22ND MEETING

HELD AT

LUBRIZOL INDIA LIMITED, BOMBAY

ON

DECEMBER 2, 1988

No.J-13013/1/87-Gen. XXI
Government of India
Ministry of Petroleum & Natural Gas

New Delhi, dated the 6th Jan.1988

To

1) All members of Scientific Advisory Committee(by name)
2) All participants as at Annexure(by name)
3) CMDs of BPCL, HPCL, MRL, CRL, BRPL and [illegible]
Dir(Refineries), ICC

Subject:- Minutes of the 22nd Meeting of the Scientific Advisory Committee at Lubrizol India Limited, on December 2, 1988

Sir,

I am directed to forward herewith a copy of the minutes of the Scientific Advisory Committee meeting held at Lubrizol India Limited on December 2, 1988.

Yours faithfully,

T.N.Parameswaran

(T.N.Parameswaran)
Under Secretary to the Govt. of India
T.No.382583

Copy alongwith copy of minutes to:

1) Adv(E)/Adv(R)
2) JS(E)/JS(F)/JS(M)/JSFA 3)AS&FA
4) PS to Secretary(P)
5) [illegible]

MINUTES OF THE 22ND MEETING OF THE SCIENTIFIC ADVISORY COMMITTEEOF MINISTRY OF PETROLEUM & NATURAL GAS HELD AT LUBRIZOL INDIA LIMITED, ON DECEMBER 2, 1988

The list of participants in the meeting is given at Annexure-I

22.1 WELCOME:

22.1.1 Shri P.K.Rudra, Chairman and Managing Director, LIL, welcomed the members and participants of SAC to Lubrizol India. In his welcome address, Shri Rudra gave a background of LIL's activities. Towards achieving technological self-reliance in the area of Chemical Additives, Shri Rudra mentioned that LIL's efforts have been: acquiring technology of most recent origin, maximising indigenous manufacturing capability and continuous strengthening of LIL's R&D base.

22.1.2 Prof. M.M. Sharma, Chairman, SAC, thanked Shri R.K. Rudra, for extending the hospitality to SAC members and participants.

22.2 CONFIRMATION OF MINUTES:

22.2.1 The Minutes of the 21st SAC meeting, which were circulated to the members earlier, were taken up for discussion. The Chairman brought out a few typographical errors as well as some minor corrections. These are listed at annexure II.

22.2.2 In the discussions on items No. 21.3.8 regarding Vacuum Distillation Unit, it was decided that the word "vacuum" be dropped from the circulated Minutes. During the discussions on the subject, the Chairman requested Shri D.K.Palit(MRL) to

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prepare a paper on :Strategies on Design of Future Distillation Columns for Refineries and Petrochemical Units for presentation in the next meeting.

22.2.3 The Minutes of the 21st Meeting were confirmed with the corrections/comments mentioned above.

22.3 STATUS REPORT ON LUBE ADDITIVES:

22.3.1 As desired in the previous SAC Meeting, LIL had prepared and circulated a paper on "Technology Perspectives on Upgradation of Lubricants and Additives" which was presented by Shri R.A. Rao. In his presentation, Shri Rao highlighted the scope for upgradation of automotive engine and gear lubricant quality levels, particularly, with respect to fuel-economy/energy conservation, emission control/environmental protection, extended oil life/ change periods, equipment durability, operator/user safety. He outlined the upgradation potential for 2-T lubricants, passenger car engine oils, diesel engine lubricants and automotive gear oils. It was pointed out that performance evaluation facilities have also to be upgraded with emphasis on development of screen and rig tests on indigenous equipment to cater specifically to the local conditions of operation and available fuels. He also emphasized the need for customer education, OEM support and pricing incentives to promote use of improved lubricant formulations.

22.3.2 Shri S.N.Mathur pointed out that since the paper has brought out that there is considerable scope to upgrade the lubricant quality, necessary steps should be taken to identify the course of action needed in this regard.

22.3.3 Dr. P.K.Mukhopadhyay mentioned that the paper should have more specifically focussed the gaps in additive technology so that collaborative projects could be taken up by different research institutions in those areas. He also mentioned that regarding engine testing development, IOC had already convened a meeting and steps are being taken to initiate tests on indigenous engines.

22.3.4 Shri Singhal of IIP remarked that the targets of our specifications and performance criterion of lubricants should be specifically identified in the context of country's requirements. He also mentioned that fuel quality has also to be taken into consideration in this context.

22.3.5 Dr. G.J.Rao stated that both manufacturing and formulation technology are equally important. LIL may have a particular approach for formulation technology, while there could be other approaches as well. He stressed that more important is the manufacturing technology and indigenous capability to develop newer additives. Regarding lubricant consumption, Dr. Rao expressed that equipment design would play a more dominant role than the lube quality. He further mentioned that regarding overcoming of deficiencies in base oils, steps required should also be specifically identified to surmount the deficiencies in base stocks.

