

JCCP NEWS

No. 118

2014 June

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Topics

- The 32nd JCCP International Symposium
- Signing of MOU with Tasweeq
- Executive Meetings in Qatar and Indonesia
- Participation in the Exhibition at World Future Energy Summit 2014
- Corporate Cooperation to Oil-producing Countries



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Cover photo
Taken by: Minoru Horike
Location: Shinjuku Gyoen National
Garden
Date: May 2010

The 32nd JCCP International Symposium

“Innovation Challenges of Oil Industry for the Future Generations”



The guest of honor, chairmen and panelists of the symposium

The 32nd JCCP International Symposium was held over two days, from January 29 to 30, 2014, under the auspices of the Ministry of Economy, Trade and Industry (METI). More than 400 people from the ministry, oil-producing countries, foreign embassies in Japan, governmental agencies, and domestic companies and organizations attended the event held at Hotel Okura Tokyo.

1. Theme

The theme of this year’s symposium was “Innovation Challenges of Oil Industry for the Future Generations.” It was discussed in detail in two sessions held on the second day, from the perspectives of “Management Strategy and Human Resource Development for Changing Times” and “Technical Possibilities and Environmental Approaches for the Future.”

The global oil situation is undergoing dramatic changes brought about by the shale oil and gas revolution, the construction of large-scale, export-oriented refineries in emerging nations, and the increasing need to address environmental issues. The oil industry as a whole must therefore gain an accurate awareness of such movements of the times from a long-term standpoint and continue

its efforts for innovative technical development and management improvement.

Based on this understanding, the symposium was held with the objective of exchanging information and views with leading authorities from oil-producing and oil-consuming countries who consistently address the challenge of innovation in their respective capacities.

2. Overview

(1) First Day (January 29): Opening Ceremony

The symposium opened at 2:00 p.m. on January 29 with a welcome address by Mr. Keizo Morikawa, President of JCCP, followed by a greeting from the guest of honor, Mr. Takayuki Sumita, Director-General of the National Resources and Fuel Department at METI.

In his speech, Mr. Morikawa explained the objectives of the 32nd JCCP International Symposium as follows: “The world energy situation is undergoing remarkable structural changes. There has been a change in the demand-supply structure in emerging countries in the Middle East and Asia due to their economic growth, shale oil and shale gas development brought about by technological innovation, deeper oil well



Mr. Takayuki Sumita, Director-General, National Resources and Fuel Department, METI, giving a speech as the guest of honor

exploration, responses to global environmental issues and reassessment of nuclear power generation. These are the challenges and changes we face today as both producers and consumers of oil. To fulfill our mission of achieving sustainable and stable supply of oil, we must assess these changes, formulate a management strategy for the future, improve the technologies required for implementation of the strategy, and nurture the next generation of leaders. In order to fulfill this common mission, greater importance than ever before will be placed on dialogue and information-sharing between oil-producing and consuming countries.”

Next, Mr. Sumita spoke as follows: “Especially in the Japanese oil industry, it is important to have a global view and to promote the healthy development of the oil industry from a broad perspective. One of the tools for securing a stable oil supply is cooperation with oil-producing countries. More concretely, Japanese cooperation in human resource development and technology transfer has particularly important significance. JCCP activities and the JCCP international symposium have played important roles in such cooperation, and the symposium, in particular, is expected to initiate a new era of innovation in the oil industry.”

(2) Keynote Speech

Following the opening speeches, a keynote speech was given by Prof. Paul Stevens, a Distinguished Fellow at the Energy, Environment and Resources Department at the Royal Institute of International Affairs (Chatham House), based in London. Titled “Global Implications of the Technological Revolution in the Production of Gas and Oil,” Prof. Stevens’ speech focused on the technological revolution that is taking place in the oil industry today, and discussed its immediate impact on the oil and gas markets and its future, long-term global

impacts. A detailed summary of the speech is provided on pages 9 to 13 in this issue of *JCCP NEWS*.

(3) Special Lectures

Prof. Stevens’ keynote speech was followed by four special lectures.

The first lecture was by Dr. Mohammed Al-Madi, OPEC Governor, Ministry of Petroleum and Mineral Resources, Saudi Arabia. In his lecture titled “Transformative Technologies: Lessons Learned from Successes in the Energy Industry,” Dr. Al-Madi explained how technological innovations and technical investment are transforming the oil industry, and introduced the King Abdulla Petroleum Studies and Research Center and the open network innovation model as examples of actual initiatives being implemented in Saudi Arabia.

Next, Mr. Abdulla Haji A. M. Al Abdulmalek, Executive Director–Administration Directorate, Qatar International Petroleum Marketing Co., Ltd. (Tasweeq), gave a lecture on “Sustainable HR Strategy at Tasweeq.” In addition to general HR strategies, Mr. Abdulmalek discussed HR strategies under the Tasweeq Mission to “nurture Qatari workers (Qatarization) and present Qatar as a leader in business ethics” and the Graduate Development Program as concrete examples of HR development programs at Tasweeq.

Following Mr. Abdulmalek, Mr. Win Maw, Deputy Director General, Energy Planning Department, Ministry of Energy / Myanmar, gave a lecture on “The Current Status and Future Vision of Oil and Gas Sector in Myanmar.” He first explained the structure of the energy sector in Myanmar by providing an overview of energy-related ministries and government agencies, organizations such as the National Energy Management Committee, and national companies, then discussed the present state of oil and gas production in the country, the conditions of mining sites, the privatization of refineries, and joint venture schemes. Mr. Maw closed his lecture by expressing his wish that “the participants of the symposium will return with best insights about these potential opportunities of technical and fiscal management in Myanmar oil and gas sectors.”

Following Mr. Maw, Dr. Fereidun Fesharaki, Chairman, FACTS Global Energy (FGE), gave a lecture on short-term oil and gas markets. Under the title of “Dynamic Challenges and Opportunities in the Global Oil and Gas Industries,” he shared his views on the five demand centers in the world (China, Middle East, Latin America, India and Africa), the three supply centers



Dr. Mohammed Al-Madi, OPEC Governor, Ministry of Petroleum and Mineral Resources, Saudi Arabia, giving a speech at the reception



Special lecture: Mr. Abdulla Haji A. M. Al Abdulmalek, Executive Director-Administration Directorate, Tasweeq

in the world (United States, Iraq and Canada), issues in demand facing the industrialized nations, issues in the oil refining business, and the characteristics of the natural gas market.

Unfortunately, Mr. Zach Henry, Director of Energy Dialogue, International Energy Forum (IEF), who was scheduled to give a lecture, could not make an appearance due to an unexpected, urgent matter.

(4) Reception

A reception was held after the keynote speech and special lectures, and Mr. Atsushi Taketani, Director, Petroleum Refining and Reserve Division, National Resources and Fuel Department, METI, gave a welcome speech, followed by Dr. Mohammed Al-Madi, OPEC Governor, Ministry of Petroleum and Mineral Resources, Saudi Arabia, who gave a speech on behalf of the oil-producing countries, and Mr. Jun Arai, COO, Showa Shell Sekiyu K.K., who led a toast after giving a brief greeting on behalf of the Japanese side.

(5) Second Day (January 30): Discussion Sessions

Two discussion sessions were held on the second day. Discussion Session 1 was held in the morning, chaired by Mr. Yutaka Yamazaki, Executive Vice President, JGC Corporation, and Discussion Session 2 in the afternoon, chaired by Mr. Takashi Matsushita, Director, Managing Executive Officer & General Manager, Manufacturing & Technology Department, Idemitsu Kosan Co., Ltd.

In Session 1, themed “Management Strategy and Human Resource Development for Changing Times,” five panelists gave presentations on their company’s management strategies and human resource development initiatives and visions. Dr. Dinh Van Ngoc, President & CEO, Binh Son Refining and Petrochemical Co., Ltd., gave a presentation titled “PVN’s Human Resource

Development (HRD) and Management Strategy to Meet the Increasing Demand and Challenges of Human Resources for the Refining and Petrochemical Industry in Vietnam”; Mr. Nofal Said Khamis Al Saidi, General Manager, HRS, Oman Oil Refineries and Petroleum Industries Company (Orpic), gave a presentation titled “Human Capital Management Draft Framework”; Mr. Abdulla Ibrahim Al Marzooqi, Manager, Strategic Studies’ Business Development Department, Corporate Support Division, Abu Dhabi Oil Refining Company (TAKREER), gave a presentation titled “Nationalization: The Challenges and Solutions to Contemporary Human Resourcing”; Mr. Sami Hussain Malallah, Training & Career Development Manager, Training & Career Development Department, Kuwait National Petroleum Company (KNPC), gave a presentation titled “Employee Development Strategy”; and Mr. Nobutaka Nohara, Executive Officer, General Manager, Corporate Administrative & Financial Affairs Division, JGC Corporation, gave a presentation titled “Development of Globally Competitive Human Resources.”

As chairman of the session, Mr. Yamazaki summarized the presentations as follows: All of the panelists in this session today are from the management of a national company or oil and gas company, and have emphasized their awareness of the need for human resource development and their management responsibilities to serve their country. Based on this awareness, they are putting together a management strategy and a strategy for human resource development in response to changing needs against the social environment and industrial history in their country. I would like to see a further deepening of understanding about the management and human resource development strategies in different countries, and hope Japanese companies will extend their help in the development of human resources in various countries



Special lecture: Mr. Win Maw, Deputy Director General, Energy Planning Department, Ministry of Energy / Myanmar



Special lecture: Dr. Fereidun Fesharaki, Chairman, FGE

with the cooperation of the Japanese government.

In Session 2, themed “Technical Possibilities and Environmental Approaches for the Future,” five panelists gave presentations on the technical and environmental vision and initiatives of their company. Mr. Dhani Prasetyawan, Vice President, Refining Technology, PT Pertamina (Persero), gave a presentation titled “Energy Management System”; Mr. Abdulqader Alkamali, Chairman of ADNOC Group Environmental Committee and Vice President HSE, Abu Dhabi Gas Industries Ltd. (GASCO), gave a presentation titled “Pollution Prevention through Resource Conservation”; Mr. Saad Noori Mohammed Al-Darraji, Director General, Midland Refineries Company, Ministry of Oil-Iraq, gave a presentation titled “Technical Possibilities and Environmental Approaches for the Future”; Prof. Gautam Kalghatgi, Principal Professional, Research & Development Center, Saudi Aramco, gave a presentation titled “Engine Development Trends and the Implications for Transport Fuels”; and Mr. Itaru Matsuhiko, Executive Officer & General Manager, Technology & Engineering Center, Idemitsu Kosan Co., Ltd., gave a presentation titled “Philosophy and Strategy of Idemitsu for the Future of Petroleum Refining Industry – In Pursuit of Harmony between Value of Hydrocarbons and Conservation of Environment.”

As chairman of the session, Mr. Matsushita summarized the presentations as follows: All of the presentations in this session today spoke about environmental protection as a priority issue in all aspects of refinery management, including the designing of refinery facilities and initiatives for quality enhancement and operational improvement, and emphasized the need to make active efforts to introduce and develop new technologies. For environmental protection, the oil industry in oil-producing countries and Japan have accumulated experience and

technologies through refinery operations, and possess invaluable knowledge that cannot be purchased from licensors but can only be acquired through the actual management of a refinery. In order for the oil industry to maintain good relations with local communities as a good corporate citizen, oil-producing countries and Japan must mutually share their technologies and know-how as future energy suppliers and create a win-win relationship between oil producers and consumers.

3. Closing Statement

After the discussion sessions, Mr. Masataka Sase, CEO & Executive Director of JCCP, delivered a closing statement as follows: Today, we are seeing a great deal of changes in the energy sector. In the Middle East and Asian countries and other emerging countries, demand for energy is increasing due to their economic advances, and we are also seeing innovation and technology in shale oil and shale gas development, deep sea oil field development, and construction of new refineries. Energy demand balance is changing due to all these factors. In this symposium, the speakers have taken up related matters and gave presentations that shared ideas about the direction of responses for future generations, and initiatives for human resource development and technological innovation. I think we had a highly fruitful two days.

This was the 32nd time that JCCP organized the international symposium since its founding in 1981. Held annually, it aims to provide a venue for exchanges between oil-producing countries and Japan, and to contribute to the stable supply and demand of energy by promoting mutual understanding. I would like to once again thank everyone for their participation and contributions in making this symposium meaningful.

<by Akio Yamanaka, Councilor, Administration Dept.>

The 32nd JCCP International Symposium Program
 “Innovation Challenges of Oil Industry for the Future Generations”

Date	Time	Proceedings
Jan. 29 (Wed)	14:00 – 17:45	Opening ceremony Opening address Mr. Keizo Morikawa, President of JCCP Guest-of-honor speech Mr. Takayuki Sumita, Director-General, Natural Resources and Fuel Department, Agency for Natural Resources and Energy, METI Keynote speech Prof. Paul Stevens, Distinguished Fellow, Energy, Environment and Resources Department, Royal Institute of International Affairs (Chatham House) Special lectures Dr. Mohammed Al-Madi, OPEC Governor, Ministry of Petroleum and Mineral Resources Mr. Abdulla Haji A. M. Al Abdulmalek, Executive Director – Administration Directorate, Qatar International Petroleum Marketing Company Ltd. (Tasweeq) Mr. Win Maw, Deputy Director General, Energy Planning Department, Ministry of Energy / Myanmar Dr. Fereidun Fesharaki, Chairman, FACTS Global Energy (FGE)
	18:00 – 20:00	Reception
Jan. 30 (Thu)	9:30 – 12:00	Session 1 “Management Strategy and Human Resource Development for Changing Times”
	13:30 – 16:00	Session 2 “Technical Possibilities and Environmental Approaches for the Future”
	16:00 – 16:05	Closing address: Mr. Masataka Sase, CEO & Executive Director of JCCP

Keynote Speech

Country	Speaker	Speech Title
U.K.	Prof. Paul Stevens Distinguished Fellow, Energy, Environment and Resources Department, Royal Institute of International Affairs (Chatham House)	Global Implications of the Technological Revolution in the Production of Gas and Oil

Special Lectures

Country	Speaker	Speech Title
Saudi Arabia	Dr. Mohammed Al-Madi OPEC Governor, Ministry of Petroleum and Mineral Resources	Transformative Technologies: Lessons Learned from Successes in the Energy Industry
Qatar	Mr. Abdulla Haji A. M. Al Abdulmalek Executive Director – Administration Directorate, Qatar International Petroleum Marketing Company Ltd. (Tasweeq)	A Sustainable HR Strategy at Tasweeq
Myanmar	Mr. Win Maw Deputy Director General, Energy Planning Department, Ministry of Energy	The Current Status and Future Vision of Oil and Gas Sector in Myanmar
USA	Dr. Fereidun Fesharaki Chairman, FACTS Global Energy (FGE)	Dynamic Challenges and Opportunities in the Global Oil and Gas Industries

Session 1: Management Strategy and Human Resource Development for Changing Times

Chairman: Mr. Yutaka Yamazaki, Executive Vice President, JGC Corporation

Country	Speaker	Speech Title
Vietnam	Mr. Dinh Van Ngoc President & CEO, Binh Son Refining and Petrochemical Co., Ltd.	PVN's Human Resource Development (HRD) and Management Strategy to Meet the Increasing Demand and Challenges of Human Resources for the Refining and Petrochemical Industry in Vietnam
Oman	Mr. Nofal Said Khamis Al Saidi General Manager, HRS, Oman Oil Refineries and Petroleum Industries Company (Orpic)	Human Capital Management Draft Framework
UAE	Mr. Abdulla Ibrahim Al Marzooqi Manager, Strategic Studies & Business Development Department, Corporate Support Division, Abu Dhabi Oil Refining Company (TAKREER)	Nationalization: The Challenges and Solutions to Contemporary Human Resourcing
Kuwait	Mr. Sami Hussain Malallah Training & Career Development Manager, Training & Career Development Department, Kuwait National Petroleum Company (KNPC)	Employee Development Strategy
Japan	Mr. Nobutaka Nohara Executive Officer, General Manager, Corporate Administrative & Financial Affairs Division, JGC Corporation	Development of Globally Competitive Human Resources



Session 1 panelists



Session 2 panelists

Session 2: Technical Possibilities and Environmental Approaches for the Future

Chairman: Mr. Takashi Matsushita, Director, Managing Executive Officer & General Manager, Manufacturing & Technology Department, Idemitsu Kosan Co., Ltd.

Country	Speaker	Speech Title
Indonesia	Mr. Dhani Prasetyawan Vice President, Refining Technology, PT Pertamina (Persero)	Energy Management System
UAE	Mr. Abdulqader Alkamali Chairman of ADNOC Group Environmental Committee and Vice President HSE, Abu Dhabi Gas Industries Ltd. (GASCO)	Pollution Prevention through Resource Conservation
Iraq	Mr. Saad Noori Mohammed Al-Darraj Director General, Midland Refineries Company, Ministry of Oil	Technical Possibilities and Environmental Approaches for the Future
Saudi Arabia	Prof. Gautam Kalghatgi Principal Professional, Research & Development Center, Saudi Aramco	Engine Development Trends and the Implications for Transport Fuels
Japan	Mr. Itaru Matsuhira Executive Officer & General Manager, Technology & Engineering Center, Idemitsu Kosan Co., Ltd.	Philosophy and Strategy of Idemitsu for the Future of Petroleum Refining Industry — In Pursuit of Harmony between Value of Hydrocarbons and Conservation of Environment

* Presentation materials from the symposium are available on JCCP's website (<http://www.jccp.or.jp>) for your reference.

Keynote Speech

Global Implications of the Technological Revolution in the Production of Gas and Oil

Prof. Paul Stevens, Distinguished Fellow,
Energy, Environment and Resources Department,
Chatham House



A technological revolution is taking place in the oil upstream sector. Today, I wish to look at the global implications of this. I shall start by describing what this technological revolution is that I am going to be talking about. Then, I will look at what the immediate impact has been on the oil and gas markets, and will look to the future and ask the question, “What are the future global impacts likely to be as we move forward?”

In order to do so, I firstly need to answer a key question. That is, “To what extent can the shale gas revolution, which is being experienced in the United States, be replicated elsewhere, what are the opportunities, what are the problems, and what are the barriers?”

Technological Revolution

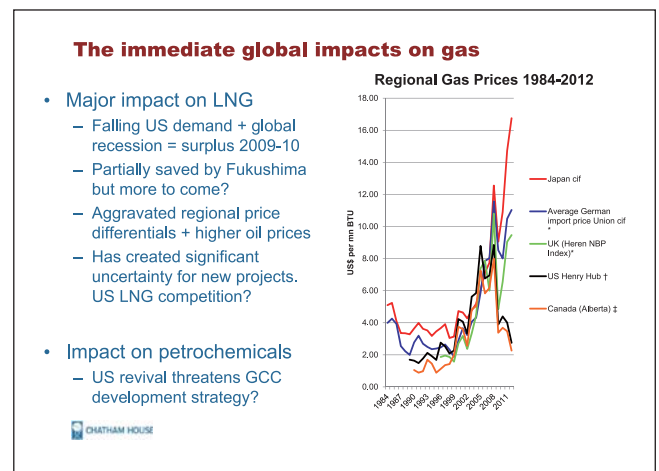
Let me start by talking a bit about what I mean by the technological revolution. I would suggest that a main component of the revolution has been extended-reach horizontal drilling. I believe the record for the lateral bit at the moment is 12.5 kilometers, but I read that figure about three months ago, and I suspect, given the rate of technological change, that it is probably now longer. The second main component is hydraulic fracturing, whereby water, sand and chemicals, at very high pressure, are injected into the formation to break up the shale and release the gas or oil.

