CHALLENGES FACING JAPANESE STEEL IN TODAY'S GLOBAL ECONOMY

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I am happy to hear that you have an interest in the steel industry. In the U.S. few articles have appeared in newspapers or magazines about the steel industry in the past decade. In fact, since the U.S. steel industry lost its competitiveness and profitability after the 1982 recession, only a few people have paid attention to the industry. Wall Street has been interested only in the so-called high-tech industries and the best and brightest financial businesses. But I want to remind you that the steel industry is no longer a smokestack industry. It continues to be a very important basic industry, and because it use high technology, it is now a high-tech industry itself.

These days the steel industry is regaining its press value. Numerous anti-dumping and CVD petitions have been filed since 1991. Mini-mill competition has also emerged against integrated mills. Big mills regained their competitiveness through intensive restructuring. And, last year, profitability was restored through economic recovery. Now once again Wall Street pays attention to the industry. Hence U.S. steel makers could obtain financing through public offerings to strengthen their balance sheets. Over $5 billion was raised from the market in the past couple of years. In addition, Japanese steel involvement in the U.S. steel industry has taken the form of joint ventures or equity ownership, investing directly or indirectly over $7 billion since 1984 when the U.S. steel industry needed help in modernizing because of lack of financial resources.

Japanese steel production has surpassed U.S. output since 1982. This shift in steel output leaders occurred against the background of a severe recession in the United States caused by high
inflation, subsequent high interest and strong dollar policies which were extremely damaging to American manufacturing, not only to steel but also to auto production and other areas. The final blow, which made the recession even worse, was rising energy costs fueled by the oil crisis. The loss of American manufacturing competitiveness was followed by a hollowing-out effect as some manufacturers moved off-shore. Since 1982, the U.S. current account has been in deficit.

American steel makers, along with many other traditional heavy industries, faced major challenges and had to undergo severe restructuring. Their workforce has been dramatically reduced with the shutdown of obsolete facilities. Some survived as reconstituted mills. Modernization of processes, especially continuous casting, contributed to productivity and quality, and reduction of white collar office workers cut overhead costs. Over a ten-year period, productivity of the U.S. steel industry has caught up to the world-class level and now may even surpass that of Japanese steel.

In the case of Japanese steel, domestic competition for capacity expansion was the main strategy up until 1980 since we enjoyed steadily increasing domestic demand as well as the opportunity to expand export sales. I believe that if Japanese steel had continued this strategy of expansion, it would face excess capacity overnight when a recession hit, or strong competitors emerged, or the economic environment, such as the foreign currency situation, changed.

In Europe, steel makers sought to solve their problems through joint investment or collaboration, and this is continuing today. But Japanese steel makers never considered such approaches, even at the time of the second oil crisis or during the yen appreciation recession after the Plaza Accord in 1985. Instead, Japanese steel makers made individual efforts to rationalize and to reduce capacity.
Our capacity has been cut from a high of 150 million tons to the current 110 million ton level. The workforce of the top 5 steel makers was reduced from 150,000 in 1985 to 90,000 today. In comparison, the 5 top U.S. integrated mills reduced their workforce from that same 150,000 in 1985 to 77,000 today. We still have a lifetime employment system by which, for example, major steel companies dispatch employees to affiliate companies rather than laying them off. About 30% of total employees work for affiliated companies with some 30-40% of their wages subsidized by the parent companies. This is obviously a heavy burden on Japanese steel companies, although we do not have the added burden of pension or health care costs for retirees as U.S. steel companies have.

Concerning domestic demand trends for Japanese steel, after hitting bottom in 1986, the economy quickly adjusted to the yen recession and started recovering through the so-called bubble economy which reached its peak in 1990. Actually asset inflation seemed to continue and sustain the economic growth. Many in Japan believed the myth that real estate values and stock prices would continue to rise. But it was really only a myth.

When we examine the bubble economy, we find that the balance of asset values (real estate, stock, net fixed asset and financial assets) steadily increased from 1970 to 1988 to about 16 times GDP. There are several reasons: 1) real short-term interest rates (CD 3 month interest - CPI) were kept low, in the range of 4%, 2) the money supply was kept high, always 10% of the growth rate because of the constant increase of household savings to financial institutions, 3) dreams of capital stock gains enabled equity financing and bonds with expected total ROI (including capital gains) at levels equivalent with U.S. and Europe, although the ROI stock was far less than U.S. standards (i.e., less than 1 percent).
It is noteworthy to mention that the accumulated current account surplus of Japan from 1982 through 1993 was $810 billion. But this was not the reason for the bubble economy since the long-term capital balance in the same period was actually minus $690 billion, including about $350 billion in direct investments overseas.

During the bubble economy, Japanese steel enjoyed strong domestic demand. We had a peak of 110 million tons annual rate of crude steel production toward the end of 1991. The sudden collapse of the bubble economy caused domestic demand to fall sharply, and apparent consumption of crude steel fell as much as 15 million tons. We could cover about 5 million tons through the increase of exports due to the economic growth of Asian countries, maintaining an 8% range of import penetration.

Among the current (1994) domestic apparent consumption of 73 million tons, 20% is consumed by indirect exports. In this sense, another round of weak dollars and strong yen and subsequent manufacturing shifts to Asian countries (i.e., the so-called "hollowing out effects") causes concern for Japanese steel. The first round of direct investments of Japanese manufacturing took place in 1986, accelerating investment mostly in the United States and Europe. I do not call this a "hollowing out effect." Only a few direct investments (about 15%) to Asian countries permitted exports back to Japan.

The second round of direct investments of Japanese manufacturing is now taking place, following a strong yen of more than 100 to the U.S. dollar. The objectives of direct investment to Asian countries are marketing to those countries and exporting back to the Japanese market (27%). But a horizontal division of manufacturing is also taking place in intra-Asian trade and diminishing circumvention trade, such as exports to North America. This phenomenon is really
the "hollowing out effect" of Japanese manufacturing. Japanese steel has to follow such changes in the economic environment. Exports of Japanese steel companies to Asian countries (except China) have increased 50% from 8.9 million tons in 1989 to 12.9 million tons in 1994. We are also making efforts to cope with increasing demand in that area by establishing joint ventures with local manufacturers, mostly in the areas of finishing processes such as tinning plates, electrolytic galvanizing and cold rolling sheet products. Such efforts will continue to balance the division of work to avoid damage caused by the "hollowing out effect" to the industry.

