

Successful Licensing Goes 'Full Circle'

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Case history of international licensing effort by steel company

SYNOPSIS

"Full Circle" is a story of a long-term licensing program that started in 1974 when Bethlehem Steel Corporation, an American company — the licensor, licensed its patents and technology applicable to an aluminum-zinc alloy coated sheet steel development to John Lysaght (Australia) Ltd., (JLA), the licensee. Lysaght subsequently became part of BHP Steel International Group. In 1986 it purchased a subsidiary company of the American licensor and certain of the licensor's patents and license contracts as well as specific technology related to aluminum-zinc coated steel.

Between 1975 and 1979 Bethlehem broadened its licensing efforts to include companies in Japan and Europe. Initially based in Bethlehem's Research Department, the licensing team was enlarged to include a marketing representative, potential licensees were identified and visited, and extended negotiations were conducted with several companies. Delayed by problems in the European steel industries, license agreements were finally executed in 1979 with two European steel companies. Although Japanese companies, for several reasons, deferred taking a license, eventually several did.

In 1980 a newly formed Bethlehem subsidiary company, Bethlehem International Engineering Corporation (BIEC), assumed responsibility for the sale of Bethlehem's proprietary information. A new licensing organization was recruited and an agreement was made with JLA to combine for license purposes, its coating technology with Bethlehem's technol-

ogy. Agreements were also made with certain coating equipment manufacturers to offer specialized equipment to licensees under the Bethlehem/JLA developments. Bethlehem agreed to permit licensing in the U.S.A., and a more sophisticated market program was pursued that resulted, by 1987, in the licensing of 18 additional companies throughout the world.

In March of 1986 Bethlehem approached BHP Steel International Group — Coated Products Division, formerly JLA, about acquiring BIEC. This BHP division investigated various aspects of such an arrangement, including its total commitment to Zinalume in Australia and a desire to strongly influence in other countries the continued development and marketing of aluminum-zinc alloy coated sheet steel.

◀ Evaluation ▶

In addition to evaluating whether the revenue stream from BIEC's licenses would be sufficient to adequately cover the investment, a determination had to be made about the absorption of the BIEC organization and whether its key management people would be willing to transfer to BHP.

In August 1986, BHP purchased BIEC from Bethlehem, together with all patents, trademarks, proprietary information and licenses applicable to Bethlehem's aluminum-zinc alloy coated sheet steel developments. It then became necessary for BHP Steel International Group, via BIEC, to license Bethlehem to continue production of aluminum-zinc alloy coated sheet products in the U.S.A. Thus, the former American licensor is now the licensee, and the former Australian licensee is now the licen-

sor. Surely, the arrangements have gone "full circle."

PART I — By Joseph J. O'Keefe

Full circle is the story of a long-term licensing program that started in 1974 when an American company, the licensor, licensed its patents and technology to an Australian company, the licensee. The latter in 1986 purchased a subsidiary company of the American licensor and certain of the licensor's patents and license contracts to other companies as well as specific technology relating to aluminum-zinc coated steel. Thus, the former American licensor is now the licensee, and the former Australian licensee is now the licensor.

The story will be presented to you in three parts. The first part describes the licensing efforts by Bethlehem Steel Corporation, a large U.S. steel company, from 1974 until the end of 1979, when a new subsidiary company, Bethlehem International Engineering Corporation, was formed to promote both the licensing of Bethlehem's patents and technology and also the sale of engineering services.

James L. Forand, President of BIEC International Inc., will discuss the licensing of such patents and technology from 1980 through the present. Noel Doyle, General Man-

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ager of International Business, for BHP Steel International Group's Coated Products Division, formerly John Lysaght (Australia) Ltd. (JLA), will explain the story behind the 1986 BHP acquisition of Bethlehem patents and licenses with other companies as well as specific technology relating to aluminum-zinc coated steel.

BACKGROUND

In 1972, Bethlehem began production of a new 55% aluminum-zinc alloy coated sheet steel product for which patent protection had been obtained in many countries. The product was sold under the trademark "Galvalume sheet" and at a premium price compared with those of other coated sheet steel products being sold at the time. The marketing program emphasized the product's superior characteristics, particularly its corrosion resistance. Sales of the product were moderately successful in 1972 and improved in 1973. In 1974 the Galvalume sheet production line operated at full capacity when there was a surge in world demand for all types of steel products.

