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Japan Report

(FOUO 21/82)

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SCIENCE AND TECHNOLOGY

CONFLICTING OPINIONS ON TRADE FRICTION

Tokyo THE JAPAN ECONOMIC JOURNAL in English 9 Mar 82 p 10

[Article by Tsuneo Kita]

[Text] While signs that the Japan-U.S. trade friction is going further to escalate now confront the Government and its party with urgency to work unitedly for its solution, rumblings of a discord already have begun to emerge within the Government on how to handle the problem of further widening Japan's market.

The Government last week held a meeting of cabinet ministers concerned with economic problems to listen to a report on the situation in the U.S. made by a special mission of the ruling Liberal Democratic Party which just returned from a visit to that country.

Esaki reported that the U.S. reaction was extremely severe and critical, and the cabinet ministers' meeting was devoted only to hearing Esaki's report. Whether it was because its nature was far more bitter than expected or whether administrative officials had done spadework in advance, the only one who opened his mouth when Toshio Komoto, director-general of the Economic Planning Agency and chairman of the meeting, asked whether anyone had any remarks was Foreign Minister Yoshio Sakurauchi.

At a press conference after this meeting, Agriculture, Forestry & Fisheries Minister Tazawa, whose fate is being concerned constantly with the controversial farm products import problem, declared firmly, "I feel that the present restraint on auto exports is still too mild, and something more dramatic must be done."

He advocated curtailing the number of Japanese cars to be exported to the U.S. in the second year — 1982 — of the voluntary export curb by a larger margin. His view was that the blame for Japan's big trade surplus arising from export of manufactured products should not be shifted to focus onto farm products.

Government quarters felt that Tazawa's remark was intended to counter the opinion made known earlier by International Trade & Industry Minister Shintaro Abe to the effect that he favored a review of Japan's residual import restrictions and felt that the Government should enter into talks with the U.S. on the farm products import issue.

Tazawa was not the only cabinet minister with a worry. Finance Minister Michio Watanabe had to stick up for the Japan Tobacco & Salt Public Corporation which comes under his jurisdiction and is the target of American criticisms over its handling of foreign tobacco.

"I have no intention further to reduce the tariff rate on cigarettes and tobacco. I feel that the tobacco and salt corporation and the American tobacco industry should solve this problem by undertaking negotiations on a commercial basis," he said.

The Government at the end of last month held a meeting of ministries and agencies concerned to study the problem of decontrolling service industries — an easing which is slated to follow the Government's earlier relaxation of import inspection rules. The Foreign Ministry is said to be the one which urged holding of such a meeting.

One government informant had this to say:

"You see, the Economic Planning Agency became the channel for easing import inspection rules. That meant that the Foreign Ministry this time just had to grab the initiative. However, it remains to be seen whether all of the others smoothly will fall in line with the Ministry."

It is said that in this case, too, an "under-the-surface" struggle is now going on.

Even without this, there are troubles enough in resolving remaining problems in further liberalizing Japan's market. And there is also the time-limit of only slightly more than three months until the holding of the next Summit meeting in Paris in June.

Furthermore, signs point strongly that with the approach of the Summit, Japan not only will be pressed to widen its market by the industrially-advanced nations but also to increase its domestic demand.

As to expanding domestic demand, it is obvious that the fiscal authorities are going to come up with objections.

(Tsuneo Kita is a Nihon Keizai economic correspondent.)

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POLITICAL AND SOCIOLOGICAL

IMPACT OF ELECTORAL DISTRICT APPORTIONMENT ON TRADE DISPUTE

Tokyo MAINICHI DAILY NEWS in English 24 Mar 82 p 2

[Article by Hideo Matsuoka]

[Text]

A List of Japanese Barriers to Trade, presented by the U.S. Commerce Department to a Senate committee hearing is an interesting document — interesting in several contexts. It typically shows how Americans view Japan. It is an American analysis of Japan and the Japanese, you might say.

Not all of the document is so, because it is largely an analysis of Japan in the economic phase. Why does Japan retain the trade barrier of import quota? The country keeps 22 farm products, four leather products and even coal briquettes under the quota system to thwart unrestricted import of these goods. Why? The Commerce Department paper notes that people engaged in these fields of industry form the vital power base of the Liberal-Democratic Party, especially at election time.

Japan's present constituency system was formulated right after the country's defeat in World War II, and has not changed for 30 years since. Immediately after the defeat, food production had the top policy priority. There was labor concentration of farms, and it produced many voters in rural areas. This demographic distribution gave power to a political party that successfully corralled the farm vote. But the demographic picture underwent a complete change in these 30 years. Industrialization siphoned the population off the farms into cities. Due to the delay of the start of surveys on the migration, the farm-to-city population movement began on statistics only in 1963. During the 10 years that followed, more than 500,000 persons left the farm for the cities every year. In recent years, we are seeing the so-called U-turn or back-to-rural-areas shift of population from large cities. Still, some 300,000 workers are leaving the farm every year.

Many farm villages across the nation have become underpopulated. In a 1980 survey, it was reported that, of the farm families headed by persons aged 60 and over, 470,000 households are without a member of the family ready to succeed the present head of family on the farm.

Based on this analysis of population redistribution, the Commerce Department paper ventures a guess that, if electoral reapportionment were made strictly in proportion with

the distribution of voters, the number of Liberal-Democratic seats in the Diet may fall roughly by half to below 200, forcing the party out of power. The department is angry that the LDP has been blocking the import of farm produce to protect Japanese farmers who form its power base.

I am rather chagrined by this bold guess about the loss of 200 LDP seats. I think the department calculation puts together the party's seats both in the House of Councillors and House of Representatives. Still, the loss of 200 seats for one party presupposes a revolutionary change taking place in the Japanese political picture. Such change is possible if rice import is completely liberalized. A complete import liberalization can totally ruin Japanese rice farming which subsists on Japanese rice prices which are two to three times higher than the world average. Some 46 million farmers and their families, roughly 40 percent of the Japanese population, would be deprived of their means of earning a living.

Liberalization

If the liberalization does materialize, Japanese farming will shift to large-scale operation to compete with imports. Therefore, the actual casualty should be smaller than 46 million. Still, it would mean a revolutionary change in the country's political atmosphere. The resulting turbulence could cut the LDP Diet strength by 200 as the U.S. Commerce Department surmises.

The loss of 200 LDP seats is typical American thinking which is too abrupt for us to concur with. In American thinking, American steel and auto industries are producing much unemployment for losing competition from imports which are freely entering America. Likewise, if the Japanese farmers are put out of jobs for losing competition from imports when Japan liberalizes rice import, the damage is something that the Japanese farm industry has to accept as a natural consequence of free economy. The relief of unemployed farmers is the responsibility of Japanese politics and economy, Americans must think.

We may say that public assessment of the Japanese electoral system by Americans is an American intervention in the domestic affairs of Japan. But such countering does not help solve the issue at all. America's criticism may disregard the reality in Japan. But, if that reality is not normal by the world's standard, it means that the nation which takes that reality for granted is somewhat out of line with the rest of the world, and thus is required to fall in line.

Japanese industrial products are dominating the world market because Japanese industry excels in productivity and its products pack a high level of technology. Japanese farming industry, by contrast, is second or even third rate by the world standard. In food and animal feed, Japan's self-sufficiency is a mere 4 percent. The loss of international competitive potential has resulted in the import of 96 percent of the nation's needs in these fields.

As far as competitive potential is concerned, the same can be said about Japanese rice farming. But the rice farming is allowed to survive on government subsidy. The government is run by the Liberal-Democratic Party. Therefore, farmers vote for LDP politicians. The farm vote puts the LDP in power, and the party will not do anything that may endanger its power base. As long as the party keeps giving subsidy to farmers, they are not anxious to modernize their operation. Their backwardness is more than made up for by the politically-motivated subsidy. In other words, the LDP is buying farm votes at cost to the national treasury.

Rice price support is one of the three major causes of the government deficit along with the health insurance and the Japanese National Railways. LDP politicians are being elected on the government deficit. How long will this continue? Japan's trade friction with the U.S. has forced the government to do something about this. Japan is being asked by the U.S. to step up its defense spending if it does not open up the market for farm products.

Even Yoshihiro Inayama, president of the Federation of Economic Organizations (Keidanren) has gone on record advocating liberalization of farm product import as soon as possible. Forcing a radical change in the manner of farm management in Japan is an imperative for the LDP government, even if it means loss of the party's Diet strength.

Another problem is reapportionment. The massive outflow of farm population into cities naturally requires reallocation of Diet seats for each constituency that is affected by the migration. We should feel ashamed to be told by America that Japan has not had one reapportionment during the 30 postwar years, and that if one is carried out the LDP will lose 200 seats.

Four Verdicts

Already there have been four verdicts, including one by the Surpeme Court, that the present state of legislative seat apportionment is unconstitutional. The number of voters per apportioned House of Representatives seat in the Chiba Fourth District is roughly four times that in the Hyogo Fifth District. There are many other cases of disparity amounting to three to three and half times. The ruling by the Osaka High Court in February this year even went so far as to declare: "Theoretically, the entire apportionment of legislative seats in the Public Election Law is in itself unconstitutional and, accordingly, the 1980 general election deserves to be declared null and void."

Although the judiciary has unequivocally termed the present state of Diet seat apportionment unconstitutional, the Liberal-Democratic Party would not dare touch the problem. Reapportionment is a matter that affects the opposition parties also, and therefore the country's failure to carry out reapportionment may not be blamed entirely on the LDP. But the responsibility of the LDP, which has a majority in the Diet, is far greater than those of opposition parties. Instead of endeavoring to increase its supporters in urban areas, the LDP is doing everything to retain the present state of apportionment, giving an inproportionately large number of seats to sparsely populated farm areas where it keeps pouring money from the national treasury to cultivate grassroots support. This is the real picture of the LDP's "majority."

The people are paying taxes to finance the LDP's vote-buying in the seat-heavy voter-light rural constituencies. The result is to draw a harsh criticism from America to a degree that threatens the foundation of the friendly ties between the two countries. What say you, Japanese taxpayers?

(The Japanese original is carried in the latest issue of the weekly "Sunday Mainichi.")

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POLITICAL AND SOCIOLOGICAL

KOMOTO'S POLITICAL FUTURE

Tokyo MAINICHI DAILY NEWS in English 21 Mar 82 p 2

[Article by Takuo Hayashi]

[Text]

One of the events watched with keen interest in Japanese politics this year is whether Prime Minister Zenko Suzuki will be reelected without a hitch in the election of the Liberal-Democratic Party president scheduled for this November, or whether there will be a big disturbance. If a disturbance is to occur at all, its source will be Toshio Komoto, now the director-general of the Economic Planning Agency.

Under prevailing circumstances, it appears to me that there is a growing possibility of Komoto abandoning his challenge to Prime Minister Suzuki. In other words, Prime Minister Suzuki is most likely to be elected unopposed in the LDP presidential election this autumn. What then, is the basis for my prediction as such?

The first major point: it is believed that Komoto, even if he runs for the LDP presidency as a rival candidate against Suzuki, will have no chance of winning it.

The LDP presidential election is to be held in two stages. The first stage is the preliminary election by all LDP members and the second stage is the formal election by all LDP members of both houses of the Diet. In the formal election, the two top candidates listed in the preliminary election will vie for the post and of the two the one who earns the largest votes in the formal election will be named LDP president.

The original strategy of Komoto and his faction was to "win an overwhelming victory in the preliminary election" as a first step. In practice, however, the primary was held only once in electing the president, that is, in November, 1978 just after this system was introduced. At that time, then Party Secretary General Masayoshi Ohira placed top and then Prime Minister Takeo Fukuda finished second by a large majority, much to the contrary of earlier speculations. As a result, Fukuda declined to run for the formal election and Ohira was elected president and subsequently became prime minister. Thereupon, Komoto and his faction have endeavored to increase their number of affiliated members believing that "an overwhelming victory in the preliminary election will assure him the post of party president and that of prime minister."

However, of the five big LDP factions the four others, alarmed over the rapid expansion of party members affiliated with Komoto, joined hands last year in revising the LDP presidential election rules and the primary election system came into existence in name only. In concrete terms, the following two steps were taken. Firstly, in case there are only three candidates, the president is to be directly chosen by formal election without holding a preliminary election. Until then, the primary was to be held as a matter of principle regardless of the number of candidates, that is, whether there were three candidates or only two. Secondly, the number of recommendations by the LDP Diet members as qualifications to run in the presidential election was changed from 20 to 50.

Formal Election

The LDP members now total 1,160,000. Those affiliated with the Komoto faction are believed to be about 500,000, commanding the largest number in the five big party factions. However, at least four persons have to run in the race if a preliminary election is to be held at all. Such is most unlikely. Then, if Komoto runs as sole rival against Suzuki, he has to fight directly in the formal election without a preliminary election. In that case, Komoto stands no chance of winning judging from the faction-ridden political dynamics of the LDP.

The second major point: the policy disputes which would enable Komoto to fight against Prime Minister Suzuki in the formal election are being lost.

Komoto as Director General of the Economic Planning Agency has consistently advocated the need to increase domestic demand and stimulate business. On the other hand, Prime Minister Suzuki who gave much importance to fiscal reconstruction has shown only passive response to Komoto's opinion. In this connection, speculations have been rife in the political arena that "Komoto will serve the prime minister a letter of resignation at an opportune moment on the ground of policy confrontation and embark upon challenging him."

However, an atmosphere favoring Komoto's view has become dominant of late both in the government and the Liberal-Democratic Party, including even Prime Minister Suzuki. As far as this matter is concerned, it is a welcome sign for Komoto. But, in the final analysis Komoto is losing a just cause to challenge Prime Minister Suzuki.

(The writer is journalist-lecturer at Musashi University in Tokyo)

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POLITICAL AND SOCIOLOGICAL

SUZUKI'S REELECTION MOVE

Tokyo THE DAILY YOMIURI in English 19 Mar 82 p 3

[Article by Kenji Kitahara]

[Text]

All indications seem to confirm that Prime Minister Suzuki has begun his bid for reelection as Liberal-Democratic Party (LDP) president and premier which are posts former premier Takeo Fukuda says he obtained through mere chance.

This first evidence of this bid is the Diet session. The current Diet session will last until May 19, and Suzuki is expected to glide through the session without extending it.

Of course, Suzuki gives as reasons for not extending the Diet session the meeting with Chinese Premier Zhao Ziyang when he visits Tokyo in late May and Suzuki's attendance at the Versailles summit and at the UN special general assembly meeting on disarmament.

In other words, the diplomatic schedule is too tight to take the usual easygoing attitude toward extending the Diet session.

But LDP leaders close to Suzuki admit it would be better for the premier to be abroad in June when the deficit in revenues from fiscal 1981 is expected to be brought to light.

The deficit is predicted to be ¥1,000 billion-¥1,500 billion.

Fukuda is taking a threatening attitude on the deficit issue. He says the deficit will be a major political problem and he indicates he will call Suzuki to account for this fiscal trouble.

Most certainly it would be prudent for Suzuki to be out of the country when the deficit controversey bursts on tbe political scene, because it could influence the LDP presidential election next November.

Also, interest in the deficit will be less in the media because of the news involving the summit, Suzuki's participation in the UN General Assembly meeting on disarmament and his visit to Brazil which he only recently added to his diplomatic schedule.