As Professor Krugman states in *Foreign Affairs*, "The newly industrializing countries of the Pacific Rim have received a reward of this extraordinary mobilization of resources that is no more than what the most boringly conventional economic theory would lead us to expect. If there is a secret to Asian growth, it is simply deferred gratification, the willingness to sacrifice current satisfaction for future gain. It is, however, perfectly reasonable if growth of East Asia has been primarily input driven, and if the capital piling up there is beginning to yield diminishing returns, the conventional wisdom about an Asian-centered world economy needs some rethinking."

Returning to the subject of the first round of direct investment to the United States, we find that Japanese steel was one of the major investors in the U.S. steel industry, and NKK was one of the pioneers. Why? As you are well aware, the U.S. steel industry has been innovative in protecting itself against imports. Since 1989, and spanning more than two decades, a series of voluntary restraint agreements and trigger price mechanisms were arranged through government intervention. Japanese steel exports to the United States peaked in 1976, and since then have been steadily declining due to competition among emerging competitors and yen appreciation. We have completely changed our export product mix from commodity grades to value-added
niche products which either are not produced or are in short-supply in the market. Recognizing
that the U.S. market will remain the largest market in the world, we perceived that manufacturing
in the local market would be the best solution if we were to remain competitive.

NKK has maintained good relations with several U.S. steel companies through
technological transfer. The U.S. steel industry had difficulty in modernizing equipment and
technology because of problems raising funds due to weak balance sheets. Several U.S. steel
companies sought assistance from Japanese steel not only in technology but also through financial
infusion. Also the steel-intensive auto industry badly needed high quality steel for auto body and
parts. As a whole, we were convinced we could revitalize the industry by further technological
transfers and capital commitment.

Fortunately, Japanese steel was financially healthy at that time and could afford to respond
favorably to the requests. All major Japanese steel companies committed to various types of
participation, some through part ownership of the company, others through joint ventures in
down-stream areas. As a result, our investments are now paying off for the U.S. economy. The
Big 3 U.S. auto companies, which previously lacked quality materials such as coated sheets to
manufacture certain critical parts, now have that supply. Over three and a half million tons of
production capacity for coated sheets has been developed through joint ventures involving Inland,
National, LTV, USS, AK-Steel and Wheeling-Pittsburgh.

While there are no official reports on how much money we provided to U.S. steel-making,
my estimate is that in direct and indirect capital and financial infusion, the amount is probably
more than $7 billion from 1984 to 1993. John Tumazos, a top steel analyst from the leading
brokerage firm of Donaldson, Lufkin and Jenrette, estimates about $3 billion in equity and $7.5
billion in obligations, including mini-mills, which Japanese have assumed. Were it not for those investments in the mid-80's, the U.S. auto industry would have faced a serious shortage of coated sheets in the last two years, when auto production increased sharply.

It would appear that our program was successful. But there has been one major problem. Our investments did not reduce trade frictions. American mills are continuing to use trade law remedies as a major strategy to maintain their domestic markets.

We think it very ironic that despite our collaboration on investments and technical transfer, U.S. mills are vigorously pursuing such a large number of cases, not only again Japan but against virtually all imported steel. When the Voluntary Restraint Agreement expired in March 1992, a number of trade cases were filed covering perhaps 80% of all finished products, including rail, hot and cold rolled sheets, plate, coated sheets, electrical sheets and OCTG. This was done despite the fact that Japanese producers only sold 70% of their allotted quota.

According to one count, 87 suits have been filed. The International Trade Commission usually makes a Preliminary Determination, and it almost always is in favor of the plaintiffs since less stringent criteria is used than for final determinations. After the preliminary review, 59 cases remained. After the final determination, there were 31 positive verdicts. The industry actually won much less than half the cases they filed.

The Japanese steel industry has maintained that American steel's problems are not from imports but from a changed supply and demand structure in the United States, which occurred during the 1990-1992 recession. Fierce competition from new low-cost mills was one development. New technology lowered entry barriers through low capital costs for the capital intensive-steel industry. Another was the emergence of steel producers under Chapter 11
protection and older mills that were reconstituted by entrepreneurs and also had a lower cost structure. Finally, the legacy costs, such as health care and pension expenses for retirees, created a substantial burden for the integrated mills. To quote a Government Affairs Manager from Caterpillar: “It is clear to Caterpillar that the cause of injury to American integrated steel makers is domestic competition, primarily from mini-mills and reconstituted mills.”

To be fair to the big U.S. mills, they have made great efforts to become competitive. But these efforts were essential not to compete with imports but to compete for survival against domestic mini-mills. Over the past ten years of rationalization, man hour per ton production has improved from over 8 hours to just about 5 hours. According to some published reports, this is slightly better than Japan and the major European producers. In terms of employee cost per man-hour, the U.S. industry at about $30 is lower than that of Japanese steel. This has resulted from cost-cutting in the United States and the high appreciation of the yen against the dollar.

Today, the situation is much changed from what it was several years ago. Since 1991, U.S. steel shipments have increased to about 15 million tons and reached close to 94.5 million tons last year. This is a result of an upturn in the U.S. economy, sparked by strong auto, appliances and housing demand.

The Administration’s earlier low-interest policy created a vigorous stock market which found steel equities once again attractive. Since the beginning of 1993, well over $5 billion of new capital was raised by steel producers through equity in the stock market. Today, the industry has returned to profitability, benefiting from strong demand, import protection, its own restructuring, and the weak dollar.

Finished steel production is virtually at 100 percent capacity. In addition, mills have had
to import over 8 million tons of semi-finished steel from all over the world to meet customers' requirements. Prices have increased several times over the past two years and further increases are expected. Everything appears to be rosy for American steel mills. So what are they looking for now? The answer, unfortunately, is more protection.

The GATT agreement, when implemented by the WTO, is estimated to increase the world GDP over the next ten years by 1%, or $230 billion a year, through the elimination of trade barriers and tariffs. But, there were many who did not want the new WTO and others who want to change U.S. trade law so that it will be more restrictive than the GATT philosophy. Naturally, some of these industries are steel and semiconductors. And they have put into U.S. law several provisions which expand the probability of finding imports to be traded unfairly in the U.S.

But thousands of small and medium-sized manufacturers in the United States as well as such large companies as GM and IBM have complained about these provisions because they will hurt them and restrict their choices. Last year, GM told the ITC that it had to pay much higher prices and also found very little off-shore steel available to them because of the trade cases. And in February of this year, GM told the Department of Commerce that it should take into consideration users and consumers of steel in all trade actions. Industrial users, the company said, should be part of the process because they are the ones that suffer.

Another program in steel trade is called the Multilateral Steel Agreement, MSA. Talks have been going on for well over four years. But, thus far, there has been very little progress. The purpose of the MSA was to eliminate subsidies and lower tariffs among major steel producing countries including the United States, Japan, and the European Union.