Bethlehem initiated a program to license its aluminum-zinc alloy coating developments in 1974. Early that year Bethlehem entered into a disclosure-evaluation agreement with John Lysaght (Australia) Ltd. (JLA) under which, for a fee, Bethlehem:

1. Made a full disclosure of its proprietary information about such developments.
2. Permitted JLA personnel both to visit a line manufacturing Galvalume sheet and to observe the performance of such sheet by visiting locations at which it had been in use for several years.
3. Gave JLA an option to enter into licenses to use Bethlehem's proprietary information and Bethlehem's patents in Australia.

Bethlehem and JLA executed such license agreements in October 1974. Events leading to the license arrangements with JLA are detailed "Licensor View of Agreement," published in *les Nouvelles*, Vol. XIX, No. 4, December 1984.

In 1975, the worldwide demand

for steel products plummeted and orders for Galvalume sheet declined. The decline in sales of Galvalume sheet and other related circumstances caused Bethlehem to reevaluate Galvalume's production, research support and marketing strategy. During the reevaluation period no further licensing efforts were made. As a result of the decline in sales of Galvalume and a question about further commitment to the product, difficulty was anticipated in trying to convince others to license a product to which Bethlehem might not provide full support.

The reevaluation led one year later to a renewed corporate program for Galvalume sheet. Bethlehem's Galvalume facilities were improved, the Research Department's program for the product was expanded, and an interdepartmental Galvalume Project Team (GPT) was formed to support all aspects of the product. The team, a first for Bethlehem, comprised representatives from the Steel Operations, Sales and Research Departments. The GPT was headed by James L. Forand, who had seven years' experience in Bethlehem's Research Department and an additional four years as a market development engineer in the Sales Engineering Division of the Sales Department.

◀ Renew Efforts ▶

These renewed efforts to promote Galvalume sheet included a revised market plan, with a more competitive pricing schedule, and a concentration of sales efforts toward the construction and building industries.

In April 1976, two years after entering into Bethlehem's first licensing agreement, JLA began production of aluminum-zinc alloy coated sheet products at Port Kembla, Australia, and experienced few difficulties. As part of JLA's marketing strategy, one of its subsidiary companies, which sold prefabricated buildings, converted from the use of more than 75,000 tons per year of zinc-coated sheet, i.e. galvanized, to aluminum-zinc alloy coated sheet, which JLA sold

under the trademark "Zincalume." That move, plus a marketing plan of selling Zincalume sheet for the same price as galvanized sheet and a great advertising campaign, resulted in a phenomenal success story. JLA's notable introduction of Zincalume sheet in Australia was the catalyst which certain Bethlehem personnel recognized as an opportunity to initiate further efforts to license the aluminum-zinc alloy coating developments to other companies abroad.

◀ Initial Strategy ▶

In 1974, Bethlehem's initial licensing strategy had been to offer licenses first to companies in the Pacific Basic before looking elsewhere. The first licensing efforts were directed toward companies in Japan, which then possessed the world's second-largest capacity for coated steel sheet products, and toward several other companies, including JLA, that had contacted Bethlehem directly about its developments. The early licensing activities were conducted exclusively by Bethlehem Steel's Research Department personnel, with approval of the Steel Operations and Sales Departments. Steel Operations' participation in the licensing efforts included granting approval for prospective licensees to visit the Galvalume sheet production line, training licensee production personnel, and providing licensees with start-up assistance. The Sales Department's initial participation was limited to providing the Research Department with commercial information and coordinating visits by potential licensees to locations in the U.S.A. where Galvalume sheet had been in use for several years.

The terms of the license agreements with JLA awakened both departments, particularly Sales, to the opportunities that licensing opened. In addition to the license income, JLA's production of aluminum-zinc alloy coated sheet steel products enhanced the reputation of such products not only in the U.S.A. and Australia but also in other countries.