22.3.6 Shri Rudra and Shri Rao clarified that since the paper was prepared from national point of view and not from LIL's angle, the performance upgradation and gaps in formulation technology have been brought out. Shri Rudra commented that there is no doubt that the manufacuring technology is equally important and LIL has been laying emphasis in this area.

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22.3.7 Shri Anand of DGTD remarked that the Chemicals which are being imported have to be adequately identified along with end use applications so that these can be idigenously developed. Shri Rudra clarified that in respect of imported materials, LIL does provide the information in its possession with respect to their specifications, broad nature of chemical composition and their end-use.

22.3.8 After detailed discussion on Lubricant Additive Technology, it was agreed to constitute a committee comprising of Dr. P.K.Mukhopadhyay, Dr. G.J.Rao and Shri R.A. Rao to prepare a paper on specific recommendations with respect to identification of:

- area of upgradation of Lubricant Quality;
- strategy for introducing and manufacturing new components and packages.
- support to be given for indigenous development of new components.

22.3.9 The Committee should submit its recommendations before the next SAC meeting.

22.3.10 While deliberating on the inclusion of fuel additives, it was agreed that this subject could be further discussed in a subsequent meeting of the SAC.

22.4 SYNTHESIS, CHARACTERIZATION AND EVALUATION OF OLEFIN POLYMERS AND CO-POLYMERS AS V.I IMPROVERS

22.4.1 The Chairman then requested Dr. Sivaram, NCL, to present his paper on synthesis and Characterization and Evaluation of Olefin Polymers and Co-Polymers as Viscosity Index Improvers.

22.4.2 In his presentation, Dr. Sivaram enumerated various polymer performance characteristics of typical polymers and co-polymers with special reference to use as V.I. Improvers. He reviewed the recent developments in Olefin copolymerization by Ziegler Natta catalyst and pointed out that the new soluble Zirconium catalyst enables perfect random placement of comonomers and achievement of very high molecular weights as well as narrow molecular weight distributions. Some of the new catalysts can provide access to comb shaped olefin copolymers from monomers such as hexene-1, octene-1 etc. The quasi-living Ziegler catalysts also enable controlled chain branching to polymers with novel architecture. Dr. Sivaram felt that branched macro molecules with narrow molecular weight distribution may prove to be superior V.I. Improvers. He also presented major areas of his research plan involving catalyst development, polymer synthesis and characterization.

22.4.3 Chairman, initiating the discussion, stated that since the programme is exploratory and challenging in nature, project should be encouraged; there is novelty in the approach suggested by Dr. Sivaram. He was happy to know that both IOC and LIL have already shown interest in this programme. Regarding the funding of the project, the Chairman indicated that when there is an enlarged scope, CHT may also be involved in funding this project.

22.4.4 Dr. Mukhopadhyay pointed out that temporary shear loss characteristics should also be taken into consideration in the performance characteristics of V.I. Improvers. He mentioned that IOC(R&D)'s involvement would be mainly in its evaluation. The Chairman suggested that IOC can also get involved in sponsoring the project.

22.4.5 The Chairman concluded that NCL's polymer project merits serious consideration and financial support should come from IOC and LIL. If necessary, CHT may also be involved in this programme.

22.5 DEVELOPMENT OF INDIGENOUS ENGINE TEST METHODS:

22.5.1 SAC had earlier formed a sub-committee consiting of IOC, LIL, IIP and ARAI to review indigenous engine test development programme and make recommendations. Accordingly, IOC R&D had conducted a meeting. Based on the Committee's deliberations, IOC(R&D) submitted an action plan for Development of Indigenous Engine Test Methods for the Evaluation of Automotive Lubricants and Fuels which was already circulated to the members. In his presentation, Shri Raje(IOC R&D) reviewed the engine testing facilities existing at IIP,(IOC)R&D and LIL for testing oils for 2-cycle engines, gasoline engines, and diesel engines and also fuel quality. He summarised the activities proposed in all the three laboratories for engine test development on indigenous engines. He also pointed out the difficulties in getting Reference Oils and Reference Fuels.

22.5.2 Chairman welcomed this multi-laboratory collaboration to develop test methods on indigenous engines.

22.5.3 Dr. Rao enquired about the time frame for completing the programme. Shri Raje mentioned that in view of the nature of this programme, it is difficult to give an exact time target. However, he indicated that about 30-40% progress has already been achieved in some of the Sequence test development efforts and it may take three to four years to complete the programme.