I can only assume that American steel makers would rather take their chances with
modifying the U.S. trade laws to make them more protective than to go along with the GATT consensus to liberalize trade. Our fear is that this type of protectionist push will proliferate around the world and further diminish the free trade principles of the new WTO.

So, as I see it, the strategies pursued by the major American steel mills have paid off. The first sought collaboration and alliance with Japanese steel makers for new technology and financing, and this is beginning to reap results. At the same time, their restructuring is bringing them closer to competing with the emerging mini-mills. Economic growth and financial policy in the United States have given them, once again, a favorable stock market for equity financing. And finally, they continue to look for trade law remedies as a major strategy in reducing competition from abroad and want U.S. laws to be even tougher.

For the immediate future, the environment looks good for steel in the United States. As long as the Federal Reserve keeps interest rates under 6%, domestic GDP will sustain a growth rate of between 2 and 3%, and this means steel consumption will remain above 100 million tons - which will keep the industry operating close to capacity. Imports will continue to be protected by the new trade laws as well as the weak dollar.

U.S. steel users were helped by large amounts of imported semi-finished steel to be converted to finished steel in the United States last year. But world-wide economic recovery will create less availability of semi-finished steel and this will cause a shortage of steel in the United States this year. However, the mini-mill share will continue to grow, especially in the flat-rolled area. One mill can now produce a few million tons of sheet and others are constructing plants to do likewise. In two years, the minis might control 20% of this lucrative market of flat-rolled products compared to nothing six years ago. Serious efforts will be required to enforce balance
sheets and to achieve competitiveness against mini-mills and other emerging competitors.

Let me turn back to Japan. After the collapse of the bubble economy, the economic structure has changed from a high growth to a low growth economy, real estate prices have fallen, manufacturing has begun to experience a hollowing-out effect, and foreign competition through deregulation and the ever-increasing yen has intensified. Under these circumstances, domestic steel mill shipments sharply declined from 81 million tons in 1990 to 63.5 million tons in 1994. In addition to this decline in production, average domestic prices dropped sharply -- about 15% in the last two years -- to a level even unattractive to NIE’S or Brazilian exporters. In a consequence, the five major Japanese steel companies lost 300 billion yen in 1993, compared to a 270 billion yen profit in 1991. Japanese steel now has no choice but to revise its traditional business customs and to change its management style.

The five major Japanese steel companies have targeted cost reductions totaling 930 billion yen in 3 years from 1994. (NKK’s target is 175 billion yen). Cost reduction measures include: first, reduction of employees eliminating multi-layer management (about 25,000 employees) through a 25% cut back of white collar and 20% cutback of blue collar employees relying on substantial incentives for early retirement and relocation to subsidiaries; second, cut back of capital investment to 30-40% of traditional investment; third, drastic reconsolidation of manufacturing plants; and fourth, reconstruction or readjustment of diversified businesses and more concentration on core businesses. This is the most drastic restructuring experienced in Japan’s post-war history.

While convinced that Japanese steel will once again regain its competitive edge in the world market, I am very concerned about the inevitable cutbacks in R&D spending. Japanese
steel has been a technological leader over the past two decades, spending 2.5% of its sales on R & D compared to 0.5% in the United States. Technological gaps will vanish, and a convergence between the technologies of Japan and elsewhere will emerge.

In this sense, we need continued R&D. In the past, R&D mostly focused on advancement of technology and value addition. However, we now have to focus more on the development of lower-cost processing.

Steel industry R&D is expensive -- about double per R&D researcher than that of other industries (59M yen vs. 26M yen in telecommunications and electronics), and its life cycle is much longer. Also, steel R&D requires processing by large-scale, expensive equipment in a high-temperature environment, which takes substantial capital investments.

Already, Japanese steel is embarking on some remarkable projects. Kawasaki Steel has developed continuous - continuous hot strip rolling, and Sumitomo Metals is now constructing new technology seamless pipe manufacturing with a high cross angle piercing mill. On the rational level, we are developing a Direct Iron Smelting and Reduction process to replace blast furnace and coke oven production. Other steel making processes are being developed to enable effective utilization of scraps and energy saving through the use of arc furnaces. In the mini-mill area, Japanese steel is behind in the thin-slab casting process where Japanese steel has less opportunity to invest in the replacement of existing hot-strip mills.

Clearly, the realization of R&D results is closely related to investment opportunities. Who will be the winner in cokeless iron making, scrap substitution or near net shape melting processes is now uncertain. We are confident that after our current restructuring efforts, Japanese steel will regain its vitality in technical competitiveness, profitability and development of new products to
meet users’ demands.

I will conclude with a few points on trade. First, American steel trade lawyers have made a very good living over the past two decades or more promoting what one top integrated steel executive calls the trade law remedy approach to import competition. Second, while we have no objection to any company filing trade petitions when they feel that a certain country is selling a certain product unfairly, American steel makers claim everyone sells everything unfairly.

I don’t think they really believe this, but that’s what they say and that’s how they file their cases. Japan was named in several suits, along with many others. Some we won in the preliminary stage, others in the final stage. And we also lost some cases. But we believe the process itself is unfair. Our fair shipments suffer for a year or more, and we question the final “unfair” determination. We’re hoping that this will change. Because if it doesn’t, then we will see a continuation of charges and counter-charges throughout the world.

It might be hard for you to believe that while the United States is the largest user of trade laws in the world, it also gets charged with more trade law violations than any other single country. As the expression goes, “He who lives by the sword dies by the sword.”

Basically, my view is - let’s try to get a multilateral steel agreement that’s fair and equitable, especially now that Russia and Ukraine are pushing exports of steel to the United States due to their current excess supply. If the big U.S. mills will not compromise, then the only recourse is to have a strong WTO - and to have it supply impartial judgements of what’s fair and what’s not fair. This would be far better than the unilateral approach of American mills using a trade law which is becoming more and more restrictive and using procedures set up by the Import Administration of the Commerce Department which are biased. These procedures only help those
few mills that may win some of the cases.

Now that steel has become a globalized industry, companies can no longer survive without continued rationalization and competitiveness. Everyone has a chance to invest in steel. Japanese steel invested in the United States and is now investing in Asian countries, and the U.S. steel industry will have more linkages to NAFTA Mexico.

I hope for a true global economy in steel where American and Japanese manufacturers can work together in the fast-growing APEC or elsewhere. I also hope that American steel leaders will recognize the internationalization of their industry so that a global consensus on steel trade can be established to meet the global economy. This would be far more beneficial than the unilateral approaches that have been so common in U.S. trade policy for steel as well as other areas.
U.S. STEEL INDUSTRY LOST ITS PROFITABILITY AFTER THE 1982 RECESSION.