RENEWED LICENSING EFFORTS — 1976

With Bethlehem's renewed support for Galvalume sheet and JLA's very successful introduction of Zin-calume sheet, the time was opportune to renew Bethlehem's licensing efforts. Responsibility for licensing remained with Bethlehem's Research Department and Manager of Patents. It was recognized that a thoroughgoing licensing effort would require support from a team comprising technical, marketing and legal specialists. Accordingly, a licensing team was formed with Dr. John W. Frame, Manager of Product Research, to handle the technical questions, James L. Forand, Galvalume Project Team Manager in Sales Engineering, to handle the commercial questions, and myself to deal with legal matters and negotiations.

The team's first step was to visit the same companies in Japan that had been visited in 1974. On the assumption that a company having only one line would be very reluctant to shut down its single line for modifications to convert to production of a new product, the team selected only those companies that had two galvanizing lines.

In planning Bethlehem's overall licensing strategy, the team proposed to offer nonexclusive licenses rather than an initial disclosure-evaluation arrangement such as Bethlehem had made with JLA. The team believed JLA's very successful production and sale of aluminum-zinc alloy coated sheet products through the use of Bethlehem's licensed technology was sufficient proof of the value of such technology.

The team arranged a schedule to visit 12 Japanese companies. Team members prepared a script and a large number of slides for presentation to the personnel of each company to be visited. For visits to the Japanese companies, we had a Japanese advertising company prepare a presentation with taped Japanese narration and slides in Japanese.

Japan Revisited

In late 1976 the licensing team, in which I represented the legal exper-

tise, Jim Forand the commercial aspects and John Frame the research background, visited Japan and made a licensing presentation to 12 companies. The presentation was well received by all audiences, which we believe were much larger than they would have been had the presentation been made in English. Dealing with questions was slightly more difficult, since in many instances the questions had to be translated from Japanese into English and vice-versa for the answers.

At the completion of our trip the team members were satisfied with their efforts and hoped they had kindled interest on the part of some of the Japanese companies in acquiring a license. The participation by a representative of the Sales Department, i.e. Jim Forand, with his ability to discuss in detail both commercial and technical aspects of Galvalume sheet, strongly contributed to the presentation. In general, the presentation gained solid credibility because of the well-rounded makeup of the team, including, as it did, members covering the legal, research, production and sales aspects of the new coating development.

Europe Next

Prior to its departure to Japan, the team planned a subsequent visit to European galvanizing companies to promote the licensing of Bethlehem's coated-steel developments. Arrangements were made to visit galvanizing companies in Great Britain, Belgium, West Germany, Italy, France, Luxembourg and Sweden. There were no plans to offer an exclusive license or to make an arrangement for a full disclosure of proprietary information.

As in the case of the licensing team to Japan, the European licensing team included Jim Forand and me as well as Angelo R. Borzillo, one of the co-inventors of the aluminum-zinc alloy coating developments, who would deal with technical questions.

The reaction in Europe was positive and also different from that in Japan. Several European companies that expressed interest in a license insisted on an exclusive arrangement and also insisted that

more information was required, notwithstanding JLA's success, in order to make a decision whether to license. Under the circumstances, the team suggested that for a fee Bethlehem might be willing to disclose substantially more information and that Bethlehem certainly would consider an exclusive arrangement under favorable circumstances. In spite of the usual problems associated with travel, working through interpreters, and the normal criticism of a new product by potential licensees, the licensing team considered the trip to have been quite productive.

Licensing — Part-Time Work

Although the licensing team did not return from Japan or Europe with another licensee, its efforts had certainly represented a reasonable commitment to a licensing program, given the fact that team members were still having to devote the majority of their time to the everyday demands of their respective departments. In addition, no separate funds were budgeted for the licensing program. Each team member charged whatever expenses he incurred to his own department, including advertising, translation and international travel expenses.

Although this loose arrangement may have acted as a light restraint on the team's activities, the members' knowledge of the licensing income from JLA, combined with the total cooperation from the executives of the various departments involved, acted as a stimulus to the team's efforts. The other team members and I firmly believed that once several companies were licensed under Bethlehem's developments, top management could be approached for approval for a more permanent licensing program to be funded by income from existing license arrangements.

