

More than Fuel

Interview with Toshikazu Hashimoto, president of JNOC, by Toshio Iwasaki, editor of the Journal of Japanese Trade & Industry

Oil has long been called the lifeblood of industry. Yet even though Japanese industry is among the strongest in the world, it lives under the constant threat that supplies of this precious commodity might be interrupted.

Domestic sources are able to meet only a mere 0.3% of Japan's petroleum needs, and Japan must depend on imports for the remaining 99.7%. Making the situation even more precarious, 70% of Japan's imports come from the volatile Middle East.

Although there was no forewarning of the oil crises of the 1970s, Japan's vulnerability has long been clear, and the Japan National Oil Corporation (JNOC) was established in 1967 to promote the development of oil resources. Will the day ever come when Japan's oil supplies will be secure? To get the answer to this and other questions, the *Journal* interviewed JNOC President Toshikazu Hashimoto about Japan's oil strategy.

Question: *Most Japanese did not realize how important a stable supply of oil was until the first*

oil crisis in 1973, but the JNOC was formed six years before that. Could you give us a little background on why?

Hashimoto: Although most people did not pay much attention to the Middle East before the oil crisis, there was concern over the fact that we are dependent on imports for practically all of our oil. Oil is an indispensable source of energy, not only for industry but for transportation and everyday living as well. In fact, if you look back, you will see that stable oil prices and smart energy use were major factors enabling Japan to grow as fast as it did in the 1960s. Given the importance of stable access and the need to develop our own sources overseas, the JNOC was formed in 1967 to assist companies engaged in overseas oil development.

Assuming that the JNOC helped us weather the crisis—we were just lucky that it was founded six years before the first oil crisis—the fact is, it takes time to develop oil. The initial exploration stage alone takes five years, and then it is another five years before commercial production can begin, which means a total lag of 10 years on average.

Q: *And of course this means that your capital costs are tremendous even when you do find oil—and I am sure there are times when you come up dry. How do you cover your costs?*

A: The overall success rate is very low. To start with, the chances of striking oil during the initial exploratory drilling average 30% worldwide. But even after finding oil, there are still questions. How much oil is there? How much of that can actually be recovered? And what is recovery going to cost? Normally only around 20% to 30% of the oil can be extracted by ordinary means. All things considered, the overall commercial success rate is only 3%.

Although it is true that Japan has to pay royalties, taxes and all kinds of other costs since it has practically no deposits of its own and has to go overseas for its oil, this is also true for many of the major foreign companies, and Japan is not necessarily at a disadvantage here. More than costs, it is volatile oil prices and exchange rates that have the biggest impact on how an oil company judges a project's economic feasibility. Even after succeeding in bringing oil to market, Japanese oil developers had a very difficult time in 1987 and



Toshikazu Hashimoto

1988 because of collapsing oil prices and the rapidly appreciating yen.

Q: *I take it the JNOC was helpful?*

A: Of course the oil development companies have to look at the economic considerations, but there is much more to oil exploration than just the economics, and sometimes a little help is needed to help ease some of the risks involved and enhance the incentive for the companies. The JNOC provides assistance up to 70% to 80% of exploration expenditures of the Japanese party in the form of loan and equity financing.

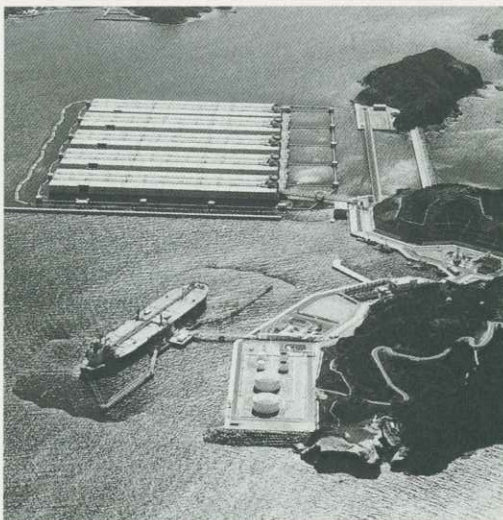
The JNOC is also involved in exploration technology research and development, and we provide support in this area in addition to our financial assistance.

Q: *Compared with the industrial West, Japan got a very late start in oil development. Since oil exploration and development is very technology-dependent, I would assume that Japan is also behind in the technology as well. Is it?*

A: Japan is anywhere from 50 to 100 years behind the United States and the other industrialized countries in oil development. The major oil companies have accumulated a vast wealth of experience in oil-development technology over the years. Most of the innovation in oil-development technology in recent years, however, has been in the kinds of technology that these companies do not have much experience with. Electronics is a prime example. This is an area in which Japan is very competitive. For example, Japan is close to perfecting technology that will allow real-time measurement of data when drilling thousands of meters below the earth's surface.

Also, oil fields have tended to be smaller—as well as deeper—recently, which also helps change the game. In the past, offshore wells were never deeper than 200–300 meters, although it is now necessary to drill to as low as 500 to 600 meters below sea level. At the same time, oil exploration is spreading to regions where the environmental conditions are extremely inhospitable, such as the polar regions. The classic oil-development technology alone is incapable of dealing with these developments, and new technologies are needed to meet the new challenges. One new technology is in enhanced oil recovery, aimed at extracting oil efficiently from wells that have lost their natural pressure. Japan is now hard at work developing technology in these new fields, and we no longer have to worry too much about technological backwardness.