I have also added two other elements to the technological revolution. The first is 3D seismic and the second is coiled tube drilling. I think these are going to play an increasing role in the way in which the revolution develops.

Now, a few characteristics about these technologies: The first is that they are not new technologies. They have been around for quite a long time. Horizontal drilling was developed in the 1930s, and the first well was fraced

in 1947. A second point is that these technologies were developed largely by private companies, but on the back of a large amount of public R&D funding in the United States. This is an extremely important part of the story, because this was funding for fundamental research in basic science. The third characteristic is that the technologies have been improving constantly, at a rapid rate. This is in part owing to a learning-by-doing process as operators get together and exchange information.

Immediate Global Impacts on Gas

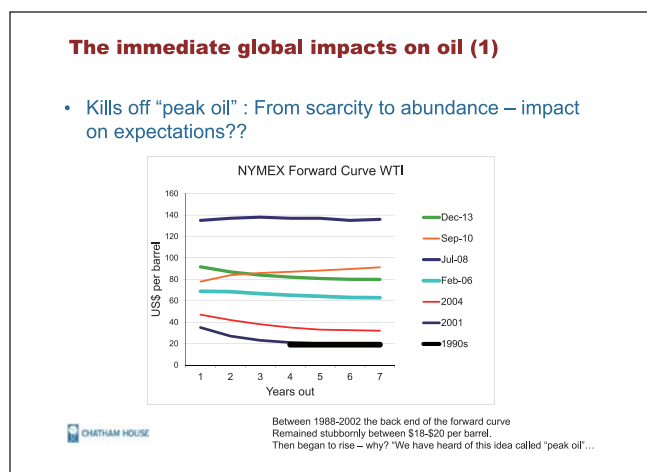


What has the immediate impact been on gas? Of course, the main impact has been via LNG. The period from 2009 to 2010 saw a falling demand in the United States and a global recession, and the result was a surplus in LNG with a downward pressure on LNG prices. Another impact has been an aggravation of regional price differentials. Slide 1 shows the price of gas starting in 1984, and from the period of around 2002 to 2008, there was a degree of convergence of gas prices among different regions. However, that has been destroyed as a result of the shale gas revolution, and a huge price differential emerged, in part driven by the shale gas

revolution but also by higher oil prices, because gas prices are contractually linked to the oil price.

All of this has created significant uncertainty for new projects, and there is a great deal of concern, for example in Australia, as to how much U.S. LNG is going to come into the market, and what sort of competitive results will come from that. Another impact is that the fall in domestic gas price in the United States has created a revival of the U.S. petrochemical industry.

Immediate Global Impacts on Oil (1)



What about the impact on oil? A good consequence is that the “peak oil” argument is now dead and buried. Slide 2 shows the forward curve from NYMEX. It is interesting to note that four to seven years out and between 1988 and 2002, the backend was stubbornly between \$18 to \$20 a barrel. That was viewed as the long-term price of oil. From 2004 to 2006 to 2008, however, the curve at the backend has risen. In other words, price expectations changed.

An interesting question, to which there is yet no sensible answer, is “Why did price expectations change? What was going on?” When buyers were asked why they are willing to pay so much more in the future for oil, they said they heard of “peak oil,” and it sounded like a reasonable argument to push out the future price. Today, we are seeing an attitude that moves from this idea of scarcity to one of abundance. It is too early to say what effect these expectations may have on the industry, but they will have some sort of effect.

Immediate Global Impacts on Oil (2)

The second immediate impact on oil relates to the situation in the United States. Between 2007 and 2012,

seaborne crude imports in the United States fell by 2.2 million barrels a day. As the country began moving slowly toward the magic goal of energy independence, it also effectively began moving toward a reduction in oil imports. Before all this, roughly half of the U.S. trade deficit was energy, but the United States’ move toward energy independence could bring significant impacts on the balance of trade, and therefore have implications for the value of the dollar.

It has also given rise to speculation about the impact on U.S. policy. We are hearing people say that the United States will no longer have interest in what is happening in the Middle East, and it will lose all interest in policing the sea lanes because it no longer imports oil. Both arguments are nonsense. Superpowers police sea lanes, whether or not they import oil, and U.S. foreign policy in the Middle East has a lot to do with other things besides oil.

It has also had an impact on crude price differentials. As a result of new technologies, there is a surplus of light sweet crude, and a large portion of West African crude, which used to go to the United States, is now going to Asia.

Interestingly, between 2012 and 2020, there is estimated to be 8 million barrels a day of new refinery capacity in Asia, but on close examination, that new capacity is wrongly configured. It is geared for a world in which there will be a shortage of light sweet and a surplus of heavy sour, whereas in fact the world we are moving into is exactly the opposite. It will be interesting to see how this plays out.

Before Consideration of Future Impacts (1)

Future global impacts? The replicability of the US experience? Why the “shale gas revolution” in the USA?

Characteristic	USA
Favourable geology	Yes
Lots of drill core data to help identify “sweet spots”	Yes
Weak environmental regulation for fracking	Yes
Tax credits + Intangible drilling cost expensing	Yes
Property rights to the landowner	Yes
Pipeline access easy –large network + common carriage	Yes
Selling gas into a “commodity supply” market very easy	Yes
Dynamic and competitive service industry	Yes
Population familiar with oil and gas operations	Yes
Licensing large areas with vague work programs	Yes
Significant government investment in basic R & D	Yes
High liquids content in the gas	Yes
Started by rising gas prices	Yes
Favourable access to finance	Yes

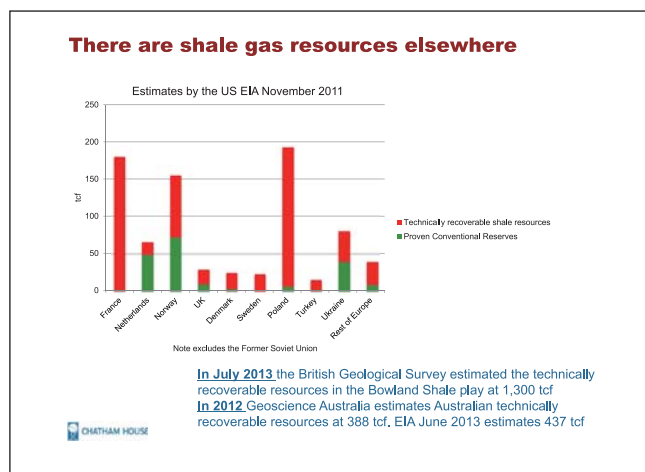
Before we can consider the impact on the gas and oil markets, we need to answer my initial question, “How

far can the shale gas revolution, which occurred in the United States, be replicated elsewhere?” To answer this, we must ask, “Why did the United States have a shale gas revolution?” The list for examining this question is long, and each item is answered with a yes. Here are a couple of examples. With regard to property rights of a landowner, in the United States, subsoil hydrocarbons are the property of the landowner. If I am a landowner in the United States and you come to me and ask if you can dig up my backyard and look for shale gas, I will say with great pleasure you can dig up my backyard and here are my bank account details, because if you find any shale gas it’s mine, and I get the benefit. As someone said, the development of shale gas is like having the circus coming to town.

Another example is the U.S. gas market. The U.S. gas market has an extensive pipeline network. It is a commodity supply market, and it is easy to sell gas in the United States. The list goes on and on.

At the same time, however, there is no question that there are significant shale gas resources in other parts of the world as well.

Before Consideration of Future Impacts (2)



This next slide is the sort of slide that would receive an “F” if a student gave it to me. The green bar represents proven gas reserves, and the red bar represents technically recoverable resources. The rule of thumb in the United States says that if you have a figure for technically recoverable resources, about 10% of that might be regarded as recoverable reserves. The point of the slide, however, is to illustrate that there are resources elsewhere, and particularly in China and Latin America. So, the question is, “Can these potential resources be converted into gas molecules in a gas pipeline?”

Before Consideration of Future Impacts (3)

Future global impacts? The replicability of the US experience? Why the “shale gas revolution” in the USA?

Characteristic	US A	EU	UK	Aus
Favourable geology	Yes	?	?	?
Lots of drill core data to help identify “sweet spots”	Yes	No	No	No
Weak environmental regulation for fracking	Yes	No	No	No
Tax credits + Intangible drilling cost expensing	Yes	No	?	No
Property rights to the landowner	Yes	No	No	No
Pipeline access easy –big network+common carriage	Yes	No	No	No
Selling gas into a “commodity supply” very easy	Yes	No	?	No
Dynamic and competitive service industry	Yes	No	No	No
Population familiar with oil and gas operations	Yes	No	No	No
Licensing large areas with vague work programs	Yes	No	No	?
Significant government investment in basic R & D	Yes	No	No	No
High liquids content in the gas	Yes	?	?	?
Started by rising gas prices	Yes	?	?	No
Access to favourable finance	Yes	No	No	No

Earlier, I mentioned some characteristics of the United States. If you look at other parts of the world and apply those characteristics, instead of getting a long list of yes’s, you will have a long list of no’s. This is true for the U.K., as well as for Australia. This means there are many barriers to the development of shale gas. Thus, even if there are hopes for a shale gas revolution in such countries, don’t hold your breath. Shale gas revolution will occur eventually, but not so quickly.

Future Global Impacts for Gas (1)

So, what about the future global impacts for gas? Gas is a strange creature. It is strange, because energy people get very excited when they talk about gas. They say gas is a wonderful fuel, it has high conversion efficiency, it is clean, it is easy to use, and so on and so forth. Yet, within the history of gas consumption in the primary energy mix, the share of gas hardly changed up to about 1990. After 1990, it began to increase slightly but not much.

Why is this? The answer is because there are a whole series of constraints upon the burning of gas. For example, the premium fuel argument that was used in the European Union and the United States said that gas is such a wonderful fuel that it should not be burned, but should be saved for premium usage. Thus, in 1975 the European Union and the United States both passed legislation that prevented the building of new gas-fired power stations. These constraints are beginning to come off, and when they do come off, the results are expected to be spectacular.

The best example is the U.K. The graph shows that by 1990 about 20% of primary energy came from gas. Ten years later it was 40%. This is because the constraints

came off. I suspect that in a lot of countries where the constraints come off, gas demand will increase. This will be aggravated or encouraged in a world where there are expectations that the shale gas revolution will occur and there will be lots of cheap gas.

Future Global Impacts for Gas (2)

Future global impacts for gas?

- Demand for gas will increase as constraints come off post 1990 in a world where expectations are for lots of cheap gas
- Increased LNG trade?
 - Fears of competition
 - Investor uncertainty
 - Panama Canal delays?
- Pricing issues
 - Links to oil prices?
 - Will the “Asian gas premium” continue?

Category	Capacity (MMt)
Existing	~250
Firm	~100
Probable	~100
Possible (Schedule)	~200
Possible (Unscheduled)	~300

Jim Jensen May 2012

CHATHAM HOUSE

There will certainly be an increase in LNG trade. This slide shows an estimate from Jim Jensen as to what LNG capacity might look like. However, there are fears of competition, investment uncertainties, and lots of other little bits and pieces.

One caught my attention the other day. Only about less than 10% of the world’s LNG tanker fleet can go through the Panama Canal because of size constraints. The Panama Canal is in the process of being expanded, and when it is finished, about 90% of the LNG fleet will be able to go through the canal. The problem is that the expansion has run into serious financial problems, so that it will not be completed on time and could be delayed.

There are also pricing issues, and there is growing concern in many gas markets about the contractual link between gas prices and oil prices. This is most obvious in Europe. European gas consumers are asking why they are paying so much for gas when considering what is happening to U.S. gas prices. The answer, of course, is because the oil price has gone up, but then they ask what oil price has got to do with gas price, and are demanding a change in these contracts. In fact, Gazprom is under huge pressure from European gas consumers to move away from those sorts of contracts.

Another interesting issue is whether the Asian gas premium will continue, and again, this is all going to be dependent upon what happens in terms of the replication of the shale gas revolution.

Future Global Impacts for Oil

Tight oil will increase and continue to increase in the United States. Last year, U.S. oil production increased 15% in a single year, marking the largest percentage increase of any oil producer in the history of the industry. The IEA came out with a statement early last year that said by 2014 the United States will overtake Saudi Arabia. My response to that is, “So what?” In this context, size does not matter. Saudi Arabia’s importance in the world oil market stems from the fact that it is willing and able to carry significant amounts of spare capacity and use that spare capacity in a responsible manner to keep the oil market balanced. The United States, with its thousands of producers, could never even begin to approach that sort of role.

Another issue is the application of various technologies in a different way, and particularly to fallow oil fields. Since only about 35% of oil in place is recovered, this leaves a lot of oil to be recovered. If technologies such as horizontal drilling and fracking are applied to fallow oil fields, oil might begin to flow again.

Another important impact for oil relates to changing trade patterns. Essentially what is happening is that oil, which traditionally flowed from the Middle East to the West, is now flowing more and more from the Middle East to the East. This has all sorts of implications for oil markets and geopolitics.

Lastly, there is the problem of what I have come to call “OPEC’s dilemma.” OPEC’s dilemma is a simple idea. Ever since the Arab uprisings kicked off at the beginning of 2011, Arab producer governments sought to increase oil prices. They wanted and needed more revenue to counterbalance the needs of the young, disaffected population.

Recent statistics in Saudi Arabia between 2010 and 2013 show that government current account spending increased 40%. The government thus wants to increase prices, but doing so would lead to demand destruction. According to the IEA’s new policy scenario up to 2035, 68% of the increase in oil demand will come from the Middle East, India and China. The significance of this is that all three regions have a long history of highly subsidized oil prices to their consumers. This is changing, however. It started to change in India in 2002, and in China in 2009. It is also being talked about in the Middle East, but now is not a particularly good time to be increasing energy prices. The implication is that if the price stays high, it will increasingly be passed on to

the final consumers of oil products.

At the same time, higher prices will increase supply. This is in large part due to the technological revolution that I have been describing. In 2011 there was a joke amongst oil analysts regarding who will be the next member of OPEC, and the answer was North Dakota, simply because of the increase in oil production that was coming from there.

Now, the problem is that this sort of increase in oil

production calls for higher prices. Thus, a situation is created where the price needs to be high, but that high price will lead to demand destruction and increase supply.

This is rather reminiscent of the period from 1980 to 1986 immediately after the first two oil shocks of the 1970s, which ended in the price collapse of 1986. There are differences between then and now, but the situation nonetheless suggests that higher prices are unsustainable.

Thank you very much indeed for your attention.



Signing of MOU with Tasweeq

JCCP and Qatar International Marketing Co., Ltd. (Tasweeq) agreed to strengthen their cooperative relationship, and exchanged a Memorandum of Understanding (MOU) on November 19, 2013.

1. Background

Tasweeq was founded in 2007 as a state-run marketing company in Qatar. It exports and sells LPG, oil products and condensate produced in Qatar, as well as undertakes the export and sale of crude oil and GTL under contract with Qatar Petroleum (QP). As it is the primary interface for sales in Qatar, Japan's oil industry is well aware of the significance of establishing a good relationship with the company. JCCP, for its part, has developed a certain bond of cooperation with Tasweeq to date through training programs implemented directly by JCCP as well as those implemented by member companies.

In May 2013, JCCP invited Mr. Abdulla Haji A. M. Al Abdulmalek, Executive Director – Administration Directorate, to Japan under the VIP Invitation Program, to deepen mutual understanding with relevant parties in the energy sector in Japan by visiting the Agency for Natural Resources and Energy under the Ministry of Economy, Trade and Industry, in addition to domestic companies related to oil businesses.

2. Signing Ceremony

The signing of the MOU took place on the morning of November 19 in a conference room in Tasweeq's Head Office located in Doha.

First, Mr. Saad Abdulla Al-Kuwari, CEO, thanked JCCP on behalf of the company for accepting many participants



Article on the signing ceremony in a local newspaper (Al-Arab); Dec. 5, 2013



Mr. Saad Al-Kuwari, CEO (center), and Mr. Abdulla Haji A. M. Al Abdulmalek, Executive Director – Administration Directorate (left)

from Tasweeq into its training programs, and articulated his hopes that the signing of the MOU would provide new momentum for strengthening ties between Tasweeq and JCCP. Then, Mr. Masataka Sase, CEO & Executive Director of JCCP, expressed JCCP's expectations of further strengthening its relationship with Tasweeq, and the two leaders signed and exchanged the MOU.

After the ceremony, the JCCP members held a friendly exchange of views with Mr. Al-Kuwari and executive officers of Tasweeq, and confirmed their mutual hopes to further strengthen ties between the two organizations in the future.

News of the signing ceremony appeared in several local newspapers the following day.

<by Koichi Ito, Operations Dept.>



Article on the signing ceremony in a local newspaper (Al-Watan); Dec. 5, 2013

Executive Meetings in Qatar and Indonesia

Mr. Masataka Sase, CEO & Executive Director of JCCP, visited Qatar and Indonesia from November 17 to 22, 2013 to hold policy dialogues with the top management of state-run oil companies in the two countries with the aim of deepening exchanges and strengthening mutual understanding and cooperation with oil-producing countries.

1. Qatar

(1) Participation in LPG Trade Summit

On November 18, the JCCP delegation attended the LPG Trade Summit, held at a hotel in Doha under the sponsorship of Qatar International Marketing Co., Ltd. (Tasweeq).

This was the first time for JCCP members to attend the international conference on LPG, which garnered the widespread interest of people engaging in LPG businesses in Qatar and around the world. It featured an opening speech by Dr. Mohammed Al-Sada, Minister of Energy & Industry, and keynote speech and presentations, which provided a wealth of useful information to the JCCP delegation.



Dr. Mohammed Al-Sada, Qatari Minister of Energy & Industry, delivering an opening speech at the LPG Trade Summit

(2) MOU Signing Ceremony with Tasweeq

On the morning of November 19, Tasweeq and JCCP signed the MOU at Tasweeq's Head Office in Doha. For details, please see the article on "Signing of MOU with Tasweeq" provided separately in this issue of *JCCP NEWS*.

(3) Visit to the Japanese Embassy in Qatar

In the afternoon of November 19, the JCCP delegation paid a call on the Japanese Embassy in Qatar and met with H.E. Ambassador Shingo Tsuda.

Mr. Sase first explained that his recent visit to Qatar was realized by invitation from Tasweeq prior to its participation in the upcoming JCCP International Symposium, and reported on his participation in the LPG Trade Summit and the MOU signing ceremony that was held in the presence of Mr. Saad Abdulla Al-Kuwari, CEO, and other top officers of Tasweeq. Ambassador Tsuda then said he hopes JCCP will continue its activities in Qatar and work to deepen the friendly relationship between the two countries, as Qatar is poised to become increasingly important to Japan hereafter in terms of energy security.



*At the Embassy of Japan in Qatar:
H.E. Ambassador Shingo Tsuda (second from left)*

2. Indonesia

(1) MIGAS

On the morning of November 21, the JCCP delegation visited the Indonesian Directorate General of Oil and Gas (MIGAS) and met with Mr. A. Edy Hermantoro, Director General.

Mr. Sase first thanked MIGAS for its support of JCCP activities, and explained the purpose of his visit, which is to deepen ties with the Directorate and obtain its candid views and requests. Mr. Hermantoro introduced himself as having acceded the post of Director General held by his predecessor Ms. Evita Legowo in December 2012, and said that he had heard much about JCCP from her. He also thanked Mr. Sase for accepting many training participants from MIGAS, and noted that employees who have participated in JCCP training programs have formed a network among themselves through which they organize various alumni activities.