A Prospect in West Germany

During the team's European visit a West German company, Company A, expressed great interest in a licensing arrangement. The licensing team learned that Company A had recently started a new high-capacity galvanizing line and had

shut down a smaller line that could easily be modified for the production of aluminum-zinc alloy coated steel products. In addition, Company A, like JLA, had a building division, representing a captive market for a considerable tonnage of coated steel products that also could be easily switched to the use of aluminum-zinc alloy coated steel products. The team subsequently learned that several of Company A's personnel had visited Australia earlier in the year and observed JLA's very successful production and sale of Zinalume sheet.

In early December 1976, Company A sent Bethlehem a letter stating a desire to enter into a disclosure-evaluation agreement by the end of the year. However, that optimistic date was not met.

LICENSING EFFORTS — 1977

A draft of a disclosure-evaluation agreement, with appended drafts of patent and technology license agreements, was sent to Company A in January 1977. Negotiations concerning the agreements continued for several months, by mail and telex and with direct negotiations both in the United States and Germany.

Obviously, the negotiations began with many areas of disagreement. For example, Company A's personnel objected to Bethlehem's proposed fee for a disclosure and insisted that an exclusive license for all of Europe was necessary, both to justify the expense of modifying a line to produce a new product and for the marketing expenses of introducing it.

As the team learned later, several of the marketing problems were due to the then existing rigid West German building codes, which had not been revised in many years. On the other hand, taking into consideration certain different circumstances, Bethlehem had no intention of granting a license on more favorable terms than those which had been given to JLA. Bethlehem was also extremely reluctant to grant an exclusive license for any extended period, even if restricted to the European Economic Community. This reluctance was due to

a recognition that a long-term exclusive license would possibly limit the fees to be received by Bethlehem from only a single technology license and also to concern for the regulations then governing exclusive license arrangements in the EEC.

A Good Start

There was no question that both Bethlehem and Company A were interested in working out a mutually satisfactory arrangement, and initial negotiations were successfully completed with the execution of a disclosure-evaluation agreement, effective August 1, 1977. The agreement included an option, to be exercised by a specified date, for Company A to enter into patent and technology license agreements for the production of aluminum-zinc alloy coated sheet. The licenses were to be exclusive within the European Economic Community (EEC) for a limited time.

Bethlehem's Research Department personnel immediately began implementation of the agreement by proceeding with arrangements for Company A personnel to visit the Galvalume sheet production line, and to visit various locations where Galvalume sheet had been in service for several years in order to observe its performance under various atmospheric conditions. Implementation of the disclosure proceeded very smoothly, and Company A obtained the information it required to better evaluate its interest in acquiring further licenses for production purposes.

While dealing with Company A, members of Bethlehem's licensing team were also responding to requests from other companies for additional information about Galvalume sheet and for samples for test purposes. One of the most favorable characteristics of Galvalume sheet is its superior corrosion resistance as compared to galvanized sheet. Unfortunately, companies interested in the product, from a use and/or license viewpoint, were reluctant to accept Bethlehem's claims for the product's long-term corrosion resistance. Each potential licensee wanted to order coils of such sheet for in-house test pur-

poses. Such tests took considerable time and contributed to the delay in licensing other companies under Bethlehem technology.

A Prospect in Sweden

Concurrent with negotiations in West Germany with Company A, Bethlehem was negotiating terms for a disclosure-evaluation agreement with a company outside the EEC. On September 30, 1977, Bethlehem entered into such an agreement with Stora Kopparberg Bergslags AB, a Swedish company that was owned 50% by the Swedish Government. The agreement included an option to be exercised by March 30, 1978, to enter into further patent and technology license with specified royalties and fees and granting Stora Kopparberg certain exclusive rights. A disclosure of Bethlehem's technology to Stora Kopparberg personnel was made shortly after the disclosure to Company A.

At the end of 1977 the licensing team was satisfied with its efforts and optimistic that Bethlehem could have one, and possibly two, additional licensees under its coated sheet developments by mid-1978.

LICENSING EFFORTS — 1978

Unexpected Problems

Early in 1978, Stora Kopparberg and several other Swedish companies entered into an agreement to form a new company to be known as Svenskt Stal Aktiefbolag (SSAB). As a consequence, Stora Kopparberg requested an assignment of the disclosure-evaluation agreement with its exclusive option to SSAB and also requested an extension of the option period. Both requests were granted by Bethlehem to permit management of the new company to develop its own conclusions about entering into a license arrangement. SSAB's new management aggressively sought modifications to terms previously agreed upon by Stora Kopparberg personnel, and the licensing team was faced with the task of educating personnel of the new company about the value of Galvalume sheet and a license arrangement with

Bethlehem.

