49TH MEETING

HELD AT

CENTRE FOR HIGH TECHNOLOGY, SCOPE CONVENTION CENTRE, SCOPE COMPLEX, NEW DELHI

ON

DECEMBER 15, 2000

उच्च प्रौद्योगिकी केन्द्र
(पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय)

Centre for High Technology
(Ministry of Petroleum & Natural Gas, Govt. of India)

उ.प्रौ./एस.ए.सी./
CHT/SAC/ 1145

जनवरी 11, 2001
January 11, 2001

सेवा में,
To,

1. पेट्रोलियम और प्राकृतिक गैस मंत्रालय हाइड्रोकार्बन्स की वैज्ञानिक सलाहकार समिति के सभी सदस्यों को ।
1. All Members of the Scientific Advisory Committee on Hydrocarbons of the Ministry of Petroleum and Natural Gas.
2. अपर सचिव (विपणन) / संयुक्त सचिव (रिफाइनरी) / सलाहकार (ई) / ओ.एस.डी. (रिफाइनरी), पेट्रोलियम और प्राकृतिक गैस मंत्रालय
2. AS(M) / JS (R) / JS(E) / Adviser (E) / OSD (R) - MOP&NG.
3. सचिव, तेल उद्योग विकास बोर्ड ।
3. Secretary, Oil Industry Development Board
4. सभी तेल कंपनियों के मुख्य कार्यकारियों को ।
4. Chief Executives of all Oil Companies.
5. पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय के सचिव के निजी वैयक्तिक सहायक को ।
5. PPS to Secretary, MOP&NG

विषय : पेट्रोलियम और प्राकृतिक गैस मंत्रालय की हाइड्रोकार्बन्स पर 49वीं वैज्ञानिक सलाहकार समिति के कार्यवृत्त का परिचालन ।

Sub.: 49th Meeting of the Scientific Advisory Committee on Hydrocarbons of the Ministry of Petroleum & Natural Gas - Circulation of minutes.

महोदय / महोदया,
Dear Sir / Madam,

पेट्रोलियम और प्राकृतिक गैस मंत्रालय की हाइड्रोकार्बन्स पर 15 दिसम्बर, 2000 को नई दिल्ली में हुई वैज्ञानिक सलाहकार समिति की 49वीं बैठक के कार्यवृत्त की प्रति आपकी सूचना एवं आवश्यक कार्रवाई हेतु संलग्न है ।

Enclosed, please find a copy of the minutes of the 49th Meeting of the Scientific Advisory Committee on Hydrocarbons of the Ministry of Petroleum and Natural Gas held at New Delhi on 15 December, 2000 for your information and necessary action.

धन्यवाद !
Thanking you,

भवदीय,
Yours faithfully,

(एस.के. सिल)
निदेशक
(S.K. Sil)
Director

संलग्न : यथोक्त
Encl.: As Above.

पाँचवां तल, कोर 6, स्कोप कॉम्पलैक्स, लोधी रोड, नई दिल्ली- 110 003
5th Floor, Core 6, SCOPE Complex, Lodhi Road, New Delhi-110 003
E-mail : cht@giasdi01.vsnl.net.in Fax : 4362879, 4367350 Tel.:.....

Minutes of 49th Meeting of the Scientific Advisory Committee (SAC) on Hydrocarbons of the Ministry of Petroleum & Natural Gas held On 15th December, 2000 at New Delhi

List of participants is enclosed as Annexure-I.

Shri K. Ravikumar, ED, CHT extended warm welcome to Prof. M.M. Sharma, Chairman, SAC, all other members of SAC and other distinguished delegates/invitees from oil industry and research institutions participating in the meeting. Recalling his association with SAC, he expressed that it was an honour for him to participate in the SAC meetings in the august company of eminent scientists, academicians and other members, since taking over the charge of ED, CHT in Jan. 1997. He appreciated the contributions of SAC for the recommendations to sponsor important research & development programmes for developing indigenous technologies, absorption of new technologies and undertaking various studies for upgrading quality of petroleum products to meet the international norms, particularly in respect of future emission standards. He observed that SAC has been providing an open forum for high level exchange of ideas, expertise and sharing of experience between the oil industry and research scientists & academicians. He informed the members that this would be the last SAC meeting he would be participating as its member, since he was to lay down the office ED, CHT on 31.12.2000. He expressed good wishes to Chairman, SAC, all the Committee members and executives from oil industry, research and academic institutions participating in the meeting and thanked the Committee for its support to CHT .