Suzuki's pledge to stake his political life on administrative reform has begun to be an embarrassment for him.

In a recent meeting between Suzuki and Yasuhiro Nakasone, director-general of the Administrative Management Agency, the two agreed that streamlining of the ministries and agencies would be omitted from recommendations scheduled to be submitted in July. This apparently reflects his response to strong arguments against the reform program from within the LDP with the LDP election in mind.

Suzuki is taking a negative, defensive position on important issues to avoid stirring up the political world before the LDP presidential election. Former premier Kakuei Tanaka is employing tactics in collusion with Suzuki to delay the verdict in his Lockheed trial, the government is backing away from administrative reform and the LDP is submitting no important bills to the extraordinary Diet session.

As this writer said in his column last week, the tenure in office for a Japanese prime minister is too short. And as amply illustrated by Suzuki, his first year in office is taken up with studying foreign and domestic problems and his second year with efforts to win reelection for a second term.

If this is not changed, the duty of governing will continue to be neglected by the premier.

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POLTICIAL AND SOCIOLOGICAL

EDITORIAL ON SUZUKI'S POPULARITY

Tokyo ASAHI EVENING NEWS in English 19 Mar 82 p 5

[Editorial]

[Text]

There is increasing public concern over the political maneuvers of the Suzuki Cabinet, and many people have begun to take a hard look at politics.

An Asahi Shimbun public opinion poll has shown that there is a profound lack of confidence in the Suzuki Cabinet. One wonders how the Prime Minister will respond to this.

The support rate for the Cabinet has fallen to 30 percent, the lowest level since the inauguration of the Suzuki Cabinet 20 months ago. The non-support rate, on the other hand, is 49 percent, which is the highest rate for this Cabinet. About half of the voters questioned gave a resounding "No!" when asked whether the Suzuki Cabinet should remain in office. The reasons for the higher non-support rate are very revealing; the percentage of those who expressed "a lack of confidence in the Government's policies" has risen dramatically from five percent at the start of the Cabinet's tenure to 26 percent now.

The Suzuki Cabinet dragged its feet over the Opposition demand that a tax reduction should be incorporated into the fiscal 1982 budget. With business in a slump and real wages for workers tending to fall, dissatisfaction with the Government's economic policies is becoming stronger.

But this is not the only reason for the sudden change in the support rates. There is also a lack of confidence in the way the Cabinet is executing its policies, and this lack of confidence extends to the Cabinet's handling of such important issues as the worsening relations with the United States and the defense buildup. In brief, the general incapacity shown by our political leaders during their nearly two years in office has resulted in a drop in support.

In giving the Liberal-Democratic Party an absolute majority in the elections for both Houses of the Diet two years ago, the voters seem to have trusted the LDP's public promises that it would correct its political attitudes. The voters expected the smooth execution of policies in regard to the host of difficult issues that Japan faces in this low-growth era. But, under Suzuki, politics as a whole has only moved retrograde.

The growing factionalism within the LDP, the swelling of the ranks of the Tanaka faction and the increased influence on the party of former Prime Minister Kakuei Tanaka—these are clear manifestations of political corruption. Meanwhile, the special Diet committee for the investigation of

political corruption has been abolished, and a "gray official" in the Lockheed case has been given an important post. Even the once unthinkable idea of "Tanaka's restoration" can now be heard in political circles.

With regard to defense, the Prime Minister is far from being a hawk. He previously said that national policy should rest on the three non-nuclear principles and that Japan should strive to build peace in the world by encouraging nuclear disarmament.

But, in fact, the defense budget has begun to be increased within special limits, and there is a more pronounced tendency, on the part of the Government and the party in power, to move to the right. The right wing of the LDP has been in good spirits since Suzuki took office.

Taken together, these two issues of political ethics and defense give an idea of the shape LDP politics has come to take: we have a leader who does not speak, or if he does, he tells the people what they want to hear but does not follow through with real efforts.

The same criticism can be made with respect to administrative reform. Though he asserted that he would stake his political life on reform, this assertion has hardly been backed up with action. The recent confusion in debate in the Special Administrative Research Council is due to the fact that the Prime Minister will not let the council do its work and has not shown any leadership in the matter.

The LDP's resistance to the proposal for a tax reduction would have been unnecessary if Suzuki had taken some steps toward reforming the administration and reducing expenditure at the time the fiscal 1981 budget was drawn up. But when one's basic principle is to let things take care of themselves, proper administrative reforms cannot be made; and neither can anything else.

Public concern about politics may not always be justified, but the increase in the non-support rate shown in the opinion poll definitely reflects a sense of having been betrayed. The public are well aware of things even when they do not seem to be watching, and they should not be underestimated.

Though lack of confidence in the Suzuki Cabinet is growing, the LDP still has a support rate of about 50 percent, but this is not active support and seems rather to reflect the helplessness of the Opposition parties. It should be emphasized that Suzuki's problems are, at the same time, the problems for the whole of the LDP. (March 18)

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POLITICAL AND SOCIOLOGICAL

EDITORIAL ON ADMINISTRATIVE REFORM

Tokyo MAINICHI DAILY NEWS in English 18 Mar 82 p 2

[Editorial]

[Text]

The Second Ad Hoc Council on Administrative Reform which was inaugurated a year ago has another year to go to finalize its recommendation to the government. It is now rushing in order to submit a basic recommendation around July.

Looking back on the achievements of the council, we are placing high expectations on it, while at the same time calling on the government to meet the enthusiasm of the council to pave the way for creating an effective and rational administration.

The council was established for the purpose of "contributing toward the realization of a rational administration to match our changing economic and social circumstances." We cast serious doubts, however, on whether the basic policies of the council have been put into practice during the past one year. The responsibility rests not with the council but with the government.

Immediately after it was inaugurated, the council was commissioned with the task to map out a plan for reducing expenditures, aside from its basic target of realizing administrative reform to create a simple but effective government. The first-phase recommendation submitted to the government last July was poles apart from the ideal of administrative reform. Even this recommendation was watered down in the course of legislation in the Diet.

In other words, the recommendation was simply ignored by the government. Hence criticism ran high that the Second Ad Hoc Council had downgraded itself to the role of maidservant to the government.

It is still fresh in our memory that when the government was obliged to float deficit-covering national bonds for fiscal 1981, Chairman Toshiwo Doko of the Council bitterly criticized the government saying: "Things would not have come to such a pass if the government had observed the council's recommendation to the letter."

The recommendation submitted this February calling for rationalization and simplification of the government's licensing and approval systems was insufficient because it was mapped out under heavy pressure of various government ministries and agencies. In short, the council was thrown into a whirlpool of politics from the very start, and the government only selected those items in the recommendation which served its purpose. When the situation turned unfavorable to the government, it tried to hide behind the council. It is not too much to say that the interests of the government and the Liberal-Democratic Party have always prevailed over the recommendations of the council.

The resistance of certain ministries and agencies as well as special corporations also became all the more complex when the council began delving into their particular sectors. The council's tentative plan contained in the basic recommendation mapped out by the secretariat was lukewarm in content as it avoided including difficult items. It was reported that Chairman Doko turned down the tentative plan and asked the secretariat to scrutinize it. Thus, there is a lurking suspicion that the bureaucrats have not been cooperating with the council.

The council should not listen to any political hubbub. It is our sincere wish that it map out a reform plan with a broad and profound vision to fulfill its original ideal. It is now immaterial whether or not reform is plausible. It should submit a dynamic and bold blueprint that is most comprehensible to the nation.

The most important question now is the attitude of the government in dealing with the work of the council. The government should refrain from meddling with the council while the latter is deliberating on the reform plan. Prime Minister Zenko Suzuki himself earlier pledged that his government would honor the reform plan and we call on him to keep that promise.

It must be made crystal-clear that administrative reform is not aimed at fiscal reconstruction. It may contribute toward fiscal reconstruction as an end-result, but the reform is, in itself, a question to be discussed in a different dimension from fiscal reconstruction.

Chairman Doko declared that it is Prime Minister Suzuki who has to tackle reform to the best of his ability. We urge the prime minister to respond to that call.

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TANAKA SHOWING SIGNS OF FATIGUE

Tokyo MAINICHI DAILY NEWS in English 10 Mar 82 p 2

[Article by Takehiko Takahashi]

[Text] Criticisms have surfaced over the fact that former Prime Minister Kakuei Tanaka continues to possess great influence in Japanese politics although he is a defendant in a criminal trial over the Lockheed scandal.

One is the statement made by former Prime Minister Takeo Miki at a conference of the Liberal-Democratic Party's supreme advisers. Another is the statement by Seiichi Tagawa, representative of the New Liberal Club, at the party convention.

In his strong criticism, former Prime Minister Miki declared that the way in which the Tanaka faction is expanding its factional influence is tantamount to creating "a party within a party."

Tagawa said that "if a verdict of 'guilty' is handed down in the first trial, Tanaka should resign as a Diet member."

Criticisms of the kind made by Miki and Tagawa exist not only among the opposition parties but also within the LDP. That these criticisms have not been made openly up to now testifies to the strength of Tanaka and of the Tanaka faction. Statements of this kind have not been made even by the Fukuda faction, which constitutes the core of the anti-Tanaka influence in the LDP. This gives further proof of how strong "numbers" are in the world of politics.

The Suzuki administration is receiving the support of the Tanaka faction. If this support is lost, the Suzuki administration will at once face the danger of collapsing. In particular, Prime Minister Zenko Suzuki is hoping to be reelected as LDP president in the party election scheduled this autumn. Here again the support of the Tanaka faction will be necessary. This was why Susumu Nikaido (Tanaka faction), who has been criticized as "a gray official," has been placed in the important post of LDP secretary general.

Special Attention

Both Yasuhiro Nakasone and Toshio Komoto, who are hoping to succeed Suzuki as prime minister, are giving special attention and consideration to the Tanaka faction. This is especially so in Nakasone's case. Nakasone's electoral district is the same as that of former Prime Minister Takeo Fukuda. Possibly partly because of that, Nakasone was uncooperative in regard to the formation of the Fukuda administration. Fukuda, on his part, did not cooperate and was cool toward a "Nakasone administration" appearing to succeed the Ohira administration.

Because of such a Fukuda-Nakasone relationship, Nakasone believes that it will be impossible to obtain Fukuda's cooperation to assume the reins of administration. Thus Nakasone is acting with the judgment that to obtain the cooperation of the Tanaka faction is the only way of obtaining the premiership.

On the other hand, Fukuda has a feeling of considerable goodwill toward Komoto. In his case, too, Komoto judges that it will be difficult to gain the premiership if the Tanaka faction takes the lead in opposing a "Komoto administration" and he is thus endeavoring to win the favor of the Tanaka faction.

All this is making the position of the Tanaka faction more and more advantageous within the LDP. If the Tanaka faction were to decide to file a candidate from the faction in the next party presidential election, the situation would undergo a big change. But the Tanaka

faction is smart and instead of doing that, it is endeavoring to grasp the leadership through the strength of numbers.

If the Tanaka faction were to lose this strength, it would be when Tanaka is judged guilty in the Lockheed trial and the unity of the Tanaka faction crumbles. At present, the Tanaka faction asserts that even in the foregoing contingency, the solidarity of the faction will not be affected. There is a considerable number of people in other factions who share a similar opinion. Is this correct or not? Only time can tell.

Not so long ago an individual who is close to Tanaka visited the Tanaka residence and found Tanaka alone in a room. This visitor said, "When he is alone, Tanaka looks extremely tired. One could say that his appearance is almost abnormal."

This undoubtedly indicates how fatigued Tanaka is upon facing the difficulties caused by being a defendant in the Lockheed trial. Most people consider that the trial is proceeding unfavorably for Tanaka. When the verdict is handed down and if it is "guilty," there is a possibility that the view expressed by Tagawa of the New Liberal Club will spread among the people. It is also bound to have some effect on the Liberal-Democratic Party.

In such a case, changes are likely to occur involving not only the Suzuki administration but also the "post-Suzuki administration."

(The writer is an adviser to the Mainichi Newspapers and former chief editorial writer).

CSO: 4120/202

POLITICAL AND SOCIOLOGICAL

POLITICAL IMPACT OF SATO VERDICT

Tokyo MAINICHI DAILY NEWS in English 17 Mar 82 p 2

[Article by Takehiko Takahashi]

[Text]

The verdict in the first trial of defendants Tomisaburo Hashimoto and Takayuki Sato in connection with the Lockheed scandal will be handed down shortly. It was from the relationship of these two that the expression "gray officials" emerged. Among those called "gray officials" are Susumu Nikaido, Mutsuki Kato, Hideo Sasaki and Kazuomi Fukunaga.

Among them, Sasaki and Fukunaga retired from the political world after being labeled "gray officials." Nevertheless, Nikaido is at present the secretary general of the Liberal-Democratic Party and Sato holds the important post of chairman of the party's national organization committee.

Having lost in the last election, Hashimoto is not a Diet member now but Sato is a Diet member. If a verdict of guilty is handed down for Sato in the first trial, how will he cope with this? This is the focus of attention in the political world. This is because the action that Sato takes will have a close relation with former Prime Minister Kakuei Tanaka.

The following alternatives can be considered in regard to the judgment for Sato:

1. Not guilty.

In this case, the prosecutor will most likely appeal the verdict but Sato will continue to be a Diet member as before.

2. Guilty.

This can take the form of a prison sentence or a stay of execution. The opinion is that if there is a stay of execution, Sato need not resign as a Diet member. There is an even stronger view that if he gets a prison sentence, he can no longer be a Diet member.

What Action?

The problem is that if the verdict is guilty but with a suspended sentence, what action will the opposition parties take? And how will the LDP cope with such action?

Among the opposition parties, Junya Yano, secretary general of the Komeito, says, "If the verdict is guilty, won't Sato resign? If he doesn't and if advice is given that he should resign, the Komeito can only support such advice."

Nevertheless, Yano is ambiguous as to whether the Komeito will take the lead in advising the resignation. For the Komeito, it would be more desirable for the Japan Socialist Party to take the lead and for the Komeito to follow suit. This is because of the relations between the Komeito and former Prime Minister Tanaka.

If the advice is issued by the opposition parties for Sato to resign, how the LDP will act is a problem. The Tanaka faction would undoubtedly like to ignore this. In the case of a guilty verdict, if a precedent is set for the defendant to resign, even if an appeal is made, there is a strong possibility of this being applied to former Prime Minister Tanaka also.

Upon observing the progress of the trial, the verdict for former Prime Minister Tanaka is likely to be handed down in April or May next year. The prospect is that the prosecutor's argument for punishment will be made at the end of this year with the sentence to be pronounced four or five months after that.

At the recent party conference, Seiichi Tagawa, representative of the New Liberal Club, declared clearly that if Tanaka is found guilty, he should resign, it will not be easy for Tanaka to ignore this.

If an attempt is made, centering on the Tanaka faction, to keep Sato from resigning, a general attack is likely to be made by public opinion. People will begin to say that "there must have been a sinister purpose in making Nikaido the secretary general." The Liberal-Democratic Party will be plunged into great confusion.

In such a case, Prime Minister Zenko Suzuki, as president of the LDP, will find it necessary to clarify his position.

