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1. Letter of DGIS dated 3<sup>rd</sup> May 1994, in which the Commission is asked to submit an advisory report
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## 1. INTRODUCTION

This advice is the continuation on the review advice of the EIS oil refinery Tout Lui Faut, Surinam published by the Commission for EIA on 7 July 1994. In this review advice the Commission for EIA recommended to prepare additional information to the existing environmental study. In September 1994 Staatsolie presented the additional information asked for. This document is prepared by ABB Lummus Crest: Staatsolie Suriname Refinery - phase I; Additional information to Environmental impact Statement (EIS).

In this advice the Commission presents the final conclusions concerning the review (chapter 2). In Chapter three the additional information to the EIS/Environmental study will be reviewed (see chapter 2).

To get a brief overview of the EIA procedure until so far, the main points of the advice of the Commission for EIA (7<sup>th</sup> July 1994) is presented in the next paragraph.

### **Main points of the review advice of the EIS dated 7<sup>th</sup> July 1994.**

By letter dated 3<sup>rd</sup> May 1994 (Appendix 1) the Minister for Development Cooperation in the Netherlands invited the Netherlands independent Commission for Environmental Impact Assessment to conduct an advisory review of the Environmental Impact Statement (EIS) "Environmental study of Surinam Refinery Project Tout Lui Faut". Therefore the Commission visited Surinam in the period 6 - 13 June 1994 in order to gather necessary information which was not provided in the EIS and finally to settle on the needed additional information to be provided by Staatsolie.

Staatsolie Maatschappij Suriname N.V. (Staatsolie) intends the construction of 7,000 barrels per stream day (bpsd) modular refinery to process locally produced crude. The proposed refinery site is at Tout Lui Faut, located between the Sir Winston Churchill Road and the Surinam river, about 10 kilometres upstream from the main port of Paramaribo. The feedstock of the refinery will be Saramacca Crude which is produced by Staatsolie and exploited on shore in the Saramacca district.

The EIS/Environmental study for phase 1 which must be available for decision-making by the Directorate General for International Cooperation, is published in 1989 and was based on a feasibility study prepared by Staatsolie (1988). At the time, the initiative had not yet been worked out in the feasibility study in detail, therefore the EIS contains limited information.

During the visit to Surinam the Commission discovered that more and ample information about the design of the refinery and the environmental situation was available. Having scrutinized this information, the Commission has decided to add this information to the EIS as being vital for the review.

The Commission found that the terms of reference for the EIS were not adequate. Therefore, the Commission elaborated a review framework on basis of international guidelines and, emission and immission standards recommended by the "Suriname milieu commissie raffinaderij project, 1990". Next the EIS and additional information were reviewed based on this framework. Furthermore recommendations were made for those aspects on which essential information is missing.

The Commission recommended to provide additional information to the existing EIS/Environmental study, 1989.

## 2. FINAL REVIEW

The Commission considers the information brought together in the following reports as the environmental impact statement for the phase 1 of the oil refinery in Tout Lui Faut:

- EIS/Environmental study; 1989, by ABB Lummus Crest.
- Documents studied by the Commission for EIA during the visit to Surinam<sup>1</sup>].
- Advisory review of the EIS Oil refinery Tout Lui Faut, Surinam; 7<sup>th</sup> July 1994, by the Commission for EIA.
- Staatsolie Suriname Refinery - phase 1. Additional information to Environmental Impact Statement; September 1994, by ABB Lummus Crest.

Together with the additional information, the Commission is of the opinion that **the total available information is sufficient and in general correct** to weigh the environmental interest in the decision making process.

Nevertheless, the Commission wishes to make some observations regarding the above mentioned additional information. The greater part of the observations could be considered as possible conditions to be inserted in the license to be granted according to the "Hinderwet".

### 3. REVIEW OF THE ADDITIONAL INFORMATION

#### 3.1 Headlines on the review of the additional information to the EIS

The additional information to the EIS covers the main issues, raised in the recommendations of the Commission's review advice.

The emission/immission data now presented in the addition are well within acceptable standards. SO<sub>x</sub>/NO<sub>x</sub>/particles emissions for instance are of the same level as in most Western European oil refineries.

In the review advice recommendations were made by the Commission to elaborate alternatives of the design with a lower impact on the environment. The additional information shows that Staatsolie has decided to implement the most important suggested alternatives in the design, being;

- ! The installation of a second sour water stripper, making the stripper capacity more redundant. This is an important measure to limit emissions of H<sub>2</sub>S and NH<sub>3</sub>.
- ! Improvement of water treatment by adding coal absorption (phenol reduction to surface water) and flotation.
- ! Replacement of existing old fashioned bolted storage tanks by new API or BS welded storage tanks. Important measure to prevent soil/groundwater pollution.