Within the EEC, Company A's option to enter into production licenses had been extended several times during 1977 and early 1978. Although Bethlehem was reluctant to grant the extensions, there was little alternative since no other identified prospect for a license existed in the EEC. In March 1978 the licensing team surprisingly learned that Company A had been reorganized several months earlier. The new management announced that it would take a more cautious approach toward an arrangement with Bethlehem and insisted upon renegotiating terms to which the former management had agreed.

Shortly thereafter Company A was sold to Company B, another West German company, which requested a further extension of the exclusive option period. Bethlehem reluctantly declined to grant the extension, but Bethlehem and Company B continued discussions directed to a license arrangement. Again the licensing team was faced with the job of educating a new group of people about the advantages of Galvalume sheet and a license arrangement with Bethlehem.

Another Licensing Prospect in the EEC

In May 1978, a second company in the EEC, Phenix Works SA of Belgium, requested revisions to drafts of agreements it had received from Bethlehem after the team's visit to that company in 1976. Revised drafts of agreement were sent to Phenix Works and to Company B in West Germany, and each company was informed that Bethlehem was concurrently negotiating with two companies for an exclusive arrangement. The first company to agree to terms would be Bethlehem's exclusive licensee in the EEC.

License negotiations for the remainder of the year were uneventful. From a licensing viewpoint, 1978 had not been a successful year. However, from the viewpoint of aluminum-zinc alloy coated sheet product sales, the year had been great. Bethlehem was considering modifications to its facilities to increase production of Galvalume sheet in the U.S., and JLA was con-

structing a second line for the production of Zinalume sheet in Australia. The licensing team was convinced that the very successful sales of such products by both companies would have a positive impact on licensing.

LICENSING EFFORTS — 1979

Early in 1979, Bethlehem's negotiators learned of the serious problems that had contributed to the depressed conditions of the European steel industries for several years. In Sweden the strategy for dealing with the problems had been to merge several companies to form one company, SSAB. In the EEC, old steelmaking facilities were closed, some facilities were modernized, and new facilities were built or planned. As part of the rationalization of the Belgium and European iron and steel industries, Phenix Works SA of Belgium and Arbed SA of Luxembourg jointly were to build in Luxembourg and operate a dual-purpose line for the production of coated sheet steel. In April 1979 the licensing team visited Phenix Works for discussions and learned that any further meetings would also include Arbed personnel.

After extended negotiations by mail and person-to-person both in Sweden and the United States, Bethlehem and SSAB finalized a patent and technical information license agreement on July 1, 1979. SSAB was granted an exclusive license under certain Bethlehem patents in Sweden and under Bethlehem's proprietary technical information for use in Sweden, Norway and Finland. The negotiations had been difficult and time consuming, and for the first time Bethlehem negotiators encountered an American attorney on the licensee's negotiating team. SSAB had retained a United States law firm to assist in negotiations.

On October 10, 1979, after extended negotiations both in Europe and in the United States, Bethlehem entered into patent and technology license agreements with Phenix Works SA and Arbed SA, collectively the "licensee." The licensee was to form a new com-

pany that was granted exclusive licenses under certain Bethlehem patents in Luxembourg, the exclusive right to use Bethlehem's proprietary information in Luxembourg, and certain assurances regarding the granting of further licenses in the EEC for a limited period. Company B was promptly notified of the exclusive license arrangement, which precluded, for a time, any further negotiations between Bethlehem and Company B.

During negotiations with all potential licensees each company did its best to develop as much information as possible about the technical aspects of manufacturing and using aluminum-zinc alloy coated sheet steel as well as about experiences of Bethlehem and JLA in marketing such sheet in their respective countries. Apparently, less concern existed about the technical aspects of aluminum-zinc alloy coated sheet than about how it could be marketed.