If Prime Minister Suzuki demands the resignation of Sato, he will face a counter-offensive by former Prime Minister Tanaka and the Tanaka faction. It can be prophesied that this will affect Suzuki's bid for reelection as party president in autumn. On the other hand, if Suzuki quashes Sato's resignation, Suzuki will face the counter-offensive of public opinion and attacks by the opposition parties.

Upon considering this situation, it can be said that the forthcoming judgment to be handed down on Sato is an extremely dangerous political bomb.

(The writer is an adviser to the Mainichi Newspapers and former chief editorial writer).

CSO: 4120/204

EDITORIAL: ADVANCE OF MILITARY SKILL

Tokyo MAINICHI DAILY NEWS in English 15 Mar 82 p 2

[Text] The national Diet is apparently trying to reach a conclusion on the "experimental remodeling" of the Air Self-Defense Force F-4 fighter. The explanation given by Defense Agency Director General Soichiro Ito during last Tuesday's meeting of the House of Representatives Budget Committee was unsatisfactory.

Ito said that the restoration of the bombing facility of the F-4 Phantoms would not be misunderstood by other countries as an aggressive move if recent developments in military technology are taken into account. "We have no plan to revise our basic policy of not possessing arms regarded as a threat to other countries. Within this framework, our military equipment might undergo changes in accordance with the advance of military technology..." he said.

In other words, Ito's explanation indicated that Japan may develop and improve its capability in the future based on an obscure yardstick — the advance of military technology. By taking advantage of the recent dispute over the F-4's bombing functions, the government has removed an obstacle standing in the way of improving its military equipment.

We would like to pose two questions. The first is: "What are the 'other countries' that the Japanese government has in mind? Everybody knows about the wide qualitative and quantitative difference in military strength between the Soviet Union and other Asian nations, so these countries will feel differently about the "threat" by Japanese Self-Defense Forces.

We believe that the government explanation concerning "other countries" is mere sophistry. We do not support its claim that the remodeled F-4s would not be a "threat" to other nations.

The second question is about Ito's way of thinking on the "advance of military technology." It is true that weapons are becoming more and more sophisticated every day. In short, the arms race has no end but the Self-Defense Forces should not follow this trend. We wonder if this situation can be termed "an advance."

Ito's statement implies that a country must improve its military capability in proportion to the improvement of the same capability of other countries. Ito is giving top priority to military affairs. While the duty of professional soldiers may be to work out survival plans on the assumption of war, politicians must deal with the matter differently.

Amid the mounting calls for disarmament both at home and abroad the world is keenly watching Japan on this specific matter. Some may say that the F-4 issue and disarmament are two different things but we do not agree.

Ito would have made a different statement if he really understood Japan's position as one of the leaders calling for disarmament at the United Nations. The government has appropriated funds for the remodeling but if it was aware of Japan's position, it would have taken a different path.

The F-4 issue discloses the drawback of the civilian control system in Japan. The plan to remodel the F-4 was approved behind Prime Minister Zenko Suzuki's back, clearly showing the unsound functioning of civilian control. Professional officers will claim that the remodeling was not of sufficient importance to require Prime Minister Suzuki's approval, but this way of thinking might be the downfall of the civilian control system.

The government should have established a policy to contain the system immediately after clarifying the real cause of the dispute, but instead it merely confirmed a *fait accompli*. Moreover, the government imprudently established a rule that the remodeling of F-4 Phantoms would be handled solely by the Defense Agency.

We are also dissatisfied with the attitude of the opposition parties, and must inform the Japan Socialist Party, which ignited the dispute, that Ito's statement did not settle the matter while the government seems to have justified many questionable points.

The opposition parties did little to clarify the matter during Diet sessions. For instance, we do not know the reason why the budget was temporarily suspended in connection with the F-4 remodeling. We urge the opposition parties not to support the government and the government party by allowing these questions to remain unanswered.

CSO: 4120/202

EDITORIAL ON TAX CUT TANGLE

Tokyo THE DAILY YOMIURI in English 8 Mar 82 p 2

[Text] With a compromise reached between the Liberal-Democratic Party (LDP) and five opposition parties on the tax cut issue, the Diet will resume its deliberation Monday for the first time in seven days. The agreement calls for establishing a subcommittee of the House of Representatives Financial Affairs Committee to study a revision of the taxation system and ways to raise revenue to offset a tax cut.

As is true with conventional compromises between the ruling and opposition parties, the compromise agreement is ambiguous, not referring to the date and the scale of the tax cut.

The opposition parties have not given up hope for a tax cut in fiscal 1982, but if one is carried out on a small scale, it would be meaningless. In fiscal 1983, a tax cut totaling ¥1 trillion, as demanded jointly by the five opposition parties, should be carried out.

Administrative Reform

Both the ruling and opposition parties, based on the compromise agreement, must try very hard to achieve the ¥1 trillion tax cut. Revenue for a tax cut should be mainly sought in carrying out administrative reform. The government is asked to make special efforts toward this goal.

Prime Minister Suzuki declared last month at the lower house's budget committee that the issue of deficit-covering bonds will be zero in fiscal 1984 and he will take political responsibility if it is not achieved. At the same time, he pledged that the government will not introduce a large-scale indirect tax even if it carries out an income tax cut. The only alternative to raise revenue to offset the tax cut is to carry out administrative reform thoroughly.

Toshiwo Doko, chairman of the second ad hoc Administrative Reform Council, has emphasized that a tax cut will be possible only if administrative reform

is earnestly pursued. Voices are growing in the council that about ¥2 trillion could be saved only if the Japanese National Railways (JNR) is streamlined.

'Natural Tax Increases'

Behind this recent flareup is the public's irritation and dissatisfaction with the "natural tax increases" over the past five years and the Suzuki cabinet's undetermined stance toward administrative reform. The ongoing administrative reform has not had favorable effects on the people's livelihood so far.

In defiance of the council's first recommendation to withhold a pay raise for public servants, the government approved the pay hike as recommended by the National Personnel Authority. The government has increased the issue of deficit-covering bonds in the fiscal 1981 supplementary budget due to a drop in tax revenues, though the amount of deficit-financing bonds had been reduced. The government said that it had slashed spending drastically in the fiscal 1982 budget. But we have not heard any government office cry that it cannot carry out its work with the money allocated to it.

The ruling and opposition parties must feel responsible for the week-long suspension of Diet business and make strenuous efforts to economize public spending and reform the Diet to achieve a large-scale tax cut.

(March 8)

CSO: 4120/202

ECONOMIC

AUTOMOBILE PARTS INDUSTRY'S STRUGGLE FOR EXISTENCE REPORTED

Tokyo NIKKEI SANGYO SHIMBUN in Japanese 4, 5, 12, 19, 20, 27 Jan, 2 Feb 82

[4 Jan 82 p 7]

[Text] Automobile Foundry Company

It seems this year will be a rough one for the automobile parts makers. In a period of declining demand, the requests from makers of complete automobiles to cut costs will only grow stronger. To get through this difficult period, the parts makers will have to move further ahead with decisive rationalization and radical reform as well as with diversification in the operation of their businesses. Up to now it has been all right for them to act at the direction of the makers of complete automobiles, but from now on they must find new directions on their own. Now, it seems, we must take a look at what the automobile parts makers are thinking and what they might be planning.

On 1 November last year, the Automobile Foundry Company, a subsidiary of Isuzu Motors, established its own subsidiary, Jichuseiko (headquarters, Yokohama; president, Kiyoshi Miyashita; capital, 20 million yen), by making a separate and independent entity of its steel casting division, the profits of which were not satisfactory. Ostensibly the reason for the move was to "strengthen the steel casting division fundamentally," but it was really intended as part of a tactic to reduce volume by cutting off unprofitable sectors in order to concentrate investment in strategic sectors. It is safe to say that this is a final effort to avoid being washed away by the wave that will soon come crashing in.

The Automobile Foundry Company is a parts manufacturer which has strong ties to the U.S. General Motors through Isuzu. It supplies ductile from parts called [?differential] box for the "J Car," which GM has presented to the world as the world car. The volume of deliveries to GM has reached 30,000 per month. And it appears that the number of the [?differential] box to be supplied will increase still further, as the Automobile Foundry Company calculates that it will be forced to make a new response if the idea of a GM-Isuzu world truck gets started. So the company moved to strengthen its strategic divisions, with a response to GM in mind.

Furthermore, Isuzu, the parent company, has been trying to take a hand in the reorganization of its affiliated parts makers. The makers have to establish their own defenses by making the first move so that they will not be swallowed up in this wave. The separation of the new company was hastened by the fact that two subsidiaries of Isuzu, Jidosha Bubin Seizo and Jidosha Neji Kogyo (main office, Yokohama; president, Hisao Okutsu; capital, 250 million yen), suddenly signed a merger agreement in order to rationalize management.

Yoshizo Yuki, president of the Automobile Foundry Company, is a second generation owner-president. Although Isuzu, a major stockholder, is looking for an escape route in the world strategy which it is promoting with GM, Mr Yuki certainly considered that he must protect his own castle on his own. He probably decided that the quickest way would be to establish efficient operation by separating the weak divisions from those with a high earning potential.

The mainstay of the strategic divisions is the one that makes the lightweight high-strength ductile cast steel which is supplied to GM. The firm has already moved the entire capability of the ductile steel casting division to its plant at Tsuchiura, in Ibaraki Prefecture, and has begun production in earnest. Furthermore, getting a headstart on the concept of a GM-Isuzu world truck, the firm is going ahead with setting up a line for large-scale ductile steel casting for trucks at its Tsuchiura plant. The company sold part of its main plant at Tsurumi, in Yokohama city, and has allocated nearly 1 billion yen, the earnings from this sale, as capital for facilities. In this way the company is steadily strengthening its strategic divisions.

On the other hand, there are many difficulties ahead for the steel casting division which was separated from the company. Although it received all of its land, buildings, machinery and equipment from the Automobile Foundry Company, it must be said that it will be difficult for it to enlarge its operations. Since it appears that the percentage of the Automobile Foundry Company's sales accounted for by the steel casting division will continue to decline in the future, that division will need to search for other work. Furthermore, the majority of the 165 employees of Jichuseko are older people.

This company served as a "receiver" for the older employees from the Automobile Foundry Company. In short, it was a subsidiary company whose purpose was to perform a supporting function in order to facilitate expansion of the Automobile Foundry Company's business.

Beginning this year, the global strategy of GM and Isuzu will finally be put into practice. Together with Suzuki Motor Works, Ltd, they will begin action on the strategy for the minicar which is to follow the J-car. Furthermore, at the end of last year they confirmed a basic policy on the concept of a world truck, and they can be expected to give substance to this concept in due course. The time the Automobile Foundry Company has been waiting for has come.

Will the preparations it has made bear fruit and enable it to make great progress? Or will this decisive rationalization cause problems in personnel management and not be effective as anticipated? For this firm, this promises to be an important year which will be the key to growth in the future.

[5 Jan 82 p 8]

[Text] Akebono Brake Industries

A great wave of internationalization of automobiles is about to break. However, if the automobile parts makers do not catch it right, they may not be able to keep from being thrown. Akebono Brake Industries, a very large manufacturer of brakes for passenger cars, agreed last year with the American Bendix firm, its partner in technical cooperation, to build a jointly managed plant in the United States. As it comes to the critical stage of internationalization, Akebono is trying to begin the new era with efforts to strengthen its entire group by providing fully for subsidiaries and subcontracting manufacturers.

Reportedly, some kind of "conclusions" on the plan for a factory to be jointly managed by the top Japanese and American manufacturers of brake equipment will be made public by this summer. Yasutada Nobumoto, president of the Akebono Brake Company, cautiously remarked: "How will we get past the American antitrust restrictions? We are assuming a joint management in which the automotive machine industries division of Bendix will be a "separate" entity; what will the other side decide about this? These two points remain from last year as problems to be solved."

The situation in France is, of course, different from that in the United States, but Yasutada Nobumoto seems to be "confident of success" because antitrust laws were cleared and low-cost production was realized by assembling small-scale plants with the French Bendix Company. So far, there are six enterprises to which Akebono Brake has supplied technology: in Australia, Mexico, Spain, Chile, Brazil and Taiwan. Since "even chairman Eigi attests to the fact that, particularly in disc brakes, the technology is the best in the world," the company's primary objective this year is to improve the system of technical cooperation with these firms and to make every effort toward diffusion and penetration of the Akebono trademark.

Akebono Brake's provision of technology overseas generally takes the form of jointly supplying technology with the U.S. Bendix Company; however, Bendix provides no support at all in marketing. The question is how to build an overseas marketing network along with the production bases. Last autumn, Akebono proposed to Bendix the deletion of the restrictions on marketing areas (territory clauses) in the technical cooperation contract. These clauses had been an obstacle to penetration of overseas markets. Regarding realization of this proposal a matter of course, Akebono will start a new global strategy which combines manufacturing and marketing.

On the other hand, while the company gradually takes action to extend its reach overseas, it must also take a close look at the separate task of putting muscle into its own essential parts. Akebono Brake is supported by more than 10 subsidiary companies and a group of some 60 subcontracting or cooperating firms called the Seiwa Association. The situation makes it clear that "s loughing off" these companies will determine the possibilities for the group as a whole.

President Nobumoto said: "Theoretically, our policy is to provide for growth without cutting off or reducing subcontracting." However, he emphasized a stringent policy by saying: "Within the Akebono Brake group we will introduce a pattern similar to that of strengthening and readjustment which was steadily implemented over the past year in relations between the car makers and the parts makers." This policy says: "The parts makers have gotten better by being thrashed every year by the automobile makers. Putting this formula to use to some extent in our own back yard will be for the good of the group as a whole."

Once every 2 years the Seiwa Association organizes a tour for about 20 people to inspect firms in the European and American automobile industry such as Bendix in America. Recently many young managers have been participating. President Nobumoto's assessment is that "they seem to get the feel of the toughness of overseas markets and they are eager to respond to the new era." However, reportedly President Nobumoto also says that "they will go to other places besides those enterprises which have salable technology and cost capability; the parts and materials can only come from them."

Three new major objectives were presented to the managerial corps of Akebono Brake at the end of last year. They were:

1. Raise the principal products such as disc brakes to the highest level of efficiency and production technology in the world.

2. Gradually build up production efficiency by thoroughly improving the work rate.

3. Improve the operational divisions that are the furthest behind in rationalization. Subsidiaries such as Akebono Machine Industry (headquarters in Tatebayashi in Gumma Prefecture) were told that even though they had avoided deficit operation, "in comparison with other makers in the industry there is still room for effort." Through a formula for diagonsis of individual firms, orders were given for looking into the merits of those operational sectors which individually showed a profit.

Akebono Machine Industry has expanded its plant for making cast steel parts and later will begin preparations to handle aluminum casting. For those subsidiaries such as Akebono Soft Engineering (main office in Tokyo) whose work has nearly all been directed toward the automobile industry, the task is to expand operations to general production. Akebono Brake's policy has been that "while its mainstay will always be products for the automobile, it will build up its defenses with new, nonautomotive lines." This policy will involve such moves as a drive for new products in processed aluminum materials for use as housing materials. When Akebono Brake Industries has made clear its separation from Bendix in the field of production technology, how far will it be able to adjust its position? This is the question which will probably decide its future.