CHART-1: U.S. STEEL INDUSTRY'S INCOME (STEEL SEGMENT)

REMARKS: 1) INCOME BEFORE TAX OF REPORTING COMPANIES TO AISI.
2) EXCL. UNUSUAL OR EXTRAORDINARY ITEMS.
SOURCE: AMERICAN IRON AND STEEL INSTITUTE (AISI)
### Principal Japanese investments in North American steelmaking facilities

<table>
<thead>
<tr>
<th>Venture (founded)</th>
<th>Shareholder (% share)</th>
<th>Type of products</th>
<th>Start-up</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Integrated operations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AK Steel (1994) (formerly Armco Steel Co LP - 1989)</td>
<td>Kawasaki Steel (20), Armco (4) Public (76)</td>
<td>HR, CR, coated sheet (4,800)</td>
<td>Existing operation</td>
</tr>
<tr>
<td>Copperweld Steel Co (1989)</td>
<td>Daido Steel (38), Marubeni (8.4) Itochu (8.4), Okayama (8.4)</td>
<td>Bar, rod (560)</td>
<td>Existing operation</td>
</tr>
<tr>
<td>USS/Kobe (1989)</td>
<td>Kobe Steel (50), USX (50)</td>
<td>High quality bar, tube (2,400)</td>
<td>Existing operation</td>
</tr>
<tr>
<td><strong>Finishing facilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Steel Industries (1984)</td>
<td>Kawasaki Steel (50), CVRD (50)</td>
<td>HR, CR galvanized sheet, pipe and tube (1,800)</td>
<td>Existing operation</td>
</tr>
<tr>
<td>DNN (1990)</td>
<td>Dofasco Steel (50), NKK (40), National Steel (10)</td>
<td>CG sheet (360)</td>
<td>1993</td>
</tr>
<tr>
<td>I/N Tek (1987)</td>
<td>Nippon Steel (40), Inland Steel (60)</td>
<td>CR sheet (1,000)</td>
<td>1990</td>
</tr>
<tr>
<td>UN Kote (1989)</td>
<td>Nippon Steel (50), Inland Steel (50)</td>
<td>HDG sheet (500), EG sheet (400)</td>
<td>1991</td>
</tr>
<tr>
<td>L-S Electro-Galvanizing (1985)</td>
<td>Sumitomo Metal (40), LTV Steel (60)</td>
<td>EG sheet (400)</td>
<td>1986</td>
</tr>
<tr>
<td>L-S II Electro-Galvanizing (1989)</td>
<td>Sumitomo Metal (50), LTV Steel (50)</td>
<td>EG sheet (400)</td>
<td>1991</td>
</tr>
<tr>
<td>Ohio Coating Co (1994)</td>
<td>Wheeling-Pittsburgh (45), Dong Yang Tinplate (45), Nittetsu Shoji America (10)</td>
<td>Tinplate (250)</td>
<td>1996e</td>
</tr>
<tr>
<td>Protec Coating (1990)</td>
<td>Kobe Steel (50), USX (50)</td>
<td>HDG sheet (600)</td>
<td>1993</td>
</tr>
<tr>
<td><strong>Mini-mills</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auburn Steel (1974)</td>
<td>Sumitomo Corp (90), Kyoei Steel (10)</td>
<td>Billet, merchant bar (320), SBQ (320)</td>
<td>1975</td>
</tr>
<tr>
<td>Austeel Lemont (1994)</td>
<td>Auburn Steel (100)</td>
<td>Billet, merchant bar, SBQ, rebar</td>
<td>Existing operation</td>
</tr>
<tr>
<td>Arkansas Steel</td>
<td>Yamato Kogyo (50), Auburn Steel (25), Sumitomo Corp (25)</td>
<td>Tie plate, flat bar, billet</td>
<td>Existing operation</td>
</tr>
<tr>
<td>New CF&amp;I Steel LP (1994)</td>
<td>Oregon Steel (85.6), Nippon Steel (9.52)</td>
<td>Billet, bar, rail, OCTG (850)</td>
<td>Existing operation</td>
</tr>
<tr>
<td>Florida Steel (1992)</td>
<td>Kyoei (100)</td>
<td>Bar, rod (1,560)</td>
<td>Existing operation</td>
</tr>
<tr>
<td>Nucor-Yamato (1987)</td>
<td>Yamato Kogyo (49), Nucor (51)</td>
<td>Sections (600)</td>
<td>1988</td>
</tr>
<tr>
<td>Tamco</td>
<td>Tokyo Steel (100)</td>
<td>Rebar, rod (300)</td>
<td>Existing operation</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cuyahoga Steel &amp; Wire</td>
<td>Nissho Iwai (50), John Quay (50)</td>
<td>Bar (42), wire (18)</td>
<td>Existing operation</td>
</tr>
<tr>
<td>Maruichi American (1975)</td>
<td>Maruichi (100)</td>
<td>Tube/pipe (110)</td>
<td>1976</td>
</tr>
<tr>
<td>Pexco (1992)</td>
<td>Sandvik Steel (70), Sumitomo Metals (30)</td>
<td>Stainless tube/pipe (12)</td>
<td>1993</td>
</tr>
<tr>
<td>Western Tube &amp; Conduit Corp (1964)</td>
<td>Sumitomo Metal (95.2), Sumitomo Corp (1.6), Simkin Bussan (1.6)</td>
<td>ERW (150)</td>
<td>1965</td>
</tr>
<tr>
<td>Omega Tube &amp; Conduit</td>
<td>Western Tube &amp; Conduit (100)</td>
<td>ERW</td>
<td></td>
</tr>
<tr>
<td>Sumiden Wire Products</td>
<td>Sumitomo Electric (80), Sumitomo Corp (20)</td>
<td>PC wire/strand stainless wire</td>
<td>1979 &amp; 1990</td>
</tr>
<tr>
<td>Precision Bar Service Inc (1992)</td>
<td>Sumitomo Corp (65), Ogiso Kogyo (35)</td>
<td>Pealing, grinding, cutting of SBQ</td>
<td>1992</td>
</tr>
</tbody>
</table>

**Note:** Nippon Steel acquired 13% of Inland stock in 1984. Sumitomo Metal bought 7% of LTV stock in 1993.

Key: HR = hot rolled; CR = cold rolled; CG = continuous galvanized; HDG = hot dip galvanized; EG = electrogalvanized; OCTG = oil coated tubular goods; e = estimate.

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JAPANESE STEEL PRODUCTION SURPASSED U.S. OUTPUT IN 1982 AND BEYOND.

(MILLION METRIC TONS)

CHART-2: RAW STEEL PRODUCTION
U.S. Workforce Has Been Dramatically Reduced.