Mr. Sase then explained that JCCP offers customized courses in response to specific needs in each country or organization, and asked MIGAS members to contact JCCP's counterpart office if there are any requests for such courses. In response, Mr. Hermantoro thanked Mr. Sase for the proposal, and said he would consider the offer within the company, as similar proposals had also been received from a JCCP delegation that visited MIGAS the previous week.



At MIGAS:

Mr. A. Edy Hermantoro, Director General (second from right)

(2) PERTAMINA

In the afternoon of November 21, the JCCP delegation visited PERTAMINA and met with Ms. Evita M. Tagor, Human Resources Director.

Mr. Sase first thanked PERTAMINA for its support of JCCP activities, and explained that the purpose of his visit was to hear about specific needs and requests at PERTAMINA, and to further deepen JCCP's relationship with the company. Ms. Tagor, on behalf of Ms. Karen Agustawan, President Director, who could not make an



At PERTAMINA:

Ms. Evita M. Tagor, Human Resources Director (left)

appearance due to other urgent business, conveyed Ms. Agustawan's best regards to Mr. Sase, then expressed her deep appreciation to JCCP for accepting large numbers of participants from PERTAMINA to its training courses every year. She said that JCCP training is incorporated as part of the company's in-house training program, as it provides a wealth of highly beneficial information, and asked for JCCP's continued cooperation in training PERTAMINA employees.

As at MIGAS, Mr. Sase also proposed the implementation of customized courses, and Ms. Tagor indicated she would consider the offer within the company.

(3) Japanese Embassy in Indonesia

Late in the afternoon of November 21, the JCCP delegation visited the Japanese Embassy in Indonesia, and received valuable local information from Mr. Shigeru Ushio, Minister of Economic Affairs.

3. Summary

During the recent visits to Qatar and Indonesia, the JCCP delegation's participation in the LPG Trade Summit yielded a host of valuable information from experts in the field, and policy dialogues with key figures in JCCP counterpart organizations highlighted their strong expectations of JCCP. The delegation renewed their awareness of the importance of implementing regular follow-up meetings, and set their minds to exploring how best to utilize the valuable information they obtained to enhance future JCCP activities.

<by Koichi Ito, Operations Dept.>

JCCP Participation in the Exhibition at World Future Energy Summit 2014 in Abu Dhabi

The Fourth World Future Energy Summit 2014 (WFES) was held over three days from January 20 to 22, 2014 at Abu Dhabi National Exhibition Centre, and JCCP participated in the exhibition part of the event.

WFES is an international event dedicated to the creation of a sustainable society through the utilization of renewable energies. It has been held since 2011, hosted by Masdar, a renewable energy and sustainability technology company in Abu Dhabi.

As the world's largest trade fair for renewable energies and environmental technologies, WFES is comprised of panel discussions and seminars by world leaders and energy-sector stakeholders from Abu Dhabi and around the world, in addition to an international exhibition. The exhibition this year featured 650 exhibitors and attracted some 30,000 visitors.

Many Japanese organizations and companies participated in the exhibition as part of the Japan Pavilion organized by the Ministry of Economy, Trade and Industry (METI). JCCP also set up a booth for the first time at WFES, as an effective means for widely increasing recognition of JCCP activities in Middle East countries.

1. About WFES

An opening ceremony was held on January 20, graced by the presence of His Highness Sheikh Mohammed Bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of UAE Armed Forces. Following an opening speech by the CEO of Masdar, a panel discussion was held by top-level energy experts from neighboring countries.

The exhibition, as a whole, featured a large variety of displays by various countries of photovoltaic generation, wind power generation, energy conservation, fuel cell vehicles and solar panel vehicles, with the largest portion of the exhibition floor occupied by Masdar, the sponsor company, the ADNOC Group, the local state-run oil company based in Abu Dhabi, and other major oil companies.

2. Visitors to the JCCP Booth

On the first day, the Japan Pavilion received visitors mainly from energy-related companies and other energy-sector stakeholders, as well as a visit by H.E. Mr. Toshimitsu Motegi, Japanese Minister of Economy, Trade and Industry. The JCCP booth welcomed many JCCP alumni and people involved in JCCP technical cooperation projects in UAE and other neighboring countries.

Other visitors included people from the environment and IT sectors and the media, who inquired mostly about JCCP activities related to the environment. A number of people inquired about the catchphrase "Connected by Technology, Person-to-Person" printed on JCCP's banner, creating an ideal opportunity for JCCP members to explain the organization's operations.

The second and third days of the exhibition saw many students from primary schools, junior high schools, technical colleges and universities in UAE, who visited the exhibition as part of their extracurricular activities. The hands-on science experiments provided in the seminar section of the Japan Pavilion seemed to catch their interest, as they also frequently do in Japan.

The JCCP booth also welcomed many visitors and provided detailed information on JCCP activities in an easy-to-understand manner. The estimated 250 visitors



With Mr. Abdul Qader Al Kamali, GASCO (left)

to the JCCP booth were from UAE and other Middle East countries such as Saudi Arabia, Bahrain, Qatar and Oman, and from Germany, China, Canada, Turkey and Malaysia.

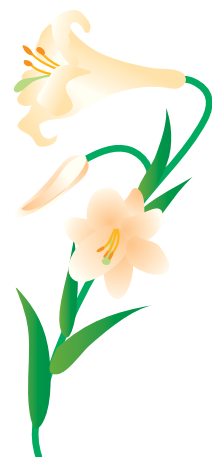
3. Observations

JCCP participated in WFES for the first time and gained an ideal opportunity to widely promote an awareness of JCCP activities not only to people in the oil sector, but also those in other sectors and students as well, and judging by the number of visitors, the amount of materials distributed, and visitors' reactions to JCCP's explanations, a sufficient level of results was achieved.

*<by Jun Nishimura, General Manager,
JCCP Middle East Office>*



Explaining JCCP activities to female students visiting the exhibition



Total Number of Training Participants Surpasses 22,000

JCCP has proudly reached another milestone by receiving the 22,000th participant to a training program in its 32nd year of establishment. The commemorative 22,000th participant was Ms. Hoang Le Hang, a Deputy Director of the Marketing & Foreign Relations Department at Vietnam National Petroleum Group (Petrolimex). She participated in a course on Petroleum Marketing & Physical Distribution (CPJ-44) that commenced on December 9, 2013.

Since its establishment in November 1981, JCCP has continued to organize an average of 25 JCCP-initiated courses every year, in addition to offering courses through the cooperation of its member companies, receiving participants from oil-producing countries to customized courses in Japan, and promoting technical transfers in the oil downstream sectors. Many of the 22,000 participants who have taken part in a JCCP training program in the past now play active roles in important posts in government institutions and state-run oil companies in their respective countries, and support Japan's cooperative activities in oil-producing countries based on their knowledge and understanding of Japan. As Ms. Hang is among members who will lead the future of Petrolimex, JCCP hopes she will apply what she has

learned at JCCP to Vietnam and become a supporter of Japan herself.

JCCP has been able to consistently receive participants from oil-producing countries throughout its 32-year history owing to their kind understanding and expectations of JCCP, as well as the cooperation of JCCP member companies and cooperating companies in Japan. By implementing programs that respond to needs in oil-producing countries, JCCP will devote even greater efforts to promote personnel and technical exchanges with oil-producing countries in the future.

<by Koichi Ito, Operations Dept.>



Ms. Hoang Le Hang, Deputy Director, Marketing & Foreign Relations Department, Petrolimex



I am proud and honored to be the commemorative 22,000th participant of such an esteemed organization as JCCP. By attending the training course on "Petroleum Marketing & Physical Distribution," my fellow classmates and I have gained deeper appreciation of our professional field, as well as better knowledge about the Japanese oil industry and about advanced technologies and infrastructure, not to mention a greater understanding of Japanese culture, people and history.

I would like to express my sincere thanks to Mr. Masataka Sase, CEO & Executive Director of JCCP, and course coordinators Mr. Eiji Tsukamoto and Mr. Masayuki Jimbo. I also wish to extend my thanks to all the organizers, lecturers and supporters of the program. They worked professionally and effectively to provide a successful training course as a testament to the renowned reputation of Japan Cooperation Center, Petroleum. We were thoroughly impressed with the thoughtful and caring arrangements made throughout the course. Our accommodations were comfortable, transportation was convenient, and the guidance and instructions we received were extremely helpful.

I wish to also thank all my classmates, who shared in the JCCP experience and helped create unforgettable memories of our stay in the hospitable and beautiful country of Japan.

I will apply the knowledge I acquired to my current work and contribute even more to the development of the Petrolimex group. At the same time, I will contribute to sustainable growth in my country, and to enhancing and promoting the warm relationship between Japan and Vietnam.

For Improved Training Practicality (Part 3)

—Training using a New Simulator—

1. Introduction

A distributed control system (DCS) is a basic plant operation tool. Based on this understanding, JCCP installed a DCS-based training simulator immediately after its establishment and commenced training using an actual machine. Today, JCCP has two DCS models, on which participants can engage in training on process operational control and DCS engineering. They are systematically upgraded on a regular basis to reflect technological advancements and allow training on the latest facilities. JCCP previously had two DCS systems—Yamatake Honeywell’s Advanced-PS and Yokogawa Electric Corporation’s CENTUM CS-3000—and three independent miniature plants connected to each DCS, to provide training simulators (No. 6 Simulator and No. 5 Simulator) that closely matched actual onsite facilities. Two years ago, the Advanced-PS was replaced by Azbil Corporation’s Harmonas-DEO, and recently,

the CENTUM CS-3000 was upgraded to a Centum-VP. Below is an overview of the new system and the training program that has been renewed based on the new system.

2. Configuration of the Simulators

(1) Miniature plants

Connecting a training DCS system to a plant allows training under conditions that closely match real operating conditions. JCCP thus introduced miniature plants at an early stage, and recently upgraded their instrumentation from a conventional type to one that is based on the world’s most widely used HART Protocol. Considerations were also made to provide training on leading-edge instrumentation equipment by adopting a fieldbus in some of the instruments.

(2) System configuration

Fig. 1 shows the configuration of the DCS system at

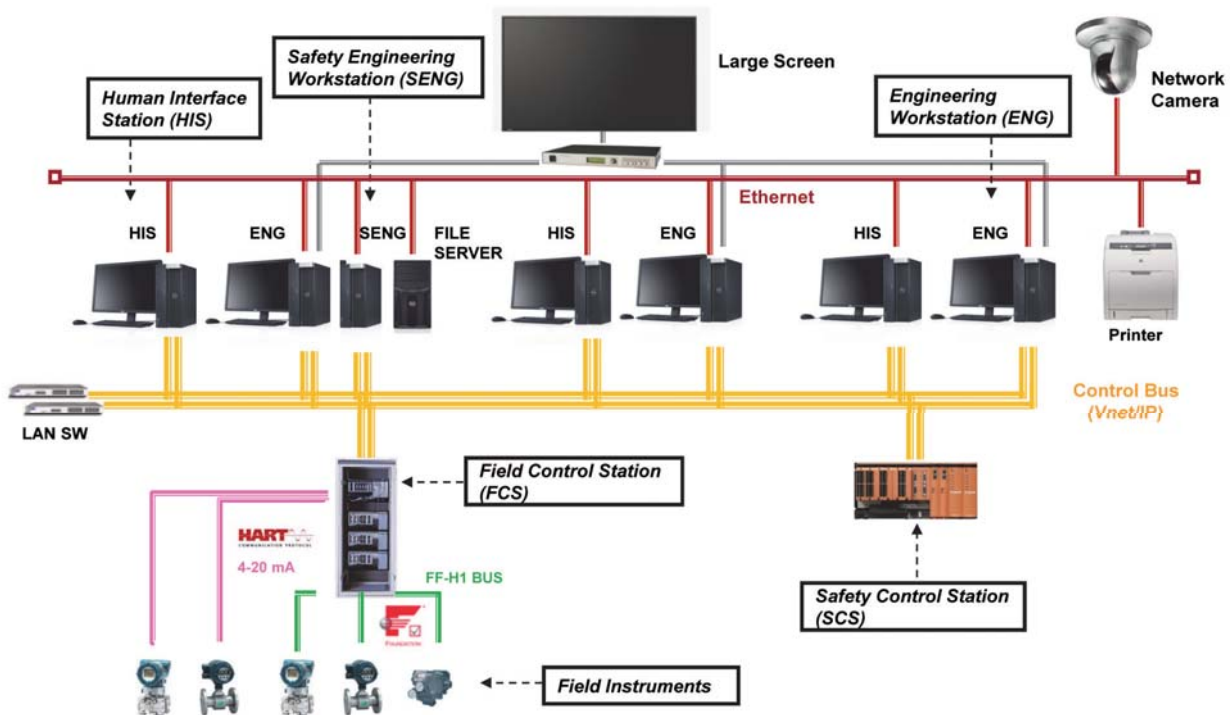


Fig. 1 System configuration

JCCP. Operations are performed via three sets of HMIs (human machine interfaces), with each set comprised of an operating terminal and engineering terminal. This setup allows simultaneous training by six to nine participants.

Additionally, changes were made to the layout of the miniature plants and DCS to improve the operating environment, which had become slightly confined in terms of space, and measures were taken to create an environment that closely matched an actual control room, such as by installing a large screen in front of the HMIs, setting up remote cameras, and projecting images from the camera onto a large screen.

3. Training Content

The simulators are connected to JCCP's existing and external facilities (PCs, etc.) to provide the following training.

(1) Process control practice using a miniature plant

Hands-on training in basic process control (PID control) is provided through actual operation of a miniature plant. This practice allows participants to learn about tuning methods for good controllability and methods for controlling disturbances, and is incorporated in all instrumentation courses, as it covers many aspects that are common to instrumentation-related engineering.

(2) DCS engineering practice

The main functions of DCS include process control and monitoring. In this practice, participants learn how process control and monitoring functions are implemented using DCS. In order to operate a plant using DCS, it is necessary to load data from various

instruments to the DCS, so participants first learn about methods for defining necessary data. Then, they practice control functions through a series of actions, from building control logic and downloading it to the DCS to confirming the control action, and also practice monitoring functions by creating a process-monitoring screen and actually monitoring processes on the screen they created.

(3) Practice using MPC (model predictive control)

Here, participants aim to solve an interference problem in the water level of two water tanks of a miniature plant using MPC, and learn about important procedures for building MPC, such as conducting a step test and identifying a model under conditions that closely resemble an actual system. The practice is performed by connecting to a PC in which MPC functions are installed.

(4) Practice using OSS (operational support system)

Participants practice building automated operating and guidance systems using OSS, which is frequently used today in Japanese refineries.

4. Future Issues

Fieldbus, safety instrumentation and wireless systems are some of the keywords in today's instrumentation field. They are not utilized on a full scale yet in Japan, but through the utilization of facilities available at JCCP Headquarters and the cooperation of member companies, JCCP strives to satisfy participants' expectations by creating an environment that is consistently conducive to learning about the world's leading-edge technologies.

<by Kazuhiro Suzuki, Training Dept.>



Training using the old No. 5 Simulator



Training using the new No. 5 Simulator

[New Course] Regular Course on Energy Management— Advanced Technologies and Strategies

A new regular course on “Energy Management” was organized this fiscal year in response to recent changes in needs in oil-producing countries, and was held from October 8 to 23, 2013.

1. Background

In many oil-producing countries today, domestic oil consumption is increasing rapidly accompanying economic growth and population growth, and is prompting their oil ministries and state-run oil companies to explore measures to control oil consumption and increase energy efficiency as priority issues, and to consider introducing renewable energies in a positive light.

However, there is little economic incentive to promote energy efficiency in oil-producing countries, because a subsidy system is in place that keeps the prices of oil products relatively low, and the economic environment is hardly conducive to the formulation of energy efficiency projects. Furthermore, since the residential, transportation and business sectors account for an especially large percentage of the domestic oil consumption in oil-producing countries, there is a growing need to address energy consumption efficiency on a sector basis.

Amid this situation, JCCP has annually received an increasing number of requests from oil-producing countries for training programs on energy efficiency and renewable energies, with particularly strong expectations for Japan’s advanced environmental and energy technologies and for the formulation of specific projects. As a prime example of this trend, a customized program on energy efficiency was organized and held jointly with the ADNOC Environment Subcommittee last fiscal year.

In addition, a new regular course on energy management was established based on a course on energy conservation that has been offered up to now and placing the focus on introducing energy efficiency technologies and case examples, including renewable

energies, and on building the necessary capacities to formulate new energy efficiency projects in oil-producing countries.

2. Basic Design of the New Course

The course that was previously offered on energy conservation aimed to develop skills for the evaluation of new technologies, as well as those for analyzing energy efficiency and new project formulation, through lectures and a workshop. Ultimately, a workshop on developing new energy efficiency projects was implemented, and the course was essentially designed so that participants could take the initiative in developing new projects in their respective countries after completion of the course.

Gauging from the status of previous participants to the course on energy conservation, providing understanding of the following items is considered particularly important from the perspective of building capacities for project formulation among participants from oil-producing countries:

- (1) Changes in the energy market structure brought about by the development of renewable energy sources and other advanced technologies;
- (2) Environmental policies in the energy market and the impacts of environment-conscious actions;
- (3) Development of technologies to increase energy utilization efficiency in the residential, industrial and business sectors; and
- (4) Project formulation through cooperation among all stakeholders, including the government, private companies and local communities.

The new course was therefore designed with the aim of enhancing conceptual, imaginative, and project development capacity related to energy efficiency among participants from oil-producing countries.

More specifically, the course program consisted of a general overview of energy, environment and economics, energy and environmental policies, and strategies of oil companies, followed by an examination of new

technologies (process technologies and energy-saving and environmental devices), policy studies of advanced technologies, and pilot projects based on public-private cooperation. A workshop was then held to provide practical training in the formulation of individual projects and energy and environment scenarios, so that participants could utilize the knowledge they had acquired to develop capacities for taking initiative after returning to their respective countries.

3. Participants

From more than 40 applicants from around the world, 17 were ultimately selected following strict screening. They represented various departments, including oil downstream policy departments in oil ministries, planning departments in state-run oil companies, and environment and energy efficiency departments in refineries.

4. Course Content

(1) Lectures at JCCP

Mr. Yoshikazu Kobayashi from the Institute of Energy Economics, Japan gave a comprehensive lecture on the structure of Japan's oil market while sorting out the main focuses of the energy demand-supply situation in Japan after the accident at Fukushima Nuclear Power Station following the Great East Japan Earthquake and the state of long-term policy examinations.

Tetsuo Arai, JCCP lecturer, introduced a theoretical framework for analysis of environmental measures applied to crude oil production, energy efficiency, climate change and other such issues, and held an interactive class discussion to examine practical policies from the standpoint of state-run oil companies. He also introduced strategic initiatives of oil companies in



Class discussion on scenario planning

Japan's energy market, and discussed possibilities for future business expansion by state-run oil companies in oil-producing countries.

Mr. Masakazu Sasaki from Toyo Engineering Corporation lectured on the basics of pinch technology as an important technology for analyzing potential energy conservation and promoting project development, and its application to energy cooperation among a multiple number of plants.

Mr. Motonaga Kume from JGC Corporation gave a lecture that emphasized how the introduction of gasification would enable a broad range of strategic initiatives. For example, in addition to heavy oil treatment in refineries, it would allow flexible responses to changes in the demand structure owing to the development of power generation businesses and the petrochemical industry, as well as promote increased production of crude oil and establishment of measures against climate change through the effective utilization of CO₂.

