6TH MEETING

HELD AT

DEPARTMENT OF PETROLEUM, MOE, SHASTRI BHAWAN, NEW DELHI

ON

MAY 18 - 19, 1983

Draft Record of the Sixth Meeting of the Scientific Advisory Committee for the Department of Petroleum

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Venue: Department of Petroleum, Shastri Bhavan, New Delhi.

Date: 18th May, 1983 and 19th May, 1983 (afternoon).

(A list of the participants is attached - Annexure -I)

The minutes of the previous meeting were reviewed and approved.

6.1 Feedstocks for chemicals from refineries

Shri M.Kurien explained briefly the contents of the report. Though the aromatics potential in crudes have been well established particularly for projects like BPCL and Saleempur, there has, however, been an element of doubt about the analysis of n-paraffin contained in the kerosene cut. Though IIP analysis indicates 15% content, there has been another set of analysis which give a figure of 25%. It was observed that the refineries have very poor analytical facilities and this has to be corrected immediately. Each refinery must have facilities to analysis all the streams. Similarly, the amount of ethylene indicated in the report in FCC off gas stream for Cochin and Madras refineries needs to be checked and reconfirmed from M/s. Universal Oil Products (UOP) by the Kurien Committee and Adviser(R) Since IPCL has facilities to identify various carbone numbers, IIP would once again examine the potential of n-paraffins. However, it was pointed out that it would be highly desirable to analyse and compare the results from 2 or 3 laboratories.

6.2 Refinery-wise production of special products:

The potential of C15-C27 n-paraffin in gas oil range has been brought out in the Report. The Committee is of the view that the actual potential for its utilisation does not appear to exist.

It was agreed that utilisation of ethylene particularly in Vizag for ethyl-benzene production from lean ethylene stream of FCC off gases should be examined and EIL should make a detailed study on ethylene recovery from lean streams for taking a decision about its possible utilisation. Where chlorine is available like in Madras, ethylene dichloride can be made from the ethylene recovered. It was pointed out that National Chemical Laboratory is working on the production of ethyl-benzene from lean streams and any study should take note of the data available in NCL. Secretary (Petroleum) observed that pentane, bitumen and wax production should be examined more thoroughly. Oxidised wax can be used in rust prevention and also it may be useful for coating urea granules. If this latter application is developed, the utilisation of wax in urea coating may be very substantial. The possibility of producing bitumen from indigenous crude should also be further explored.

6.3 Hydro-refining:- IIP would give a note for justification of hydro-refining for upgradation of feedstocks for lubes. Regarding ATF dearomatisation, EIL and IIP would work together and give a note; analysis of the aromatic fraction with reference to substituted naphthlenes is necessary.

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It was concluded that the various streams have to be analysed thoroughly and the present facilities are inadequate in the refineries to carry out the analysis.

Prof. Sharma thanked Shri Kurien and Dr. Kothari for preparing a good concise report on feedstocks.

6.4 IPCL's report on creation of pilot scale facilities for the manufacture and evaluation of catalysts:

Dr. Prasada Rao gave a brief introduction about the report. He clarified that Dr. Doraiswamy's comments have been properly incorporated in the report. Dr. Ganguly of IPCL, enqrured if it might be better for concentrate on evaluation on bench scale and further pilot facilities. This matter was discussed in detail and it was decided that an integrated catalyst preparation and evaluation of bench scale should be available at one place at the national level and based on the evaluation results. Further facilities may be considered later. It was noted that the facilities required for day-to-day IPCL R&D programmes have not been included in this proposal. The SAC approved the proposal of IPCL on catalyst manufacture and evaluation. However, the report has to be revised taking into consideration comments such as space requirement, defining particularly major areas, nature of equipment to be ordered, pilot plant facilities required, etc. and the Board's approval should be obtained to the revised report quickly.

6.5 Phase-II feasibility report of IOC(R&D):

Shri Goel of IOC gave brief details of the proposal and informed that time bound programmes have been spelt out as desired in the earlier meeting of the Committee, In view of the facilities already available in IIP and Lubrizol some discussion was centered around whether it would be necessary to create these type of facilities in IOC. It was, however, agreed that a company of IOC's size must have the facilities set out in the proposal. However, detailed discussion should take place between IOC, IIP and EIL on thetype and size of equipment before implementation. It was also observed that IOC R&D should not be restricted to only lubes and additives but must engage in a major way in refinery operations. It was suggested that a separate division should look into research connected with refinery operations and this should be managed by very competent scientists. It was also emphasised that while negotiating a technology, pilot plant facilities should also be included so that meaningful research support can be simultaneously planned. A centralised agency should collect the various information about the refinereis and the knowledge gained suitably shared for the benefit of the refineries. It was agreed that after updating the cost figure indicated in the proposal and giving due consideration to the above comments the IOC.P. should proceed with the proposal most expeditiously.

6.6 National facility for Mass spectrometry:

The proposal of the Regional Research laboratory, Hyderabad was taken up for discussion. In view of the facilities already available in the country at several locations it was debated if such

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centralised facility to cater to petroleum and Coal industries (for identifying the various components) would be required. The Regional Research Laboratory, Hyderabad is an outstanding centre for mass spectrometry and there is need to have a high capability instrument at one location. Secretary (Petroleum) agreed to discuss this with DG, CSIR.