Chart: Number of Steel Employees in U.S.A.

Remark: Employees of Steel Division of AISI Member Companies.
Source: American Iron and Steel Institute (AISI)
U.S. MILLS HAVE DRASTICALLY SHUT DOWN OBSOLETE FACILITIES.

CHART-6: U.S. RAW STEEL CAPACITY AND PRODUCTION

SOURCE: AMERICAN IRON AND STEEL INSTITUTE (AISI)
OBSOLETE FACILITIES OF OPEN HEARTH HS CHARACTERIZED THE OUT-OF-DATE U.S. STEEL INDUSTRY.

CHART: U.S. STEEL PRODUCTION BY TYPE OF FURNACE

SOURCE: AMERICAN IRON AND STEEL INSTITUTE (AISI)
U.S. STEEL FACILITIES OPERATED AT OVER 90% IN 1994 — HIGHEST IN 20 YEARS.

CHART-7: U.S. CAPACITY UTILIZATION OF RAW STEEL PRODUCTION

SOURCE: AMERICAN IRON AND STEEL INSTITUTE (AISI)
CONTINUOUS CASTING RATE LARGELY INCREASED IN U.S. — A TYPICAL INDICATION OF MODERNIZATION.

[UNITED STATES]

(MILLION METRIC TONS)

1985 86 87 88 89 90 91 92 93 94

[JAPAN]

(MILLION METRIC TONS)

1985 86 87 88 89 90 91 92 93 94

CHART-#: CONTINUOUS CASTING RATE IN U.S. AND JAPAN

REMARK: CRUDE STEEL PRODUCTION (LEFT-SCALE)

thereof; CONTINUOUS CASTING (ditto)

CONTINUOUS CASTING RATE (RIGHT-SCALE)
REDUCTION OF WHITE COLLAR OFFICE WORKERS CUT OVERHEAD COSTS.

(Number in thousand)

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<thead>
<tr>
<th>Year</th>
<th>Employees Receiving Salaries</th>
<th>Employees Receiving Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

CHART-4: NUMBER OF STEEL EMPLOYEES IN U.S.A.

REMARK: EMPLOYEES OF STEEL DIVISION OF AISI MEMBER COMPANIES.

SOURCE: AMERICAN IRON AND STEEL INSTITUTE (AISI)
PRODUCTIVITY OF U.S. STEEL INDUSTRY HAS CAUGHT UP TO WORLD CLASS LEVEL.

CHART-1: RAW STEEL TONNES PRODUCED PER STEEL EMPLOYEE

REMARK: AVERAGES OF MAJOR U.S. (14), JAPAN (8) AND EU (15) STEEL MILLS.
SOURCE: PAINE WEBBER, WORLD STEEL DYNAMICS
AND NOW EVEN EQUAL TO THE PRODUCTIVITY OF JAPANESE STEEL.

(Man hours per metric ton)

CHART-6: MAN HOURS PER METRIC TON SHIPPED
SOURCE: PAINE WEBBER, WORLD STEEL DYNAMICS
JAPANESE STEEL COULD ENJOY EVER INCREASING DOMESTIC DEMAND AS WELL AS BIG OPPORTUNITY TO EXPAND EXPORT SALES UP UNTIL 1980.


REMARK: INGOT BASIS
IN EUROPE, STEELMAKERS SOUGHT TO SOLVE THEIR PROBLEMS THROUGH JOINT INVESTMENT OR COLLABORATION.

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRIED. KRUPP (GERMANY)</td>
<td>91.10</td>
<td>KRUPP (SECOND LARGEST IN GERMANY) ACQUIRES 24.9% STAKE OF HOESCH (THIRD LARGEST).</td>
</tr>
<tr>
<td>KRUPP MERGES HOESCH.</td>
<td>92.7</td>
<td></td>
</tr>
<tr>
<td>USINOR-SACILOR (FRANCE)</td>
<td>92.6</td>
<td>CONCLUDE MUTUAL SUPPLY AGREEMENT OF STEEL PRODUCTS. [USINOR-SACILOR PROVIDES HOOGOVENS OF 150 THOUSAND TONS OF PLATE, WHILE HOOGOVENS PROVIDES USINOR-SACILOR OF 150 THOUSAND TONS OF HOT ROLLED COIL ANNUALLY.]</td>
</tr>
<tr>
<td>BRITISH STEEL (UK)</td>
<td>92.8</td>
<td>ESTABLISH AVESTA SHEFFIELD TO MERGE THE STAINLESS STEEL SHEET BUSINESSES OF BOTH COMPANIES.</td>
</tr>
<tr>
<td>ARISTRAIN (SPAIN)</td>
<td>92.10</td>
<td>FORM A JOINT VENTURE TO PRODUCE H-BEAM.</td>
</tr>
<tr>
<td>DLMINE (ITALY)</td>
<td>94.3</td>
<td>ESTABLISH DMV STAINLESS, A NEW HOLDING COMPANY FOR THE THREE-WAY MERGER OF THE SEAMLESS STAINLESS STEEL TUBE BUSINESSES.</td>
</tr>
<tr>
<td>KRUPP HOESCH PURCHASES WHOLE STAKE OF ACCIAI SPECIALE TERNI (AST), ITALIAN MAJOR STAINLESS MILL.</td>
<td>94.9</td>
<td></td>
</tr>
<tr>
<td>THYSSEN (LARGEST IN GERMANY) AND KRUPP HOESCH (SECOND LARGEST) COMBINE OUTPUT OF TINPLATE/ELECTRICAL SHEETS/StAINLESS FLAT PRODUCTS IN NEW SINGLE ENTITIES.</td>
<td>94.10</td>
<td></td>
</tr>
</tbody>
</table>

*CHART-Ω*: ALLIANCES BETWEEN EUROPEAN STEEL MILLS FOR PROFITABILITY

(THOUSANDS)

160
150
140
130
120
110
100
90
80
70

1985 86 87 88 89 90 91 92 93

JAPAN

UNITED STATES

CHART-03: WORKFORCE OF 5 MAJOR MILLS IN JAPAN AND IN U.S.

REMARK: STEEL SEGMENT ONLY
SOURCE: ANNUAL REPORTS / PAINE WEBBER, WORLD STEEL DYNAMICS
Major Japanese steel mills dispatch some of the employees to affiliate companies without laying-off.

**Chart-4: Breakdown of Employees of Japanese Steel Industry**

- **Nationwide**
  - **Total Employees**
  - **Actual Workforce**
  - **Differences: Workforce dispatched to affiliated companies**

**Remarks:**
1) Total of both steel and non-steel segments
2) At the end of September of each year

**Source:** Japan Iron and Steel Federation (JISF)
From 1987 Japan started recovering by so-called 'bubble economy' reaching the peak in 1990.