The lectures provided a general, theoretical perspective on trends in energy and the environment, and introduced case examples in which new technology-oriented projects have allowed diverse and flexible expansion of businesses. Inspired by these lectures, many participants commented that they had gained ideas for formulating new projects in their countries.

(2) Site Visits

At JX Nippon Oil and Energy Corporation, a lecture was given on the company's initiatives for energy efficiency in the residential and industrial sectors, with a focus on the fuel cell business and the achievement of energy efficiency in the "SOENE (energy-creating) House." The initiatives particularly garnered the participants' strong interest as the oil company's approach to the final consumption sectors, and as its efforts toward increasing energy efficiency and introducing renewable energies in the residential sector. In fact, some of the participants expressed their wish to promote the initiatives as a pilot project in their countries.

At Kashima Oil Co., Ltd., specific case studies were introduced, such as of the cooperative relationship between the company's refinery complex and neighboring companies, and of the company's initiatives for promoting energy conservation. Particularly in regard to the framework of cooperation for improved efficiency, which goes beyond the conventional bounds

of the company to include neighboring companies, many participants said they wish to consider adopting the framework in their countries.

Solar Frontier K.K. gave an overall introduction to the CIS thin-film solar cell technology and photovoltaic power generation businesses in Japan and abroad. The company's operations also strongly interested the participants, as many state-run oil companies in oil-producing countries are planning to introduce renewable energies.

At Nissan Motor Co., Ltd., a presentation was given of the company's initiatives related to electric vehicles, fuel cell vehicles and technical development, and its environmental measures as an automobile manufacturer. Following the presentation, the participants had the rare opportunity to experience a test ride on a test course.

At Kitakyushu Smart Community, an overview was given of the project that is being implemented in the community to promote the introduction of renewable energies and increased energy efficiency in cooperation among Kitakyushu City, private companies and local residents. Also in Kitakyushu, the participants visited the Next Generation Energy Park, where they received an introduction to an energy project that aims to promote the introduction of renewable energies and the innovative utilization of waste.

At Mitsubishi Heavy Industries' Nagasaki Shipyard, the focus of training was placed on energy-saving boiler and turbine technologies and wind-power generating technologies, and on the potentials of project development based on the introduction of the latest high-performance technologies. The participants also learned about quality management and production processes in the manufacture of large-sized equipment.



At the Kitakyushu Citizens' Solar Power Station

At the National Institute of Advanced Industrial Science and Technology (AIST), a lecture was given on examples of leading-edge technical development in the environment and energy-saving fields in the institute, including the Fukushima Renewable Energy Project, methane hydrate initiatives, heavy oil reforming technologies, and other examples of research that will have an impact on future energy markets.



At Mitsubishi Heavy Industries, Ltd.



At Nissan Motor Co., Ltd.

(3) Workshops

In order for the participants to utilize the knowledge on advanced technology projects they gain from the lectures and site visits in the course and apply it to their duties in their countries, they need to acquire experience in thinking and acting on their own initiative. Thus, the following capacity-building workshops were organized as part of the course.

- (1) Development of environment and energy projects
(lecturer: Mr. Tetsuo Aarii, JCCP)
- (2) Planning environment and energy scenarios
(lecturer: Mr. Masahiro Kakuwa, Showa Shell Sekiyu K.K.)

The project development workshop prepared participants to initiate specific projects in their own countries, by providing an exercise in linking new energy efficiency technologies and advanced case examples to project formulation. Particular emphasis was placed on realizing such projects by identifying obstacles and issues and discussing them among the entire class.

The participants created project proposals that respond to needs in each oil-producing country, including needs for cogeneration, regional energy cooperation, solar power, wind power and biofuels.

As a culmination of the training the participants received in Japan, the workshop on scenario planning provided an opportunity to personally reflect back on the technical knowledge and case examples they had acquired, and to define and deepen their awareness of issues with the aim of applying that knowledge within the economic environment in their respective countries. In effect, it motivated the participants to put the fruits of their training in Japan to full use in their countries.

5. Summary

As part of the renewal of training programs, JCCP has placed high priority on developing participants'



At the National Institute of Advanced Industrial Science and Technology (AIST)

capacities to proactively formulate new projects in their countries. Not only are the participants expected to make full use of what they learned in Japan after their return to their countries, but they are also expected to use that knowledge to build human networks and develop new businesses between participants from around the world and Japanese companies.

The development of new technologies is advancing particularly in the environment and energy sectors, and the situation in Japan is also changing from year to year. Thus, the training for new projects in this course also aimed to develop a broad perspective, creativity and imagination through an examination of the status of technical development and advanced projects. It also placed emphasis on helping participants build their own framework for gaining a broad understanding of the changes in the energy market and the direction of technical developments related to the environment.

The program schedule consisted of visits to Kitakyushu and Nagasaki within a short period of time, but the participants indicated they had spent a fulfilling time in Japan. JCCP hopes the project plan they created in the workshop will come to realization in their countries in the future.

<by Tetsuo Aarii, Training Dept.>

[New Course] Regular Course on TPM Activities for Refinery Maintenance Management

1. Background and Objective

A marked generational change is taking place in oil-producing countries today, and is bringing to the surface issues in the operation of refineries and methods of handing on technologies to the next generation. Amid this situation, there is rising interest in TPM (Total Productive Maintenance/Management) activities, which were originally developed in Japan to modify employee consciousness. Since fiscal 2008, therefore, JCCP has been implementing customized TPM seminars in Saudi Arabia and Iran on a continuous basis, and organized a program in Japan last fiscal year for members from the Ministry of Oil-Iraq. Since then, to more closely respond to requests from oil-producing countries, a new regular course on TPM was included in the lineup of regular courses in fiscal 2013.

The course focused on addressing the issue of technological continuity that is of concern in oil-producing countries, and aimed to strengthen maintenance management technologies with a focus on onsite preventive maintenance, reliability and facility improvement by providing training in maintenance activities through autonomous maintenance and small-group activities in Japanese refineries. It was held over an 11-day period from January 14 to 24, 2014, with the objective of raising the awareness of refinery engineers who are responsible for operations and maintenance in the same manner as refinery equipment.

The participants were 18 engineers engaged in maintenance management at 15 organizations in 13 countries in the Middle East, Africa, West Asia, Asia and South America, and ranged in age from their 20s to 50s.

2. Program Overview

The course program was designed to provide a general understanding of TPM activities, shed light on the reality of TPM activities at oil companies that implement them, and provide training in the latest maintenance technologies at an engineering company,

maintenance company and equipment manufacturer. A problem-solving workshop was included in the program to summarize the main points of the course.

(1) General understanding and practice of TPM

- 1) Lecture on the introduction to TPM
Refinery safety management and maintenance management based on TPM activities
- 2) Hokkaido Joint Oil Stockpiling Co., Ltd., Hokkaido Office
Tank overhaul inspection, TPM activities
- 3) Idemitsu Kosan Co., Ltd., Chiba Refinery
Case examples of TPM activities and Kaizen activities for refinery management

(2) Latest inspection technologies

- 1) JGC Corporation, Yokohama Head Office
Latest inspection technologies and risk management
- 2) Sankyu Inc., Maintenance Center
The role of contractors and implementation framework and technology
- 3) Japan Steel Works, Ltd., Muroran Refinery
Manufacture of pressure vessels and the latest technologies

(3) Problem-solving workshop

- 1) Case studies and group discussion
“Workplace issues and solutions and action plans”
- 2) Presentation of the results of group discussions by each group

3. Results and Evaluation

(1) General understanding and practice of TPM

The lecture on the introduction to TPM defined TPM and explained its eight supporting elements in specific terms. Furthermore, to deepen understanding of the background to development of TPM, it aimed to provide a re-awareness of the importance of maintenance by introducing a serious accident that had occurred in the past at an oil complex in Japan. Emphasis was also



Lecture on the introduction to TPM

placed on the importance of managers in enhancing management and motivation in the workplace.

In the offsite training at Idemitsu Kosan, a general explanation was given of the objectives, history and effect of TPM activities implemented by the company, followed by a discussion of the process of initial cleanup and visualization in relation to autonomous maintenance activities, with a focus on achieving maintenance reform. A case example was also introduced of an activity to reduce malfunctions by changing the mechanical seal of rotary equipment, as a means for verifying the specific results and effect of such specialized maintenance.

The Hokkaido Office of Hokkaido Joint Oil Stockpiling Co., Ltd. has actively implemented TPM activities since its founding, and boasts a large number of awards. An actual walk-through of the office allowed the participants to observe the 5Ss applied to cabinets and desks in the office and to the field, where tools and service parts are sorted and organized in easy-to-

understand fashion. It is hoped that they will apply such TPM activities to their own workplaces after returning to their countries.

(2) Latest maintenance technologies

At JGC Corporation's Yokohama Head Office, a case example of a serious accident that had occurred at BP was introduced to explain the importance of OSHA and PSM in preventing such accidents, as well as the importance of risk management. The utilization of RBI to prevent risks was also introduced as a case example and explained in Q&A format. Additionally, an introduction of some of the latest technologies, including the Inspection Data Management System developed independently by JGC Corporation, its efforts to extend equipment life, and the thermal spraying technology that is expected to be utilized for equipment repair, and active questions and answers helped to deepen participants' understanding of maintenance.

At Sankyu Inc.'s Maintenance Center, a detailed presentation was given of the engineer development program that the company implements as a maintenance specialist to provide training individually geared to university graduates, vocational school graduates, and industrial high school graduates. The company's framework for training overseas maintenance managers was also introduced through a case example of the maintenance of rotary equipment, and gave a clear picture of the company's efforts to also develop local overseas employees. In the field, the participants gained first-hand knowledge of model facilities and material evaluation facilities used for training, as well as heavy machinery used in actual maintenance tasks, and the latest maintenance technologies.



Verification of the 5Ss in the office and plant





At the Japan Steel Works, Ltd., Muroran Plant



Problem-solving workshop

At the Japan Steel Works' Muroran Plant, an overview was given of the latest technologies developed independently by the company, including technologies for the manufacture of heavy oil hydrocracking units for the world's heavy oils and the latest pressure vessels used in nuclear power stations. Following the presentation, a tour was given of their manufacturing processes. In addition, the participants viewed a swordsmith performing the ancient Japanese sword-forging process, and gained exposure to Japan's advanced technology and technique. As a whole, the program at Muroran Plant provided a renewed awareness of the importance of material technologies and the understanding that process technologies are born from the thorough enforcement of the 5Ss in the actual workplace.

(3) Problem-solving workshop

A group discussion on "Workplace problems and countermeasures and action plans" was held as a form of practical training. Each participant presented a problem they had experienced and how they responded to it as a case study, and the other participants provided their input in a group discussion after gaining a shared understanding of the problems. More specifically, problems that were common to the entire group were

identified, and after reaching a common awareness of the desired state of affairs in regard to the problems that were selected, they analyzed why they are a problem, and what their causes may be. They then created an action plan for solving those problems, and gave a presentation on the last day of the course. In the general review of the course, the participants mentioned the workshop as having been particularly meaningful, raising expectations of their performance after returning to their countries.

4. Observations

Even prior to the course, the 18 participants had expressed their wish to incorporate TPM activities in some form at their workplace, while some participants also said they have already introduced TPM to their workplace. In any case, in the general review of the course, they more firmly reiterated their initial wish to make full use of TPM activities, and are expected to take action upon returning to their countries. Judging by the participants' evaluation, the course achieved its original goal, but further improvements will be made to make up for any shortfalls and continue implementing the course next fiscal year and onward.

<by Fumihito Tone, Training Dept.>

CPJ Women's Course on CSR of Japan's Oil Companies for Qatar and UAE

1. Background and Overview

JCCP once again received a request from Qatar and UAE to implement a customized course for women, following last year's implementation of such a women-only course. The request was for a group composed of two women from Qatar and eight from UAE, representing a wide range of ages and occupations from general affairs to engineering. In consideration of the diversity of the group, JCCP organized a course on corporate social responsibility (CSR) that pertains to both administrative and technical personnel. To provide a frame of reference for the fulfillment of CSR in the participants' companies, the course was designed with a focus on presenting case examples of CSR initiatives in Japan's oil industry, and a comparison of the respective characteristics of CSR initiatives in three major oil companies in Japan. Visits were also made to an engineering company, automobile manufacturer and an analytical instrument manufacturer, to examine their environmental management practices, which form the core of corporate social responsibility, and their relationship with local communities.

The course was implemented over a period of 12 days, from October 21 to November 1, 2013.

2. Course Program

(1) Overview of Japan's Oil Industry and CSR

Initiatives

In addition to presenting an overview of the oil situation in Japan, including the status of oil imports, changes in product demand, and the reality of oil companies, this lecture provided an understanding of the goal of corporate social responsibility, the theme of the course, through an examination of how oil companies in Japan fulfill their role in making ongoing contributions to society. Special focus was placed on changes that have occurred in the oil situation after the Great East Japan Earthquake and the initiatives taken by companies in the oil industry to survive the tumultuous aftermath of the disaster.

(2) Global Energy Situation

(Lecturer: Mr. Mitsuyuki Maeda, Energy & Innovation Research Institute)

This lecture was designed to allow participants to gather and analyze wide-ranging information on the global energy situation, which oil companies require to promote CSR, and to acquire general knowledge and information on the energy industry from a global perspective. First, the status of petroleum was clarified by examining various energy circumstances in relation to petroleum, and a comparison was presented of the future outlook of petroleum and other energies. The situation in Fukushima was also discussed in detail, in response to the participants' requests.

(3) JX Nippon Oil and Energy Corporation (JX), Head Office & "SOENE House"

As a representative oil company in Japan, JX introduced its CSR activities with a focus on social contribution activities. In the exchange event with the female staff at the JX Head Office, the participants divided into four groups and spent a fruitful time exchanging views with their Japanese counterparts about the similarities and differences in women's work in Japan and their countries. Additionally, at "SOENE (energy creating) House," a model house that incorporates proposals for new living environments using new energy technologies developed by JX, a training program was organized and implemented from the female perspective. It provided effective training, which captured the participants' avid attention and inspired many questions.

(4) Cosmo Research Institute, Head Office

Cosmo Research Institute first gave a presentation on Cosmo Oil's CSR activities and sustainable corporate activities, then discussed various initiatives and volunteer activities that the company implements with particular emphasis on maintaining close ties with society. The participants then divided into two groups and engaged in a workshop to extract topics that are key to corporate activities related to the three keywords of economy, environment and society, and gauged their level of understanding of CSR.



Workshop at Cosmo Research Institute

(5) Toyota Motor Corporation, Head Office and Motomachi Plant

First, the participants toured the Motomachi Plant, the main factory of the company, and observed first-hand the various Kaizen activities being implemented in the assembly process. They were especially impressed with the explanation of the features of the Jidoka principle, Kanban system, Andon system and other such tools developed and implemented by Toyota. The CSR Department Corporate Planning Division also provided detailed information on Toyota's CSR activities and elicited strong interest and many questions from the participants about important CSR issues. For example, they asked how Toyota disseminates and shares policies and strategies with its business partners, and what types of criteria are used to evaluate Toyota's CSR. The fact that all questions were answered in precise detail was a testament to Toyota's status as a world-leading company.

(6) JX Nippon Oil and Energy Corporation, Marifu Refinery

A video presentation provided an overview of the refinery, followed by a tour of the refinery's compact group of devices. In the integrated instrument control room, the participants experienced an actual general meeting and safety confirmation practice, and expressed surprise at the refinery's high share of needle cokes, which are its particular specialty. Furthermore, they learned about the refinery's preventive maintenance for air and water management through an explanation of its environmental initiatives, and gained an understanding of safety management systems (SMS) and risk management in a lecture that featured actual examples of management practices implemented by Marifu Refinery presented in an easy-to-understand manner.



Presentation of CSR activities by Toyota Motor Corporation

(7) Shimadzu Corporation, Head Office and Sanjo Plant

Shimadzu Corporation specializes in the manufacture of measuring instruments that provide an effective means for environmental measurements.

Following an overview of the company, a presentation was given on its CSR activities, with particular focus on environmental management topics, including the details of monitoring and treatment of wastewater that is discharged from the plant. The participants then toured the site, which is governed by voluntary standards that are 10 times more stringent than the water quality standards of Kyoto City, as well as inspected the manufacture of testing equipment and observed a demonstration of the equipment using various testing devices. They also showed strong interest in how Japanese companies maintain corporate security, upon learning that the assembly of special analytical instruments in the plant is exclusively performed by a specific team of three employees, and asked about the measures taken by the company to prevent them from being recruited away by other companies.



At Shimadzu Corporation

(8) JGC Corporation, Yokohama Head Office

A presentation of JGC Corporation's business vision as an engineering company was followed by an overview of its CSR activities, with an emphasis on activities that are implemented in cooperation with the local community as part of the company's local contribution efforts. For example, detailed descriptions were given of its activities in support of handicapped people, which are implemented jointly with an NPO, and its activities for environment protection, which are implemented with Earthwatch Japan, an NPO sponsored by JGC. As part of the presentation, a female employee related her experience in participating in an activity organized by Earthwatch Japan, and held a lively and interactive Q&A with the participants. With regard to JGC's environmental countermeasures, an overview was given of its initiatives for CO₂ capture and storage and renewable energies.

(9) Idemitsu Kosan Co., Ltd., Chiba Refinery and Plant

Following an introduction to the company and its Chiba Refinery, a brief overview was given of the training program that the Technical Training Center offers to refinery operators from Qatar and Oman, and information was provided about the organization of the operating departments and their energy-saving activities through a tour of the refinery. During the tour, an explanation was given of an employee skills acquisition chart in response to a question on how the skills of employees and staff are evaluated. With regard to CSR activities, the company's stance that "the very activities that the company has pursued since its founding to promote human respect and environmental harmony by its refineries and plants form the core of CSR activities" prompted many questions that indicated the participants' strong interest in CSR.

3. Observations

In the visits to various offsite facilities, there were many questions from the participants about



At JGC Corporation

the employment and development of multinational employees, as a reflection of the issues and realities of the employment and human resource development situation in the participants' countries. Consideration will thus be given to including this issue as a possible new theme for improving future training programs.

As requested by Qatar and UAE, the course was themed on corporate social responsibility, as it was last year. The group of participants came from a broad range of fields, including members from the personnel management, regional cooperation, administration, procurement and finance departments, as well as project managers, strategic planning managers and CSR managers, but they all seemed to equally appreciate the course content. Thus, JCCP gained a boost in continuing to offer the CSR course to various countries hereafter as a women-only course.

The participants' evaluation of the course indicated that the course objectives had been sufficiently achieved, and included comments that expressed their strong desire to use the experience of this course to enhance CSR activities in their companies and countries. Based on the achievements of the course, which has been implemented twice so far, participants requested an "Advanced CSR course" specifically for female employees in charge of CSR, including last year's participants, so they can further their knowledge and ensure an even higher level of CSR activities.

<by Fumihito Tone, Training Dept.>

CPJ on the Latest Power Turbine and Boiler Technologies for Vietnam

1. Background

The recent customized program in Vietnam came to be implemented against a background of circumstances in which the efficiency improvement and increase in power supply capacity of Petrovietnam's power plants have become issues of particularly high priority among the company's various operations, as also mentioned in the previous issue of *JCCP NEWS* (No. 117, January 2014).

Based on this understanding, JCCP planned and organized a two-part program, with the first part comprised of a Customized Program-Overseas (CPO) in Ho Chi Minh City held by a Japanese expert, and the second part comprised of a Customized Program-Japan (CPJ) held with the cooperation of representative plants and businesses in relevant technical fields in Japan. The program was implemented as scheduled, according to plan.