While each potential European licensee was trying to acquire rights to manufacture a new aluminum-zinc alloy coated sheet product in Europe, each was then producing and marketing zinc-coated sheet, i.e. galvanized. There was concern whether the new product would take away a portion of the market for galvanized sheet or would be sold for different purposes without affecting the sale of galvanized sheet. On the other hand, if a potential licensee failed to take a license from Bethlehem, it was faced with the possibility that a competitor would acquire such a license and dominate the market for coated steel sheet products, at least for certain uses.

◀ Other Concerns ▶

The other concerns of the potential licensees were those encountered with any license negotiations. The potential licensees tried to minimize royalty and fee payments to Bethlehem and sought to acquire an exclusive license for as long as possible and for as large a geographical area as possible. Bethlehem's objectives were just the opposite. Bethlehem's strategy was to obtain as large a reasonable income

as possible from license fees and royalties and to limit any exclusive arrangement as to time and geographic area. Neither Bethlehem nor the licensees got everything that was sought. The parties to the agreements compromised on some terms and stood fast on others, and it must be concluded that the agreements represent terms mutually acceptable to both sides.

At the end of 1979, during a visit to Japan for other purposes, I contacted six companies that made coated steel sheet products in order to encourage them to acquire a license under Bethlehem's patents and technology applicable to aluminum-zinc alloy coated steel. As usual, I was received with the utmost courtesy but left Japan without a firm commitment from any such company.

1979 had been a good year for Bethlehem's licensing efforts. JLA, Bethlehem's first licensee, had begun operation of its second Zinalume sheet line. SSAB had acquired a license for Scandinavia and was proceeding with plans to convert a line to the production of aluminum-zinc alloy coated sheet steel, and Phenix Works and Arbed acquired a license and initiated work on a new dual-purpose coating line to be built in Luxembourg.

CONCLUSION

During the years 1976-1979 Bethlehem's licensing team followed the originally planned strategy of first directing its licensing efforts toward companies in the Pacific Basin and Europe. Activities in North America were deferred to enable Bethlehem to consolidate its market for Galvalume sheet, and little action was taken to generate interest in the license arrangement with companies in countries in which Bethlehem had no patent protection for its Galvalume sheet developments. The team's efforts had been reasonably successful in view of the problems that plagued the world's steel industries during that period.

Negotiations in Europe with three companies had proceeded almost to the step of finalizing agreements when each of the companies encountered problems that resulted in

a reorganization of one, a buy-out of the second and a joint-venture arrangement of the third. In each instance the licensing team had to repeat its efforts to educate new personnel about the advantages of aluminum-zinc alloy coated sheet and the desirability of entering into a license arrangement with Bethlehem. Finally, in 1979, two companies in Europe, one in Sweden and one in Luxembourg, entered into license arrangements on the basis of efforts begun in 1976.

◀ Japan Reluctance ▶

Japan was another story. Despite visits to a dozen Japanese companies in 1974 and 1979 there was only one Japanese company that would be identified as a possible prospect. There were two reasons for the lack of enthusiasm on the part of the Japanese. Since there were no aluminum-zinc alloy coated sheet steel products being sold in Japan, there was no threat to the orderly market for the usual coated steel products. A more important reason was Bethlehem's refusal to grant a Japanese licensee the right to export aluminum-zinc coated sheet products to the United States.

The Galvalume licensing program from its inception in 1973 through 1979 had been directed and coordinated by Research Department personnel, with assistance from Sales personnel. Those from Research most directly involved in the licensing and in handling all technical matters were Dr. John W. Frame and Dr. James B. Horton and Angelo R. Borzillo, the co-inventors of the aluminum-zinc coating developments. As usual, I dealt with legal matters and the negotiations. Those from Sales who were most involved were James L. Forand and Al Potter, who provided the invaluable marketing information necessary to persuade potential licensees of the commercial attractiveness of Galvalume sheet.

Behind the licensing team were Dr. D.J. Blickwede, Vice-President, Research, and Dr. T.B. Winkler, Assistant Vice-President, Research, who had the foresight and deter-

mination to support the developments and licensing, and the executives of the Steel Operations and Sales Departments, who committed the funds required for production and commercialization. For all of us who participated directly in the program it was a lot of work, an extended course in licensing and negotiation, a chance for extensive foreign travel, which wasn't all bad, and an opportunity to work closely with knowledgeable and interesting people with whom we dealt at Bethlehem and other companies.