Chart 8: Japanese steel demand and supply (1969-1990)

Remark: Ingot basis


Remark: Ingot Basis
INDIRECT EXPORTS HAVE BEEN GRADUALLY DECREASING.

CHART-Q: JAPANESE DOMESTIC ORDINARY STEEL CONSUMPTION AND INDIRECT EXPORTS

REMARKS: 1) FISCAL YEAR BASIS (APRIL-MARCH)
2) APPARENT CONSUMPTION OF ORDINARY STEEL \( \text{LEFT-SCALE} \)
thereof; INDIRECT EXPORTS \( \text{ditto} \)
% OF INDIRECT EXPORTS \( \text{RIGHT-SCALE} \)
JAPANESE STEEL EXPORT INCREASED TO ASIAN COUNTRIES.

(MILLION METRIC TONS)

CHART-10: JAPANESE IRON AND STEEL EXPORTS
U.S. STEEL INDUSTRY HAS BEEN INNOVATIVE IN PROTECTING IMPORTS.

CHART 4: HISTORY OF U.S. STEEL IMPORTS AND MECHANISMS FOR PROTECTION

REMARK: STEEL MILL PRODUCTS BASIS
Japanese steel export to U.S. peaked in 1976 and since then it steadily declined.
SERIES OF YEN EVALUATION OVERWHELMED JAPANESE STEEL EXPORTS TO U.S.,

CHART-20: COURSE OF YEN EVALUATION
WE HAVE COMPLETELY CHANGED EXPORT PRODUCTS MIX FROM COMMODITY GRADES TO VALUE ADDED NITCH PRODUCTS.

(THOUSAND NET TONS)

CHART-0: U.S. STEEL IMPORTS FROM JAPAN BY PRODUCTS

SOURCE: AMERICAN IRON AND STEEL INSTITUTE (AISI)
### Major Japanese Automobil Makers' Manufacturing Facilities in North America

<table>
<thead>
<tr>
<th>Company</th>
<th>Name of Operation Facilities</th>
<th>Share (%)</th>
<th>Location</th>
<th>Capacity (cars/year)</th>
<th>Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOYOTA</td>
<td>Toyota Motor Manufacturing U.S.A. Inc.</td>
<td>Toyota 100%</td>
<td>Lexington, KY</td>
<td>236,000 (+ being expanded to 480,000)</td>
<td>1986</td>
</tr>
<tr>
<td></td>
<td>New United Motor Manufacturing Inc.</td>
<td>Toyota 50%, G.M. 50%</td>
<td>Fremont, CA</td>
<td>312,000</td>
<td>1984</td>
</tr>
<tr>
<td></td>
<td>Toyota Motor Manufacturing Canada Inc.</td>
<td>Toyota 100%</td>
<td>Cambridge, Ontario</td>
<td>57,000</td>
<td>1986</td>
</tr>
<tr>
<td>NISSAN</td>
<td>Nissan Motor Manufacturing Corp. U.S.A.</td>
<td>Nissan 100%</td>
<td>Smyrna, TN</td>
<td>440,000</td>
<td>1980</td>
</tr>
<tr>
<td>HONDA</td>
<td>Honda of America Manufacturing, Inc.</td>
<td>Honda 100%</td>
<td>Marysville, OH</td>
<td>527,000</td>
<td>1978</td>
</tr>
<tr>
<td></td>
<td>Honda of Canada Manufacturing, Inc.</td>
<td>Honda 100%</td>
<td>Alliston, Ontario</td>
<td>101,000</td>
<td>1984</td>
</tr>
<tr>
<td>MATSUDA</td>
<td>Auto Alliance International</td>
<td>Matsuda 50%, Ford 50%</td>
<td>Flat Rock, MI</td>
<td>238,000</td>
<td>1985</td>
</tr>
<tr>
<td>MITSUBISHI</td>
<td>Diamond-Star Motors Corp.</td>
<td>Mitsubishi Group 100%</td>
<td>Normal, IL</td>
<td>231,000</td>
<td>1985</td>
</tr>
<tr>
<td>FUJI : ISUZU</td>
<td>Subaru Isuzu Automotive Inc.</td>
<td>Fuji 51%, Isuzu 49%</td>
<td>Lafayette, IN</td>
<td>169,000</td>
<td>1987</td>
</tr>
<tr>
<td>SUZUKI</td>
<td>CAMI Automotive Inc.</td>
<td>Suzuki 50%, G.M. 50%</td>
<td>Ingersoll, Ontario</td>
<td>205,000</td>
<td>1986</td>
</tr>
<tr>
<td>Company</td>
<td>Facilities</td>
<td>Capacity</td>
<td>Began Operation</td>
<td>Joint Venture (Share %)</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------</td>
<td>----------</td>
<td>-----------------</td>
<td>--------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Armco Steel Co. LP</td>
<td>Middletown, OH -- #2EGL</td>
<td>300,000</td>
<td>1991</td>
<td>Armco 50%, Kawasaki Steel 50%</td>
<td></td>
</tr>
<tr>
<td>Bethlehem Steel</td>
<td>Burns Harbor, IN -- CGL</td>
<td>450,000</td>
<td>1993</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sparrows Point, MD -- CGL</td>
<td>260,000</td>
<td>1992</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Walbridge, OH -- EGL</td>
<td>300,000</td>
<td>1993</td>
<td>J/V with Inland Steel</td>
<td></td>
</tr>
<tr>
<td>Double G. Coating</td>
<td>Jackson, MS -- CGL</td>
<td>260,000</td>
<td>1994</td>
<td>Bethlehem 50%, National 50%</td>
<td></td>
</tr>
<tr>
<td>DNN Galvanizing LP</td>
<td>Windsor, Ontario -- CGL</td>
<td>400,000</td>
<td>1993</td>
<td>DOFASCO 50%, NKK40%, NSC10%</td>
<td></td>
</tr>
<tr>
<td>I/N KOTE</td>
<td>New Carlisle, IN -- CGL</td>
<td>500,000</td>
<td>1992</td>
<td>Inland 50%, Nippon Steel 50%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New Carlisle, IN -- EGL</td>
<td>400,000</td>
<td>1992</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L.S. Electro Galvanizing</td>
<td>Cleveland, OH -- EGL</td>
<td>400,000</td>
<td>1986</td>
<td>LTV 60%, Sumitomo Metal 40%</td>
<td></td>
</tr>
<tr>
<td>L.S.II Electro Galvanizing</td>
<td>Columbus, OH -- #2EGL</td>
<td>360,000</td>
<td>1991</td>
<td>LTV 50%, Sumitomo Metal 50%</td>
<td></td>
</tr>
<tr>
<td>National Steel Corp.</td>
<td>Great Lakes, MI -- EGL</td>
<td>400,000</td>
<td>1986</td>
<td>Majority owned by NKK</td>
<td></td>
</tr>
<tr>
<td>PROTEC Coating Co.</td>
<td>Leipzig, OH -- CGL</td>
<td>600,000</td>
<td>1993</td>
<td>USX 50%, Kobe Steel 50%</td>
<td></td>
</tr>
<tr>
<td>Wheeling-Nisshin Inc.</td>
<td>Follansbee, WV -- CGL</td>
<td>270,000</td>
<td>1988</td>
<td>Nisshin 64%, W.P. 36%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Follansbee, WV -- #2CGL</td>
<td>240,000</td>
<td>1993</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z-Line Co.</td>
<td>Hamilton, Ontario -- CGL</td>
<td>350,000</td>
<td>1991</td>
<td>STELCO 60%, Mitsubishi 40%</td>
<td></td>
</tr>
</tbody>
</table>
IN THE LAST TWO YEARS AUTO PRODUCTION HAS INCREASED SHARPLY.