Another factor working in our favor is that the oil-producing countries are looking for the latest



One of the 10 oil reserve depots kept by the JNOC

technology from the oil companies, and a company's technology level is now a major factor in whether or not it wins the concession. As a result, technological advances are imperative if newcomer Japanese companies are going to expand overseas. But given the capital and personnel limitations, it would hardly be efficient for an individual company to do its own research. Realizing this, the JNOC has established the Technology Research Center (TRC) to carry out a lot of this technological research.

But the TRC is not just for domestic technological research. It is open to foreigners as well. Hoping to further international cooperation, the center supports international information exchanges, researcher exchanges and joint research efforts, as well as providing training for engineers from the oil-producing countries. For example, starting this May, 11 engineers from seven oil-producing countries—including China, Indonesia, Abu Dhabi and Oman—were invited to Japan for a three-month training course on geophysical exploration technology. Before the year is over, there will be two more courses to train a total of 50 engineers. We believe that Japan has a responsibility, as the world's second-largest oil consumer, to do more along these lines.

Q: *The JNOC is also active in stockpiling efforts, especially in the wake of the two oil crises. Could you tell us a little about the oil reserve situation and what you expect for the future?*

A: If you stop and consider the impact that a cutoff in the oil supply would have on Japanese life, you can see how critical oil reserves are to Japan's economic security. Oil reserves are main-

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tained in Japan both by the government and by private industry. At present, the stockpiles held by the JNOC stand at 30 million kiloliters and private reserves at 50 million kiloliters, making a total of 80 million kiloliters. This is about 140 days' supply. By the mid-1990s, we plan to have a total of 160 days' worth—increasing the government reserves to 50 million kiloliters and slightly reducing those held by the private sector.

Private-sector reserves are held in storage tanks owned by Japanese oil companies, and the government stockpiles held by the JNOC are stored in 10 different areas selected both for security and economic considerations and built specifically as national oil storage facilities. In addition to the usual storage tanks, these national storage facilities utilize underground cavern storage tanks and floating storage vessels. These vessels are anchored to islands and breakwaters in enclosed bodies of water, and I do not know of any other country that is using this method.

Q: *Getting back to exploration and development, which areas of the world is the JNOC concentrating on?*

A: We are currently involved in 97 projects, 25 of which have already started production. In terms of the number of projects, the area getting the most attention is Southeast Asia, but in terms of crude oil volume it is the Middle East. In addition, we are also active off the coast of Angola, in Australia, in North and South America, and in the North Sea. Actually, there is nowhere that we are not concentrating on. We are concentrating on the whole world.

The oil developed by JNOC-assisted companies amounts to 12%–13% of Japan's aggregate demand, and we would like to up this to 30%. Actually, we are interested in more than just Japan. If Japanese exploration and development efforts can raise the amount of proven reserves, this will contribute to meeting demand worldwide. Japanese companies are making an energetic effort in this area, and there have already been a number of requests from other companies wanting to do joint development. Such international cooperation is essential for an oil-poor country such as Japan.

Q: *Oil supply stability is also affected by oil prices, which have a tendency to fluctuate wildly. What is the outlook on this?*

A: In a free-market economy, it is supply and demand that determine prices. I think it would be better for both the oil-producing and the oil-consuming countries, however, if the price of oil stayed within an agreed range.

Until recently, Japan has not been involved in the production or upstream portion of the oil industry but has only dealt with the refining or downstream portion. Lately, however, Japanese oil refiners have started to move upstream. The majors are already well along in this process, and if Japanese companies can establish themselves both upstream and downstream, then they can make money on the refined products when crude oil prices are low and make money on the crude oil when product prices are low. This kind of integration is also under way in the oil-producing countries of the Middle East, but from the other direction—from upstream to downstream.

All in all, these trends should serve to create a more balanced relationship between the oil-producing countries and the oil-consuming countries, as well as to limit oil price fluctuations. As a major oil importer, Japan benefits from lower oil prices, but if the price drops too low, investment in oil development dries up to create future shortages and an increased risk of worldwide crisis.

Q: *Responding to the challenge of the oil crises, Japan succeeded in making energy conservation widespread, halting the rise in energy consumption, and reducing the dependence on oil as a primary source of energy. How do you see the future for Japanese oil demand?*

A: Japan's oil dependence has been reduced from close to 80% in the early 1970s to less than 60% now. The government is predicting this will drop to under 50% by the mid-1990s. For the time being, nuclear power is the most viable alternative energy source. Given how inexpensive oil is now, it is just not cost-effective to develop other energy sources.

There are limits to what can be done with energy conservation, however, and there are a number of experts who suspect that the government's forecast of a further decrease in oil dependence is just wishful thinking. Whatever the case, it is unlikely that oil will relinquish its position as the single most important source of energy any time in the near future. And as more and more countries industrialize, they will depend on oil for the bulk of their energy needs. So the important question now is how we can husband the world's finite oil resources and use them most efficiently. In addition to being used as a fuel, oil is a critical basic material for the chemicals industry and has a number of other critical, non-fuel uses. Ideally, we would use alternative energies for fuel and save our oil for other uses. ■