Prof. M.M. Sharma, Chairman, SAC thanked CHT in organising the 49th SAC meeting, although it was decided in the last SAC meeting to hold it at IOCL-Digboi Refinery or IIP-Dehradun. He appreciated the role of ED, CHT, Shri K. Ravikumar in enmeshing with all the members of SAC, which facilitated high level interactions among SAC members and participants from Oil industry, research and academic institutes.

In reference to Oil sector, he noted that with the commissioning of a large refinery at Jamnagar, there has been a drastic change in the country on the front of petroleum refining and within the next three-four years the refining capacity in the country will be comparable with that in any prominent European country. Against the backdrop of the changed scenario, he observed that the Indian petroleum refining industry would have to work competitively, with a different mindset. He also apprised the participants about the various technical presentations presented in the recent European Refining Technology Conference held in Rome in November, 2000, which had focussed, inter alia, on technologies for production of diesel with 50 ppm sulphur and motor spirit with 10 ppm sulphur. In regard to the R&D projects being undertaken by the oil industry, he observed that although several innovations could come out of the research in the field of Fluid Catalytic Cracking, the other refining processes for residue upgradation viz., Delayed Coker, Visbreaker, etc. have not attracted much attention of the industry. This unexplored area, he observed, would require due consideration of the industry by formulating research studies for innovative ideas. As pointed out in the previous meetings, the Chairman stressed the importance of IGCC projects in the refineries which is a very effective and

attractive means to use heavier residue irrespective of high sulphur, metal and asphaltenes and even RPC with 8% sulphur could also be used.

The various Agenda items which were taken up for presentation / discussions and the decisions emanating from the deliberations of the Committee are given below :

49.1 Development of new horizontal reactor for Fluid Catalytic Cracking for Vacuum Gas Oil – RRL, Jorhat

49.1.1 Presentation and discussions

Shri R.C. Borah, Scientist, RRL- Jorhat made presentation on the project. He stated that although riser type reactors are the standard for the present day FCC process in the refineries, they have several inherent problems particularly with the use of heavier feedstocks, viz., post riser cracking due to increasing riser outlet temperature, back-mixing of catalyst particles along the walls, etc.. He stated that a horizontal type of reactor could remove some of the bottlenecks of the riser reactor since there would be short contact time in a horizontal reactor.

In response to a query on the working of the proposed horizontal reactor, Sh. Borah informed that the concept and the experimental set-up have been developed on the basis of literature survey and it would involve coupling of micro pulse reactor with a gas chromatograph.

49.1.2 Decisions of the Committee

It was noted by the committee that the proposal placed by RRL has been formulated on the basis of a Ph.D thesis and as such could not be considered by the Committee for recommendation. It was further observed by the committee that fairly advanced expertise has been acquired by research centres in the country, viz., IOCL(R&D Centre), EIL(R&D Centre) as also refineries such as BPCL, KRL, CPCL, etc. and in view of the experience gained by them, RRL should visit their facilities/ units and discuss the concept of the subject proposal with them. It was, therefore, decided that SAC would consider the proposal only after RRL had consulted the refineries/ research centres for comprehensive discussions on the concept, experimental set-up and methodology of the project.

49.2 Study to develop aqua refining process "a modified visbreaking process for residue upgrading" – IIP, Dehradun

29.2.1 Presentation and discussions:

Shri M.M.Kumar, Group Leader, IIP made a presentation on the proposal, which was earlier presented in the 46th SAC Meeting at CPCL in October'1998. He informed that the proposal, which had earlier envisaged project cost of Rs.167 lakhs, had been reviewed by IIP with revised cost of Rs.100 lakhs, for consideration of SAC.

He pointed out that the philosophy of the "Aqua – refining process" is based on hydrogen production during the process by dissociating water into hydrogen and oxygen, using a dual catalyst. The project, which will be a collaborative effort between IIP, UDCT & EIL would be carried out in two phases;

Phase I: Development of Catalyst
Phase II: Process Development
i) Comprehensive study on pilot plant
ii) Kinetics and modeling

During discussions on the proposal, Dr.A K Bhatnagar; Director (R&D), IOCL pointed out that IOC had earlier undertaken a similar research project with CFRI, using FeO as catalyst. The problems with that study was very high requirement of water, which was difficult to handle and the project was found to be highly energy intensive. In response to this observation, IIP informed that their proposal is different since it would be using a dual catalyst.

On the issue of financial participation by any industry member, IIP informed that they are in touch with 2 refineries for seeking their collaboration.

49.2.2 Decisions of the Committee:

The Committee observed that decision for recommending the proposal would be considered by it only after IIP obtains confirmation from any industry member for financial participation in the project. IIP was also advised to thoroughly examine and work out energy requirement of the proposed project.