CHART-©: U.S. AUTO PRODUCTION

SOURCE: WARD'S AUTOMOTIVE
AMERICAN STEEL'S PROBLEMS ARE NOT FROM IMPORTS BUT FROM A CHANGED SUPPLY STRUCTURE.

CHART-10: CHANGING SHARE OF THE U.S. MARKET FOR MAJOR MILL STEEL PRODUCTS

REMARK: E = ESTIMATE AS OF MAY, 1994
SOURCE: PAINE WEBBER, WPRLD STEEL DYNAMICS
IN THE PAST 10 YEARS, U. S. MAN HOUR PER TON SHIPPED HAS IMPROVED SHARPLY.

CHART-20 (SAME AS 40): MAN HOURS PER METRIC TON SHIPPED

SOURCE: PAINE WEBBER, WORLD STEEL DYNAMICS
EMPLOYEE COST OF U.S. STEEL INDUSTRY IS LOWER THAN THAT OF JAPANESE.

(US$ PER HOUR)
SINCE 1991, U.S. STEEL SHIPMENTS HAVE INCREASED ABOUT 17 MILLION TONS.


SOURCE: AMERICAN IRON AND STEEL INSTITUTE (AISI)
### Steel Industry Equity Offerings 1992 - 1994

<table>
<thead>
<tr>
<th>Date</th>
<th>Issuer</th>
<th>Security Offered</th>
<th>Amount ($ in millions)</th>
<th>Date</th>
<th>Issuer</th>
<th>Security Offered</th>
<th>Amount ($ in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filed</td>
<td>WCI</td>
<td>Common Stock</td>
<td>160.8</td>
<td>07/22/93</td>
<td>U.S. Steel</td>
<td>Convertible Preferred Stock</td>
<td>135.0</td>
</tr>
<tr>
<td>07/22/93</td>
<td>Wellton Steel</td>
<td>Common Stock</td>
<td>326.3</td>
<td>08/29/93</td>
<td>U.S. Steel</td>
<td>Common Stock (IPO)</td>
<td>58.0</td>
</tr>
<tr>
<td>03/03/94</td>
<td>AK Steel Holding</td>
<td>Common Stock</td>
<td>184.5</td>
<td>09/29/93</td>
<td>Huntington Inc.</td>
<td>Shiloh Industries</td>
<td>36.9</td>
</tr>
<tr>
<td>03/28/94</td>
<td>Rouge Steel</td>
<td>Class A Common Stock</td>
<td>154.0</td>
<td>09/01/93</td>
<td>NorthWestern Steel &amp; Wire</td>
<td>Common Stock (IPO)</td>
<td>36.9</td>
</tr>
<tr>
<td>03/22/94</td>
<td>Cold Metal Products</td>
<td>Common Stock</td>
<td>62.0</td>
<td>09/29/93</td>
<td>Wheeling-Pittsburgh</td>
<td>Common Stock (IPO)</td>
<td>36.9</td>
</tr>
<tr>
<td>03/10/94</td>
<td>Olympic Steel</td>
<td>Common Stock</td>
<td>139.4</td>
<td>02/15/93</td>
<td>Bethlehem Steel</td>
<td>Convertible Preferred Stock</td>
<td>250.0</td>
</tr>
<tr>
<td>03/07/94</td>
<td>Bethlehem Steel</td>
<td>Common Stock</td>
<td>184.5</td>
<td>02/15/93</td>
<td>U.S. Steel</td>
<td>Steel of West Virginia</td>
<td>300.0</td>
</tr>
<tr>
<td>02/23/94</td>
<td>Birmingham Steel</td>
<td>Common Stock</td>
<td>218.4</td>
<td>02/15/93</td>
<td>International Steel</td>
<td>Convertible Preferred Stock</td>
<td>40.0</td>
</tr>
<tr>
<td>02/07/94</td>
<td>Weobo Industries</td>
<td>Common Stock</td>
<td>218.4</td>
<td>02/15/93</td>
<td>Bethlehem Steel</td>
<td>Convertible Preferred Stock</td>
<td>125.0</td>
</tr>
<tr>
<td>01/28/94</td>
<td>U.S. Steel</td>
<td>Common Stock</td>
<td>161.3</td>
<td>02/15/93</td>
<td>U.S. Steel</td>
<td>Common Stock</td>
<td>158.0</td>
</tr>
<tr>
<td>01/28/94</td>
<td>J&amp;L Specialty Steel</td>
<td>Common Stock</td>
<td>218.4</td>
<td>02/15/93</td>
<td>U.S. Steel</td>
<td>Common Stock</td>
<td>54.0</td>
</tr>
<tr>
<td>10/15/93</td>
<td>Huntco Inc.</td>
<td>Class A Common Stock</td>
<td>49.5</td>
<td>02/15/93</td>
<td>U.S. Steel</td>
<td>Common Stock</td>
<td>94.5</td>
</tr>
<tr>
<td>11/11/93</td>
<td>Schnitzer Steel</td>
<td>Class A Common Stock</td>
<td>275.0</td>
<td>02/15/93</td>
<td>Inland Steel Industries</td>
<td>American Depository Shares</td>
<td>10.5</td>
</tr>
<tr>
<td>11/04/93</td>
<td>LTV Corporation</td>
<td>Common Stock</td>
<td>171.9</td>
<td>05/01/93</td>
<td>Quanex Corporation</td>
<td>Common Stock</td>
<td>179.5</td>
</tr>
<tr>
<td>12/23/93</td>
<td>Gibralter Steel</td>
<td>Common Stock</td>
<td>163.0</td>
<td>05/15/93</td>
<td>China Steel</td>
<td>Convertible Exchangeable Preferred Shares</td>
<td>75.0</td>
</tr>
<tr>
<td>10/04/93</td>
<td>Menahan Iron &amp; Steel</td>
<td>American Depository Shares</td>
<td>154.0</td>
<td>04/26/93</td>
<td>Birmingham Steel</td>
<td>Common Stock</td>
<td>136.5</td>
</tr>
<tr>
<td>09/30/93</td>
<td>Acerinox, S.A.</td>
<td>Common Stock</td>
<td>54.0</td>
<td>04/26/93</td>
<td>Birmingham Steel</td>
<td>Common Stock</td>
<td>84.1</td>
</tr>
<tr>
<td>09/29/93</td>
<td>Kentucky Electra Steel</td>
<td>Common Stock</td>
<td>54.0</td>
<td>03/26/93</td>
<td>Birmingham Steel</td>
<td>Common Stock</td>
<td>84.1</td>
</tr>
</tbody>
</table>