Companies Related to Akebono Brake Industries (Units of 1 million yen)

	Capital	Main Operation
Japan Systems Safety Research Institute	100	Research and development of automotive parts
Akebono Kosan	10	Rental and sale of gas stations
Akebono International	30	Exports related to brakes
Akebono America	$50,000	Marketing, collecting information on development of new products
Akebono Soft Engineering	35	Designing information systems; consigned data processing
Akebono S.A.	32	Manufacture and marketing of brake shoes
Akebono Machine Industry	15	Manufacture and marketing of cast products
Sanyo Brake Industry	40	Marketing and manufacture of brake drums and shoes
Toyou Brake Industries	400	Marketing and manufacture of brake drums and shoes
Sanyo Hydraulic Industry	10	Manufacture and marketing of pistons for brake parts
Akehai [phonetic] Industries]	40	Manufacture and marketing of wheel cylinders for brakes
Takami Manufacturing Co	20	Manufacture and marketing of brake parts and shoes
Hatawa Industries	10	Brake maintenance; brakes for industrial machines
AK Packaging Research	5	Marketing packaging materials, packaging software
Akebono Engineering	20	Manufacture and marketing of automation machinery
Seiwa Transport	20	Overland transport

[12 Jan 82 p 9]

[Text] Abugi Automobile Parts

The Nissan Motors group is proceeding with a spectacular overseas strategy and is converting to FF cars (front engine, front wheel drive). Within the group, Atsugi Motors will be placed in a very difficult and trying position. Production of the company's strongest product, drive shafts for FR cars (front engine, rear wheel drive), will certainly drop off sharply, and the company must plan to "maintain" the scale by adding new products to its lineup.

It is estimated that in 2 years the loss in production of drive shafts by Atsugi Parts will reach a scale of roughly 10 billion yen a year. The president of the company, Shigeru Kitamura, even said that this will be "the greatest trial the company has experienced since the war." For this reason, since last year Atsugi Parts has been making every effort to incorporate new products. According to another parts dealer connected with Nissan: "Because the areas of various companies' resonsibility within the Nissan group are fixed, even though a given company may develop a good product, it may not necessarily be able to handle the production by itself." Because of this situation, the leaders of Atsugi Parts have been moving around the Nissan network quite a bit.

As a result, they have finally been able to insure that they can expand production of a power steering pump for FF cars and begin production of a compressor for air conditioners for automobiles. Among business people it is rumored that competition with Nippon Radiator, which has responsibility for completed automobile air conditioners, was especially sharp over the compressor. Nevertheless, Atsugi Parts managed to arrange to begin production of 20,000 of these items per month at its Iiyama plant, which it will complete this month (at Atsugi city, Kanagawa Prefecture; plant investment, about 1.6 billion yen).

With such investment in new products, "Atsugi Parts' sales for the 2-month period this year are about 1.6 billion yen higher than in the previous period, and since 100 billion yen is assured, it seems that at least the future shrinkage in the scale of the company's sales can be avoided" (President Kitamura). Nevertheless, President Kitamura's expression has still not brightened. A rapid decline in the percentage of profits has begun to penetrate throughout the company.

Three years ago, in 1978, Atsugi Parts' profit ratio (ordinary percentage of profit on total sales) was 4.7 percent. In the following year, this dropped slightly, to 4.6 percent, and last year it dropped to 4 percent. Moreover, estimates for this year are that ordinary profits will be 30 billion yen, a decline of 9.5 billion from the previous year, and that the profit ratio will drop precipitiously to a mere 3 percent. Having been forced to insure quantity, the company has developed serious problems of quality in its work.

In his New Year's greeting this year, President Kitamura announced: "We will put into practice the proverb, 'Enjoy fine food with a small group.' This means that the company will develop a strategy to shape up the firm in response to reduced and declining profits. At this stage, specific policies are being

worked out; the program will be made known when it is initiated in the beginning of fiscal 1982. The basic idea, however, is 'readjustment to an optimum balance on three points--investment, labor expenses and the use of orders from overseas'" (President Kitamura).

The move to rationalize processing has been going on continuously for several years and has been concentrated in the manufacturing division. This movement will be expanded to a companywide TQC development which will include the sectors not directly involved in manufacturing. Furthermore, as a policy for dealing with swelling labor expenses, the company began last year to refrain from replacing the regular retirement personnel by making every effort to cut back on the 200 to 300 seasonal or temporary workers it hired at peak periods. The company says it will review the relationship between improving operations and introducing automated machinery and the size of the work force. Prospects seem to be fairly strong that as a result it will settle on a strategy which will essentially call for decisive reduction.

On the other hand, when it comes to policy for strengthening the group of subcontracting firms, President Kitamura says that "the makers of complete cars demand that the parts makers lower costs, and it is difficult for the parts makers to carry this demand directly to the subcontractors."

There is an association of firms which subcontract with Atsugi Parts called the Kohokai. Some 40 firms belong to this association, but most of them still have not built up strength to withstand a "frigid blast." They have decided on a policy in which buyers from Atsugi Parts will go into the various firms and take them in hand and give them on-the-spot guidance on improving operations.

President Kitamura subtly says: "We cannot say that in the future there will be no cases in which we will change over to internal manufacturing of items which in the past were let out to subcontractors." He said this by way of a slap on the wrist to improve the insufficient capacity of some of the subcontractors; at present, Atsugi Parts has to rationalize its own processing and probably could not undertake to increase greatly the percentage of its internally manufactured items. The company will diversify even similar parts and will "urgently make changes in production policy" (President Kitamura). If the company were to increase the use of its superior subcontractors and make efforts to improve the poorer subcontractors, it would be using "natural selection." It appears that this is the sort of tactic the company will follow.

Last fall, Atsugi Parts greatly increased the capacity of Atsugi-Mexicana, its production base in Mexico, to cast aluminum. It also greatly expanded production by Taiwan-Atsugi Industries. Atsugi Parts overseas strategy finally got its motor running. It will be some time, however, before these activities show their strength in terms of profits. For Atsugi Parts, which is faced with a reduction in its profit margin and which has been considered "to have the character of a branch factory for Nissan Motors and to be somewhat lacking in mind of its own" (another firm in the industry), the next 2 or 3 years will be the crucial test.

[19 Jan 82 p 8]

[Text] Kanto Seiki Company, Ltd

At this point, the large manufacturer of electronic equipment Kanto Keiki is sweating heavily as it tries to play the ball sent its way by the parent company, Nissan Motors. Riding the wave of automotive electronics, Nissan is placing orders for new electronic machinery in quick succession. Increased orders are a happy thought, but Kanto Seiki's capacity is small and the orders are coming with short delivery times. The methods used up to now will yield no profit at all. In distress, the company has begun to work on a policy for the serious struggle ahead.

In an automotive industry which has entered a period of deceleration, automotive electronics has continued to grow steadily. The technological strength of this field became the raw material of expanded automobile sales and, in turn, this led to heightened international competition. Nissan, which has carried on a sharp competition with Toyoto Automotive Industries, steadily developed new electronic equipment for automobiles and placed orders with Kanto Seiki to make the marketable products. In recent times, when the demand for electronic equipment in general has peaked, these orders are a help but, says company President Kazuhiko Ono with a wry smile, "unless we get started on rationalization, it will be hard to make a profit."

Basically making various kinds of measuring devices for automobiles, this company manufactures clocks, resin products and many items of electronic equipment such as microcomputers and electronic parts. Consequently, cost management was difficult even before, but the frequency of orders for new electronic firms at this time has lent impetus to cost management. The first step in this direction is the rationalization strategy of putting the inspection process in the factory on line by using computers.

The automotive electronics items lately being ordered by Nissan include many items which liberally use microcomputers and LSI (large scale integrated circuits), so there are many items for inspection. It would take too much time to inspect item by item in the various production processes, as was done in the past. The idea is that the inspection process can be greatly simplified if it is carried out through integrated computer control. According to the plan, the company will change over to an arrangement in which it will set up computer terminals for each production or assembly and complete the inspection simply by continuous monitoring of the product at these points. It is an arrangement for immediate inspection in which the items to be checked for individual products will be stored in the central computer and the product will be monitored at the terminal. In this way, even if the items to be inspected increase, they can be handled without increasing personnel.

Up to now, the company's capital investment has been applied to increasing capacity; the policy for some time to come will be to direct almost all capital investment toward rationalization. The company says that "it will continue investment at about 1 billion yen a year" and it wants to have an on-line inspection system based on computers in operation as quickly as possible.

At the same time, the company is trying to unitize its assembly processes. This means building a production system in which it will be possible to assemble various products simply by putting together work done in blocks. It would do no good to go to the trouble of simplifying the inspection process if assembly were inefficient. In any case, it is critical that there be cost management at the work site along with simplification of the inspection process.

In short, the company would have little potential for development if it were to handle the orders from Nissan through sheer effort. Whatever may have been the case a decade ago, it now has an electronic technology division within the company. Since thick-film IC are to be manufactured and microcomputers for automobiles are to be assembled, it would be a waste simply to handle orders from Nissan as they come.

In preparing for the battle in automotive electronics, the firm is letting its hopes rise for fostering its own independent capability to develop electronic equipment and is increasing its expectations of a challenge to high-technology semiconductors. Therefore, it considers that technical exchange with Nissan is indispensable and has started closer technical exchanges with Nissan.

Kanto Seiki's dream is that in return for handling low-profit orders, it will gain impetus in improving its own technical capability.

Since its founding in 1956, Kanto Seiki has grown as the Nissan group's specialist in manufacturing measurement devices. Will it be able to ride the wave of automotive electronics to serious participation in the field of semiconductors?

Will it be able to take the "wild pitches" and "poor throws" from Nissan gracefully and direct them toward added capability in new fields? Or will it weaken under the pressure of successive pitches. Kanto Seiki is now being tested.

[20 Jan 82 p 8]

[Text] Keihin Seiki Manufacturing Company

"We are already making large cuts in subcontracting." These are the words of Shiro Watabiki, the president of Keihin Seiki Seisakujo, a manufacturer of carburetors affiliated with Honda Motor Company, Ltd. With this statement he is emphasizing that he has gotten an early start on the new era of sharp competition. The company has a cooperative organization called the Keihin Kyoryokukai which is currently made up of 32 companies involved with carburetors and 50 companies involved with valves. "The year before last there were 100 companies involved with values, but adjustments were made on decisive criteria such as ability to compete" (President Watabiki). As a result the company has created a system of about half that number which will get through the rough times of being efficient.

Specifically, at that time, the company conducted a sorting-out process based on such criteria as quality, cost of manufacture and rate of deliveries met, and at the same time it took care to foster the outstanding subcontractors by raising the terms for cash payment to subcontractors from the earlier 10 percent to 30 percent beginning in November of the year before last. Furthermore, since July of last year, the company has thoroughly adopted the idea that "a subcontractor is part of the manufacturing division of the firm" (President Watabiki) by holding top-level seminars for subcontractors. In addition, it has begun to try gradually to raise the capacity and strengthen the solidarity of the Kehin Seiki group by increasing the frequency of round-table discussions for exchange of views with the subcontractors.

Strengthening such essential sectors as these advanced the preparatory work of transforming the company into a consolidated maker of automotive fuel systems. Keikin Seiki's best products have always been mechanical products. Mikumi Corporation, which is its greatest rival, is associated with Mitsubishi Automotive Industries and is well known for electronic fuel injection equipment. It could not honestly be denied that Keikin Seiki had been behind in the most advanced electronic technology.

However, last summer, the firm finally advanced into automotive electronics by beginning delivery of electronic carburetors to Honda. In addition, it has also received payment from the American motorcycle maker, Harley Davidson, for delivery of test production of similar machinery. Prior to this, in May of last year, at its Tsunoda Plant (at Tsunoda city in Miyagi Prefecture) at a cost of about 1.3 billion yen including testing and production facilities, the company completed an electronics specialty area covering 2,000 square meters (the area of the building) and created an entity which fully employs about 100 electronic technicians.

Furthermore, 2 years ago the company began to plan seriously for conversion from the manufacture of metal carburetors to manufacture using resin in order to satisfy the move toward lighter weight. The prospects are that the results of this planning will soon be applied to the manufactured product. President Watabiki says that "the goal is that the leap from simple carburetor shop to integrated maker of fuel systems will be accomplished before 1985." Supported by a rapid growth in demand for motorcycles, he appears to have made a smooth start toward the goal.

Since near the end of last year, the firm has done a lot of "shopping." It bought a site for a 29,800-square meter plant in Marumori-cho, which is a neighboring village to Tsunoda city where the Tsunoda plant is located. Furthermore, purchase of land adjacent to the plant together with a site for use by an affiliated company is included in the firm's projected budget. When existing sites in Miyagi Prefecture are included, Kehin Seiki plans a total of about 100,000 square meters of plant development.

Thus, Keihin Shiki, by starting to move toward electronics, by taking the initiative regarding resin materials and by insuring sites for new plants, is steadily working out the "moves in its domestic operating strategy, which is looking to the decade beginning in 1985." Reportedly, Miyagi Honda Sales

(main office in Sendai city), into which the firm put capital the year before last in order to get a direct feel of the users' wishes, began to provide market information which was as valuable as originally expected. In an 11-month period last year, the company's sales were about 21 billion yen, 1 billion yen over original estimates. This year the company sales goal is 25 billion yen in the 11-month period. President Watabiki is fully confident that in the next 2 years he will complete domestic preparations to enter the new era."

However, the task to be accomplished is to build up the company's overseas strategy, which seems to mark the firm as having come late to the field as an important maker of automotive parts. Last year, progress was made toward opening a true overseas era by providing technology to South Korea and deciding upon a joint production program in Taiwan. Still, the firm's only conspicuous achievement in the American and European markets is exporting carburetors for West Germany's Volkswagen. In view of the fact that the parent company, Honda Motor Company, is anxious to complete an overseas production system, Keihin Seiki will have to concentrate its attention on the manufacture of complete automobiles in looking to orders for and local production of assembly parts in North America or Europe and South America.

When volume in the industry generally seems to have peaked, it is a great advantage to be able to predict that for the present the volume of work will continue to expand as always because of Honda Motor Company's increasing production of motorcycles and cars. By accelerating its shift to mechanical electronics and increasing its overseas aspirations with a favorable wind at its back, the firm is making a critical attempt to change itself into a survivor.

[27 Jan 82 p 8]

[Text] Nippon Denso

The Toyota group is trying to get through the era of deceleration with a pending consolidation of manufacturing and sales. The largest parts maker in the group, Nippon Denso, thinks that "maintaining a growth of 10 percent or more a year is in itself the best policy for surviving the era of slow growth in the automotive industry" (vice president of the company, Kengo Toda). The firm has decided that its growth as an enterprise must not fail as it responds to increasingly more severe demands from the auto makers for reduced costs and as it deals with the development of products which require high technology. Therefore, little by little, the company will disperse the burden of investment in research and development, which will get heavier and heavier. To do this it will try to improve the technical capability of the group as a whole by providing some of its accumulated technology in electronics and electronic equipment to other firms in the Toyota group such as Tokai Rika. It has also begun to study the idea of working out a resolute policy to foster cooperating firms by which it would transfer some of its own divisions in toto to those firms.

The company's ambition for expansion of its business is symbolized by the construction program at the Daian works in Mie Prefecture. After plant number one, which will be completed in March this year, the company will begin as early as this August to build plant number two on the same scale as the first plant, about 50,000 square meters.