One person who contributed substantially to the to the program but got little recognition for his efforts was Duffield Hoy, a patent agent who prepared and prosecuted the basic patent applications. Duff did a superb job. Without the patent protection he was able to obtain for the aluminum-zinc alloy coating developments, there would have been no commercialization of Galvalume sheet and no licensing program.

Starting in 1980, the responsibility for Bethlehem's Galvalume licensing program passed to Bethlehem International Engineering Corporation (BIEC). Jim Forand, who was then Vice-President of Marketing for that company, will detail the Galvalume licensing from 1980 to date.

PART II — by James L. Forand

AD HOC LICENSING

My initial exposure to the world of technology licensing came in the mid-1970s. I was the marketing member of Joe O'Keefe's *ad hoc* Galvalume Licensing Committee in Bethlehem Steel. Joe was my mentor on the subject of licensing, and I thank him for sharing his knowledge of the subject with me.

In 1976, our Galvalume Licensing Committee made extended trips to Japan and Western Europe to make presentations to major hot-dip metallic coated sheet steel producers. These visits created a great deal of interest, inasmuch as Bethlehem was joined that year by JLA in producing the product. With two major world steel makers already committed to Galvalume, others had to

take a serious look at this newly emerging technology. The seeds of interest were being sown.

In early 1977, I was appointed Project Manager of Bethlehem's Automotive Project Team in Detroit and reluctantly departed from the world of licensing.

In 1979 Svenskt Stal AB of Sweden and Galvalume, a joint-venture company of Phenix Works of Belgium and Arbed of Luxembourg, became the next licensees of Bethlehem's Galvalume technology and patents.

A MORE FORMAL APPROACH

In October 1979, Bethlehem Steel created a totally owned subsidiary, Bethlehem International Engineering Corporation (BIEC), to manage a contract Bethlehem had secured with the Peoples Republic of China to develop a beneficiation and pelletizing plant at an iron ore body in northeastern China. In December 1979 Bethlehem Steel decided to consolidate the sale of all Bethlehem Intellectual property under BIEC's banner. On January 1, 1980, I was appointed Vice-President of Marketing and Sales of BIEC. Thus, after a three-year hiatus, Joe O'Keefe and I became partners again in the Galvalume licensing exercise.

By early 1980 it was clear to all of us associated with the Galvalume licensing program that we had a marvelous commercial opportunity before us. The perceived cash flow from the sale of Galvalume technology and patent licenses was clearly in the tens of millions of dollars. Three license agreements had already been consummated in Australia, Sweden and Luxembourg. The basic framework was established. A significant up-front fee was charged for the technology transfer, and a running production royalty was charged for the rights to practice the claims of the extant Galvalume patents in the producing country.

THE GALVALUME PACKAGE

One might question the contents of the technology package. On the surface the concept of "Galvalum-

ing" might not appear any different from continuous galvanizing. Galvanizing is itself somewhat of a high-level "art" form. Operator know-how and tricks of the trade have been discussed at length during many international galvanizing conferences.

The Keys to Success

The BIEC/JLA technology package embodies the details of the required operating practices necessary for quality production. An operating manual and a detailed product technology manual are sent to the licensee company after the license agreement is signed. The technology disclosure pays particular attention to the facility equipment mix and design. Several days of consultation are included to review engineering drawings of the facility and to provide assistance in the selection of specific equipment items essential to the production of quality Galvalume. Key manufacturing parameters are isolated, with specific limits to the range of acceptability. Potential problem areas are clearly defined, with suggested changes in operating practice to minimize or eliminate a given product-quality problem.

The technology package provided by BIEC and BHP Steel International Group's Coated Products Division (CPD) contains not only detailed operating practices but also a vast amount of product-testing data. In addition, intrinsic materials engineering properties are disclosed as well as corrosion mechanisms operable under differing atmospheric exposure conditions. The technology package also includes start-up or facility-commissioning assistance. BIEC and/or CPD generally provide two skilled operating personnel to the licensee to assist with start-up operations. Such assistance is available for one month, although thus far most existing licensees have produced prime-quality product on a consistent basis well within a month.