**Transactions in bold represent those involving Salomon Brothers as managing underwriter.**

- Issuance amount does not reflect over-allotment provisions.
- Issuance amount for transactions in negotiation reflect prices as of the last day before filing for seasoned companies and mid-point of filing range for IPOs.
TODAY, THE U.S. STEEL INDUSTRY RETURNED TO PROFITABILITY.

CHART-32: STEEL SEGMENTS' INCOME BEFORE TAX OF REPORTING COMPANIES TO AISI (EXCL. UNUSUAL OR EXTRAORDINARY ITEMS)

SOURCE: AMERICAN IRON AND STEEL INSTITUTE (AISI)
The mini-mill share will continue to grow, especially in the flat-rolled area.

(MILLION NET TONS)

CHART-33: NEW FLAT-ROLLING EAF CAPACITY IN U.S.A.

(MILLION METRIC TONS)

DOMESTIC CONSUMPTION OF STEEL PRODUCTS

% CHANGES FROM PREVIOUS YEAR

CHART-34: JAPANESE DOMESTIC DEMAND FOR STEEL PRODUCTS (1990~1994)

REMARK: STEEL PRODUCT BASIS
SOURCE: INTERNATIONAL IRON AND STEEL INSTITUTE
FIVE JAPANESE MAJOR MILLS LOST 300 BILLION YEN IN 1993.

(BILLION YEN)

RECURRING INCOME OF REPORTING COMPANIES TO JISF

FIVE MAJOR INTEGRATED MILLS (EXCL. ONE-TIME ITEMS)

CHART-35: RECURRING INCOME OF REPORTING COMPANIES TO JISF

REMARK: FISCAL YEAR BASIS (APRIL-MARCH)
SOURCE: JAPAN IRON AND STEEL FEDERATION (JISF)
### FIVE MAJOR JAPANESE STEEL MILLS HAVE TARGETED TO ACHIEVE COST REDUCTION.

<table>
<thead>
<tr>
<th>Steel Mill</th>
<th>Announcement</th>
<th>Personnel Cutback</th>
<th>Cost Reduction (Billion Yen)</th>
</tr>
</thead>
</table>
| **NIPPON STEEL** | 93.10.29    | by FY1996  
TOTAL: 27,000 → 20,000 (¥7,000)  
WHITE: 10,000 → 6,000 (¥4,000)  
BLUE: 17,000 → 14,000 (¥3,000) | FY1994-96  
 ¥300 |
| **NKK**          | 93.3.10     | by FY1996  
TOTAL: 22,200 → 19,000 (¥3,200)  
STEEL: 14,700 → 12,100 (¥2,600)  
OTHERS: 7,500 → 6,900 (¥600)  
94.3.15 REVISION: 22,200 → 17,700 (¥4,500)  
WHITE (¥1,400)  
BLUE (¥3,100)  
94.8.9 ANOTHER REVISION: 22,200 → 16,400 (¥5,800) | FY1994-96  
 ¥175 |
| **KAWASAKI STEEL** | 93.4.21    | by FY1996  
TOTAL: 13,600 → 10,700 (¥2,900)  
WHITE: 3,300 → 2,700 (¥600)  
BLUE: 10,300 → 8,000 (¥2,300)  
93.12 REVISION: 13,600 → 10,300 (¥3,300)  
WHITE: 3,300 → 2,300 (¥1,000)  
BLUE: 10,300 → 8,000 (¥2,300)  
94.5.18 ANOTHER REVISION: 13,600 → 8,700 (¥4,900)  
WHITE: 3,300 → 2,300 (¥1,000)  
BLUE: 10,300 → 6,400 (¥3,900) | by FY1995  
 ¥210 |
| **SUMITOMO METAL INDUSTRY** | 93.3.11    | by FY1995  
TOTAL: 19,400 → 16,400 (¥3,000)  
WHITE: 5,400 → 4,600 (¥800)  
BLUE: 14,000 → 11,800 (¥2,200)  
94.3.8 REVISION: 19,400 → 15,100 (¥4,300)  
WHITE: 5,400 → 4,100 (¥1,300)  
BLUE: 14,000 → 11,000 (¥3,000) | by FY1995  
 ¥150  
by FY1995  
ADDITIONALLY  
¥50-100 |
| **KOBE STEEL**   | 93.6.1      | by FY1995  
TOTAL: 20,100 → 18,200 (¥1,900)  
WHITE: 8,500 → 7,900 (¥600)  
BLUE: 11,600 → 10,300 (¥1,300)  
94.3.8 REVISION: 20,100 → 16,300 (¥3,800)  
WHITE: 8,500 → 7,300 (¥1,200)  
BLUE: 11,600 → 9,000 (¥2,600)  
thereof, STEEL DIVISION: 8,800 → 6,700 (¥2,100) | by FY1995  
 ¥100 |

**CHART-36: PROFITABILITY PROGRAMMES OF MAJOR JAPANESE STEEL MILLS**
Japanese steel has been leader of technological advance in recent two decades spending in R&D.

CHART-38: R&D EXPENDITURES AND RATIO TO SALES IN JAPANESE STEEL

REMARK: FISCAL YEAR BASIS (APRIL-MARCH)
SOURCE: JAPANESE AGENCY OF MANAGEMENT AND COORDINATION
CUT BACK OF CAPITAL INVESTMENT TO 30-40% LEVEL OF TRADITIONAL INVESTMENT.

CHART-37: CAPITAL EXPENDITURE

REMARK: JAPAN - FISCAL YEAR BASIS (APRIL-MARCH)
U.S.A. - CALENDER YEAR BASIS