49.3 Identification and estimation of Poly Aromatic Hydrocarbons in diesel fuel – IIP, Dehradun

49.3.1 Presentation and discussions

Dr. A. Dutta, Scientist G, IIP made presentation on the project and informed that although this project was earlier approved in the 44th SAC Meeting held in October, 1998, the Executive Committee of CHT in its 11th Meeting held in June, 2000 had decided that IIP should revise their proposal which should involve determination of PAH content in various streams blended in the HSD pool, and also standardise the Test Method to be adopted for determination of PAH content.

The activities involved in the proposed study would be:
i) Review of various analytical methods for determination of PAH
ii) Estimation of PAH content in commercial diesel fuels
iii) Estimation of PAH content in various refinery streams blended in diesel pool by Indian Refineries
iv) Physical separation of PAHs from various streams of diesel fuels

v) Standardising of analytical method for determination of total PAHs for Indian Diesel Fuels.

Shri A P Ram, OSD (R) informed that PAH content would be included in the Euro standard from Ist January, 2001. He also mentioned that Indian Refineries are to be advised about the method for determination of PAH content in diesel fuel. It would be therefore required for IIP and IOCL (R&D) to examine various methods and submit their interim recommendation for PAH determination to MOP&NG at the earliest, so that the refineries could be advised accordingly.

49.3.2 Decisions of the Committee

The Committee recommended the proposal, involving the project cost of Rs.50.90 lakhs, for funding by CHT/OIDB.. It was also decided that the scope of project should include recommendation of the method for separation of PAHs present in the diesel fuel.

49.4 Studies on effect of Gasoline composition – Benzene, Aromatics & Olefines – on vehicle emissions – IIP, Dehradun

49.4.1 It was recalled by CHT that when the above proposal was presented by IIP in the 47th SAC Meeting held in November, 1999 at HPCL, Visakh, SAC had decided that IIP should come forward with a partner agreeing for financial participation to the extent of 25% of the total project cost. However, considering the great merit and benefits of the study to the refining industry, it was informed by Shri A P Ram, OSD(R), that MOP&NG has taken a view that the proposed study involving total cost of Rs.153 lakhs, could be sponsored by CHT/OIDB without the condition of financial participation by a partner. He informed that MOP&NG would issue the letter to this effect. Taking cognizance of this, SAC recommended the proposal for funding by CHT/OIDB.

49.5 Presentation on recently completed projects

49.5.1 Assessment of residual life of turbine oil by RBOT (Phase-II)- IIT, Delhi

Dr. C.R. Jagga, CSO, IIT, Delhi made a presentation on the subject project, which was completed in Oct. 2000. He informed that turbine oil samples from both steam turbine and gas turbine power plants were monitored under this project and more pronounced degradation was observed in case of gas turbines. The important conclusions of the project are:

1. RBOT life deterioration can be used to predict residual life of turbine oils.

2. There is direct correlation between residual oxidation inhibitor in the oil and its remaining useful RBOT life.

3. RBOT life and Anti-oxidant content of the oil are more responsive than TAN especially in steam turbines to degradation of turbine oil.

49.5.2 Catalyst & Technology Development for hydrotreating of Diesel and Vacuum Gas Oil – IIP, Dehradun

Shri P.C. Gupta, Scientist-E, IIP made a presentation on the project recently compled by IIP. The desulphurisation targets set under the objectives of the project were 0.05% (500 ppm) sulphur for Diesel and reduction of sulphur and nitrogen upto 90% and 50% respectively in case of VGO.

He informed that various catalyst formulations were developed jointly by IIP and Sud Chemie India Limited (SCIL). The catalysts, R&D/971-X (CoMo-Alumina) and R&D/985-X (NiMo-Alumina) were developed for producing diesel containing 500 ppm sulphur and the catalyst system consisting of catalysts R&D/980-X and R&D/986-X were developed for hydrotreating VGO to meet the required objectives. About 10 kg. of diesel HDS catalyst has been prepared by SCIL and 5 kg. of this catalyst has been sent to KRL for testing at their pilot plant to assess its suitability for commercial exploitation. The testing is currently under progress at KRL and based on the data generated on its performance, its commercial exploitation by Indian refineries would be explored by IIP.

49.6 Other Presentation

49.6.1 International funding mechanisms for technology upgradation leading to reduction of Green House Gases (GHG) emissions in Indian Industries inlcluding oil sector – PCRA, New Delhi

The presentation on various international funding mechanisms was made by Dr. Naval Karrir, Dy.Manager, PCRA. He pointed out that under the present scenario of organisational inter-connected multiple bottom lines i.e. financial, economic, environmental, social and informational, it would be beneficial for the oil industry in India to avail such funds. He informed that to meet the environmental bottom lines through technology upgradation, there are several international funding mechanisms which could be availed by the Indian industries.

