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Weekly Surveyor

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Directorate of Science and Technology

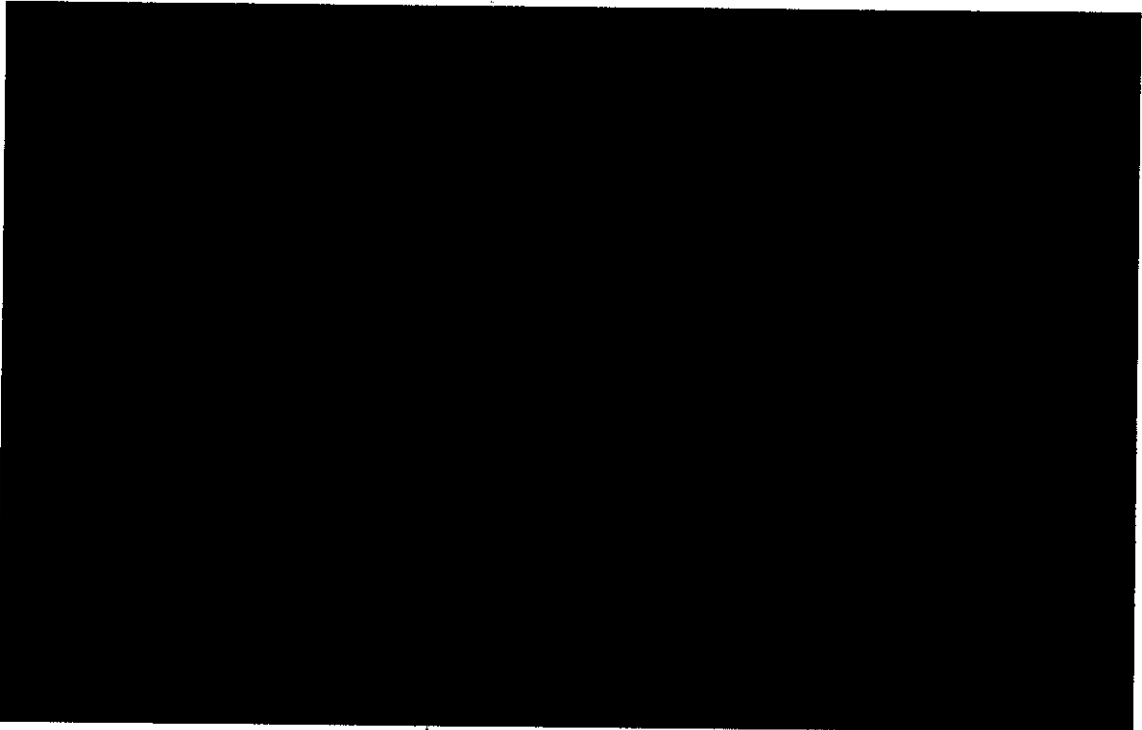
This publication is intended to furnish the intelligence community with a timely survey of significant current scientific intelligence. The items herein are based on selected incoming reports of all kinds received during the previous week. The comments represent the views of the Office of Scientific Intelligence and the Office of Weapons Intelligence and are coordinated to the extent possible in the time available within CIA but, being based on the material at hand, are subject to change on receipt of further information or analysis. We caution against action taken solely on the basis of the preliminary evaluations herein. Substantive questions concerning items in this publication may be addressed directly to the Surveyor Staff, OSI, CIA Headquarters, Langley. (Code 143, Extension 6516) Questions concerning distribution should be forwarded through appropriate departmental channels.

