



**November 26, 1957**  
**Letter, South African Atomic Energy Board, 'Production of  
Heavy Water in the Union'**

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**Summary:**

The Deputy Chairman of South Africa's Atomic Energy Board sets out the present position in regard to the manufacture of heavy water in the Union.

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Afrikaans

**Contents:**

- English Translation
- Scan of Original Document

The Secretary for Foreign Affairs: Pretoria.

Production of Heavy Water in the Union.

With reference to your letter 137/11/23 dated 28 October, addressed to the acting Secretary for Mines, I wish to inform you that the production of Heavy Water has been investigated by the Board since last year. In the first instance an investigation into existing processes has been undertaken by dr A.J.A. Roux, Director of Research of the Board. At the beginning of this year two engineers were appointed to assist dr Roux. On 29 March they published a report where in all the locally available information on the different processes to produce Heavy Water was explained. After a detailed study it was decided to further investigate the six processes that from a South African viewpoint would be feasible. One such is the Sasol-patent process where the surplus gas available at Sasol is used. To further the investigation it was necessary to send the Board's two engineers to the Atomic Research Establishment at Harwell for 12 months. The two engineers, Mr Colly and Fraser, left in June and reported in England to the British Authority, Dr Pratt at Harwell on the 1<sup>st</sup> of July. They are currently working there and will not return to South Africa before the middle of next year. They will possibly visit other countries as well to gather information on the production of Heavy Water. They will possibly include the Scandinavian countries in their visits.

For the strictly confidential information of the Union's Charge d' Affaires in Vienna it can be added that the report as quoted by him originated from Sasol and that it was unduly optimistic. As the Charge d' Affaires is aware, Heavy Water can only be used as a moderator in nuclear reactors and will influence the capital expenditures of a nuclear reactor and until success is proven with a homogenous reactor that uses of Heavy Water with uranium oxide in suspension, if possible at all, it will lower the cost of the generating of nuclear energy.

Concerning the Atomic Energy Board, the representatives of the Scandinavian countries may be informed that the investigations into the production of Heavy Water in South Africa will continue. With its cheap coal South Africa may produce Heavy Water on a competitive basis.

(Signed) V.H OSBORN

Deputy Chairperson: Atomic Energy Board.

ISOTOPE"

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UNIE VAN SUID-AFRIKA.—UNION OF SOUTH AFRICA.  
 DEPT. OF EXTERNAL AFFAIRS  
 RAAD OP ATOOMKRAG,  
 REGISTRY ATOMIC ENERGY BOARD,  
 21-11-1957  
 P/A SEKRETARIS VAN MYNWESE,  
 C/O SECRETARY FOR MINES,  
 PRETORIA.

RECORDED  
 PLACED ON FILE

20 NOV 1957

Die Sekretaris van Buitelandse Sake,  
PRETORIA.

Vervaardiging van Swaarwater in die Unie

Met verwysing na u diensbrief 137/11/23 van 28 Oktober, gerig aan die waarn. Sekretaris van Mynwese, wens ek u mee te deel dat die vervaardiging van Swaarwater reeds sedert verlede jaar deur die Raad ondersoek word. In die eerste instansie is 'n ondersoek na bestaande prosesse onderneem deur dr. A.J.A. Roux, Navorsingsdirekteur van die Raad. Aan die begin van hierdie jaar is twee ingenieurs aangestel om dr. Roux behulpsaam te wees. Op 29 Maart het hulle 'n verslag uitgebring wat al die plaaslike beskikbare inligting oor die verskillende prosesse om Swaarwater te vervaardig uiteengesit het. Na 'n breedvoerige studie is besluit dat ses prosesse van die Suid-Afrikaanse standpunt beskou die moeite werd is om verder te ondersoek. Een daarvan is die Sasolpatentproses waarby gebruik gemaak word van surplus gasse wat by Sasol beskikbaar is. Om voort te gaan met hierdie ondersoek was dit egter nodig om die Raad se twee ingenieurs vir 12 maande toe te voeg aan die Atoomkragnavorsingsinstituut te Harwell. Die twee ingenieurs, mnre. Colley en Fraser, het in Juniemaand vertrek en op 1 Julie in Engeland aan die Britse outoriteit, dr. Pratt, te Harwell gerapporteer. Hulle is tans daar besig en sal nie terugkeer na Suid-Afrika voor die middel van volgende jaar nie. Moontlik sal hulle ook ander lande besoek om inligting in te win in verband met die vervaardiging van Swaarwater. Hulle sal moontlik die Skandinawiese lande insluit.

Vir die streng konfidensiële inligting van die Unie se Saakgelastigde in Wenen kan bygevoeg word dat die berig soos deur hom gekwoteer sy ontstaan het by Sasol en dat dit heelwat oor-optimisties is. Soos die Saakgelastigde seker weet, kan Swaarwater slegs gebruik word as 'n moderator by kernreaktore enslegs 'n invloed kan uitoefen op die kapitaalkostes van 'n kernreaktor, en tot tyd en wyl dat sukses behaal is met 'n homogeen-reaktor wat gebruik maak van Swaarwater met uraanoksied in suspensie as 'n brandstof is dit te betwyfel of goedkoop Swaarwater, as dit moontlik is, 'n aansienlike vermindering in die koste van die opwekking van kernkrag sal teweeg bring.

Wat die Raad op Atoomkrag betref mag die Skandinawiese lande se Verteenwoordigers meegedeel word dat die ondersoek na die vervaardiging van Swaarwater in Suid-Afrika nog voortduur. Met sy goedkoop steenkool meen Suid-Afrika dat hy moontlik op 'n kompetitiewe basis Swaarwater sal kan vervaardig.

*V. H. ...*  
 ADJUNK VOORSITTER: RAAD OP  
 ATOOMKRAG

*3 afskrifte  
 ad*