He briefly touched few specific cases on how multinational organisations like SHELL and British Petroleum have already taken a lead and started projects and programmes, related to environmental protection, taking benefit of these international funding mechanisms.

49.7 Review of status of ongoing R&D projects sponsored by CHT/OIDB

49.7.1 CHT apprised the Committee about the progress of the ongoing CHT/OIDB sponsored R&D projects which are to be completed in the next six months. It was noted by the Committee that out of the six projects to be completed by May 2000, four projects are likely to be completed as per schedule. However,

the projects on "Development of Flash Zone Entry Device for Vacuum Column" and "Development of Hydrodynamics of Trickle Bed Reactor Phase-II" being executed by EIL, would be delayed due to various problems being faced by EIL, in the case of the former project the equipment availability at Barauni has influenced the schedule.

49.7.2 CHT informed the Committee that in case of three R&D projects wherein besides the research institutions viz., IIP, EIL, other collaborating partners are involved, there has been substantial delay in signing the MoU between CHT and the research institute, which is the nodal agency to execute the project. However, the differences between research institutes and the collaborating partners are likely to be resolved soon and the work related to the projects might be commenced soon.

49.8 Other Points

49.8.1 The members felt that with the recent global developments in petroleum refining, it would be necessary that an Expert Committee be formed for technological upgradation, which would give its recommendations for providing direction and guidance to the refineries for taking up various projects related to changes in fuels specifications, change in quality of crude oil available in the international market and other developments/related issues which are taking place in the international arena.

The members also expressed the view that there is a need for giving recommendations by the Committee on the strategy and the mechanism to facilitate scaling up of the technology developed at the pilot plant scale to a full fledged commercial plant.

It was proposed that the Committee should constitute of members from IOCL-R&D, EIL, IIP, NCL and others. The time frame for the Committee to give its report and recommendations should be not more than 6 months after it is constituted. However, the details regarding the proposed Committee will be taken up by SAC in its next meeting.

49.8.2 Highlights of SAC

It was desired by the Committee that a report on the highlights of the achievements of SAC should be presented by CHT in its next meeting, which would be the 50th meeting of the Committee.

49.8.3 On a request from Dr. Ms. Malti Goel, Jt. Advisor, DST, for a presentation on the joint projects by DST, it was agreed that she would make the presentation in the next SAC meeting.

49.9 Chairman, SAC again thanked CHT for organising the meeting and conveyed good wishes, on behalf of SAC, to Sh. K. Ravikumar for a very happy post-retirement life.

49.10 It was decided that the next meeting will he held at IOCL-Digboi Refinery some time during Feb. 2001 after the stablisation of SPD unit. The exact dates for the meeting will be finalised by Shri S.N. Sharma, CSIR-HQ and CHT in consultation with Chairman, SAC and Member- Secretary, SAC.

49.11 The meeting concluded with proposing Vote of thanks by Director, CHT to the Chairman and other participants.

Annexure-I

49th Meeting of the Scientific Advisory Committee on hydrocarbons of Ministry of Petroleum & Natural Gas

List of Participants

Members

1.	Prof. M.M. Sharma (Chairman)	Ex-Director	UDCT, Mumbai
2.	Dr. S. Vardarajan	Ex-consultant	Planning Commission
3.	Prof. K. Vasudeva	Ex-Head, Chem.Engg. Dept.	IIT, Delhi
4.	Sh. K. Ravikumar	Executive Director	CHT
5.	Dr. A.K. Bhatnagar	Director (R&D)	IOC(R&D), Faridabad
6.	Dr. S.J. Chopra	Director (T)	EIL, Gurgaon
7.	Sh. S. Singhal	Director	IIP, Dehradun
8.	Dr. J.S. Sandhu	Director	RRL, Jorhat
9.	Sh. K.K. Dhingra	Executive Director	PCRA, New Delhi
10.	Sh. A.P. Ram	OSD (R)	MOP&NG
11.	Sh. S.N. Sharma	Scientist	CSIR, New Delhi
12.	Dr.Mrs.Malti Goel	Jt. Advisor	DST, New Delhi