2. Overview

The second part of the program was designed as an 11-day seminar, and was held from October 1 to 11, 2013. The offices and plants of leading Japanese companies in their respective technical fields cooperated in providing offsite training, and included Shin Nippon Machinery Co., Ltd. (Kure City), Woods Corporation Headquarters and Plant (Kobe City), Osaka Gas Co., Ltd. Senboku Power Station, Torishima Pump Mfg. Co., Ltd. Head Office and Plant (Osaka Pref.) and Mitsubishi Heavy Industries, Ltd. Kanazawa Plant (Yokohama City), all of which are located in a large-scale industrial park representative of Japan or in neighboring districts.

As stated earlier, the main theme of the course focused on increasing efficiency and preventing loss in Petrovietnam's power plants, facilities and equipment, and on enhancing plant reliability. As the theme pertained closely to actual operations, the group of participants (15 members) was selected mainly from among facility and machine engineers in virtually all offices and refineries affiliated with Petrovietnam, and included 10 engineers from Petrovietnam's power plant department.



Opening ceremony (group photo)

(1) Governor functions and reliability improvement technology

Woods Corporation, Head Office and Plant

Woods Corporation is an exclusive technical service provider of Woodward Governor, a company that boasts a worldwide business base. A content-rich lecture was provided that reflected the fact that governors are an important control mechanism (and speed-regulating function that can be regarded as the brain) for power turbines. In response to the participants' many questions, precise knowledge and explanations were provided by a specialist in the field.

Using a governor to regulate the speed of power tools is an indispensable technology to rotary machine engineers. By receiving a lecture on operating theories



Training at Woods Corporation

followed by practical training that included actual disassembly and assembly operations, the participants were able to acquire hands-on knowledge of the control mechanisms of various governors.

(2) Rotary equipment inspection and diagnosis technologies

Shin Nippon Machinery Co., Ltd.

Among the company's wide lineup of production machines, steam turbines are one of its primary products, and are exported to the Dung Quat Refinery in Vietnam and to countries around the world. The participants were thus fascinated to be able to observe up close the steady production process of actual machines using advanced technologies, as they traveled through the vast site of the plant located along the coast of the Seto Inland Sea. Furthermore, as power machines that are familiar to the participants were among the machines that were brought to the plant for repair, the participants asked a host of questions and boosted the interactive mood of the program.

The lecture was based on extensive examples of the company's products and machines. They included many examples of facilities that boast an extensive delivery record to Vietnam and other oil-producing countries in Asia that are recently experiencing remarkable growth in their market economy, and captured the enthusiastic attention of the participants. A lecture was also given on various repair technologies from an officer in charge of technical services, with reference to a number of specific examples.

(3) Power plant pump reliability improvement technology

Torishima Pump Mfg. Co., Ltd., Head Office and Plant

At Torishima Pump Mfg., a representative facility and equipment manufacturer that manufactures and supplies power plant pumps to overseas customers, a specialist in a relevant field gave a presentation on the reliability improvement of high-performance pumps, which is one of the most versatile fields for mechanical engineers, based on the company's wealth of experience.

Information about pumps was provided in an easy-to-understand manner based on familiar topics, such as the fact that electricity to drive pumps accounts for approximately 15% of Japan's total electricity consumption (1,150TWh), and therefore that total electricity consumption by pumps equals four to five times the amount of electricity produced by Fukushima



At Torishima Pump Mfg. Co., Ltd.

Daiichi Nuclear Power Station. In relation to this information, case examples of the implementation of energy-saving technologies through high-efficiency power plant pumps attracted particularly strong attention of all the practical training themes selected appropriately from among the large variety of elemental technologies.

As is well known, an especially conspicuous trend that has been observed in Vietnam in recent years is the construction of new power plants in response to a rapid increase in electricity consumption. Thus, a particularly heated Q&A took place in regard to practical technologies that would allow newly constructed plants to deliver even greater power generating efficiency than conventional plants.

(4) Practical technologies for natural gas-fired power plants

Osaka Gas Co., Ltd., Senboku Power Plant

This was the first time Senboku Power Plant was visited by a group of training participants from Petrovietnam. Boasting the latest combined cycle system among all other natural gas-fired power plants in Japan, it delivers a power generation efficiency (57%) that is on par with Petrovietnam's newest power plant. The participants asked many questions about the similarities and differences with the power plants where they work (Ca Mau, Nhon Trach), and expressed particularly focused interest in comparing cooling water systems. In Osaka Gas's power plant, cooling water is circulated by operating two cooling towers, whereas at the Nhon Trach power plant, water is drawn from an abundant river and used in a once-through cooling system.

(5) Latest combined-cycle generation technologies

Mitsubishi Heavy Industries, Ltd.

Mitsubishi Heavy Industries gave a lecture on its

abundant experience and accumulation of technologies as a representative manufacturer and worldwide supplier of steam turbines and steam generating boilers, the principal engines of power plants. Manifesting the company's abundant experience, the lecture provided a summary of a broad range of topics, including inspection technologies in general and repair examples related to various facilities and equipment that make up high-performance boilers and steam supply systems, which support the foundation of high-performance power generation systems.

In a tour of a production plant, where the processing and assembly of various facilities and devices of steam generating boilers for steam turbines were in progress, the participants asked many questions about the production methods and status of inspection at the finishing stage of such facilities, which also play important roles in power plants where they work.

Additionally, an introduction was given of the company's initiatives for strengthening its overseas technical service framework in an effort to enhance facility and equipment reliability, which is key to the maintenance and management of facilities and equipment for overseas customers. Such concrete explanations that directly pertain to actual operations were especially appreciated by the participants.

3. Summary

The course was implemented during a period of good weather. Even for the Vietnamese participants who are



At Mitsubishi Heavy Industries, Ltd.

not used to the cold, the weather was comfortable enough for them to maintain their health, and the entire course program was completed as scheduled.

In consideration of the fact that the course schedule coincided with the period when the largest number of JCCP regular courses are simultaneously implemented during the year, steps were taken to avoid any conflicts in the reservation of lecture rooms. As a result, no unexpected occurrences arose from the congested schedule, and the course was fortunately completed without incident.

Having completed the course successfully, JCCP has renewed its commitment to continue planning and implementing timely customized courses to accurately respond to needs in oil-producing countries and further develop its personnel exchange program.

<by Shintaro Miyawaki, Training Dept.>

CPJ on Environmental Management and Advanced Technologies for KPC

A Customized Program-Japan (CPJ) on Environmental Management and Advanced Technologies was held from November 25 to December 6, 2013 as the first such customized program related to the environment for participants from the Kuwait Petroleum Corporation (KPC) Group.

1. Background

KPC is actively exploring environmental countermeasures in the oil industry as a priority issue in Kuwait's core industry, and is showing increasing interest in case examples of environmental technologies and advanced projects. Its areas of particular concern include responses to such issues as the effective utilization of precious water resources, waste treatment measures, and climate change countermeasures. The company is also showing strong interest in energy efficiency improvement and the introduction of renewable energies, particularly given the rapid increase of domestic oil consumption that not only Kuwait but other oil-producing countries are experiencing today.

Under this situation, JCCP is working to deepen its cooperative relationship with KPC through training programs on environmental topics, and has held a carbon management seminar and exchange events on energy conservation, CO₂ countermeasures, and carbon financing in 2012. In fiscal 2012, a large-scale seminar on water resources and waste management was successfully completed in Kuwait with the attendance of the top management of KPC and JCCP as well as the Japanese Ambassador to Kuwait.

To further strengthen this friendly relationship, members from the KPC Group engaging in environmental matters began to proactively participate in JCCP training programs in Japan since fiscal 2013. As part of this initiative, a CPJ came to be held for a group of environmental managers from companies of the KPC Group.

2. Course Concept

To prepare Kuwait's oil industry to solve environmental

issues in its country, the course was designed to provide understanding of Japan's leading-edge technologies and advanced environmental initiatives that are taken in cooperation among the government, private companies and local residents, with a focus on allowing the fruits of training in Japan to be utilized to solve environmental issues in Kuwait's oil industry in the future. The course program placed particular emphasis on responding to high-need issues, including those related to the effective utilization of water resources and waste, and the introduction of renewable energies. Furthermore, the lectures were specifically catered to the group of participants composed of manager-level employees in environmental departments of KPC Group companies by placing emphasis on developing conceptual abilities and inventiveness and providing a general understanding of a wide range of fields. As the understanding and cooperation of a large number of stakeholders, including the international community, government organizations and local residents, is indispensable to environmental countermeasures in the oil industry, the framework for defining and resolving various issue needs to be flexible. Thus, in addition to providing an understanding of the latest technologies, the course focused on examining the diversity and flexibility of frameworks for resolving environmental issues through advanced case examples, and included the following core items.

- (1) Advanced environmental case examples (public-private cooperation projects, in particular)
- (2) Advanced environmental management in the oil industry
- (3) Development and commercialization of advanced environmental technologies and process technologies by private companies
- (4) Workshop on new project development

3. Content

(1) Lectures at JCCP

Mr. Masaki Iijima from Mitsubishi Heavy Industries, Ltd. gave a lecture introducing the latest renewable energy technologies, the separation and underground storage of CO₂, and technologies for the effective



Training in environmental management at Shirashima Oil Storage Company, Ltd.



At Kitakyushu Smart Community

industrial utilization of CO₂ and commercial case examples thereof. It deepened the participants' understanding that the oil industry has strong potential to contribute to the international community through its wide-ranging approaches to climate change.

Mr. Toshihiro Wakabayashi from Toyo Engineering Corporation lectured on the latest energy-saving distillation system. The participants learned that the oil industry is consistently pursuing technical developments in basic distillation technologies, and that there is still a large potential for achieving energy conservation.

Mr. Hiroaki Numata and Mr. Hirobumi Wada from JGC Corporation gave a lecture on technologies for the effective utilization of associated water and low-temperature heat sources in an easy-to-understand manner with reference to specific project examples.

JCCP lecturer Arie gave a lecture on the importance of exhibiting flexible views beyond conventional corporate bounds when establishing environmental countermeasures in the oil industry, and in relation to the above lecturers, engaged the participants in a class discussion to extract new ideas for promising new environmental projects in Kuwait. Through the discussion, the participants shared the awareness that Kuwait has strong potential to implement environmental and energy projects beyond the conventional framework of corporate cooperation.

(2) Site Visits

At Shirashima Oil Storage Company, Ltd., the participants learned about the environmental safety measures of an oil storage terminal. They seemed particularly impressed with the company's management practices that give full consideration to the environment and safety, such as its emergency disaster countermeasures and double oil-retaining walls.

At Kitakyushu Smart Community, an overview was given of Kitakyushu City's history of environmental

pollution countermeasures, followed by an introduction of the Smart Community Project, which aims to promote the introduction of renewable energies and energy efficiency through cooperation between private companies and local residents. A lecture was also given on the dynamic pricing system for efficient utilization of renewable energies, and motivated the participants to implement a similar project in Kuwait in the future.

Also in Kitakyushu, the participants visited Next Generation Energy Park, where wind and solar power generation and an innovative waste energy project are being implemented, and Water Plaza Kitakyushu, where they learned about the system for efficient utilization of treated wastewater and desalinated seawater as water resources and about technical developments and the demonstration related to the latest membrane bio reactor. Learning about such advanced initiatives in Kitakyushu implemented by public-private partnership broadened the participants' perspective in pursuing new possibilities.

The Tokyo Metropolitan Bureau of Environment provided a lecture on the history, present state and future plans for waste countermeasures in Tokyo, with particular weight on the treatment of general and industrial waste and policies for promoting their effective utilization. It essentially provided a general understanding of how Tokyo's environmental policies have evolved while overcoming various issues encountered in different periods in time. Thereafter, a tour was given of the innovative Tokyo Super Eco Town project.

At Japan Environmental Safety Corporation (JESCO), the participants learned about the latest PCB treatment technologies.

At Bioenergy K.K., the participants listened to a lecture on a project for recovery of energy from food waste, and seemed impressed with how the company created and has successfully launched a profitable new business model by linking waste treatment and energy sales.

At the Kobe Office of Kawasaki Heavy Industries,



Training in environmental policies at Tokyo Metropolitan Government

Ltd., a lecture was given on the possibilities of strengthening the performance of such rotary equipment in the oil industry as steam turbines, gas turbines and gas engines by state-of-the-art technologies, and of increasing their energy efficiency by applying the latest technologies. The lecture also covered the absorption cooling technology and the possibilities of using it to save energy. Meanwhile, in the production plant, the participants had the opportunity to observe the manufacture of large machines, and seemed duly impressed by the sight.

Toray Industries' Shiga Plant introduced examples of the company's businesses that contribute to global environmental protection in various sectors by utilizing its core advanced technologies. It also explained and gave examples of the cutting-edge film-separation technology used in the system for effective utilization of water resources, and captured the participants' interest with the possible application of the separation technology to desert greening. Thereafter, the participants toured the research center, where cutting-edge technical development is undertaken, and learned about the company's wide-ranging research activities.

At the Development Center of Kurita Water Industries Ltd., a lecture was given on the latest wastewater



Training in the environment and energy conservation at Kawasaki Heavy Industries, Ltd.

treatment technologies and associated water treatment technologies, which showed that effective utilization of water resources could be achieved by utilizing chemicals to treat associated water and wastewater.

4. Summary

The busy schedule of the course took the participants from Tokyo to Kyushu, Kobe and Shiga over a short period of 12 days, but the participants seemed to appreciate being exposed to Japan's advanced technologies and cases related to the effective utilization of water resources and waste treatment.

Since the program was intended for environmental managers from the KPC Group, the course duration was shortened to 12 days to facilitate their participation, but nevertheless provided a fulfilling program with the cooperation of administrative institutions and private companies in a wide range of sectors. It was designed to provide knowledge from four different perspectives: environmental policies and administration, environmental management businesses, development companies that provide environmental technologies, and residents. Through these perspectives, the participants learned that the cooperation of various stakeholders is involved in the development of state-of-the-art technologies and implementation of advanced projects in Japan.

Such comprehensive perspectives and flexible thinking will likely be qualities that the top management of oil industries in oil-producing countries will be expected to possess in the future. Furthermore, Japan's advanced initiatives in the environment sector could also contribute to addressing human resource development needs in oil-producing countries, and are expected to play an important role in deepening Japan's cooperative relationship with Kuwait hereafter.

<by Tetsuo Arij, Training Dept.>



Training in environmental technologies at Toray Industries

CPJ on Petroleum Marketing and Physical Distribution for Vietnam

1. Background

In Vietnam, where construction of the country's second refinery is underway, domestic demand is expected to increase hereafter, and accompanying this increase, human resource development is expected to become an issue of urgent concern. Personnel augmentation and human resource development are also among important issues in the oil distribution sector. In fact, the petroleum marketing company of Petrolimex is placing primary importance on strengthening its marketing framework in response to growing demand in the country and to developing human resources in oil distribution companies. Under this situation, a Customized Program-Japan (CPJ) on petroleum marketing and physical distribution was implemented in Japan as requested by Vietnam, following on from the initial program implemented in fiscal 2012.

2. Overview

The course was held over a period of 12 days, from December 9 to 20, 2013. It was roughly a week shorter than an average regular course, but nevertheless provided a fulfilling program that included three days of lectures at JCCP ((1) Japan's oil industry, (2) oil markets in Asia, etc.) and six days of offsite training ((1) JX Nippon Oil and Energy Staging Terminal Corporation, Kiire

Terminal; (2) JX Nippon Oil and Energy Corporation, Fukuoka Oil Terminal; (3) Fujitani Oil Inc., Head Office and service station; (4) Idemitsu Kosan Co., Ltd., Aichi Refinery; (5) Tatsuno Corporation, Yokohama Plant and nearby service station; (6) Cosmo Oil Co., Ltd., Head Office).

A group of 14 participants (including one woman) attended the course, composed mostly of executive officers and department managers in charge of marketing, as it was in last year's program. The average age of the group was 48.

3. Content

The lecture on "Japan's Oil Industry" provided a comprehensive view of the oil industry in Japan, and covered such topics as Japan's energy situation and particularly the energy supply-demand situation after the Great East Japan Earthquake; the effectiveness of oil in times of emergency; the necessity and status of stockpiling oil to maintain stable supply; changes in the oil industry accompanying deregulation; excessive competition in the marketing sector and the vulnerability of the oil industry; and the realities of oil quality and oil taxes.

The lecture on "Oil Markets in Asia" outlined the latest situation in the oil market in Asia, where economic growth particularly in China and India is causing a rapid



*At JX Nippon Oil and Energy Staging Terminal Corporation,
Kiire Terminal*



*At JX Nippon Oil & Energy Corporation,
Fukuoka Oil Terminal*

increase in demand for oil. Explanations were also given of crude oil prices, demand-supply trends, the status of the Asian oil market in relation to North America and Europe, and the future direction of energy strategies in Asia based on an analysis of factors influencing crude oil prices.

The first site visit was made to JX Nippon Oil and Energy Staging Terminal Corporation's Kiire Terminal, where the participants learned about the roles, functions, operations and management, and environmental safety management at the terminal. The terminal's record of zero accidents and thorough environmental safety measures made a particularly strong impression on the participants, who also expressed amazement at observing from a boat the actual size of a VLCC and domestic transfer tanker docked at the crude oil pier.

At JX Nippon Oil & Energy Corporation's Fukuoka Oil Terminal, the participants received an overview of the oil terminal and its receiving, storage and delivery system for oil products. They then inspected the delivery system and tanker loading area, and observed with special interest the differences between gas purging facilities in Japan and Vietnam, asking many questions in that regard. As a large domestic vessel coincidentally entered the port and began discharging operations at the pier while the participants were touring the terminal, they were able to observe the docking of the ship and the process from its mooring to the connection of a loading arm.

At Fujitani Oil Inc., a JX-related oil marketing company in Hiroshima, the company manager personally gave an explanation about service station operations, the retail market and marketing industry in Japan, and captured the participants' avid attention with his lecture and detailed tour of his company's service station. In fact, the participants had so many questions about the

service station facilities, in particular, that he had barely enough time to answer them all.

Idemitsu Kosan's Aichi Refinery provided training on refinery functions, from the importing of crude oil to the production, storage and delivery of oil products, and a tour of the facilities. As Vietnam's second refinery is currently under construction, the participants observed the functions of the Aichi Refinery with detailed interest, and asked many questions.

Tatsuno Corporation's Yokohama Plant provided training plus an overview on the structure and production process of various service station weighing machines and POS system instruments as a leading manufacturer in its field. As the participants were a group of manager-level employees, they had many detailed questions about investment matters that pertain directly to their duties. They also seemed to enjoy a sense of familiarity offered by the explanation of weighing machines in the plant that displayed labels written in Vietnamese and were destined for Vietnam.

At Cosmo Oil Co., Ltd.'s Head Office, the participants learned about oil companies in Japan, with particular focus on the physical distribution of oil products and the safety management of their transportation, and listened with great interest about the company's initiatives for launching new environment-related projects that involve wind power and solar power generation.

4. Summary

The group of participants was composed of top-level officers from Petrolimex's marketing organizations throughout Vietnam, but as the course's content pertained directly to their operations in their respective organization, they seemed to fully appreciate the opportunities to observe a massive VLCC up close and to tour a large-scale refinery, oil terminal, state-of-the-



At Idemitsu Kosan Co., Ltd., Aichi Refinery

art service station and a production site of weighing machines that are being considered for introduction to Vietnam, and presumably returned to their country with an impression of having attended a highly beneficial course.