22.5.4 Shri Mathur enquired whether the test methods on indigenous engines are being developed primarily to relate with the existing international tests or with field performance also. Shri Rao, Shri Raje and Shri Singhal clarified that the proposed plan of action in this regard was to correlate with international tests first. The work of correlation with field performance could be taken up later.

22.5.5 It was felt that the engine manufacturers should also be involved in this development work.

22.5.6 With regard to the cost of the engine test development programme being carried out at IOC-R&D, LIL and IIP, both IOC and LIL are bearing the cost of these programmes run in their respective laboratories. IIP's share of the test development programme needs to be supported. IIP may prepare a specific paper in this regard.

22.6 ALTERNATIVE METHODS FOR ETHANE RECOVERY FROM NATURAL GAS:

22.1.1 Chairman requested Dr. Rihani of EIL to present his paper on Alternative Methods for Ethane Recovery from Natural Gas. He gave a background of how the subject matter is of interest to the nation.

22.6.2 While presenting the paper, Dr. Rihani briefly discussed about the various processes used for the ethane recovery. The Chairman commented that a more detailed discussion on this aspect could be taken up in the next meeting where GAIL representatives should be requested to participate.

22.7 CARBON BLACK FEEDSTOCKS.

22.7.1 The Chairman then took up IIP's paper on Carbon Black Feed-stock. It was felt that SAC's earlier comments in this regard can be considered valid.

22.8 THE NEXT MEETING:

22.8.1 The next meeting would be held at EIL R&D Centre, Gurgaon, on Friday April 7, 1989.

22.8.2 The Agenda for the next meeting would be as follows:-

i) SAC recommendations on Lube Additives	Shri R.A.Rao Dr.P.K.Mukhopadhyay Dr. G.J. Rao
ii) Presentation on Seminar on Petroleum Products-Quality Aspects by 2000AD.	CHT/LIL
iii) Ethane Recovery from Natural Gas	EIL/GAIL
iv) Distillation Column Internals	MRL
v) Hydrocracking	IOC(R&D)

22.8.3 The meeting ended with appreciation of LIL's hospitality by Chairman and with a vote of thanks to the Chair. After the meeting, the members visited LIL R&D Laboratories.

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ANNEXURE -I

		ORGANISATION
1.	Prof M M Sharma	B.U.D.C.T
2.	Shri S N Mathur	Adv(R)Min.of Petroleum &NG
3.	Shri G.Jayarama Rao	Centre for High Technology
4.	Shri P.K.Mukhopadhyay	IOC
5.	Dr S Sivaram	NCL
6.	Shri S Singhal	IIP
7.	Shri C D Anand	D.G.T.D
8.	Shri D.K.Palit	MRL
9.	Dr A K Bhatnagar	IOC
10.	Shri N R Raje	IOC
11.	Dr D. N Rihani	EIL
12.	Shri P K Rudra	LIL
13.	Shri R A Rao	LIL
14.	Dr. K.L.Mallik	LIL
15.	Shri A S Rapial	LIL
16.	Shri D R Teredesai	LIL
17.	Shri S K Mukherjee	HPCL
18.	Shri R.R Parmar	LIL
19.	Dr. A.S.Sarma	LIL

ANNEXURE -II

LIST OF CORRECTIONS IN THE MINUTES OF 21ST MEETING OF THE SAC HELD ON 19TH AND 20TH SEPTEMBER, 1988 AT DEHRADUN

PARA	LINE	WORD/WORDS	MAY BE READ AS
21.3.1	7	-	diesel particularly with regard to ce tane number,
21.3.1	11	(90% pt 375^{0}C)	(90%pt 357^{0}C)
21.3.7	2	~~net~~	no
21.3.9	last line	surplus	sulphur
21.4.2	11	worth	work
21.5.4	2	lump	lamp
21.8.5	last line	protection, on the national protection, on the national basis	protection on national basis

MAJOR RECOMMENDATION MADE BY SCIENTIFIC ADVISORY COMMITTEE

Year	Recommendation	Remarks
1982	SAC Recommended setting up of EIL Research Centre indicating the outline of the facilities that should be made available.	EIL - R&D Centre is functioning in Gurgaon.
	Setting up of primary rheological testing centre facilities in India on similar lines as TNO.	
	All new hexane production facilities should adopt only the extractive distillation but not acid treatment.	
1986	Recommended for new technology Transfer agreement by LIL	Since signed.
1986	Recommended setting up of a Centre for High Technology.	Since set up.
1986	Reviewed the report of the High Powered Committee on assessment of Research potential in petroleum and recommended its acceptance.	Since communicated to PSUs for implementation.
	Recommended progressive replacement of the SO_2 extraction technology being used in the eastern region for dearomatisation of kerosene produced from Assam crude.	