Delegates / Invitees

1.	Mrs. Vandana Singhal	Secretary	OIDB
2.	Sh. S. Chandrashekhar	Under Secretary	MOP&NG
3.	Sh. A.K. Mishra	ED (Ops.)	IOC(R), New Delhi
4.	Dr. K.S. Jauhri	Scientist 'G'	IIP, Dehradun
5.	Sh. A. Soni	Executive Director	EIL, Gurgaon
6.	Dr. M.O. Garg	Scientist 'G'	IIP, Dehradun
7.	Dr. Himmat Singh	Advisor (R&D)	BPCL, Mumbai
8.	Dr. A. Dutta	Scientist 'G'	IIP, Dehradun
9.	Dr. R.P. Verma	General Manager	IOC(R&D), Faridabad
10.	Dr. K.C. Koshel	General Manager	ONGC
11	Sh. M.M Kumar	Group Leader	IIP, Dehradun
12	Sh. P.C. Gupta	Scientist 'F'	IIP, Dehradun
13	Sh. G.K. Phukan	Sr.Advisor(Ops.)	OIL, New Delhi
14	Sh. P.A. Dandekar	DGM	BPCL, Mumbai
15	Dr. G.G. Rajan	DGM(R&D)	KRL, Kochi
16.	Dr. S. Banik	DGM	EIL, Gurgaon
17	Sh. A. Mishra	DGM(LPG-E)	IBP
18	Sh. Prasad Sarma	Chief Manager(T)	HPCL
19	Sh. R.C. Borah	Scientist E-1	RRL, Jorhat

20	Dr. C.R. Jaggga	C.S.O	IIT, Delhi
21	Dr. G.P. Rai	Sr.R&D Manager	BPCL, Mumbai
22	Sh. Harendra Singh	Manager	EIL, Gurgaon
23	Dr. R.N. Lahiri	Manager	EIL, Gurgaon
24	Sh. S. Bhalla	Manager	GAIL
25	Sh. Partha Ghosh	Manager	BRPL
26	Sh. S. Mandal	Dy.Manager	IOC(R&D), Faridabad
27	Dr. Naval Karrir	Dy.Manager	PCRA, New Delhi
28	Sh. S.K. Sil	Director	CHT
29	Sh. M.K. Dutta	Addl.Director	CHT
30	Sh. P.N. Dodeja	Addl.Director	CHT

उच्च प्रौद्योगिकी केन्द्र
(पेट्रोलियम एवं प्राकृतिक गैस मंत्रालय)

CHT

Centre for High Technology
(Ministry of Petroleum & Natural Gas, Govt. of India)

No. CHT/SAC/1237

22nd February, 2001

To

1. All members of the Scientific Advisory Committee on Hydrocarbons of the Ministry of Petroleum and Natural Gas
2. AS(M) / JS(R) / JS(E)/ Adviser (E) / OSD(R) - MOP&NG
3. Secretary, OIDB
4. Chief Executives of PSU Oil Companies
5. PPS to Secretary, MOP&NG

Sub: CORRIGENDUM to Minutes of the 49th meeting of the Scientific Advisory Committee (SAC) on Hydrocarbons of the Ministry of Petroleum & Natural Gas

Dear Sir / Madam,

With reference to our letter No. CHT/SAC/1145 dated January 11, 2001 enclosing the minutes of the 49th SAC meeting, it may kindly be noted that as suggested by OSD(R), MOP&NG and approved by Chairman, SAC, the minutes of the meeting **stand corrected** in respect of item 49.4 as under :

" 49.4 Studies on effect of Gasoline composition – Benzene, Aromatics & Olefines – on vehicle emissions – IIP, Dehradun

49.4.1 It was recalled by CHT that when the above proposal was presented by IIP in the 47th SAC Meeting held in November, 1999 at HPCL, Visakh, SAC had decided that IIP should come forward with a partner agreeing for financial participation to the extent of 25% of the total project cost. However, considering the great merit and benefits of the study to the refining industry, it was informed by Shri A P Ram, OSD(R), that MOP&NG has taken a view that the proposed study involving total cost of Rs.153 lakhs, could be considered for sponsorship either through entire funding by CHT / OIDB or financial participation by IOCL to the extent of 25% of the estimated project cost.

Taking cognizance of this development, SAC recommended the proposal for funding by either entire funding by CHT / OIDB or with participation by IOCL to the extent of 25% of the project cost."

The above is issued for records and necessary action by the concerned organisations.

Thanking you,

Yours faithfully,

(S.K. Sil)
Director

पाँचवां तल, कोर 6, स्कोप कॉम्पलैक्स, लोधी रोड, नई दिल्ली- 110 003
5th Floor, Core 6, SCOPE Complex, Lodhi Road, New Delhi-110 003
E-mail : cht@giasdl01.vsnl.net.in Fax : 4362879, 4367350 Tel.:.....