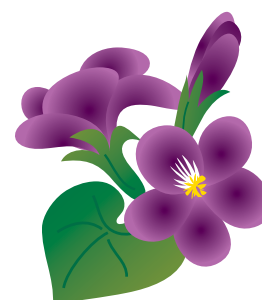
The tight schedule had the participants traveling from Tokyo to Kagoshima, Fukuoka, Hiroshima, Nagoya, Yokohama, and back to Tokyo practically on a daily basis, but they kept to the schedule and facilitated the smooth and efficient implementation of the course. JCCP assumes this was in large part owing to Petrolimex's thorough preparation and follow-up system, which included the implementation of pre-training preparation and education in Vietnam and the selection

of a participant who can translate in both English and Vietnam to accompany the group. JCCP thus thanks Petrolimex for its active input and support.

On the JCCP side, efforts to allow the participants to actually "see and feel" their experience by placing more emphasis on offsite training than classroom lectures probably coincided with their needs and led to their high evaluation of the course.

JCCP hopes that this course has ultimately deepened knowledge of Japan's oil industry and of Japan in general among the manager-level participants from oil marketing organizations in Vietnam, and contributed to strengthening ties between Vietnam and Japan.

<by Eiji Tsukamoto, Training Dept.>



Report on the Training Cooperation Program

—Saudi Arabia—

JCCP Lecturer Fumihiro Tone visited Saudi Arabia from November 15 to 23, 2013, under the objectives of the JCCP Training Cooperation Program of strengthening ties with major oil-producing countries and providing cooperation in human resource development. More specifically, he visited key persons in various relevant departments in Saudi Aramco, the principal oil company in Saudi Arabia, and its subsidiaries, to explain and exchange views regarding JCCP regular courses to be offered in fiscal 2014, hear opinions about JCCP's assistance within Saudi Aramco's education program, and explain some of the details being planned as part of the preliminary preparation for the JCCP alumni meeting scheduled to be held in fiscal 2014 in Saudi Arabia.

1. Ras Tanura Refinery

Following last year's approach, a meeting was held with Mr. Yahya Q. Daghri, Supervisor, Planning and Performances Unit (participated in a regular course on human resource management in FY2009), on the possible implementation of a practical customized program. In response to a request from the Ras Tanura Refinery for the implementation of a practical seminar similar to one that was held last year at the Yanbu Refinery, Tone gave details of the program and discussed how to proceed with the plan.

In the meeting with Mr. Daghri, it was revealed that Refining & NGL Fractionations is currently reviewing its employee training framework. Up to now, refinery managers were responsible for employee education,



Mr. Yahya Q. Daghri, Supervisor, Planning and Performances Unit, Ras Tanura Refinery (left)



Mr. Abdullah O. Al-Baiz, General Manager, Ras Tanura Refinery (left)

so JCCP needed to contact and make arrangements directly with each refinery and NGL fractionation plant regarding training programs. However, Refining & NGL Fractionations is considering establishing a controlling group in the Headquarters (located in Ras Tanura), for central control of human resource education and training.

In the meeting with the refinery's management team, Tone had the opportunity to meet with Mr. Abdullah O. Al-Baiz, General Manager, for the first time after Mr. Al-Baiz's appointment this past October. As Mr. Al-Baiz was not yet familiar with JCCP, Tone provided an overview and introduced the regular course schedule for FY2014. Also addressing Mr. Uthman A. Al-Ghamdi, Operations Manager, who was present at the meeting, Tone introduced JCCP customized programs, which have been implemented for Saudi Aramco continuously since fiscal 2008, and in particular, presented details of practical onsite training (with reference to *JCCP NEWS*).

2. Riyadh Refinery

A meeting was arranged with Mr. Abdul Rahman Al Subaie, Manager, and other management officers at the Riyadh Refinery. Tone explained the FY2014 JCCP regular course schedule, and spotlighted the new regular course on "Strategic Management." As Mr. Al Subaie expressed a strong request for the same type of customized program on onsite visualization activities



Mr. Abdul Rahman Al Subaie, Manager, Riyadh Refinery
(center)



Mr. Ali Abdulrahman Al-Hazmi, President, SASREF
(second from right)

that was held at the Yanbu Refinery, steps toward implementation of the program were discussed in general, with a promise to work out the details concerning dates and specific content in subsequent meetings. The refinery side hopes to utilize its regular overhaul period to provide its employees with practical guidance.

3. Professional Engineering Development Division (PEDD)

At PEDD, the organization responsible for developing and implementing in-house training programs for professional engineers in all sectors at Saudi Aramco, a meeting was held with Mr. Rasid K. Rahman, Supervisor Inspection Curriculum Development Group, following last year's meeting, to discuss details of the Customized Program-Overseas (CPO) on "Inspection, Corrosion/Degradation and Static Equipment Maintenance in Refinery" scheduled to be implemented from February 9 to 14, 2014, and to confirm the agreement that will be exchanged upon receiving a formal request from PEDD. Furthermore, as there was a request for the implementation of a lecture that specifically focuses on corrosion prevention sometime during the fourth quarter of next year or the first quarter of the following year, details were agreed to be discussed at the time of the above CPO.

4. Saudi Aramco Shell Refinery (SASREF)

At SASREF, a meeting was held with Mr. Ali Abdulrahman Al-Hazmi, President. As SASREF has never participated in a JCCP training program to date, Tone was introduced to the senior vice president and general

manager of human resources, and gave an overview of JCCP and the regular course schedule for fiscal 2014. Mr. Al-Hazmi had participated in a JCCP regular course in the 1980s, and spoke about his wonderful experience in Japan to his colleagues. He said that punctuality in the daily lives of the Japanese people had left a strong impression on him as a salient characteristic of Japan, and that it is something he wishes his employees to experience. The senior vice president of human resources indicated a strong interest in Kaizen activities among other Japanese-style management practices, and expressed his wish to send SASREF participants to a regular course on Total Productive Management (TPM).

5. Summary

Through the previous and recent visits, the original objectives of introducing the FY2014 regular course schedule to Saudi Aramco's refineries and head office and of exchanging views regarding customized programs for Saudi Aramco have been achieved. Furthermore, the recent visit allowed JCCP to include SASREF among its relationships with Saudi Aramco's joint-venture companies, which include Petro Rabigh. With respect to customized programs for Saudi Aramco, formal requests for training in practical onsite visualization activities, which was previously implemented at the Yanbu Refinery, have been received from the Jeddah, Riyadh and Ras Tanura Refineries and Petro Rabigh.

At the same time, various situations that have come to light during the recent visit have made JCCP strongly aware of the need to keep track of organizational changes and personnel transfers at Saudi Aramco and to continue to engage in detailed talks to maintain mutual ties.

<by Fumihito Tone, Training Dept.>

Report on the Training Cooperation Program —Vietnam—

1. Background

JCCP has formulated and implemented a number of Customized Programs-Overseas (CPO) and Customized Programs-Japan (CPJ) for Petrovietnam to date in response to the company's diversifying needs. To review the results of such customized programs implemented during fiscal 2013, as well as to discuss possible new training themes with relevant departments in Petrovietnam and hold detailed meetings with each operating section for finalization of implementation plans while exchanging views on future program content, JCCP program managers (Shintaro Miyawaki and Kazuhiro Suzuki) visited Petrovietnam's Head Office and relevant offices from January 6 to 10, 2014, under the JCCP Training Cooperation Program.

2. Content

(1) Petrovietnam, Head Office

At Petrovietnam's HRD & Training Division and Power Division, the JCCP members held an exchange of views with Mr. Thanh Tuan Anh, Deputy General Manager, and Dr. Nguyen Tien Vinh, General Manager, respectively, to conduct a review of customized programs in general.

CPJ seminars for Petrovietnam have conventionally been implemented with the attendance of 15 participants (including the leader), and both managers agreed that the same number of participants would also be

appropriate for future programs. Additionally, with respect to program content, they requested the continued implementation of seminars on mechanical systems and instrumentation and control systems.

The JCCP members explained that budget constraints could restrict the number of CPO and CPJ seminars that JCCP could implement in one year, and in such cases, special considerations might become necessary to stay within budget by merging two seminars into one, for example. The Petrovietnam side expressed its understanding of the need to make budgetary adjustments, and requested JCCP to promptly inform the counterpart Head Office department and other relevant departments of any changes in plan or schedule that occur after making such adjustments. Additionally, the JCCP members received approval from the Petrovietnam members to schedule CPO and CPJ seminars in consideration of their optimal timing in relation to regular courses that are implemented during the first and second halves of the year.

As a wish from the Head Office Power Division, the Petrovietnam side shared its view that perhaps Hanoi should be the venue of the next CPO seminar, as the state-of-the-art power generation facility that is currently under construction is located closer to Hanoi than to Ho Chi Minh City. Also in relation to this issue, the JCCP side received a request to send a seminar lecturer (expert) to the construction site and convene a case study workshop over a period of about two days in the latter half of the CPO seminar to help resolve onsite issues. With respect to the CPO on instrumentation and control, there was a request to also include refineries among possible venues for its future implementation.

(2) Other relevant departments at Petrovietnam

Following the visit to the head office, the JCCP members visited other departments to exchange views and discuss details regarding customized programs.

The hearings held at the departments that were visited (Ho Chi Minh Plant Engineering Division, Ca Mau Power Plant Division, Ca Mau Chemical Fertilizer Division, Vung Ang Power Plant Division) yielded a number of detailed requests regarding customized



At the Petrovietnam Head Office



At the Ca Mau Power Plant Division



At the Ca Mau Chemical Fertilizer Division

programs, such as for the inclusion of a theme related to the high-efficiency thermal power plant that Petrovietnam will be building in the future, a seminar on ultra-super-critical turbine and boiler technologies that are showing particularly remarkable progress in recent years, and a lecture on water treatment technologies as an essential theme related to boiler technologies.

In response to these requests, the JCCP members said those that could be accommodated in the next customized seminar will be examined and scheduled into the seminar in line with Petrovietnam's wishes, and will be finalized upon discussion with JCCP's counterpart department at Petrovietnam.



At the Vung Ang Power Plant Division

3. Summary

On their recent visit, the JCCP members witnessed the initiatives of Petrovietnam's various departments to promote steady economic growth in line with the Doi Moi Policy, and were most impressed by their steady approach to diversified needs and technological advancements, and by the smooth progress in the construction of a high-efficiency power plant based on the company's new action plan. Moreover, owing to the efficient arrangement by Petrovietnam's head office counterpart department, the members were able to visit Petrovietnam's various departments that are scattered throughout the vertically long country within a short period of time, assess new needs for customized training in various fields, and successfully accomplish their objectives as scheduled.

Continued efforts will be made to implement customized programs that respond to needs that are brought to the surface through hearings regarding new themes with relevant business sectors of Petrovietnam, with hopes that such seminars would contribute to further developing the cooperative relationship between Petrovietnam and JCCP.

<by Shintaro Miyawaki, Training Dept.>

JCCP Regular Courses Completed

TR-15-13 Energy Management for Petroleum Industry October 8 – October 23, 2013

Lecturer: Tetsuo Arii

Content: With the objective of developing capability of strategic project development, the course program is designed to start with energy and environment economics & policy and proceed to basic technologies and advanced technologies followed by site visits to various advanced projects, manufacturing plant and national research institute. At the end, participants will take part in workshops to prepare for an actual project in their home countries.



<13 countries / 18 participants>

Energy and Environment Economics and Pinch Technology;
Advanced Process and Equipment; Fuel Cell and Solar Energy; Electric Vehicles; Smart Community and Latest Power Generation (Gas Turbine, Steam Turbine, Wind, Solar);
Workshops for Project Development and Scenario Planning

Site visits: Kashima Oil Co., Ltd. (Kashima Refinery); JX Nippon Oil & Energy Corporation (Head Office); JX Smart House; Solar Frontier K.K.; Nissan Motor Co., Ltd. (Oppama Plant); Kitakyushu City (Smart Community and Next Generation Energy Park); Mitsubishi Heavy Industries, Ltd. (Nagasaki Shipyard & Machinery Works); The National Institute of Advanced Industrial Science and Technology (AIST)

Countries: Bahrain, Indonesia, Iraq, Kuwait, Myanmar, Nigeria, Peru, Saudi Arabia, Sudan, Thailand, UAE, Uzbekistan, Vietnam

TR-16-13 Advanced Field Device and Control October 8 – October 25, 2013

Lecturer: Shigeru Matsui

Content: Latest Control System and Wireless Instrument; Outline of Level Gauges and Practice; Review of Process Control Theory Using Dynamic Simulator; Review of Process Control Theory Using Wet Simulator; Outline of Emergency Shutdown System; Control Valve Engineering; Vibration Measurements and Diagnosis; Refinery Information and Control System; Instrument Maintenance; Outline of Flow Meters and Practice; Latest System; Outline of Transmitter & Control Valve and Practice; Latest Instrument Engineering



<12 countries / 16 participants>

Site visits: Yokogawa Electric Corporation (Mitaka Headquarters); Endress+Hauser Yamanashi Co., Ltd. (Yamanashi Factory); Shinkawa Sensor Technology, Inc. (Hiroshima Factory); Idemitsu Kosan Co., Ltd. (Chiba Refinery); OVAL Corporation (Yokohama Operation Center); Azbil Corporation (Shonan Factory)

Countries: Iraq, Kazakhstan, Malaysia, Myanmar, Nigeria, Qatar, Saudi Arabia, Sudan, Thailand, Uzbekistan, Vietnam, Yemen

TR-17-13 Gas Processing for LNG October 29 – November 15, 2013

Lecturer: Takaaki Yuasa

Content: Global LNG Market; LNG Steel Pipe Technology; Development and Production of LNG; Outline of LNG Plant; Development of Natural Gas as a New Energy Source; LNG Vaporizer and Compressor Technology; Gas Turbine Technology; LNG Storage Tank Technology; LNG Ship Technology



<10 countries / 17 participants>

Site visits: Osaka Gas Co., Ltd. (Himeji LNG Terminal); Kobe Steel, Ltd. (Takasago Works); Mitsubishi Heavy Industries, Ltd. (Takasago Machinery Works); IHI Corporation (Yokohama Factory); Mitsui Engineering & Shipbuilding Co., Ltd. (Chiba Works)

Countries: Bahrain, Indonesia, Kazakhstan, Kuwait, Nigeria, Qatar, Saudi Arabia, Thailand, Uzbekistan, Vietnam

TR-18-13 Material Problems and Their Countermeasures
October 29 – November 15, 2013

Lecturer: Masami Funayama

Content: Petroleum Industry in Japan; Material and Inspection of Static Equipment; Maintenance Management in Japanese Refinery; Material of Pressure Vessels; Estimation of Remaining Life of Static Equipment; Overview of Materials Problem, Exercise of Failure Analysis; Maintenance Activity in Japanese Refinery (TPM); Trouble Experiences and Countermeasures; Fundamentals of Welding, Metallurgy of Welding; The Latest Welding Technologies, Typical Problems and Countermeasures of High Tensile Steels; Maintenance and Repair Technologies of Refining Equipment; Tank Corrosion and Countermeasures; Corrosion & Deterioration Problems of Materials in Refinery; Typical Mechanical Damages in Refining Industry; The Latest Welding Technology

Site visits: The Japan Steel Works, Ltd. (Muroran Plant); Idemitsu Kosan Co., Ltd. (Chiba Refinery); Taseto Co., Ltd. (Fujisawa Office); IHI Corporation (Production Engineering Center); Shinko Plantech Co., Ltd. (Head Office); Chiyoda Corporation (Head Office)

Countries: Ecuador, Iraq, Kuwait, Libya, Myanmar, Nigeria, Pakistan, Sudan, Thailand, Uzbekistan, Vietnam, Yemen



<12 countries / 15 participants>

TR-19-13 Human Resource Development
November 19 – December 6, 2013

Lecturer: Taro Shoji

Content: Petroleum Industry in Japan; Japanese-style Human Resource Management & Development; HRM/HRD of Oil Company; HRD & TPM at Refinery; Small Group Activity at Refinery; HRM/Training Program of Engineering Company; Training Needs Investigation & Training Program Designing; Rational Thought and Team Consensus Building

Site visits: Idemitsu Kosan Co., Ltd. (Tokuyama Refinery); JX Nippon Oil & Energy Corporation (Mizushima Refinery); JGC Corporation (Yokohama Headquarters); Meisei University; JX Nippon Oil & Energy Corporation (Headquarters)

Countries: Indonesia, Iraq, Kazakhstan, Libya, Malaysia, Myanmar, Nigeria, Oman, Saudi Arabia, Sudan, Thailand, Uzbekistan, Vietnam, Yemen



<14 countries / 19 participants>

TR-20-13 Information and Control Systems Utilized in Refineries
November 19 – December 6, 2013

Lecturer: Kazuhiro Suzuki

Content: Petroleum Industry in Japan; Outline of Distributed Control System (DCS); Trend of Information and Control Systems; Controller Tuning Method; Hands-on Training of Process Control; Alarm Analysis; Operation Support System; Modernization of Instrumentation; Safety Instrumented System; Fieldbus; Wireless System

Site visits: Yokogawa Electric Corporation (Mitaka Headquarters); Azbil Corporation (Shonan Factory); JX Nippon Oil & Energy Corporation (Marifu Refinery); Emerson Japan, Ltd. (Chiba Solution Center)

Countries: India, Indonesia, Iraq, Kazakhstan, Libya, Myanmar, Nigeria, Pakistan, Saudi Arabia, Uzbekistan, Vietnam



<11 countries / 13 participants>

TR-21-13 Inspection and Reliability Evaluation
January 14 – January 31, 2014

Lecturer: Masami Funayama

Content: Petroleum Industry in Japan; Plant Life Cycle Engineering; Maintenance Management in Japanese Refinery; Maintenance Management of Static Equipment; Trouble Experiences and Countermeasures; Material Characteristics of Pressure Vessels and Quality Control; Material Characteristics of Pipes & Tubes and Quality Control; Advanced Non-destructive Inspection Technologies; Inspection Training; Reliability Activities in the Refinery; Trouble Experiences and Countermeasures; Maintenance and Repair Technologies of Refining Equipment; Water Management and Corrosion and Fouling Control for Petroleum Refining Plants; Safety and Reliability of Aged Plants; Group Discussion



<11 countries / 17 participants>

Site visits: Taiyo Oil Co., Ltd. (Shikoku Operations); Kobe Steel, Ltd. (Takasago Works); Nippon Steel & Sumitomo Metal Corporation (Steel Tube Works); Non-destructive Inspection Co., Ltd. (Head Office); Showa Yokkaichi Sekiyu Co., Ltd. (Yokkaichi Refinery); Shinko Plantech Co., Ltd. (Head Office)

Countries: Indonesia, Iraq, Kuwait, Mexico, Myanmar, Nigeria, Qatar, Saudi Arabia, Sudan, Thailand, Vietnam

TR-22-13 Quality Management of Refinery Products
February 4 – February 21, 2014

Lecturer: Minoru Horike

Content: Quality Management; Quality Control in Japan; QC in the Refinery; Environmental Strategy of Japanese Oil Companies; ISO-9000; Renewable Energy in Japan; Product Planning by LP Model

Site visits: Idemitsu Kosan Co., Ltd. (Aichi Refinery); Shimadzu Corporation (Head Office and Sanjo Plant); DKK TOA Corporation (Tokyo Engineering Center); Yokogawa Electric Corporation (Mitaka Headquarters); JX Nippon Oil & Energy Corporation (Negishi Refinery); Tanaka Scientific Limited