The company is concentrating production of ignition systems products such as distributors, spark plugs and magnetos for motorcycles in the Daian works and is studying the idea of thereby increasing production of alternators, IC (integrated circuits) and LSI (large scale integrated circuits) in its empty existing plant.

Nearly 80 percent of Nippon Denso sales go to Toyota Automotive Industries, but Toyota's production plans for this year are for 3.38 million vehicles (apart from KD sets), a 5 percent increase over the previous year. Moreover, the majority of people connected with Toyota regard even this as a "goal to strive for." It is highly possible that the growth will actually be less. The reason the company is aiming at double digit growth and has been making projections at this rate for the past 2 years under these circumstances is that it is experiencing a sense of crisis that "it will be crushed by the heavy pressure of rising personnel costs and development investment if it merely prepares its defense to match the low growth of the industry in general."

The basis for the process of the company's future growth will be its long-term management plan, "Outline of a Response for the 1980's," which sets a final target of 1 trillion yen in sales in fiscal 1987. In looking toward realization of this plan, the company has first begun to work to strengthen the unity of electronic parts makers within the Toyota group. Specifically, it has expanded cooperation in essential technology with Tokai Rika and it has transferred management of production of some products to Aisan Kogyo.

Tokai Rika is a manufacturer of automotive switches, but "the majority of its products are closely related to electronics" (president of the company Takao Oiwa). Therefore, beginning in November last year it set up a new electronic operations division. This was backed up by Nippon Denso, which has cooperated in technology with this company since 1970. Nippon Denso's hope is that "if it sows the seed, perhaps someday the seed will grow on its own and reverse the situation by giving support in some way."

Nippon Denso had a similar intention in transferring production of throttle bodies for EFI (electronic fuel injection) to Aisan Kogyo. Nippon Denso researches, develops and produces a wide variety of products ranging from basic electronic parts such as IC and LSI to spark plugs. It will not be a great loss to Nippon Denso if it entrusts production of throttle bodies for EFI to Aisan Kogyo. Rather, Nippon Denso will be able to direct the extra capacity gained in this move to development of new products and, in effect, will be able to make development and production efficient for both sides.

One of the central mechanisms of the policy to improve the basic character of the group of cooperating companies is the "Nippon Denso Quality and Management Award." This award was inaugurated in 1959 and is open to the 43 cooperating

firms which are members of the Denso Cooperative Association. It is a commendation to firms which produce outstanding results in improving the quality of their product and in cutting costs. The company reportedly puts efforts into this by sending guidance teams led by the chief of the quality assurance division of its management affairs division to firms which apply.

Another thing the company is trying to do as another step forward in the policy of fostering cooperating firms is to actively exchange personnel. With the development of automotive electronics, the accumulation and application of the most advanced technology has become an important task even for the members of the Denso Cooperative Association which are, from the automobile manufacturers' standpoint, secondary cooperating firms. The company's policy is to transfer a comprehensive capability in electronics by taking in technicians from cooperating firms and putting them to work in its own organization.

Moreover, it is said that in the near future, in cases where firms do not have the capacity to establish a design division, Nippon Denso will transfer to them, intact, the divisions which are doing the designing of those firms' products within Nippon Denso. An example of such a case is the relationship between Asumo (main office in Kosai city, Shizuoda Prefecture; president Fujisaburo Saga; capital, 600 million yen), which delivers small motors to Nippon Denso, and the motor technology division of Nippon Denso's functional parts operations division, which is in charge of designing these products.

[2 Feb 82 p 8]

[Text] Nihon Denshi Kiki

If you visit Nihon Denshi Kiki, in Isezaki city in Gumma Prefecture (company president, Hajime Mizutsi; capital, 2.4 billion yen) you will hear the sound of hammering. Construction of equipment and facilities to build up the research and development system further are advancing at a rapid pace. President Mizutsu says: "In any case, it is critical that we improve our technological capability." The firm is driven by the thought that, being in the position of holding up one end of Nissan Motors' automotive electronics strategy, it will fall behind if it does not further refine its electronic technology now.

Nihon Denshi Kiki is a manufacturer which specializes in microcomputer controlled electronic fuel injection equipment. It holds the position of sole supplier of electronic fuel injection equipment installed in Nissan cars, and up to now it has been safe for the company to respond to Nissan's requirements with volume. Recently, however, a heavy buildup of the firm's research and development system has become urgent, because experimental development work on new electronic systems from Nissan has been pouring into the company continuously, as though to test its talents completely.

Current research and experimental development processes are sporadic, as though incidental to the various manufacturing processes in the plant. Whatever may have been the case up to now, when it was all right for the company

to work as Nissan directed, the company is not able to respond sufficiently with this method now that orders for new test products are increasing rapidly. The plan is to construct a new research and development unit directly opposite the main building and to concentrate the research and experimental development divisions there. The intention is to concentrate the staff which will work on research and experimental development in one place and have them work intensively in modern facilities. Since the time from research to testing will be considerably reduced and the capability of the experimental production line will be raised 50 percent, the plan will serve to enhance cost management.

Moreover, beside the research and experimental development facility, the company is constructing a testing facility where electronic equipment and engines will be adjusted and test driven. When this is completed it will be possible for the company to take over the engine testing for the firms to which its products are delivered. Since the company will consistently be able to handle everything from research and experimental testing to final testing, its ability to exchange information with the recipient firms will be enhanced, and this, it believes, will serve to considerably raise its technological capability. These plant investments, including investment to increase capabilities, total about 1.1 billion yen and are expected to be complete by sometime this spring.

Looking at the construction site from his office, company President Mizutsu explains: "If we complete that research and experimental development building and the testing building beside it, we will have completed the foundation for improving our technology. For parts makers such as us, technological capability is vital."

Nissan Motors, the parent company, is at this time building up impetus in its automotive electronics strategy to compete with Toyota Motors in Japan and General Motors and Ford overseas. It is generously pouring money and electronic technicians into its central research institute and has begun experimental development of LSI (large scale integrated circuits) exclusively for use in automobiles. It has, of course, placed various orders with makers of electronic equipment.

Nihon Denshi Kiki was originally established by Nissan to introduce electronic fuel injection technology from the West German firm Robert Bosch [phonetic]. Therefore, it has been all right up to now for the company to make electronic fuel injection equipment as such, but since experimental development of new electronic control systems, particularly engine peripheral systems, has come to the company, it has had a lot of headaches and it is safe to say that this is what triggered the improvement of its research and experimental development system.

The firm could be left behind unless it established a capability and a system equal to Nissan's in the field of engine controls. It could have problems if it were unable to respond to Nissan's demands in the area of most advanced technology and were not able to make a single technical proposal. The firm's talent is being tested. Will it remain merely a maker of electronic fuel injection equipment or can it become a maker capable of creating new electronic equipment? It now stands at the crossroads.

Since the demand for electronic fuel injection equipment has not declined as much as demand for other automotive parts, Nihon Denshi Kiki is in a favorable environment. Nevertheless, its profit margin has been shrinking year by year. In this situation, it would not appear desirable for Nihon Denshi Kiki to build up its research and experimental development division which is not directly tied to profits. However, if it neglects to make the effort at this time, it will be difficult to have the company grow in the long term. Rather, there is greater danger that if the company does nothing, it will be swallowed up in the wave of retrenchment which is coming upon it.

9111
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SCIENCE AND TECHNOLOGY

RECENT TRADE ACTIVITIES WITH SOVIET UNION REPORTED

Special Steel Exports

Tokyo NIHON KOGYO SHIMBUN in Japanese 8 Jan 82 p 13

[Text] Agreement Near for 36,500 Tons; Five Companies Specializing in Special Steel Conduct Negotiations with Soviets for January to March Shipments

On 7 January, informed sources reported that the export negotiations conducted by five special steel companies (Daido Special Steel, Sanyo Special Steel, Aichi Steel Works, Mitsubishi Steel Manufacturing, and Nippon Koshuha Steel) with the Soviet Union for January-March shipments have been concluded. The total contract amount for the five companies will be about 36,500 tons, an increase over the 23,000 tons shipped in the previous period.

These negotiations are held every quarter. This time, each company sent a representative to Moscow at the end of last year and made arrangements independently. The contract amount for alloy steel rods was 23,000 tons. This was arranged in one package by Daido Special Steel and then allocated among four companies, excluding Nippon Koshuha Steel. The price ended up on the same level as the last period's shipments because of foreign currency shortages in the Soviet Union and the low-price offensive of the European mills. Seventy percent of the alloy steel rods will be supplied by Daido, and the remaining 30 percent will be divided among the other three companies. The demand from the Toglatti automobile plant seems to have increased; there is a substantial increase over the 13,000 tons shipped in the last period.

Sanyo Special Steel was able to conclude negotiations very quickly for 9,000 tons of bearing steel rods, a much larger amount than the 5,000 tons shipped in the last period. In addition, contracts were concluded for 1,000 tons of bearing steel cold-drawn tube and 1,000 tons of alloy tube and other types of steel. In both cases, the amount is about the same as that of the previous period.

Aichi Steel contracted for a total of 2,500 tons of alloy steel plate, bearing steel plate, and stainless steel plate, about 500 tons more than last period. Most of this appears to be alloy steel plate. Mitsubishi Steel did not make any contracts in addition to its share of the alloy steel rods.

Separate negotiations by both Daido and Koshuha are continuing. Daido is negotiating for the alloy steel wire, of which 2,200 tons were ordered in the last period. Koshuha is negotiating for bearing steel wire, for which it had a 600-ton contract in the last period.

The Japanese want to hold the negotiations for the next period shipments (April to June) as soon as March in Tokyo. However, there is no sign of an upturn in the unfavorable foreign currency situation in the Soviet Union. Therefore: "This increase is a reaction to the fact that they hit bottom in the last period. There will be no improvement in any of these materials from now on."

Synthetic Fiber Payment

Tokyo NIHON KEIZAI SHIMBUN in Japanese 8 Feb 82 p 7

Text] What Is the Soviet Aim?

Toned Down Request for Deferment of Fiber Payment

Difficult Decision for the Trading Companies; Possibility of Settlement on Condition

After the request by the Soviet Government corporation for fiber export and import (V/O Khoz. EKsportlen) for a deferment of payment on imports of synthetic fiber and long fiber textiles met with a tough response from the Japanese, the Soviets last week greatly reduced the requested deferment period to 60 days. On 8 February, the trading companies involved will meet again and decide to search for "a consensus policy for the entire industry." However, the ideas of the various trading companies and the Soviet Union are in conflict and there is no telling what will happen.

The Soviet Union asked for a deferment of payment in the middle of January. At first, it appealed to five companies which have a great deal of fiber trade with the Soviet Union, including C. Itoh, Marubeni, and Sumitomo Shoji, and gradually made further requests of other companies. The deferred payment is being requested on shipments from January to June, for which negotiations are already proceeding. The Soviet Union began with a request for a "180-day deferment."

This kind of thing has rarely occurred in the fiber trade with the Soviet Union. The first impression of the trading companies was: "It seems that funds have gotten tight, possibly because of the problem in Poland." Since then, the Soviet Union has not clearly explained the reason for the deferment request, so this impression has not changed.

The major trading companies which received the Soviet request for a large deferment at first refused immediately. "It is impossible to agree to a deferred payment after an agreement has been concluded." Then the Soviet Union asked "Would it be possible under certain conditions?" So 10 related companies exchanged information and decided again on an industry basis to "refuse completely." That was on 25 January.

In response, the Soviet's second request reached the major trading companies at the end of last week. The content of this was: "We request a 60-day settlement for the shipments scheduled for the period up to 10 June which are under negotiation and for which agreements have not been signed (shipments under negotiation since December of last year)." This specific request was greatly toned down from the original request.

The negotiations with the Soviet Government corporation for fiber export and import takes a form in which the Japanese side sells thread and textiles at about the same price at which raw cotton is purchased from the Soviet Union. The payments are made separately, but in reality, this is a barter transaction. An important reason for importing Soviet cotton is that the Japanese want to export synthetic long fiber textiles. Therefore, there are reasons that make it impossible to simply cancel when changes in conditions are requested after negotiations are completed.

Even while continuing to hold to the principle of "refusing the request for deferment," some of the trading companies have begun to point to "the possibility of solving the problem by negotiating conditions." They have begun to take the approach of narrowing down the negotiations to the transactions for which the Soviets are requesting deferment and actively negotiating for payment of interest on the deferred payment.

The problem is whether a way can be found to settle the problem. Since the position of each trading company differs slightly from the others in taking a hard or soft line, the situation remains fluid. In any case, why did the Soviet Government corporation for fiber exports and imports make such a big change from its original request? Some are wondering: "What if what the Russians are really after is not fiber?" In this request for deferment, it is difficult to know exactly what the Soviets' true intentions are.

Large-Diameter Pipe

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 12 Jan 82 p 5

[Text] Four Steel Companies Agree on an Increase of 95,000 Tons for Next Year's Shipment of Large-Diameter Pipe Exports to the Soviet Union; Loans Under Old Conditions

On 12 January, steel industry sources announced that the volume of 1982 shipments of large-diameter pipe exports to the Soviet Union had been finally agreed upon at 795,000 tons, and a contract has been signed. Originally, agreement was reached last fall for 700,000 tons through December of this year. The Soviet side asked for an increase in volume for the January to March shipments next year. As a result of continued discussions between the two parties, the deal was concluded with an extra shipment of 95,000 tons. A loan from the Export-Import Bank of Japan will be applied to this addition at the same terms as for the original transaction, an interest rate of 8 percent and a term of 5 years.

The negotiations for export of large-diameter pipe to the Soviet Union were carried out by the four major steel companies--Nippon Steel Corp, Nippon Kokan, Kawasaki Steel, and Sumitomo Metal Industries--with the Soviet trade corporation for import and export of mineral and industrial products on the basis of a loan to be provided by the Ex-Im Bank. In 1981 the shipment was 700,000 tons and the deal was made on the basis of suppliers credit. This was because the pipe was

requested by the Soviet Union for use in the Yamburg pipeline to carry natural gas to Western nations. Because of pressure from the United States, the agreement broke down over the issue of interest for the bank loan. However, the Soviet Union has made a strong demand for application of a conventional bank loan to the 1982 shipments; First Deputy Minister Brezhnev of the Ministry of Foreign Trade came to Japan in the latter part of November last year and entered into negotiations with the Export-Import Bank. This was exceptionally early in comparison to the pace of negotiations in previous years. After 16 November, the OECD export credit provision guidelines were proposed as conditions, so it appears that there was a previous plan aimed at application of the old loan terms to this same transaction when it was under preliminary negotiation by the steel industry.

In any case, the discussions over the bank loan went smoothly. Agreement was concluded at the end of November under the old guidelines of 5 years at 8 percent. Agreement was also reached between the four steel companies and the Soviet trade corporation for minerals and industrial products for a volume of 700,000 tons in the April to December shipments.

However, the Soviets subsequently asked the companies for an additional 300,000 tons at the old conditions. Even though the four companies have sufficient production capacity to comply with the request, they appear to have agreed on an upper limit of 700,000 tons since the general agreement was initially made at 700,000 tons under the old loan conditions.