6.7 Control of Pollution and recovery of valuable Chemicals from the effluent streams.

The note of IOC R&D gives pertinent details of the different waste streams and also some gaseous streams. On the whole refineries have adopted satisfactory measures to meet the statutory regulations.

It was emphasised that all the refineries should implement the measures adopted by Mathura refinery immediately to prevent pollution. Also the present standard mayhave to be revised so that more stringent methods are adopted for meeting the new standards.

Regarding pollution control matters the Committee recommended that all the pollutants of the refineries should be analysed and recovery of valuable chemicals studied.

6.8 Dehydrogenation of Propane to Propylene:

In view of the flexibility available in gas cracker for meeting the deficit of propylene, the Committee recommended that this scheme need not be pursued further. However, a research programme for isobutane dehydrogenation to isobutylene may be considered.

6.9 Hydrocracking Technology Development:

The joint proposal of IIP and EIL was discussed at length and issues like phasing for the development of this programme, the relevance of this programme in the Indian context, integration of some of the facilities with other laboratories, etc. were covered. The Committee recommended that in view of the huge investment of about Rs.200 crores (in each refinery) proposed for establishing hydrocracking facilities in the two new refineries i.e., Mangalore and Karnal, it is essential to go ahead in a systematic way with this research project. However, the developmental work pertaining to support carrier for catalysts particularly with respect to zeolites should also be done at the National Chemical Laboratory. Multiple reactor system with appropriate back-up analystical facilities including on-line facilities should be installed. For the development programme under Phase I,II and III given in the proposal it should be the aim to complete this in 4 years time instead of 6 years as indicated in the proposal. Secretary(Petroleum), expressed his concern over the adequate availability of good quality manpower for carrying out this programme and stated that this be taken into account.

6.10 Demonstration Gas Cracker:

The Scientific Advisory Committee approves the proposal of Engineers India Ltd. to set up a demonstration gas cracker in association with IPCL to consolidate the indigenous gas cracker design capabilities. The capital cost for the programme may be provided form OIDB, whereas the operating cost can be met from IPCL/EIL.

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6.11 Engineering Plastics

The Deptt. of Petroleum is already encouraging the applications of engineering plastics and specific issues of National Chemical laboratory should be looked into more intensively by the Ministry.

6.12 Production of wax, sulphur, etc. from ISHS:-

The Committee recommended that the proposal of Regional Research Laboratory, Jorhat for the arrival assistance for the above project should be discussed with IIP and Adv.(R) before it is formally presented to SAC in its next meeting.

6.13 It was suggested that the deliberations of all the earlier meetings should be summarised and made public so that other scientists could also concentrate on the problems of national importance.

6.14 Chairman thanked the members profusely for their wholehearted cooperation and sustained interest. He also thanked the Deptt.'s staff for making arrangements.

It is proposed to have the next meeting of the SAC in the middle of September, 1983.

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Annexure-I

List of participants who attended the Scientific Advisory Committee meeting held on 18th & 19th May,1983

Members

1. Prof.M.M.Sharma, Chemicals Engineering,Depttof Chemical Technology.
2. Dr.B.D.Tilak, Chief Coordinator, Castford, Pune.
3. Dr.I.B.Gulati, Director, Indian Institute of Petroleum,Dehradun.
4. Shri P.K.Goel, General Manager, IOC(R&D), Faridabad.
5. Prof.Sukhdev, Director, Malti Chem Research Centre, Baroda.
6. Shri Vasant Gowariker, VSSC, ISRO, Trivandrum.
7. Dr.P.K.Mukhopadhyaya, Manager, R&D, EIL
8. Dr.J.N.Baruah, Acting Director, Regional Research Laboratory,Jorhat.
9. Dr.G.Thyagarajan, Director, Regional Research Laboratory,Hyderabad.

Invitees

10. Dr.T.S.R.Prasada Rao, IPCL
11. Dr.N.C.Kothary, IPCL/OIDB.
12. Dr.S.Ganguly, CMD, IPCL
13. Dr.I.S.Bhawrdwaj, IPCL,Baroda
14. Sh K.R.S.Narayanan, BPCL(R),Bombay.
15. Shri M.Kurien, BPCL/OIDB.
16. Shri D.N.Rihani, EIL
17. Shri G.Balamalliah, Indian Institute of Petroleum.
18. Dr.G.C.Joshi, -do-
19. Shri J.M.Sagar, IOC(R&D), Faridabad.
20. Shri K.C.Mehta, IOC(R&D)
20-A Dr.S.P.Srivastava, -do-
21. Shri A.J.A.Tauro, Ch.& MD, Indian Oil Corporation.
22. Shri V.S.More, Senior Manager(Pollution Control), IOC.
23. Shri T.K.Sinha, ED(R&P), Indian Oil Corporation.
24. Shri K.C.Das, R.R.L(H)

Department of Petroleum

25. Shri L.Kumar, Secretary, Department of Petroleum.
26. Dr.G.Jayaramarao, Adviser(R), -do-
27. Dr.K.Aghoramurthy, Adviser(PC), -do-
28. Shri M.P.Modi, Joint Secretary, -do-
29. Smt.Lalitha B.Singh, Project Officer
30. Shri L.S.Sundaresan, PO(PC)