<10 countries / 15 participants>

Countries: Indonesia, Iraq, Kuwait, Libya, Myanmar, Qatar, Sudan, Thailand, Uzbekistan, Vietnam

TR-23-13 Advanced Process Control on DCS
February 4 – February 21, 2014

Lecturer: Teruhiko Sasaki

Content: Basic Process Control Theories with Practice Using Computer Simulator and Miniature Plant with Applied to DCS; Practice of Advanced Process Control Theories and Operation Support System Using DCS; Practice of Safety Instrument System; Latest DCS Related Technologies and APC System; Optimization Control Using Advanced Control System Software; Application of Advanced Process Control in Japanese Refineries



<13 countries / 15 participants>

Site visits: Yokogawa Electric Corporation (Mitaka Headquarters); JX Nippon Oil & Energy Corporation (Marifu Refinery); Seibu Oil Co., Ltd. (Yamaguchi Refinery)

Countries: Indonesia, Iraq, Kazakhstan, Libya, Myanmar, Nigeria, Pakistan, Qatar, Sudan, Thailand, Uzbekistan, Vietnam, Yemen

IT-1-13 Turnaround and Inspection
November 25 – December 6, 2013

Lecturer: Hiromitsu Saito

Content: Outline of Petroleum Industry in Japan; Maintenance Activities in Japanese Refineries; Corrosion and Materials for Refining Processes; Inspection Technologies & Its Demonstration; Manufacture and Maintenance Technologies of Screw, Centrifugal, Reciprocating Compressors; Maintenance and Repair Technologies for Refining Equipment; Risk & Reliability Management and Turnaround Maintenance; Inspection Management System; Maintenance Planning & Scheduling in the Refinery; Plant Maintenance & Technologies as Contractor and Human Resource Development of Contractor

Site visits: Non-destructive Inspection Co., Ltd. (Headquarters); Kobe Steel, Ltd. (Takasago Works); Shinko Plantech Co., Ltd. (Headquarters); JGC Corporation (Yokohama Headquarters); Idemitsu Kosan Co., Ltd. (Chiba Refinery); Sankyu Inc. (Maintenance Center)

Countries: Colombia, Ecuador, Iraq, Myanmar, Nigeria, Pakistan, Thailand, Vietnam, Yemen



<9 countries / 10 participants>

IT-2-13 Finance & Accounting Management
January 20 – January 29, 2014

Lecturer: Masayuki Jimbo

Content: Petroleum Industry in Japan; Crude Oil Terminal; Refinery Shipping System of Petroleum Products; Distribution of Petroleum Products; Refinery Site Observation; Workshop for Business Skill Development: Corporate Negotiation; Financial Accounting, Procurement, Risk Management for Marketing and Trading; Oil Derivatives; Decision Making Process of Crude Oil Buyers

Site visits: JX Nippon Oil & Energy Corporation (Mizushima Refinery); JX Nippon Oil & Energy Staging Terminal Corporation (Kiire Terminal)

Countries: Cambodia, Ecuador, Indonesia, Iraq, Kazakhstan, Nigeria, Qatar, Thailand, UAE, Vietnam, Yemen



<11 countries / 20 participants>

IT-3-13 TPM Activities for Refinery Maintenance Management
January 14 – January 24, 2014

Lecturer: Fumihito Tone

Content: The course objectives are the following: To improve the mindset of mechanical/process engineers who are in charge of operations in the maintenance or technical section, and the performance of refinery equipment. The first main subject is maintenance management & safety management by TPM in Japanese companies. The second objective is to understand Kaizen & TPM activities through actual examples of Kaizen by TPM in Japan.

In this course, participants will learn: Summary of TPM Activities; Maintenance Management in Japanese Refineries; Maintenance & Safety Management by TPM Activities in Japanese Refineries; Practical Exercise and Group Discussion Regarding Problems in Your Section and Their Countermeasures

Site visits: Sankyu Inc. (Maintenance Center) — Plant Maintenance and Technologies as a Maintenance Company; The Japan Steel Works, Ltd. (Muroran Plant) — Recent Technologies for High Pressure Vessel Manufacturing; Hokkaido Joint Oil Stockpiling Terminal (Hokkaido Office) — Tank Inspection Planning and Execution & TPM Activities; Idemitsu Kosan Co., Ltd. (Chiba Refinery) — TPM Activities in the Refinery & Kaizen Example; JGC Corporation (Yokohama World Operation Center) — Advanced System for Maintenance & HSE Risk Evaluation

Countries: Ecuador, Indonesia, Kazakhstan, Kuwait, Libya, Myanmar, Nigeria, Pakistan, Saudi Arabia, Sudan, Thailand, Uzbekistan, Vietnam



<13 countries / 18 participants>

Survey on Cooperation Research about Catalyst and Process Examination for Effective Hydrotreatment of Kuwait Crude Fractions

This study was implemented as a JCCP Technical Cooperation Project funded by the subsidy of the Ministry of Economy, Trade and Industry (METI) for projects in oil-producing countries, with the participation of JGC Catalysts and Chemicals Ltd. and Kyushu University.

1. Background

From fiscal 2010 to 2012, JCCP and Kuwait Institute for Scientific Research (KISR) implemented a joint project to establish a method for the analysis of the molecular species of crude oil and its products, and successfully applied desulfurized catalysts produced in Japan to the hydrotreatment of crude oil fractions. Owing to this project, JCCP has won stronger confidence from KISR, and was able to build a foundation for future business opportunities between oil industry businesses and universities in Japan and research institutes in Kuwait.

Another significant achievement has been JCCP's establishment of a relationship of trust with Kuwait National Petroleum Company (KNPC) through meetings that have been held more than a dozen times between JCCP, KISR and KNPC.

Based on the results of the joint project that had been achieved by fiscal 2012, the study aims to examine the

applicability of Japan's latest catalysts and processes to the hydrotreatment of light gas oil (LGO) and atmospheric residue (AR) of new Kuwait heavy crude oil, and to give concrete shape to a new joint project that is planned to be launched in fiscal 2014 in cooperation with KISR and KNPC.

2. Progress of the Project

Meetings with KISR and KNPC have been held twice so far in Kuwait.

The first meeting was held last June to gather information about the present state and operational issues related to the hydrotreatment unit at KNPC, and to exchange views with KISR and KNPC about the possibility of engaging in joint research from fiscal 2014. The information obtained from the two-day meeting and the results of the joint research up to the last fiscal year were thereafter examined by JGC Catalysts and Chemicals Ltd. and Kyushu University, with the conclusion that emphasis should perhaps be placed on assessing the present status of issues related to the lifespan of catalysts for the hydrodesulfurization of LGO and AR produced from heavy Kuwait crude oil, and on examining solutions to those issues.

This conclusion was outlined in detail, and procedures



Meeting with KISR and KNPC



Hydrotreatment pilot plant
at JGC Catalysts and Chemicals Ltd.

for the assessment of present situations and problem solving were explained to KISR and KNPC in the second meeting held last November. At the beginning of the meeting, Dr. Meena Marafi, Executive Director of KISR's Process Research Center, thanked JCCP, saying that "the joint projects that have so far been implemented with JCCP have played extremely important roles in Kuwait, and have greatly contributed to strengthening ties between Kuwait and Japan," and thereby making it clear that the new project also occupies an important position in Kuwait.

Following Dr. Marafi's greeting, Mr. Isao Mochida, Professor at Kyushu University, explained the present state of issues concerning the life-span of hydrodesulfurization catalysts for LGO and AR produced from heavy Kuwait crude oil, and explained solutions to those issues. Also taking into consideration KISR's proposals, Prof. Mochida specifically noted that performing activity evaluations by a pilot plant that utilizes blended oil as feed oil and detailed structural analysis of raw oil and produced oil using the latest analysis instruments would be highly effective for understanding the behavior of asphaltene and resin contained in feed oil. He also explained that the introduction of GC/GCTOF/TOF (two-dimensional gas chromatography with time-of-flight mass spectrometer) to the analysis of LGO and AR could deepen molecular analysis, and thereby provide information that could lead to operational improvement and longer lifetime of the desulfurization unit at KNPC.

As there was general consent from the Kuwaiti side regarding the Japanese side's explanation of issues



Sample catalysts fabricated by JGC Catalysts and Chemicals Ltd.

and solutions based on an assessment of the present status, the two sides agreed to continue cooperating in implementing the project.

3. Future Plan

Based on the results of the research cooperation study, a new joint project is scheduled to begin in fiscal 2014, with a project agreement thereafter slated to be exchanged with KISR. As expressed by Dr. Marafi, it is hoped that by achieving its desired objectives, the project would contribute to strengthening ties between Kuwait and Japan.

<by Tsuyoshi Ota, Technical Cooperation Dept.>

MOA/MOU Signing Ceremony with KACST (Saudi Arabia)

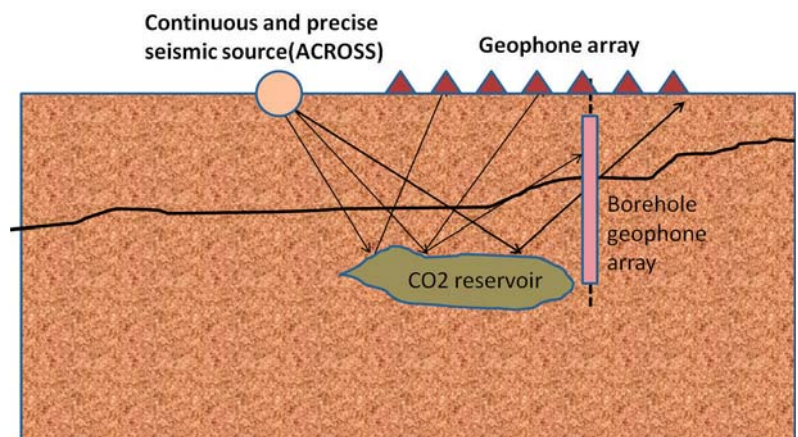
On November 27, 2013, King Abdulaziz City for Science and Technology (KACST) and JCCP took part in a signing ceremony held at KACST in Saudi Arabia. Concluded were a Memorandum of Agreement (MOA) on the “Joint Project on CCS Monitoring Technology for the Underground Storage of CO₂ Produced in Oil Refineries (Saudi Arabia)” and a Memorandum of Understanding (MOU) for hosting an international workshop related to that technology. The memoranda were signed by H.H. Dr. Turki bin Saud bin Mohammed Al-Saud, Vice President of KACST, and Mr. Morihiro Yoshida, Managing Director of JCCP, and witnessed by Mr. Ryoji Kubota, Director–Executive Officer of Kawasaki Geological Engineering Co., Ltd., the company participating in the project from Japan.

The project takes its roots in the Study on the Application of Ground Deformation Monitoring Technologies that has been implemented jointly by KACST and JCCP since fiscal 2008 employing the ACROSS technology (Accurately Controlled and Routinely Operated Signal System). The ACROSS technology was originally developed in Japan to monitor and predict seismic motion, and is a novel technology



Exchanging the signed MOA

that allows continuous monitoring and measurement of underground conditions by generating and emitting accurately controlled and routinely operated signals underground and measuring seismic waves at surface level. The KACST-JCCP Joint Study on CCS Monitoring Technology aims to apply this technology to monitoring the behavior of CO₂ that has been captured and injected into the ground. In addition to CCS, the technology is also expected to be applicable to assessing the behavior of oil, gas and water in the reservoirs.



Schematic diagram of the ACROSS technology and CCS monitoring (provided by Dr. Kasahara, Technical Advisor, Kawasaki Geological Engineering Co., Ltd.)

While the Saudi Arabian national oil company Saudi Aramco is also engaging in the development of CCS technology, the KACST-JCCP study aims to apply Japan's ACROSS technology in Saudi Arabia and ultimately transfer the technology to relevant institutions in Saudi Arabia once it has been developed for monitoring CO₂ injected into the limestone strata, which is the most typical strata in Saudi Arabia.

During the ceremony, H.H. Dr. Turki first gave a congratulatory speech, expressing his appreciation of the project and expectations of promising achievements. He then articulated his strong interest in the workshop scheduled to be held in Jeddah, and expressed his passionate hopes for the project.

Mr. Yoshida thanked all parties concerned for their cooperation toward launching the project and wished its smooth implementation. He explained that the primary goal of the technology is to enable monitoring of the geological disposal of CO₂ produced in refineries, but also noted that the technology has a wide-ranging application potential, as represented by its capacity to be applied to EOR technologies, which could lead to increased oil and gas production in oil-producing countries.

After the speeches, Mr. Kubota from Kawasaki Geological Engineering introduced his company and its role in the project, and the two leaders then signed the MOA and exchanged commemorative gifts. Dr. Junzo Kasahara, Technical Advisor from Kawasaki Geological Engineering, gave a presentation on the project, and the ceremony came to a close amid a friendly atmosphere.

In relation to this project, the KACST-JCCP 1st Joint International Workshop for the Earth's Surface and Subsurface 4D Monitoring was held in January 2012 at KACST in Riyadh with the participation of a large number of academics and researchers. While it was the first attempt of its kind, it was extremely well-received by many interested parties inside and outside the country.

Seizing this occasion of the new phase of the joint project on monitoring technology, KACST and JCCP exchanged an MOU for implementation of the second international workshop, in an answer to requests from those concerned. With the newly-joined King Abdullah University of Science and Technology (KAUST) as co-sponsor, the workshop was agreed to be held in March 2014 in KAUST's hometown of Jeddah, as the "2nd International KACST-KAUST-JCCP Workshop on Surface and Subsurface 4D Monitoring."

<by Sadao Wada, Technical Cooperation Dept.>



Presentation by Dr. Junzo Kasahara, Technical Advisor, Kawasaki Geological Engineering Co., Ltd.



Scene of the signing ceremony at KACST

Signing of Agreement for the Joint Project on Technology Cooperation for Lubricating Oil Production with the Ministry of Oil-Iraq



(From the left) Dr. Kareem A. Alwan, Manager, Petroleum R&D Center, Ministry of Oil-Iraq, and Mr. Morihiro Yoshida, Managing Director of JCCP

Oil Production” in Istanbul, Turkey, with Dr. Kareem A. Alwan, Manager of Petroleum R&D Center, and Mr. Morihiro Yoshida, Managing Director of JCCP, representing the two sides of the project. The ceremony was also attended by Mr. Hajime Okazaki, President of JX Nippon Research Institute Ltd., a company participating in the project on the Japanese side, and other stakeholders on both the Iraqi and Japanese sides.

Lubricating oil that is currently produced in Iraq is low in quality, and has a poor production yield. Thus, with the aims of examining improvement measures for each production unit, enhancing the quality of lubricating oil in the Dawra Refinery in Iraq, and increasing production and productivity, the project will be implemented over a period of two years, from April 1, 2013 to March 31, 2015.

On October 9, 2013, JCCP and the Ministry of Oil-Iraq held an agreement signing ceremony for the “Joint Project on Technology Cooperation for Lubricating

The project is the third “Special Cooperation Program for Iraq” to be implemented with funding by a subsidy of the Ministry of Economy, Trade and Industry (METI)



Members of the signing ceremony:
 Dr. Alwan and Mr. Yoshida (front row, center)
 Mr. Hajime Okazaki, President of JX Nippon Research Institute Ltd. (front row, second from left)
 Mr. Mohammed Jasim Abbas, Ministry of Oil-Iraq (project leader on the Iraqi side) (front row, second from right)

for projects in oil-producing countries. The previous two projects, on “Technical Support of Introduction of Produced Water Treatment for SOC” and “Development of Asphalt Industry and Finding New Applications,” were launched in 2011 and have been highly evaluated and appreciated by the Iraqi side. It is hoped that the third project will also be implemented successfully with the cooperation and efforts of all parties concerned.

Background and Content

Based on information and requests from the Ministry of Oil-Iraq and Iraqi trainees who have participated in a JCCP training course(s) in Japan in the past, the quality and productivity of lubricating oil in Iraq was surveyed in fiscal 2012 as a research cooperation project. Based on the results of that survey, this joint project was formulated and launched in fiscal 2013 with the aim of enhancing the quality of lubricating oil and increasing production and productivity.

As a form of technical cooperation, the project will analyze the actual operating data of the No. 3 lubricating oil unit at the Dawra Refinery, and examine measures for improvement of units that produce base oil and adjust

its properties, as they relate directly to the quality of lubricating oil. More specifically, steps will be taken to analyze the operating data of the vacuum distillation unit, hydrorefining unit and solvent-related units, analyze the quality of lubricating oil that is produced, propose operational improvement measures based on knowledge and experience, and verify the results.

For example, as the result of the analysis of lubricating oil indicated poor separation of base oil in the vacuum distillation column, a proposal was made regarding the repair and maintenance of parts inside the column as a countermeasure. A proposal was also made to increase the temperature in the reactor column of the hydrorefining unit.

In addition, the project aims to contribute to enhancing knowledge of lubricating oil production on the Iraqi side by also providing tips and advice on operational and quality management of lubricating oil.

Ultimately, JCCP hopes the project will also contribute to strengthening the friendly relationship between Iraq and Japan by providing proposals and cooperation based on Japan’s knowledge and experience in retrofitting units to the No. 3 lubricating oil unit at the Dawra Refinery.

<by Hironao Naganuma, Technical Cooperation Dept.>

The 23rd Saudi Arabia-Japan Joint Symposium

On December 2 and 3, 2013, JCCP and King Fahd University of Petroleum and Minerals (KFUPM) sponsored the 23rd Saudi Arabia-Japan Joint Symposium on oil refining and petrochemical catalyst technologies with the participation of the Japan Petroleum Institute (JPI). The symposium has been held annually at KFUPM since 1992.

On December 1, the day prior to the symposium, Mr. Morihiro Yoshida, Managing Director of JCCP, and members from JPI paid a call on H.E. Dr. Khaled S. Al-Sultan, Rector of KFUPM, to explain the significance of the following day's symposium. The Rector and Vice Rector noted that the Saudi Arabia-Japan Joint Symposium is a unique undertaking among the various activities implemented by KFUPM, and articulated their expectations that its 23-year history would see further development in the future.

On December 2, the symposium opened with a speech by Dr. Al-Sultan, who stated that KFUPM intends to focus its efforts on business areas in the future, and meet particular needs for human resources to supply manpower for Saudi Aramco's three new refineries and petrochemical complex currently slated for construction. He closed his speech by expressing his best wishes for the occasion of the 60th anniversary of diplomatic relations between Saudi Arabia and Japan to further strengthen the relationship between the two countries.

Following Dr. Al-Sultan, Mr. Yoshida first congratulated KFUPM on the 50th anniversary of its founding and the achievements it has made through those



Dr. Atsushi Satsuma, head of the JPI delegation, giving a speech

years. He then referred to the symposium's contribution to the advancement of studies in the oil refining sector, and articulated JCCP's continuing commitment to contributing to technical exchanges between Saudi Arabia and Japan.

Dr. Atsushi Satsuma, head of the JPI delegation (and professor at Nagoya University), mentioned how Prime Minister Shinzo Abe's recent Middle East tour has placed greater emphasis on promoting academic and personnel exchanges with the Middle East countries, and expressed his wish to see further development of the Saudi Arabia-Japan Joint Symposium as a pioneering manifestation of that policy.

Following the opening ceremony, the two-day symposium featured 18 presentations in six sessions on topics such as gasoline reforming, desulfurization/FCC,



Courtesy call on H.E. Dr. Khaled S. Al-Sultan, Rector of KFUPM



Mr. Morihiro Yoshida, Managing Director of JCCP, shaking hands with H.E. Dr. Khaled S. Al-Sultan

olefin catalysts, dehydrogenation/recycling, alkylation/characterization, and mechanisms/polymerization. Of the presentations, nine were on the latest R&D achievements by Japanese researchers.