Agricultural Equipment Drive V Belt

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 15 Jan 82 p 7

[Text] Large Orders from the Soviet Union to Mitsuboshi Belting and Bando Chemical; Over 1.9 Billion Yen, First Such Order in 16 Years

Kobe--Mitsuboshi Belting Ltd (Kinzo Oda, president) and Bando Chemical Industries (Shigeo Kunugi, president) announced on 14 January that they have received an order for 2,976,000 drive V belts for agricultural equipment at a total price of 1.95 billion yen from the Soviet trade corporation handling tractors. The belts will be exported from this month to September. These two companies are large manufacturers which roughly split the domestic drive belt market between them. However, the achievement of this large an export contract at one time is extremely rare.

The exports will break down as follows. Mitsuboshi will export 1.1 million belts at 700 million yen to the Soviet Government tractor corporation and other organizations in the Soviet Union, 600,000 belts at 400 million yen to countries in Eastern Europe, and 500,000 belts at 300 million yen to countries in Western Europe, for a total of 2.2 million belts at 1.4 billion yen. Bando will export 776,000 belts at 550 million yen to the Soviet Government tractor corporation.

Most of the belts for the Soviet Union will be V belts for agricultural combines. Both companies have exported belts for agricultural equipment in the past, but this is reported to be the first order of such a large size in 16 years. Several hundred thousand tractors and combines are produced annually in the Soviet Union. However, because of the severe climatic conditions, the demand for belts runs to 50 million a year, and continuing business is expected.

The 1.1 million belts for Eastern and Western Europe will be exported by Mitsuboshi through an affiliate, the Semprit [phonetic] Company (an Austrian maker of rubber tires and belts). Local production of the drive belts will begin this May under the technical guidance of Mitsuboshi. Until then, the gap will be filled by exports. The products will be supplied to the European countries under the Semprit brand.

The Japanese drive belt industry has reached the same level as such large U.S. firms as Dayco [phonetic] and Gates. Annual production is more than 100,000 belts, and 10-13 percent of that is exported.

NC Lathe Order

Tokyo NIKKEI SANGYO SHIMBUN in Japanese 18 Jan 82 p 1

[Text] 700-Million-Yen Lathe Order From the Soviet Union

Dainichi Metal Industries (headquarters in Osaka; Shozo Koyama, chairman; 304 million yen in capital) is a large manufacturer of large NC (numerically controlled) lathes and large specialized lathes. Recently it confirmed a 730-million-yen order from the Soviet Union for large specialized lathes. It will make two shipments, one in July and one in November. Delivery should be completed by February of next year. It has also received inquiries for 2.5 billion yen worth of lathes for equipment to be used in the yakutsk natural gas plant.

The shipment in July will include 21 large specialized lathes and 2 large NC lathes, for a total of 350 million yen. They are intended for use in ordinary plants. The products to be exported in November--all specialized lathes for use in automobile plants--will consist of 60 lathes at about 380 million yen.

Difficulties in Pipelayer Export

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 19 Jan 82 p 8

[Text] Pipelaying Equipment Exports Disturbed by "Anti-Soviet Sanctions"

Exports to Yamburg-Urengoy; Shrewd Maneuvering Because of Hugh Volume

Exports of pipelayers to the Soviet Union are undergoing difficulties. As everyone knows, the Reagan administration has adopted a policy banning exports of oil and natural gas-related equipment and materials to the Soviet Union as part of the anti-Soviet sanctions connected with the Polish crisis. And it is reported that Japan has been called upon to cooperate as a member of the Western camp.

The pipelayer is simply a machine used to lay pipe. The pipeline construction is needed for oil and natural gas development and this machine is essential for this. It is little more than a bulldozer with the blade removed and a crane added in its place.

Therefore, people tend to think that it is an ordinary machine that could be found anywhere. Actually, however, there are only two major manufacturers of the pipelayer in the world--Komatsu Ltd of Japan and Caterpillar Tractor of the United States. Since these two companies have built up the largest capacity for manufacturing the bulldozer, the fundamental part of this machine, there is no room for other companies to get into the market.

However, the pipelayer is often buffeted by the waves of world politics. This is especially true in the case of exports to the Soviet Union. A request to stop shipment of this pipelayer was made to Japan. It was one of the machines which President Reagan asked the Western nations, including West Germany, not to supply to the Soviet Union at last year's summit meeting of the advanced nations. "It is to be used for development of the Yamburg gas fields and may have an effect on the security of the Western nations."

Subsequently, the Soviet Union stated that it was going to promote the development of the nearby Urengoy gas fields rather than Yamburg, and the uncertain unity of the Western nations on this issue came apart completely. In fact, the U.S. Government itself approved the export of pipelayers and bulldozers from the Caterpillar Company to the Soviet Union. So business related to Yamburg and Urengoy was completely opened up.

However, President Reagan once again announced specific measures as sanctions against the Soviet Union at the end of last year because of the Polish crisis. Included in these was suspension of exports of equipment and materials related to oil and natural gas. The approval given to Caterpillar for exports to the Soviet Union was rescinded, and a request for cooperation was made to Japan as well.

The reply of Komatsu Ltd to this was "no comment". In fact, it was impossible to answer the question of whether the U.S. Government's suspension of pipelayer exports to the Soviet Union was effective or not.

The Ministry of Foreign Affairs says with regard to this U.S. request that the anti-Soviet sanctions of the end of last year were proposed to Japan. Along with the policy of suspending the approval given to Caterpillar for exports to the Soviet Union, the U.S. Government requested our cooperation with its anti-Soviet sanctions. It did not directly refer to the Komatsu pipelayer exports, but we can assume that this was indirectly included in the request.

Komatsu has given no indication of its attitude or policy on this matter. Since the U.S. Government has itself made complete turnarounds with respect to Caterpillar's exports of equipment to Yamburg and Urengoy, asking for self-restraint, then giving approval, and then rescinding the approval, this time it is impossible to simply believe what it says.

Furthermore, Komatsu Ltd and Caterpillar have recently been clashing in various locations throughout the world. Caterpillar has three times the amount of annual sales Komatsu has, but Komatsu has increased its capacity recently, and even Caterpillar, the king of world construction equipment, is said to be conscious of this.

Therefore, there is a terrific, if hidden, battle between the two companies in the collection of information. In keeping with the national character in a matter related to the Soviet Union, this is shrouded in secrecy. Neither company wants to show its hand. And because the pipelayer export problem is mixed up with politics, it is impossible to know the real situation.

Pipelayer Exports Underway

Tokyo NIHON KEIZAI SHIMBUN in Japanese 2 Feb 82 p 7

[Text] Komatsu Ltd Shipments to Soviet Union Begin for Previously Contracted Pipelaying Equipment

As a part of its economic sanctions against the Soviet Union, the U.S. Government is asking for a suspension of exports of pipelaying equipment ordered from Komatsu Ltd last fall for use in western Siberia. However, Komatsu announced on 1 February that it had begun shipments of the pipelaying equipment. This transaction is being carried out with a loan from the Export-Import Bank of Japan, and the Japanese Government has taken the attitude that "it is difficult to stop exports for which agreements have already been made." So it seems that this transaction will receive "tacit approval."

The transaction includes the export of 36 billion yen ($160 million) in pipelayers and bulldozers for use in the western Siberian natural gas pipeline project being promoted by the Soviet Government.

When discussions of this project began last summer, it was singled out for criticizm by the U.S. Government as being connected to the Yamburg project. However, the Soviet Government made a change in the appearance of the Yamburg project, and in October of last year Komatsu signed a contract with the Soviet trade corporation for equipment.

Afterward, because of the problem in Poland, the Reagan government announced economic sanctions against the Soviet Union. Caterpillar Tractor and GE (General Electric), which had also concluded agreements for the west Siberian natural gas pipeline project, suspended exports.

The request for the suspension of exports of the Komatsu pipelayers was made to coincide with these measures, and Komatsu awaited the outcome of discussions between the U.S. and Japanese Governments. However, the government took the position that "this export contract has already been concluded. The contract was accompanied by a loan from the Export-Import Bank of Japan and received official government approval." This view was stated to the U.S. Government by Minister of International Trade and Industry Abe. It appears that Komatsu judged from this government attitude that it would be all right to begin shipments for products already contracted. The shipments have been carried out successively since the end of last year. Several more are scheduled to take place in the next few months.

Crude Oil Recovery Agent

Tokyo NIKKEI SANGYO SHIMBUN in Japanese 21 Jan 82 p 14

[Text] Crude Oil Recovery Agent for the Soviet Union; 800 Tons at 500 Million Yen Ordered from Nitto Chemical

Nitto Chemical Industries, together with Mitsubishi Corp, announced on 20 January that it had received orders for 800 tons of chemicals at 500 million yen from the Soviet trade corporation for export and import of chemicals, for use in tertiary recovery of crude oil. The delivery date is June of this year. Nitto Chemical has exported 500 tons of crude oil recovery agents to the Soviet Union each year for the last 3 years. However, this is the first time it has contracted for such a large volume. The company plans to hold a symposium on agents for tertiary recovery of crude oil in the Soviet Union in the middle of February. Next it would like to make exports on the basis of a long-term contract.

With the rise in oil prices, there has been a growing movement throughout the world to recover the crude oil left after drilling in oil-bearing strata. The method of injecting water or gas to extract the oil is known as secondary recovery.

Tertiary recovery is a method in which special chemicals are used to further increase the recovery rate. Nitto Chemical's recovery agent is made from polyacryloamide and is used for tertiary recovery.

According to Nitto Chemical, the Soviet Union has been purchasing 1,000 tons of tertiary recovery agent from Japan annually. Nitto Chemical concluded two contracts beginning 4 years ago and has exported a total of 500 tons each year. This time, it received a request for 1,000 tons annually for the January to June shipment. Based on Nitto's production capacity, a contract was concluded for 800 tons.

Nitto Chemical believes that the Soviets recognized the effectiveness of its product and expanded the volume of purchases. There is also the view that the Soviet Union is moving from the testing stage to the application of tertiary recovery technology, and therefore there is a prospect of even greater Soviet purchases. Taking this opportunity, Nitto Chemical and Mitsubishi Corp are moving ahead with plans to jointly sponsor a symposium in the Soviet Union in the middle of February on the theme of tertiary recovery technology. Nitto Chemical has not yet exported its recovery agent to any countries other than the Soviet Union, but in the future it plans to work ambitiously toward exporting to the United States.

9651
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RECENT ROBOT SALES ACTIVITIES REPORTED

Tokyo SHUKAN TOYO KEIZAI in Japanese 13 Feb 82 pp 32-36

[Article by Fusao Tanaka]

[Text] The completed robots move their arms all around while making low, metallic sounds. The motion is repeated again and again for 100 hours. In the tightly sealed, adjoining room, an aging test (longevity test) has been performed under 50 degree temperature conditions. The robots which passed the test will be sent to their employers and will perform the tasks assigned to them in their plants.

Their skill is certified. Once they are taught a task, they perform thoroughly skilled labor. The quality of their work is high, and they continue night and day. And they are highly reliable.

The mean time between failures (MTBF) of Kawasaki Heavy Industries' Unimate is 2,500 hours--only one malfunction every 2,500 hours. That's one time in half a year, which is twice as good as the Unimate made by America's Unimation Corp.

The robots from the main factory of Toyo Kogyo Co have an amazing 99.97% rate of utilization, experiencing only 3 hours down time (time of malfunction) in 10,000 hours of operation. More and more plants are beginning to use these superior Japanese robots.

It has not been long since the robot boom began. It came to be known by the general public only when the Japan Industrial Robot Association declared 1980 "the beginning of the robot era."

Robots were introduced in Japan in 1967, but no headway could be made for a long time. Kawasaki Heavy Industries, which was the trailblazer of Japan's robot industry, concluded a technical cooperation agreement with the Unimation Corp of the U.S. in 1968, and began domestic production of robots in 1970. Prior to the oil shock, however, they merely sold several dozens a year, and the company was hard pressed by accumulated deficit.

But Kawasaki resumed the road to recovery when spot welding robots, which have become the company's mainstay robots, began to be used. The automobile manufacturers (and related companies), which use 90% of the spot welding robots, began to use them on a full scale in 1975.

Nissan Motor Co., which was most enthusiastic about the introduction of robots into factories, began introducing them in 1968-69 in the very limited role of moving metal between presses; it continued to feel its way until 1971 when it finally succeeded in using robots for spot welding. But even with that, only 4 units were purchased in 1971 and 10 in 1972. "We didn't start introducing them into the plants on a full scale before 1975." (2nd Technical Division Director Nobuya Konishi)

Then, in 1975, 100 units were installed. The total number installed before that time was about 100 units, so it is clear that the number of units for 1975 was large and marked a turning point for robots. By the end of 1981 Nissan had 730 robots, from playback on up. Some 90% of these were spot welding robots.

However, the classic example illustrating the full acceptance of robots by industry is the policy shift to massive introduction of robots by Toyota Motor Co. Toyota had originally taken a severe view of costs, and had not been interested in introduction of robots because the use of cheap human labor was judged to be more profitable.

But Toyota made a 180-degree turn to the massive introduction of robots. Behind this shift was, of course, the increasing necessity of production flexibility in response to diversification of user tastes and more frequent model changes. "We couldn't respond using the old single-purpose machinery. We had to introduce general-purpose robots to do it." (Production Technology Development Division Deputy Director Tadashi Ito) But the fact that "it now pays economically" (Ito) should not be overlooked.

Personnel costs increase each year and material costs have also been rising, but prices of robots are at or below earlier levels. The relative price decrease had it impact on the massive introduction of robots. This was the trigger for the robot boom in manufacturing industry in general. Toyota's big policy change came in 1979; it had brought in 630 units by the end of 1981. If units on order are included, the total becomes 700 robots.

The market for arc welding robots is expanding rapidly--annual growth of about 35% is expected to continue--and the price is now less than 10 million yen per unit. Assuming a six year lease, total payments would be 13.3 million yen. The monthly cost would be about 180,000 yen, which is well below the high wages of a skilled welder.

Because the robot works day and night, savings in personnel costs pay for it in about two years. It is an undreamed of help to smaller companies which have been unable to attract workers because of the shortage of skilled labor. As well as improved quality, moreover, it yields doubled or tripled productivity.

Smaller companies use arc welding robots, which weld long seams, more than the spot welding robots which are used by large manufacturers. There are between 300,000 and 400,000 welders in Japan at present, but it is said that there is a shortage of some 30,000. The smaller companies find it particularly difficult to attract welders, so they are active in the introduction of robots. The more motivated managers are, the more pronounced this trend becomes. They know that the faster robots are introduced, the greater the advantage to the company is.

Reflecting this positive attitude among the users, the robot makers have also entered an era of production increases. In the second half of last year, Yaskawa Electric Mfg. Co. started to receive orders of more than 100 units per month, and Hitachi Ltd. will pass the 100 units production per month mark around April of 1982.

Fujitsu Fanuc has a monthly production of 50 units now, and aims at 100 during this year. Kawasaki has already gone into painting robots and arc welding robots in addition to spot welding robots, and in the spring of 1982 it plans to sell 30 assembly robots per month, for a total monthly production in excess of 100 units.

Osaka Transformer Co. started making arc welding robots in 1979; it is now at the 50 units per month level. Kobe Steel Ltd. has a monthly production of 25 units, primarily painting robots. It delivered 100 units through 1979; this total rose to 200 in 1980 and to 300 (orders) in 1981. Production increases are also planned by Matsushita Electric Industrial Co., Mitsubishi Heavy Industries Ltd., Mitsubishi Electric Industrial Co. and the Toshiba Group.

