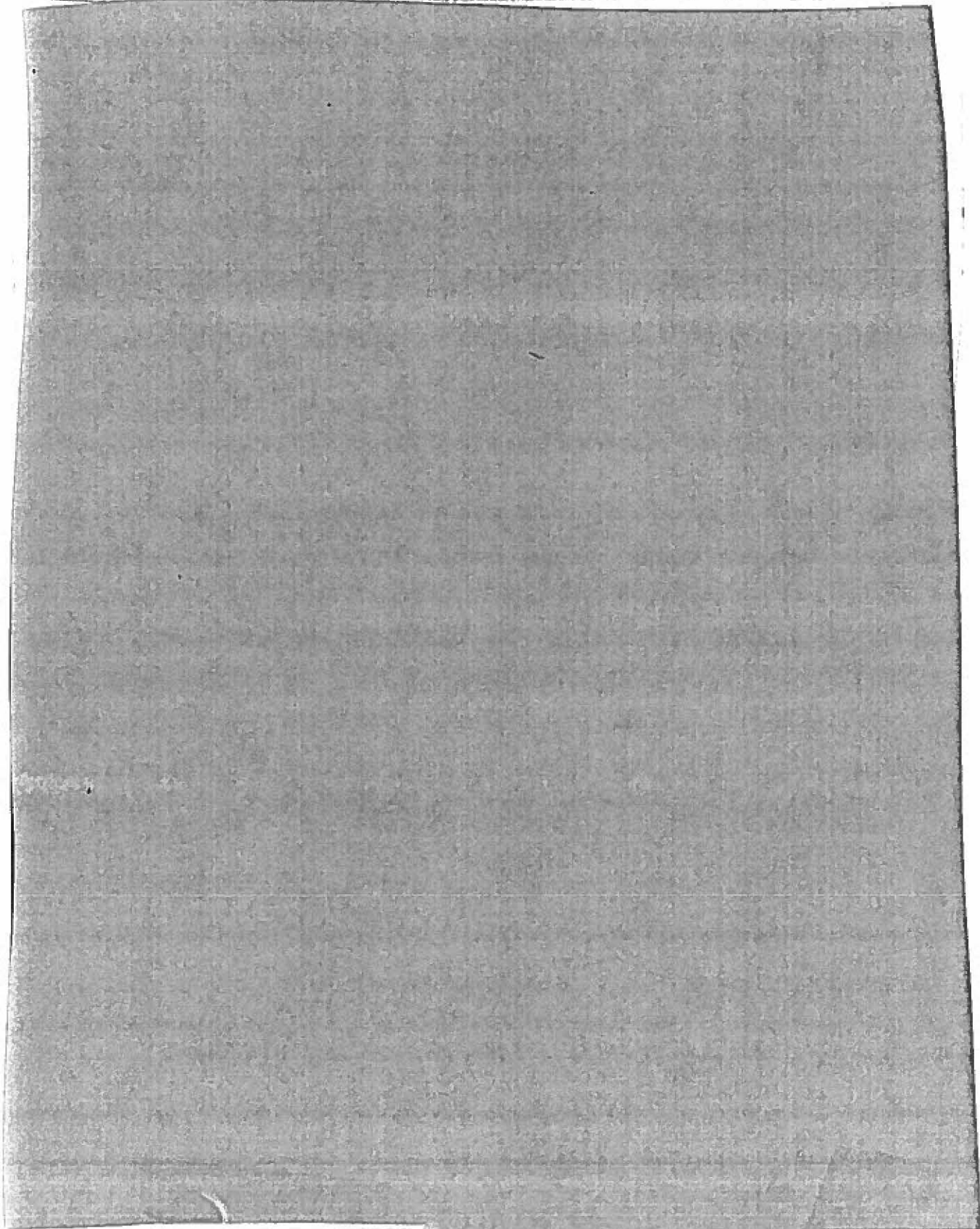
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Conclusions (U)