The presentations covered themes related to the latest oil refining and petrochemical production technologies and trends related to catalysts. The Japanese side gave nine presentations, including one by Mr. Shigeyuki Nagano, Manager of the Catalysts Research Center at JGC Catalysts and Chemicals Ltd. (the company is engaged in a joint project with KFUPM under the JCCP technical cooperation scheme), and another by Dr. Sachio Asaoka, lecturer at Kogakuin University who previously provided research assistance at KFUPM under the JCCP Long-term Researcher Dispatch Program, in addition to those by members of the JPI delegation. On the Saudi Arabian side, KFUPM gave three presentations, and Saudi Aramco, KACST and KAUST gave one presentation each. There were also three presentations by foreign researchers, namely Dr. Arthur Garforth from the University of Manchester in England, Dr. Luis Oro from University of Zaragoza in Spain, and Dr. J. Čejka from the Institute of Physical Chemistry in the Czech Republic.

The presentations by KFUPM included one by Dr. Oki Muraza, who engaged in research at Hokkaido University in FY2012, and a report by Dr. Muhammad Atiqullah, who studied at Japan Advanced Institute of



Dr. B. Rabindran Jermy from KFUPM giving a presentation



Article of the symposium that appeared in Al-Yaum on Dec. 3

Science and Technology in FY2013, both under the JCCP Researcher Invitation Program.

Articles on the symposium appeared in three local Arabic newspapers (*Al Yaum*, *Al Madina* and *Okaz*), with the one in *Al Yaum* taking up an entire page, accompanied by a number of photos. Additionally, an article that featured a summary of the first day's speeches by the guests of honor also appeared in the English-language Saudi Gazette.

The presentations and discussions fostered a keen awareness that the symposium provided an ideal opportunity for exchanging and providing useful information to both Saudi Arabian and Japanese researchers, and that it plays a significant role in strengthening technical cooperation between the two countries.

<by Sadao Wada, Technical Cooperation Dept.>

■ Session Themes

<Day One>

Session 1: Gasoline Upgrade

- (1) Dr. Yuji Saka, Cosmo Oil Co., Japan
Techniques for octane number enhancement in FCC gasoline and catalytic activity improvement
- (2) Dr. Sachio Asaoka, JCCP/KFUPM
Nanoporous hybrid catalysts: Pd/nanosized Al₂O₃/H-Beta zeolite for isomerization of naphtha

Session 2: Desulfurization/FCC

- (3) Dr. Yoshiyuki Nagayasu, JX Nippon Oil & Energy Corporation, Japan
Development of the simulator to predict the life of desulfurization agents in fuel cells
- (4) Dr. Syed A. Ali, KFUPM/CRP
Development of deep hydrodesulfurization catalysts with improved performance
- (5) Mr. Shigeyuki Nagano, JGC Catalysts and Chemicals Ltd., Japan
The recent catalyst technology for oil refining process

Session 3: Catalytic Olefins

- (6) Dr. Teruoki Tago, Hokkaido University, Japan
Synthesis of nano-crystalline zeolite crystals and their catalytic activity
- (7) Dr. Oki Muraza, KFUPM/Chemical Engineering
Catalytic cracking of n-hexane over modified H-ZSM-22 zeolites
- (8) Dr. Atsushi Muramatsu, Tohoku University, Japan
Regeneration and promotion of catalytic activity of zeolites for DME conversion to olefin

<Day Two>

Session 4: Dehydrogenation/Recycling

- (9) Dr. Atsushi Satsuma, Nagoya University, Japan
Catalysis of metal nano-cluster on NO_x reduction, green chemical reaction, and biomass conversion
- (10) Dr. B. Rabindran Jermy, KFUPM/CRP
Tuning dehydrogenation activity by Bi addition over Ni/γ-alumina catalyst for butadiene production from n-butane
- (11) Dr. Arthur Garforth, University of Manchester, UK
Enhanced Feedstock Recycling — NovaCrack™

Session 5: Alkylation/Characterization

- (12) Dr. Jiri Čejka, J. Heyrovsky Institute Physical Chemistry, Czech Republic
Controlling of textural properties of zeolites for catalytic purposes
- (13) Mr. Mohammed Al-Amer, Saudi Aramco
Development of a novel trans-alkylation catalyst to enhance xylene production
- (14) Dr. Nobuaki Kambe, Osaka University, Japan
Transition metal catalyzed C-C bond formation on sp³-carbons
- (15) Dr. Joji Sonoda, BEL Japan Inc., Japan
The development of fully-automatic IRMS-TPD analyzer

Session 6: Mechanism/Polymerization

- (16) Dr. Luis Oro, Zaragoza University, Spain
Iridium homogeneous catalysts following outer-sphere mechanisms
- (17) Dr. Emmanuel Callens, KAUST
Novel supported tantalum species in ethylene oligomerization and polymerization
- (18) Dr. Muhammad Atiqullah, KFUPM/CRP
Development of industrial polyethylene catalysts: aspects beyond synthesis, characterization, and evaluation

Our Technical Cooperation in Oil-Producing Countries and Expectations of JCCP

“Our Technical Cooperation in Oil-Producing Countries and Expectations of JCCP” is a new section that makes its debut in this issue of *JCCP NEWS*. In appreciation of the fact that JCCP activities are made possible by the cooperation of numerous member companies, this series will feature contributory articles by such companies on the background, aims and achievements of their participation in technical cooperation in oil-producing countries, future issues and visions, and their expectations and requests of JCCP.

JCCP NEWS has thus far introduced views about JCCP through the eyes of participants in the “Graduates’ Voices” and “Special Message” sections, but the new section will introduce JCCP from various other perspectives.

By introducing how external companies view JCCP, we hope to promote deeper understanding of JCCP activities.

■ First Contributory Article: Idemitsu Kosan Co., Ltd.

Mr. H. Yoshi Tanda

Senior Technical Advisor

**Technology & Engineering Section, Manufacturing and Technology Department
Idemitsu Kosan Co., Ltd.**

1. History of the Company

Idemitsu’s history began in 1911 with the founding of Idemitsu Shokai in Moji, Kitakyushu. The company is thus celebrating its 103rd year of operations this year. As the name “Idemitsu Shokai” literally indicates (“shokai” means “trading company”), it specialized in the oil sales business through its early years and in the oil refining and sales business after construction of Tokuyama Refinery in 1957, and has continued to engage in the oil business throughout its long history.

From its founding to this day, Idemitsu has consistently addressed the challenge of oil procurement as its principle mission. During its years as an oil distributor, its major management target had been to receive oil products from major oil companies in Japan, and today, as a company engaging in oil refining and sales, it is to provide a steady supply of oil from oil-producing countries.

In 1951, Idemitsu commissioned a ship named *Nisshomaru* (18,774 tons), and used it to initially import gasoline from the United States, and from 1953, to import oil from Iran. As an independent oil company required

to search for oil suppliers on its own, *Nisshomaru* was an indispensable means for expanding its search for suppliers throughout the world.



*The Nisshomaru on its return to Japan from Iran in May 1953
(Idemitsu Oil Digest No. 17; July 1, 1953)*

In May 1953, Idemitsu succeeded in importing oil from Iran. This success brought stability to Idemitsu's oil procurement operation, and eventually led to the construction of Tokuyama Refinery.

Following Iran, Idemitsu also succeeded in importing crude oil from the Soviet Union in 1960 and Daqing crude oil from China in 1973, and leveraged its strengths as an independent oil company to take active initiative in cultivating new oil suppliers. Although the process cost the company a large sacrifice, it also provided an impetus for the company to grow. Following the construction of Tokuyama Refinery, it constructed Chiba Refinery in 1963, Hyogo Refinery in 1970, Hokkaido Refinery in 1973, and Aichi Refinery in 1975. By adding four new refineries to its organization in 12 years, Idemitsu established a steady framework as an oil refining and sales company.

2. History of Technical Cooperation

Accompanying Idemitsu's accumulation of technological capabilities through the commencement of operations at its five refineries, it began to receive an increasing number of requests for technical cooperation from oil-producing countries. The company's technical cooperation initiatives thus commenced in response to such requests.

Technical cooperation with China began with the import of crude oil from Daqing, and has continued to this day, albeit through various twists and turns.

Technical cooperation with Middle East oil-producing countries began with Idemitsu's participation in SHARQ in 1979. SHARQ is a joint venture project undertaken by SABIC (Saudi Basic Industries Corporation) in Saudi Arabia and a Japanese consortium known as SPDC Ltd., to establish Eastern Petrochemical Company (SHARQ) and construct polyethylene and ethylene glycol production plants in Al-Jubail Industrial City in Saudi Arabia. Idemitsu became one of the 54 shareholders comprising the consortium, along with Mitsubishi Corporation and (then) Mitsubishi Petrochemical Co., Ltd. as the main players.

One of the reasons why Idemitsu decided to participate in SHARQ was because SHARQ was to be allotted incentive crude oil from Saudi Arabia, and participation in SHARQ would thus provide an opportunity to open a new channel for access to Saudi Arabian crude oil.

The Japanese consortium's participation in SHARQ



Participants from SHARQ (at Tokuyama Refinery)

also invited requests from the Saudi Arabian side for cooperation in the technical training of Saudi Arabian operators. Idemitsu, in step with the other shareholders, responded to these requests by providing training using the facilities at its Tokuyama Refinery and plant. Idemitsu's employees not only organized training programs, but also planned weekend outings, sports exchanges with refinery staff and other such events so that the participants could enjoy their long stay in Japan, as well as took care in creating a comfortable living environment in consideration of Muslim participants.

This scheme continued for two years, from 1983 to 1984, attended by a total of 30 participants from SHARQ.

When I visited SHARQ in 2004, Mr. Mohammad M. Al-Jabri, then-President, relayed a message of appreciation, saying that Japanese companies have not only provided their cooperation by taking a stake in the project, but have also made a "tangible" (visible) contribution by training operators. The term "tangible" has remained impressed in my mind ever since.

In 1984, Idemitsu was commissioned by JCCP to refurbish the distillate hydrodesulfurization unit at Tokuyama Refinery into a training plant, and provide training in operational technologies. To that end, instructors of the training plant created English textbooks, and programs were designed that broadly covered all operational functions of a refinery plant, from ordinary operations to start-up/shut-down, troubleshooting and emergency response operations.

These training programs and textbooks and hospitality knowhow were also put to great use when Idemitsu participated in a project on providing support for start-up operations at the Kertih Refinery in response to a request from PETRONAS in Malaysia. Idemitsu provided

operational training to engineers and operators from PETRONAS at its training plant at Tokuyama Refinery, and sent engineers to Malaysia to provide onsite guidance in operational technologies. Thereafter, the operational technology support for PETRONAS developed into a program for support of start-up operations at the Melaka Refinery, and was continued for 14 years until it came to a close in 2002.

In the 1990s, Idemitsu's training program for operational technologies was included among the components of JCCP technical cooperation to refineries in Abu Dhabi, Oman, Qatar and other such Middle East oil-producing countries, as well as to Petrovietnam, and played a role in promoting Idemitsu's overseas expansion. (Note: These programs were implemented as JCCP member company-initiated courses.)

Presently, Idemitsu is helping develop the Nghi Son Refinery and Petrochemical Complex in Vietnam in cooperation with Petrovietnam, Kuwait Petroleum International and Mitsui Chemicals, Inc. It is said that Petrovietnam selected Idemitsu to be a partner due to the strong recommendations of people who know of Idemitsu's technical training to Petrovietnam over many years.

3. Significance of Technical Cooperation

Idemitsu's technical cooperation came into being as an activity for stable oil procurement. We employees of Idemitsu are constantly told how important it is to establish good relationships with oil-producing countries by management officers who experienced the hardships of procuring oil after the Nisshomaru incident, and are always asked whether the company's technical



Operational technology training that is still offered today at the Tokuyama Refinery Training Plant

cooperation has continued seamlessly to this day.

Today, oil trade is governed by international rules, and there may not seem to be any room for feelings of good intent in the form of technical cooperation. However, we have also learned that while oil has become a commodity, it will always continue to be a strategic commodity and cannot be traded continuously over a long period of time without a relationship of trust.

4. Characteristics of Idemitsu's Technical Cooperation

A salient feature of Idemitsu's technical cooperation is perhaps that it has placed efforts on producing results in terms of "people." That is, among the various ways that technical cooperation can be achieved, such as by producing results in the form of "things" or "technology," we believe that producing results in "people" conforms to Idemitsu's management principle of respecting human dignity. As time passes, things break and technology becomes obsolete, but memories remain etched in people's minds over their entire lifetime. Thus, we are convinced that engaging in work that remains in people's memory is a foremost important element of technical cooperation.

When reading *JCCP NEWS* or participating in a JCCP international symposium, I frequently meet people who have participated in training programs implemented by Idemitsu in the 1980s and 1990s, and who now act as management officers in oil companies based in oil-producing countries. I feel that having these people fondly recall their memories of Idemitsu is, above all, the greatest achievement of Idemitsu's technical cooperation.

5. Expectations of JCCP

Idemitsu has engaged in technical cooperation from the standpoint of a private company. However, as there is a limit to what a private company can do, JCCP's establishment in 1981 under the auspices of the (then) Ministry of International Trade and Industry and the recognition of technical cooperation to oil-producing countries as an important national policy provided strong support for continued technical cooperation activities by private companies.

By participating in JCCP activities, Idemitsu was able to organize training programs on operational technologies, and through these programs, many people

from oil-producing countries visited Idemitsu's refineries and furthered their knowledge of our company. Members of Idemitsu's refineries also gained opportunities to visit oil-producing countries and see for themselves the changes taking place in oil-producing countries accompanying significant changes in the oil business environment. Such visits were especially important in terms of the fact that they provided important hints for the structural reform of Idemitsu's refineries.

JCCP has more than 30 years of experience in providing technical cooperation to oil-producing countries, and has received more than 22,000 participants from major oil-producing countries in the world to its training programs. Many of these people, whom I often meet in business scenarios, reminisce about memories of their exposure not only to Japanese technologies, but also to Japanese society and culture that support high productivity in Japan. I believe their confidence in Japan stems from such feelings. Thus, it can be said with certainty that JCCP activities have created the foundation for private companies to operate in oil-producing countries.

Creating a network of personal connections requires a large amount of time, but in terms of both time and space, JCCP possesses the power to maintain continuous exchanges with oil-producing countries from a far larger perspective than private companies. Therefore, we would encourage JCCP to stand firmly in its operations and further expand its record of cooperation to oil-producing countries for years to come in support of the activities of private companies.

6. Summary

Technical cooperation takes a long time for its



Participants of the "Essential Petroleum Refining Course for Process Engineers" implemented in 1985 at the Tokuyama Refinery Training Plant

*The third member from the left in the front row is Mr. Andrew Laah Yakubu, Group Managing Director, Nigerian National Petroleum Corporation (NNPC)
(See also JCCP NEWS No. 116 page 3 for a Special Message from Mr. Yakubu)*

results to appear. It is extremely difficult to define the relationship between its input and output, but this does not mean that results do not need to be envisioned. Efforts must be made to create an image of the results that are expected from technical cooperation, and how they might lead to securing a stable oil supply. In this respect, it can be said that technical cooperation requires greater strategic thinking than does daily work. The oil business environment will continue to undergo large changes in the future, but we will make constant efforts to always consider what type of technical cooperation is needed amid such changes.

On behalf of Idemitsu, I wish to take the occasion of this article to thank JCCP for supporting such long-term initiatives of private companies over a period of more than 30 years.

Announcement

Please Help Us Update Our Roster

Thank you for reading *JCCP NEWS* as always.

JCCP has reached a significant milestone in its history and celebrated 30 years of operations in 2011.

In commemorating this achievement, we extended our deepest appreciation to you all for your support and cooperation in our activities.

All of you who have participated in a JCCP training program in the past (graduates) are a precious asset to JCCP. We therefore wish to take this occasion to confirm your current addresses and update our roster of former participants so that we may reconnect and maintain contact with you into the future.

Our current roster mostly shows information that you provided at the time you participated in a JCCP training program, and could be outdated by now. If there have been any changes in your affiliation (position), email address, or any other contact information, we ask that you provide the latest information on the attached form and return the form to JCCP's Planning & Public Relations Group. Those of you who return the form to us are entitled to receive the latest issues of *JCCP NEWS* and announcements and invitations to exhibitions and reunions.

Also, if you know of anyone who is a former participant but is not receiving copies of *JCCP NEWS*, or anyone who wishes to update his/her contact information, we would appreciate it if you would forward this message and the attached form to that person.

Announcement

Please Send Us a Message as Alumni

Future issues of *JCCP NEWS* will feature a new section for messages from alumni. Please send us the latest news about what you are up to or photos that you wish to share with others. The Planning & Public Relations Group looks forward to hearing from you.

Thank you for your cooperation.

Personnel Changes

Operations
Dept.

Outgoing Personnel



Takashi HORI

Training Dept.

Outgoing Personnel



Tetsuji KUBOTA



Shigeru MATSUI



Editorial Postscript

Beginning with this issue, a new section entitled “Our Technical Cooperation in Oil-Producing Countries and Expectations of JCCP” has been added to *JCCP NEWS*. JCCP activities are made possible through the cooperation of numerous member companies, with support from the Ministry of Economy, Trade and Industry. By taking the occasion of this newsletter to introduce JCCP’s relationship with these companies and their expectations and requests of JCCP, we hope to offer a look at aspects of JCCP that are not readily revealed by internally written reports. We plan to continue the section as a series in subsequent issues of *JCCP NEWS* with the understanding and cooperation of member companies.

As of December 2013, the total number of participants in JCCP regular courses has surpassed 22,000, with some 850 to 900 participants per year having received training in Japan in recent years. While this figure certainly represents a remarkable achievement, JCCP places even greater importance on building ties with each and every participant and creating an ever-larger network of personal connections. We send out copies of *JCCP NEWS* to all JCCP alumni with the same thought in mind, always hoping that it will prove to be an effective means of bringing people together.



Staff of the Planning and Public Relations Group, Administration Dept.:
(from left) Kitahara, Yamanaka, Iwase

Masumi Kitahara
Planning and Public Relations Group
Administration Dept.



Japan Cooperation Center, Petroleum (JCCP)

Headquarters

Sunshine 60 Building 58F, 3-1-1 Higashi-Ikebukuro, Toshima-ku, Tokyo 170-6058, Japan

• Administration Department	TEL. +81-3-5396-6000	FAX. +81-3-5396-6006
• Operations Department	TEL. +81-3-5396-6001	FAX. +81-3-5396-6006
• Training Department	TEL. +81-3-5396-6909	FAX. +81-3-5396-6006
• Technical Cooperation Department	TEL. +81-3-5396-8021	FAX. +81-3-5396-8015

Overseas Offices

• Middle East Office	• Riyadh Office
#904, Al-Ghaith Office Tower, Hamdan St.,	Al Oula Building, 5th Floor, Flat No.508
P.O. Box 51828, Abu Dhabi, U.A.E.	Al Mohamadiya, King Fahad Road
TEL. +971-2-627-4410 FAX. +971-2-626-2166	P.O. Box 61356, Riyadh 11565, Kingdom of Saudi Arabia
	TEL. +966-11-207-9540 FAX. +966-11-207-9539

URL: <http://www.jccp.or.jp> E-mail: webmaster@jccp.or.jp