Of course sales competition among robot manufacturers is fierce. In the high-growth field of arc welding robots, especially, there are numerous manufacturers and competition for market shares is correspondingly fierce. The companies all place priority on market share and are relying on economies of scale, so much so that price cuts of 20 to 30% have become general.

At present it is said that only Kawasaki has shown a profit after subtracting investment in development and facilities. It is questionable whether or not even Yaskawa, which has shown rapid growth in recent years and has been motivated by recovering profits has shown a profit when early development costs are taken into account. That is why the companies are all eager to take advantage of economies of scale.

Robots are not sold as isolated items; it is important that they be integrated with the production line. That is, because production system know-how is included in the sale, the first sale to a large user is the most important. That is why there was such fierce competition to sell robots to Toyota.

The sales competition involves not only the manufacturers, but also the trading companies responsible for sales. Kawasaki monopolizes the field of spot welding, which accounts for more than half the robot market; its sales are now handled by Nissho Iwai Co. Ltd. rather than Tsubakimoto Machinery & Engineering Co., which had obtained the Nissan account. The loss of the sale to Toyota, Japan's largest automobile manufacturer had great impact. It appears that Toyota's subcontractors will be increasingly eager to use robots; competition for those sales will also be fierce.

Robot sales campaigns are now aimed at the smaller companies. A "human wave" sales strategy is necessary for that reason. The use of the function of trading companies in robot sales has accordingly become prominent recently. The trading companies involved are the ones which have an engineering function.

Large users have their own production control know-how, and it is enough to sell them the robots themselves. That is increasingly the trend among automobile manufacturers. But companies which lack that capability have no choice but to rely on those trading companies with an engineering function.

Fujitsu Fanuc is one manufacturer which has made use of these trading companies. It has used Yuasa Corp. and 12 other agents. Recently it has tried to expand and strengthen cooperation with influential machinery trading companies in order to handle a monthly production of 100 units.

In 1979 Yaskawa Electric Mfg. Co., the leading producer of arc welding robots, established Yaskawa Trading Corp. to concentrate on sales of robots. Actual sales have been made through distributors of welding supplies, but it now plans to expand distribution channels by taking advantage of the sales network of Yuasa Corp. And as a result, in September 1981 Yuasa Corp. tried to strengthen its sales force by carefully picking 30 men to serve as machinery salesmen in its national-wide offices.

Kawasaki Heavy Industries has also taken up the attack and strengthened Kawasaki Steel Trading Co. and Kawasaki Heavy Industries Trading Co., its trading companies and agents. This was regarded as necessary for a thorough sales campaign when the users were smaller companies.

Hitachi Ltd. has used Keiyo Engineering Co., which is responsible for software, Hitachi Product Engineering East and Hitachi Product Engineering West to deal with the small users, and has handled the large users itself. It is also using the sales network of Iwata Air Compressor Mfg. Co., with which it has a cooperative relationship, and is building a sales network of its own.

The competition for market shares has begun to spread abroad. Yaskawa, which has long since penetrated the overseas market, has working relationships with performance leader Torsteknik AB of Sweden, and also with GKN-Lincoln of Britain, Arcos SPA. of Italy and Hobart Co. of the U.S. In 1981 it went on to establish cooperative relations with companies like America's FARAD [phonetic] Robot Systems.

Hitachi started with the Automatix Inc. of the U.S. in 1980, and entered a technical agreement with GE in 1981 and sales agreements with Zeppelin, the West German machinery manufacturer, and Martine, the French machinery trading company at the end of that year. Within Europe, it had already formed ties with Lansing Ltd. of England, and is steadily intensifying its strategy of exports to the U.S. and Europe. It exports 100 units per year to Automatix of the U.S. and expects major exports of 400 units for GE in two or three years. Exports to Europe will also expand sharply with new technical cooperation agreements with European companies.

It appears that 1982 will be the year to put full effort into the robot war for Fujitsu Fanuc, too. While continuing to expand its domestic sales network, it has concluded a sales cooperation agreement with Britain's 600 Group, and it is said to be about to sign an agreement with Manurhin S.A. in France. It sells in other parts of Europe through Siemens of West Germany. And in the U.S., an agreement is being negotiated with GM. So far there has been "no comment," but there is a good chance that a joint venture will be established for local production in the U.S.

When the technical cooperation between Kawasaki and Unimation was renegotiated in 1978, it was changed so that Kawasaki could also participate in the U.S. and European territory which had been monopolized by Unimation. One story is that it purchased sales rights with three times the amount that had been paid out for royalties. With that contract in the background, Kawasaki directors flew to Unimation in January 1982 for a strategy session on how the Unimates produced by Kawasaki should be sold in the U.S. and Europe. It will not be long before Japanese-built Unimate robots will make a big push into the U.S. and Europe.

One after another, U.S. and European manufacturers are entering the robot market, as though to resist the Japanese. American electrical machinery and computer companies like IBM, Texas Instruments and GE are expected to t ake part, and European companies like Renault and Volkswagen also plan to engage in foreign sales. Thus, the robot war threatens to escalate outside Japan too.

Competition in development of intelligent robots, which is said to be the next area of concentration, has also become increasingly fierce. Intelligent robots have optical or tactile sensors, and are able to discriminate individual circumstances in performing their work. Accordingly, the work of intelligent robots is complex, and they are being introduced into difficult assembly processes.

The use of intelligent robots will probably increase rapidly. The Japanese robot market will total 290 billion yen in 1985 and 520 billion yen in 1990; the shares held by intelligent robots will increase from 14 percent in 1985 to 23 percent in 1990.

Sensors are the bottleneck in the development of intelligent robots. Research on intelligent robots has been carried out at the Production Technology Laboratory of Hitachi's Yokohama plant, and Matsushita, Mitsubishi Electric and NEC have also begun development. Moreover, Fujitsu has formed a joint development agreement with West Germany's Siemens for the intelligent robot I Series; development is to be completed by 1984. Kawasaki sent technicians to the Connecticut headquarters of Unimation, where joint development of sensors is being pursued.

This competition in development may result in the appearance of a series of assembly robots in the market beginning in 1982. It appears that Hitachi will emphasize robots for its own use, but "because there is external demand, there may be some external sales during 1982." (Managing Director Hiroshi Sonoyama)

Because assembly processes do not involve hazardous conditions like those for welding and painting, robots cannot be introduced easily unless they are quite cheap; the price range will be four or five million yen per unit. At that, the sensors will come as options.

Matsushita, Yaskawa, NEC and others are also interested in research on intelligent robots.

Robots are only one tool of the coming FMS (flexible manufacturing systems and FA (factory automation). FMS and FA will be powerful weapons for victory in enterprise competition, and companies that respond slowly will certainly lose out; this is an area into which each of the industrial groups is putting great effort.

The Matsushita Group started up a Robot Council and Robot Committee in 1981. Fifteen laboratories and 40 working groups take part; they aim at sales of 10 trillion yen after 10 years, at which time 100,000 robots are to be produced.

Hitachi has also brought together 500 people from 5 laboratories and 17 plants to study the introduction of intelligent robots within the Hitachi Group. And within the Toshiba Group, companies like Toshiba Precision Products and Toshiba Machine Co. are developing intelligent robots and promoting FA within the group. Mitsubishi Electric is also creating a system to concentrate that group's strength for development of robots and promotion of FA.

Fujitsu Fanuc has formed a group with Fujitsu Limited and Fujitsu Electric Co. Ltd. and has made up its mind to switch from a concentration on the machine processing field to a broad range which includes fields like production machinery.

Factory Automation, with robots at the center, will concentrate the full energy of groups on large-scale strategy. There are some 150 or 200 companies which make robots; a harsh period which only the fittest will survive has begun.

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DEVELOPMENT IN ROBOT R&D ACTIVITIES REPORTED

Intelligent Assembly Robot

Tokyo NIHON KEIZAI SHIMBUN in Japanese 31 Dec 81 p 7

[Text] Every industrial robot company has begun to concentrate its energies on the development of intelligent robots that can make decisions by seeing and touching objects. Already, welding robots with seeing and touching functions are being produced and put into practical use. In the latter half of 1982, influential makers such as Hitachi, Kawasaki Heavy Industries and Fujitsu Fanuc one after another will put on the market an intelligent assembly robot, a prospective winner. The trend in the industrial world to pursue the further automation of factories and labor-saving through the mass introduction of such robots indicates that the developmental competition in connection with intelligent robots will be further intensified.

Hitachi has recently set up a companywide "robot sectional committee." Robot related engineers from the Central Research Institute of the Production Technology Research Institute and from each plant will participate and promote the development of intelligent robots, etc. First, these robots will be introduced to the production lines within the company; then, they will be sold to other companies after they are fully mastered and standardized. By the end of 1982, Hitachi plans to announce the first presentation of intelligent assembly robots and to solicit orders widely.

Fujitsu Fanuc is developing an "I series" intelligent robot jointly with its business affiliate, West German Siemens. At first, the practical implementation was scheduled for the spring of 1983. However, pressured by the speedup of the development by rival companies, Fujitsu has suddenly pushed up the schedule and will exhibit the first model at the Osaka International Machine Tool Show set for November 1982 and start soliciting orders.

Kawasaki Heavy Industries is affiliated with the world's largest robot maker, Unimation, and is jointly engaged in the development of intelligent robots. Already, the company has produced a practical welding robot which uses a new semiconductor element CCD (charge coupled device), called an electronic eye, but in addition, its strategy is to put on the market an assembly robot with a sense of vision and touch before the end of 1982.

Other leading companies are also in competition to speed up the development of intelligent robots; for example, Matsushita Electric Industrial Company, Mitsubishi Electric Corporation, Nippon Electric Company, Komatsu, and robot speciality maker Dainichi Kiko (main office: Kosai, Yamanashi; president: Toshio Kono; capital: 60 million yen). In 1982, almost all these companies planned to be in the initial stage of development, but several of them are predicted to advance the schedule and put on the market the product which claims to be the forerunner of the intelligent robot.

In Japanese industry, led by the machinery and electronic-electric product industries, there is a broadening move to introduce FMS (flexible manufacturing systems), which produce various products in small quantities efficiently almost without man. The pivot of this system is the intelligent assembly robot, and so demand for it is expected to shoot up in the future. The relative importance of electronic technology increases with the improvement of the intelligence of robots. That allows a wide margin for the large electronic-electric product makers to carry out the developmental competition to advantage, and the opportunity for them to take the initiative in the robot industry in 1982, replacing the machinery makers, is becoming more evident.

IC Assembly Robot

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 14 Jan 82 p 11

[Text] Idea (2-5, Takaida Nishi, Higashi Osaka, Osaka, president: Ko Demura, TEL: 06 (781) 6361) has succeeded in developing a semiconductor assembly robot which can unman four processes--lead soldering, washing, drying and palette insertion--for the manufacture of memory integrated circuits (DIP IC). This invention will become a new manufacturing system, replacing the IC lead soldering process, for which semiconductor plants rely upon outside facilities. In particular, since the American military parts standard MIL will be revised in part, and IC lead soldering will become a requirement starting this fall, inquiries about the robot have already arrived from five large Japanese and American semiconductor makers.

In general, semiconductor production consists of the wafer process and the assembly process. The system developed by Idea realizes the unmanned operation of the latter half of the assembly process, which includes IC lead soldering, washing, drying and palette insertion, using one controller (a built-in 8 bit microcomputer) and two robots.

The present semiconductor assembly entails wire bonding (IC implantation), mold press (resin sealing) and final surface treatment of the IC lead wire. In the present assembly method, the lead is plated in an outside cooperating factory, then the assembled semiconductor is brought back and sent to the final product quality inspection process.

However, this outside consignment of the plating treatment poses problems: 1) difficulty in having a flexible production plan which can accommodate production increases and production adjustment, 2) difficulty in obtaining stable

product quality, 3) the electric properties of the IC may be damaged due to the growth of whisker-like crystals on the lead wire. It is said that the number of semiconductor makers converting to the IC lead soldering method is on the rise.

Already, a partial lead soldering method is being adopted for transistors, glass diodes, resin mold diodes, and SIP-IC (IC for amplification) among semiconductors. However, the memory integrated circuit suitable for computers such as the DIP-IC developed by Idea at this time still relies upon the plating treatment because of the difficulty in automating the soldering process due to the L-shaped leads.

The above system is comprised of a turntable type automatic solder dip (saturation) robot and a rotary type (patent pending) wash-dry robot. The controller is built into the lower part of the automatic solder dip robot. The production capacity is 15,000 hr in terms of a 16 pin IC. After washing and drying the system automatically supplies and inserts IC's into stainless palettes. The company is thinking of charging under 30 million yen as the price of one system, and it plans to produce five systems a month in the plant of the main office starting in February.

In particular, because the MIL standard, which is renowned as the most strict international standard for electronic components, is set for revision to approve only IC's with soldered leads effective next 1 October, every Japanese semiconductor company is hastening to complete the reexamination of the assembly process. Domestic and foreign interest appears to be focusing on the unmanned DIP-IC system completed by Idea.

Incidentally, the company will open the system to the public at the "Internepcon [phonetic] Japan Semiconductor Show '82" to be held at the International Trade Center, Harumi, Tokyo for 4 days starting on the 20th.

Coal Mining Robot

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 15 Jan 82 p 3

[Text] The Ministry of International Trade and Industry has decided to embark upon research and development of mining robots aimed at all-out labor-saving for domestic coal production facilities. In line with this policy, the staff of the Coal Division, the Agency of Natural Resources and Energy, MITI and engineers of the Coal Technology Research Institute and domestic coal-producing companies will hold the first meeting on the 18th to discuss basic administrative and managerial matters in this connection, hoping to initiate concrete activities starting in the next fiscal year. The Japan Industrial Robot Industry Association is also proceeding with a conceptual design for robots to work in a pit. Initiation of serious research on coal mining robots by MITI reinforces a forecast that this conceptual design will be put into practical use in the future.

With the incidence of gas explosions occurring at the Hokutan Yubari Mine as a turning point, research for unmanning of the coal mining pit face has been re-evaluated and taken seriously. At present, domestic coal-producing companies are actively involved in promoting remote-controlled machines in order to minimize the number of workers in the coal pits which use automatically running frames and drum cutters for the heavy equipment coal mining construction method, as a measure of labor-saving at the coal mining pit face. Automation of machinery and labor-saving have reached a considerably advanced stage; however, technology to forecast phenomena which might be related to serious accidents, such as gas explosions and mine explosions, is not adequate. Therefore, MITI decided to commence full-scale research starting in the next fiscal year to eliminate mining casualties by realizing the automation of coal mining sites by robots.

For labor-saving at coal production facilities, a labor-saving meeting is currently scheduled, led by the Coal Mine Mechanization Standardization Committee (chairman Shoji Iki, honorary professor of the University of Tokyo), which is an advisory committee for the Agency of Natural Resources and Energy, consisting of 16 members from the Coal Technology Research Institute and coal mining companies. The meeting, which is to be held on the 18th, will focus on assessing the feasible level of robot automation at Japanese coal production sites and is intended as a technical discussion by about 10 engineers related to coal production. The investigation will be continued until the end of this year, and they are hoping for official research to start in the next fiscal year.