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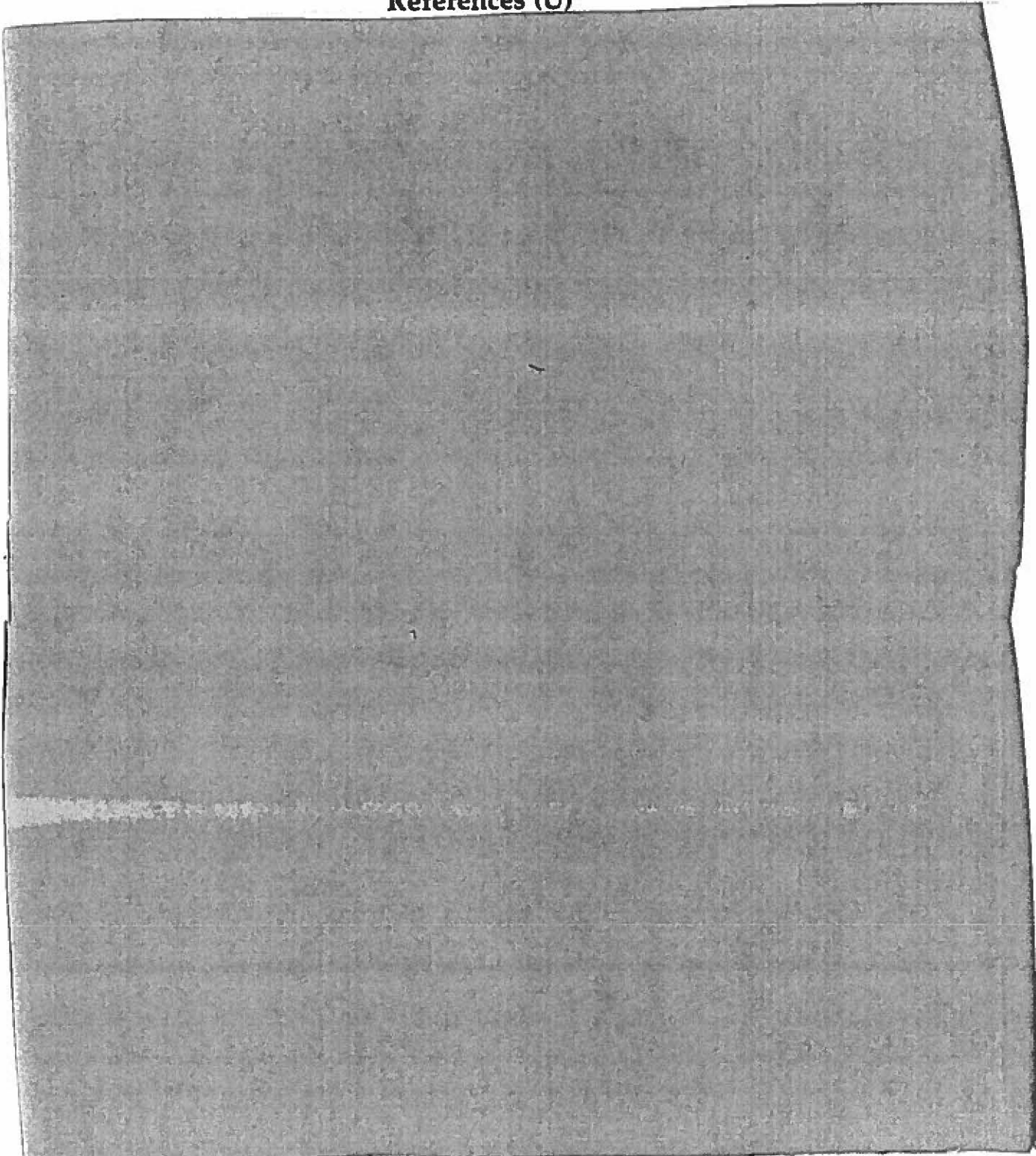
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"Tritium Transfer to Nuclear Weapons Program Detailed," JPRS-TND-90-013, Near East & South Asia,
pp. 35-38, 8 August 1990 (U).

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Distribution (U)

Lawrence Livermore National Laboratory
Internal Distribution
Director's Office (hold)

Central Intelligence Agency

[REDACTED]

Internal Z Division

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Air Force

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Defense Intelligence Agency

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Defense Threat Reduction Agency

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Department of Defense

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Department of Energy Headquarters

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Department of State

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Joint Special Operations Command

[Redacted]

The Joint Staff

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Los Alamos National Laboratory

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**Lockheed Martin Energy System/Oak Ridge
National Laboratory**

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National Air Intelligence Center

[REDACTED]

National Ground Intelligence Center

[REDACTED]

National Imagery and Mapping Agency

[REDACTED]

National Security Agency

[REDACTED]

National Security Council

[REDACTED]

Office of Naval Intelligence

[REDACTED]

Sandia National Laboratory, Albuquerque

[REDACTED]

Savannah River

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U.S. Strategic Command

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