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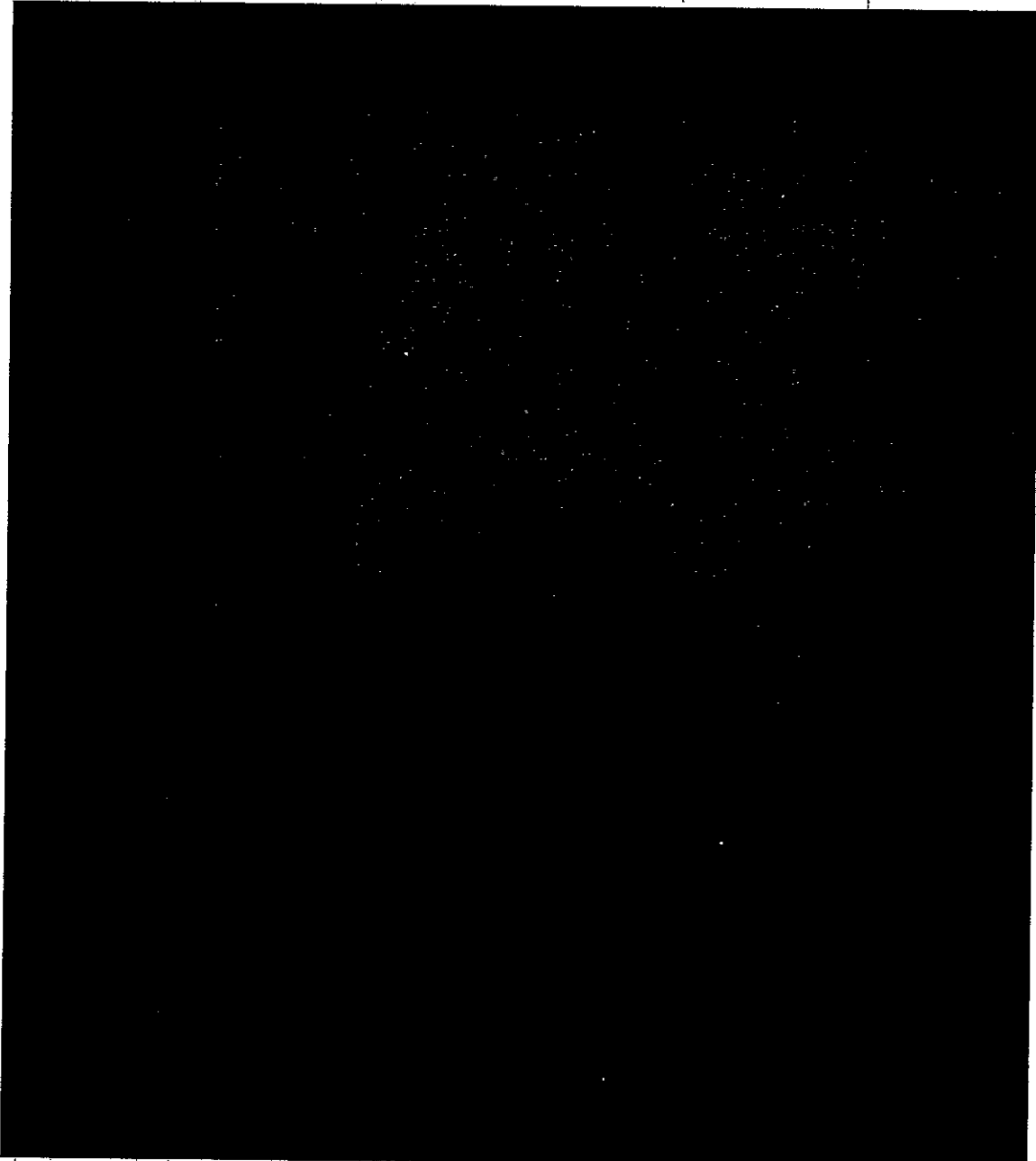
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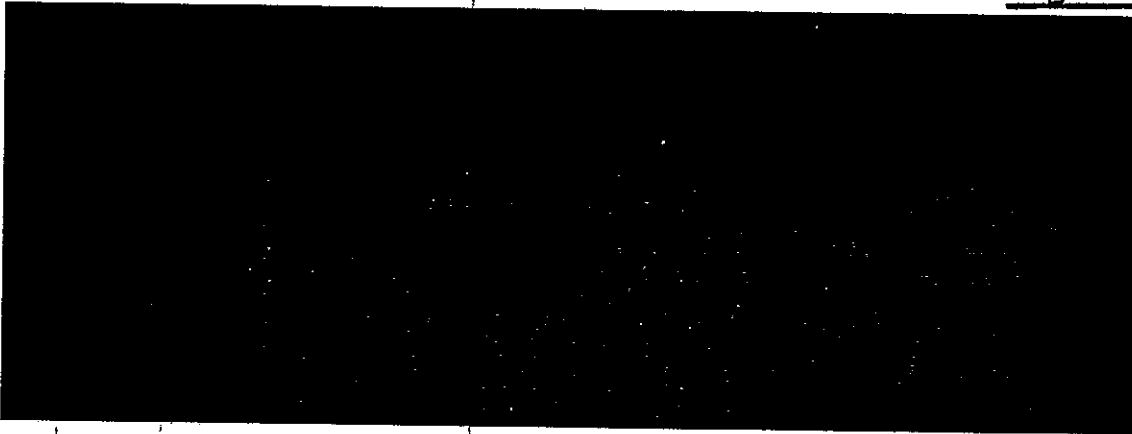
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NUCLEAR ENERGY

South African Uranium Isotope Enrichment Process Probably Aerodynamic: In December 1973, a representative of a US manufacturer of helium liquefiers held discussions with senior officials of African Oxygen Limited (AFROX), the largest supplier of industrial gases in Africa. Officials of the company stated that one account which they were specifically interested in obtaining was the Valindaba Uranium Enrichment Pilot Plant. In discussions of the plant, it was noted that the plant has "a great method for uranium enrichment" and that it uses large amounts of helium -- on the order of 5,000 liters of liquid helium annually. [REDACTED]

Comment: The South African government has been constructing a uranium isotope separation pilot plant since 1970, but the process to be employed has not been divulged. [REDACTED]

[REDACTED] the process would probably be mass or thermal diffusion, or the Becker nozzle, or a variation of one of these. The fact that this process utilizes large quantities of helium indicates that it will be an aerodynamic process such as the Becker nozzle, the Fenn supersonic jet, or a variation thereof. The economic competitiveness of these types of processes with those currently employed has yet to be demonstrated. Helium is probably going to be used as a diluent or carrier gas for the uranium hexafluoride in the separation process. [REDACTED]

[REDACTED]

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