The contents of the research include the pursuit of automation not only at the pit face, but also extensively in the pit, under the priority theme of "Automation and Labor-Saving at Coal Mining Sites." MITI is planning to take the next few years carrying out research on specific development: "For the time being, our task is to automate the machines at the coal pits, but our ultimate goal is the use of robots." For this purpose, first there will be investigation of the applicability to the coal mine of the type of automation presently adopted in automobile and machinery plants. Meanwhile, the research group will be activated as a working group under the Coal Mine Mechanization Standardization Committee.

Speaking of robots in the mine, the Robot Industry Association established a special coal mining pit face safety and automation system evaluation committee last year, and has already been working to formulate a conceptual design. The committee plans to enter into designing coal mining robots for coal mines in the next fiscal year. In the near future, the committee is hoping to receive financial support from MITI and finally to engage in the development of specific robots for the pit. The parties concerned are hopeful that the new working group of MITI will link up with this special committee and move ahead with the development of a more ideal coal mining robot.

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SEMICONDUCTOR R&D OF NTT'S MUSASHINO LABORATORY DESCRIBED

Tokyo SHUKAN TOYO KEIZAI in Japanese 30 Jan 82 pp 84-87

[Article by Kenichi Komabashi: "Semiconductor Industry's Star in the Shadows]

[Text] The world's first 64K RAM (read-in/read-out memory), which is said to be the entry ticket into super-LSI and whose mass production all the computer manufacturers are seeking, was first developed by NTT's [Nihon Telephone and Telegraph Public Corporation] Musashino Telecommunications Research Laboratory (hereafter referred to as Musashino TCRL). Musashino TCRL also beat the rest of the world in test production of the 256K RAM for the next period, which has four times the memory capacity of the 64K.

Of course, these were the fruits of Musashino TCRL's independent research. But in the course of its development, joint research with not only the semiconductor makers -- Nichiden, Hitachi and so on -- but original equipment manufacturers as well were conducted; and this cooperative research served as the foundation from which Musashino TCRL's world foremost technology has greatly influenced many computer manufacturers.

Previous articles have dealt with original equipment manufacturers (commercial firms), but in relation to the Japanese semiconductor industry, Musashino TCRL is the leading figure in advanced technology. It is the behind the scenes "star" in the true sense of the word.

Basic Goal of Musashino TCRL is "Practical Application"

Musashino TCRL was founded in 1948. The (prewar) Communications Ministry, Electric Testing Section, Weak-current Division, in existence since the Meiji Era, branched off and was placed under the Telephone and Telegraph Public Corporation when it was formed in 1952. Prior to that, in 1950, the subsections were gathered at the former site of the Nakashima Aircraft Musashino plant--the present location. In 1971 the Ibaragi Telecommunications Research Laboratory became independent of the substation, and in 1972 the Yokosuka Laboratory was started.

Ibaragi TCRL mainly conducts optical communications R&D; Yokosuka handles data communications, satellite communications and telephones; and Musashino TCRL is in charge of basic research, switchboards and LSI.

The employees of the three laboratories number 3,100 (including 600 office workers). Of this number, approximately 300 are PhD's. The annual budget is currently about 80 billion yen -- 2 percent of the NTT Public Corporation's annual income is guaranteed as the TCRL budget.

In telecommunications, the Bell Research Laboratories (United States)--a subsidiary of AT&T, is the largest in the world, with employees numbering 16,000, and it possesses the foremost technological capability in the world. TCRL from its inception has always considered Bell Laboratories as its model.

But now TCRL has caught up. "In terms of communications technology, we are at the same level." (R&D headquarters chief Yasuo Takahara) In the field of optical communications, TCRL is the world leader. Since about 1976, the tables have been turned, and the number of visitors to TCRL from Bell Research Laboratories has exceeded the number from TCRL visiting the Bell Research facility.

The objective of TCRL from its inception has not been academic research alone, but "application" which would benefit commercial undertakings. On the stone monument near the front gate of Musashino TCRL are inscribed the words that express very well the facility's objective: "Let our goal be to draw from the fount of wisdom and research, and through practical application, offer concrete benefits to the world."

The Japanese telecommunications network was virtually destroyed by the war. After the war, the expedition of reconstruction and development was sought. In the process, Japan learned to live by the creed of utilizing the foremost technology to effect rationalization. When old, established technology is used, the continually moving technological revolution will make the system obsolete in 5 years.

At the point of practical application, the foremost technology must be employed, and in order to prolong the life of that technology, a long-range perspective that affords a clear forecast of the future, and at the same time, accompanying research development focused on practical utilization is needed.

Since NTT is a public corporation/communications research organ which does not have its own manufacturing section, it tackles projects which the manufacturers will not or cannot handle for economic reasons. The technologies thus developed are communicated to the manufacturers through joint research and similar formats, and the desired product is created. That is the TCRL's primary function.

LSI is no exception. TCRL developed LSI for use in the public corporation's telecommunications network -- such as electronic switchboard, data communications, computer and so on.

Number One Position in the World Captured by Super-LSI Project

The occasion which propelled TCRL's technological capability to the world's highest standard was the "Basic Priority Item Designation" initiated under President Yonezawa in 1974. At the time, the technologies believed to have a great impact in the communications field of the future were: digital communications network, optical communications and super-LSI. These were given priority status in research development.

The starting point for selection of super-LSI as a priority project was the rumor that IBM was developing a future system using the epoch-making LSI. It was also rumored that the Bell Research Laboratories were also engaged in super-LSI research. (Both of these rumors, however, were later proven to be false.) In order to keep up with these "supposed" developments, the internal structure of the TCRL organization was strengthened.

The semiconductor research by TCRL dates all the way back to the transistor era (1951). At that time, research on the manufacturing process for mass circuitry was expensive and not very seriously pursued. But being cognizant of the fact that comprehensive research was needed in order to come to grips with super-LSI, the production facility research was initiated, and a test production line was set up within Musashino TCRL.

The objective of the TCRL project for the first period, which began in 1975, was the 64K RAM. At that time the 4K was just beginning to be employed. In the ordinary course of events, the goal should have been the 16K. The circuitry pattern, too, had to be modified from 5-10 micron technology to 2 micron for the 64K. That is to say, it was a bold plan which disregarded the rules of logical progression.

Once started, however, it went smoothly and the electronic beam exposure facility which imprints 2 micron circuitry was completed. In 1977, the world's first 64K RAM was developed.

In 1978, the second stage research began. One of its objectives was the 256K RAM, and the circuitry pattern this time was 1 micron. This was accomplished in 1980. NEC/Toshiba Data Systems Research Laboratory developed it simultaneously. However, none of the overseas manufacturers has published its development officially as yet.

Another goal for the second period was super-LSI logic. In October 1981, development of a super-LSI processor which mounted 20,000 gates, 32 bits, on a 12 millimeter square chip was announced. The same kind of super-LSI had already been announced by Bell Laboratories, Intel and Hewlett-Packard at the International Solid Circuitry Institute meeting in February 1981. Musashino TCRL was chagrined because "the thing itself was ready but we were very cautious and thus the announcement was delayed." (R&D headquarters vice chief Makoto Watanabe)

Headquarters chief Takahara sums up the reason for the remarkable success of the project in the following words: "We just happened to be on target with regard to organization and aim." That is, because of the largeness of the scale of super-LSI and digital communications research, organizations consisting of 500 persons each were formed following a "top down" format, and that worked well. (In the case of optical communications, the "bottom up" format was used because of the need to assemble individual technologies.) That format matched up well with forward-looking objectives such as the 64K.

The researchers' enthusiasm, too, was high. After the successful development of the 64K RAM, the knowledge that they were at the world's top level reinforced the high morale and acted as the generating force for successively producing the most advanced technologies.

Basic Directional Focus Resulted From Joint Research

Shortly after the start of Musashino TCRL's project, the super-LSI Technology Research Union was initiated (1976). Led by MITI (Ministry of International Trade and Industry), which felt a sense of urgency due to the IBM future system rumor, the union was formed around the Industrial Technology Agency's Comprehensive Electronics Technology Research Laboratory, with Hitachi, Fujitsu, Toshiba, and Mitsubishi Electric participating.

Seventy billion yen, extending over a 4 year period, was expended on the super-LSI union. This figure included MITI aid of 30 billion yen. Although this move was later criticized by the U.S. semiconductor industry as a "government and civilian joint effort," NTT Public Corporation supplied a director to the super-LSI union to coordinate the projects in order to avoid overlapping expenditure with the TCRL projects.

The super-LSI union, which was an organization of competing manufacturers, restricted its goals to development of super-LSI manufacturing facilities such as electronic beam exposure equipment and so on in order to produce positive joint research results, and the outcome was highly successful.

In the meantime, the situation was different with TCRL projects. Although Nichiden, Fujitsu and Hitachi were participants (Oki Electric and Mitsubishi Electric strongly desired to be included but were rejected on the ground of difference in technological levels) the main constituent was TCRL, and the three firms were allowed to cooperate in various portions of the project.

For instance, in the case of the 64K RAM, the manufacture of oxidized film of varying degrees of thickness -- 300-100 angstrom range (1 angstrom = $\frac{1}{10,000,000}$ millimeter) -- to see which thickness was appropriate was allotted to the three manufacturers. But now that the test production line has been perfected at the TCRL, the ties with the participating commercial firms have been comparatively weakened.

After all, the respective manufacturer's production lines and knowhow do differ in fine points. They are "similar, yet different." So to force them into uniformity is impossible.

But this does not mean that the TCRL's joint research projects are meaningless. The fact that the manufacturers are willing to participate in joint research is rooted in the possibility that there is a chance to sell, for example, an electronic switchboard using the super-LSI to NTT in the future. In such an event, NTT's mission -- to maintain a reliable electronic communications network -- is given priority. What is needed in order to effect this? The discussion involved in joint research provides the direction that the development will take. That is the important thing.

The Joint Research Liaison Council, at which TCRL and the three aforementioned firms came together, discussed the direction of the development and the basic processing technology. In terms of actual manufacturing method, however, each firm had different aims. and there was no point in debating them; thus, TCRL and the respective manufacturers threw out their individual thinking, and the research was conducted through mutual stimulation and a give-and-take approach.

As a result, "while the super-LSI union benefited the manufacturers in terms of facilities, TCRL's contribution was the processing technology. (headquarters chief Takahara)

Meanwhile, with regard to individual processes, joint research is being carried on with equipment manufacturers as well. For instance, photo register research was conducted with Toyo Soda Manufacturing Co, Ltd. The LSI tester was jointly developed with the Takeda Scientific Research Laboratory. The world's fastest super-LSI tester was created through this cooperation.

Pioneering Role for Translating Possibility into Reality

Semiconductor manufacturers are a proud group. "If there were no TCRL, we could do it on our own". In terms of research funds, the only thing they have received has been test production funds, and there is some thinking that NTT is merely a single element in the market place.

Of course, just because TCRL indicates the direction, there is no assurance that the manufacturers will follow suit. But if TCRL takes the initiative and develops the 64K and the 256K on itw own, it has great impact on the manufacturers that possess a certain degree of LSI technology.

That is to say, even if TCRL's unique technology is of no practical use, if it focuses on the advanced technology as a feasibility study, the objective has been reached almost in full. "Its primary mission is to corroborate the possibility as a pioneer." (headquarters vice chief Watanabe)

Of course, from the perspective of a researcher, in order to pursue advanced technology, he needs to make and test the thing he is developing. This, too, is the backdrop of "TCRL which makes its own..."

Musashino TCRL makes other significant contributions to the semiconductor industry. Aside from the usual academic activities, it has played a great role in joining the electronic communications sector with the semiconductor field. And through joint research, the strength of the semiconductor manufacturers was concentrated and research results that represent Japan as a whole were attained.

Since the 2K, 4K RAM phase, the manufacturers have applied these research results to electronic switchboards en masse, and the technologies have been applied in other sectors as well. Above all, "NTT's strict standards have upgraded the semiconductor's reliability." (Nippon Electric Vice President Junki Ouchi)

Besides joint research, there are other avenues for relaying TCRL's technology to the civilian sector. Nihon Communications Technology (capital: 70 million yen, of which NTT financed 20 million yen), which was established with the objective of transferring TCRL's technology, is the agent handling this transfer.

This firm offers all kinds of technologies developed by TCRL. In the semiconductor field, it has transferred super-LSI mask pattern defect inspection equipment, silicon wafer lifetime measurement method and so on to a certain major manufacturer. It also conducts LSI wafer processing technology education and "three or four firms interested in internal production are taking advantage of the available educational package." (President Yoshikazu Ito)

In the meantime, the formation of a custom order (special order) LSI manufacturing subsidiary (temporarily designated as Nihon Electronic Technology) is being studied. As there is a demand for applying LSI for rather specialized purposes, the idea is to offer TCRL's accumulated software and manufacturing knowhow in readily available, inexpensive packages. The United States already has venture businesses of this kind. TCRL's plan is to respond to both internal and external demand along this line, but there is a problem with funding and there are no concrete plans for starting such an undertaking.

Creative Planning Anticipated in the Future

In order to further strengthen semiconductor R&D, NTT is currently constructing the "Fourth Electronic Communications Research Laboratory" (temporary designation) at Atsugi at a cost of 22.6 billion yen. It is scheduled to open during 1983. The intention is to shift Musashino TCRL's associate sections to a new location. There will be no basic change in scope, but the plan is to emphasize development of such new spheres as the post-silicon, chemical semiconductor and so forth.

With regard to chemical semiconductors, a request for joint research has been made to the Bell Research Laboratories. The next goal in silicon development is a 1M (mega = 10 million) bit RAM. Already, X-ray exposure equipment which constructs an 0.5 micron pattern has been completed. The outlook is that in the future, "16M bit memory maximum can be attained with 0.2 micron circuitry on 1 centimeter square." (Musashino TCRL Mass Circuitry Research Section Chief Toshimasa Suzukki)

Although TCRL holds the world lead in memory, and although in LSI logic, it is domestically the most advanced, it is still a step behind the rest of the world in the latter sector. Memory design is easy for TCRL and processing technology is its specialty. But the design requirement of logic circuitry increases proportionately with the doubling and tripling of gate numbers, and testability must also be considered. Such design difficulties are obstacles. Generally speaking, it is said that "the Japanese lack creativity and thus are inferior in the logical element field."

But headquarters vice chief Watanabe asserts: "In the United States, the semiconductor makers and users are completely separate. The fate depends on the maker planning and manufacturing a salable commodity on the open market. But the growth of Japanese semiconductors was based essentially on a firm's internal need -- from the transistor age to radio, television, IC for pocket-size electric calculator and so on. Therefore the capacity to create innovative products was dulled. It is not a case of inherent lack of ability." "The plan for 32 bits is traveling along the right road."

A certain manufacturing source, too, very enthusiastically claims: "Up to now, our total energy has been focused on catching up, and there was no room for creativity. From now on we will create."

In the meantime, overseas opinion is becoming convinced that open discussion such as the method used in TCRL joint research is better than an independent effort. They are now reflecting that the Japanese formula is superior after all.

TCRL, which possesses world-class brains, will most likely lead the semiconductor industry in the future. But the manufacturers are acquiring considerable real strength and the discrepancy between the two is narrowing. Against this backdrop, TCRL's role in conducting feasibility studies will probably be emphasized and its direct influence will be somewhat eclipsed.

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