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1. Staatsolie Maatschappij Suriname N.V., 1988: Surinam refinery report; Feasibility study, process scheme, site selection and preliminary economics.
  2. Parc, 1988: Staatsolie Maatschappij Suriname N.V.; Refining project - Saramacca crude pilot plant simulation of visbreaker/hydrocracking scheme.
  3. McBride Ratcliff and associates Inc. Geosciences and Materials. Engineering Services, 1989: Geotechnical Investigation Staatsolie Suriname, 7,000 bspd refinery Tout Lui Faut, Surinam, South America.
  4. Staatsolie, 1989, 1993: Staatsolie oil spill contingency plan, different documents.
  5. Milieu commissie raffinaderij project, 1990; Advies inzake de milieustudie uitgevoerd ten behoeve van het raffinaderij project van de Staatsolie maatschappij Suriname N.V.
  6. Moret Ernst & Young, 1993; Feasibility study refinery project phase 1, Staatsolie Maatschappij Suriname N.V.
  7. Explanation by ABB Lummus Crest B.V. based on the 1993 design engineering books, Volumes 1-11.

Some recommendations which are worked out only partly by Staatsolie, need further attention, see § 3.2.

The Commission suggests:

- to prepare a summary of the environmental impact statement, so that this information becomes accessible to the interested parties; for the structure of the summary see appendix 4 of the Commission's advisory review of 7<sup>th</sup> July 1994;
- to improve the communication with inhabitants of the surrounding area of the refinery site and;
- to incorporate the presented environmental measure/ standards, as conditions to be inserted in the license ("Hinderwet").

### 3.2 Specific remarks on the review of the additional information to the EIS

In this paragraph specific remarks will be made as far as relevant. The sequence of the recommendations as elaborated in the addition, will be continued in this paragraph.

- ad 1 No comment.
- ad 2 Existing storage tanks. No clear time frame for implementing the 2-step programme (step A - maintenance and revamp of bolted parts of the existing storage tanks and step B - complete replacement of the existing storage) is given, especially for step B. The implementation of an impermeable layer within the diked area is under consideration by Staatsolie and not yet decided. Loading emissions, though small, are not quantified. In case of installing 2 new fixed roof storage tanks (step B), these tanks should be provided with inner floater roof covers, to limit emissions (state of the art technology). In the granted license ("Hinderwet") attention should be pointed out when the measures-mentioned by step A and B will be realized. The Commission recommends revamping for the short term and complete replacement in the long term.
- ad 3 The waste water flow sketch gives a good overall look at different types of waste water and the waste water treatment systems. The quantities are given but information about the quality of the different water streams is missing. The information is based on the treatment of waste water; the best practical means are used. The treated water is discharged in a check basin. Information is missing on the retention time in this basin and also what kind of parameters are being checked. It is recommended to work this out in the environmental care system. Given the high H<sub>2</sub>S content of the sour water sent to the sour water stripper, closed containment of this stream is necessary to avoid unacceptable stench levels. Also covering of open water streams downstream the strippers might be needed to keep stench levels low. The information supplied on the abatement of odour emissions is insufficient and needs further attention in the license ("Hinderwet") to be granted. Sufficient precautions are taken in the case of calamities by oil spills. The heading of the table on page 5 is missing, daily average is meant. Point 'e' on page 7; BOD and N-Kjeldahl are indicators for organic pollution and are no pollutants.
- ad 4 Information on incidental high immissions due to unfavourable meteorological conditions (inversion) is not provided. Hydrocarbon emissions into atmosphere from process sources are avoided by incineration in independent furnace burners and in the flare. It is recommended that the environmental measures/standards, as presented in the additional information (see page 9 - 13) should be incorporated as conditions in the licence ("Hinderwet").
- ad 5 The presented Noise Estimate Report shows an acceptable noise level in the Tout Lui Faut residential area of less than 50 db(A).
- ad 6 and 7 The presented environmental care system and the safety management system (Appendix II and III) are a good framework for keeping the design and operation of the refinery on standard level over the years. The methods and frequencies of monitoring emissions and immissions should be worked out in more detail. As mentioned, Staatsolie will present one report every year about the state of the art on the environmental situation and the safety.

ad 8 and 9 No comments.

ad 10 Item 1 and 2; The landuse has not been presented on the indicated map DWG 33022-0001, so no conclusions on the presence of sensitive types of landuse can be drawn.

Item 3; It is suggested to inform the local people about the potential hazards of the refinery.

ad 11 The recommendation to elaborate the impact on the SO<sub>x</sub> emission in Surinam by local customers in firing crude (mixed with diesel) versus refined fuel oil, is not worked out. In this connection the probably positive impact of the refinery on the SO<sub>x</sub> emission did not become clear.

The last three recommendations mentioned in the Commissions review advice (page 3 and 4) are not worked out in the addition:

ad 12 The recommendation to make a comparison between the intended activity, the different alternatives asked for and the zero alternative is not worked out satisfactorily. This comparison should have been launched positively for Staatsolie because a number of alternatives as mentioned in the review advice have been implemented in the design.

- ad 13 The set up of an evaluation programme for the gathering of essential data which are not available in the short term, as requested in the review advice, is missing.  
There is no information on ground-level immissions and the quality of drinking water resources.
- ad 14 A summary of the review findings, as described by the Commission for EIA in the review advice of 7<sup>th</sup> July 1994 (chapter 3) is not included.