For those licensees with limited or no prior experience in hot-dip metallic coating operations, BIEC and CPD provide an operator training program. This training program, which may last for weeks, is

conducted at a facility that most closely matches the layout and design of the licensee's coating line. The training program is given within the six-month period prior to the commissioning of the licensee's Galvalume line.

Also, BIEC provides ongoing technical support services throughout the life of the license agreement. These services may be in the form of direct trouble-shooting visits to licensee facilities or general technical support through BIEC's InterZAC forum, which will be described later. Now let us turn our focus to selling the Galvalume technology.

MARKETING AND SELLING GALVALUME TECHNOLOGY

The prime target licensees were clearly the fully industrialized nations' steelmakers, which fortunately represented firms located in countries in which Bethlehem held a strong patent position. The secondary targets were the NICs such as Korea and Taiwan. The tertiary targets included steel producers in the LDCs such as Argentina and Chile as well as the Soviet Bloc nations. It was correctly determined that the licensing effort would be much more complicated in the latter two target markets.

Creating the Team

As commercial V-P of BIEC, I set out in early 1980 to recruit a strong technically-oriented, transcultural and multilingual sales-and-marketing team. Within a couple of years this team included Ange Borzillo, Dick Wechsler, Paik Shin, Jim Bramblet, Dieter Bender, Karen Norelli and Jim Connolly. Key support staff members included Shirley Ungiran and Ellen Cohen. Ange Borzillo, one of the co-inventors of Galvalume, was a former supervisor in Bethlehem Steel's Homer Research Laboratories. Dick Wechsler, Paik Shin, Jim Bramblet, Dieter Bender, Karen Norelli and Ellen Cohen all lived abroad for several years of their lives in places such as the Far East, Latin America and Europe. Foreign language fluency and transcultural sensitivity were thus brought to the core of

BIEC's human resources. Jim Connolly was once in charge of all hot-dip metallic coated sheet steel production at Bethlehem's Sparrows Point Plant. He managed the production of Galvalume from the first pilot production runs in the mid-1960s to the commercial start-up in 1972.

Later, in the mid-1980s Klaus Niederstein, former commercial director of Siegner AG of West Germany, and Larry Caldwell, former pilot-line researcher from Bethlehem Steel, were added to the team. However, BIEC had already been borrowing the services of Larry Caldwell, from Bethlehem Steel's Research Department, for all training programs and facility commissionings before his retirement from Bethlehem in 1984.

Thus, a unique blend of engineers and scientists as well as production and commercial specialists were brought together as a team to spread the Galvalume technology globally.

◀ Communicating the Message ▶

Coincident with the staff building exercise was the development of a strong communications mix. BIEC published a nine-language Galvalume licensing brochure. We also published a Galvalume licensing proposal consisting of a detailed description of the many benefits and features of the product, a non-proprietary disclosure of the technology, and a financial model to assist in evaluating the capital investment decision. In other words, this document enabled a prospective licensee to conduct an in-house technical and commercial feasibility study.

These two key documents, along with several other promotional publications, were direct mailed to key influentials in the galvanized sheet steel business throughout the world. BIEC developed a mailing list of approximately 1,500 people who are designated as key technical and commercial deciders in this segment of the steel industry.

The BIEC team conducted a globe-trotting mission of direct sales calls on those target licensees responding to the various direct-mail cam-

paigns. We also promoted the technology at major international trade fairs and steelmaking conferences such as Hannover Messe, Leipziger Messe, ILAFA and SEAISI.

Extending Our Marketing Reach

BIEC also formed two key partnerships, one with Bethlehem's first Galvalume licensee, John Ly-saght (Australia) Ltd., and the other with selected worldwide process-line equipment builders. These partnerships were developed to extend BIEC's global marketing reach.

The first of these partnerships was achieved during 1981-82, when BIEC and JLA entered into joint technology sales and marketing agreements. The essence of these agreements was a pooling of JLA's and BIEC's patented and non-patented technical developments relating to 55% Al-Zn alloy coated sheet steel into one package. Both parties agreed to promote the sales of the technical information and patent packages as well as to deliver the technology to future licensees.

The second series of agreements was consummated with process-line builders, including Davy McKee of the U.K., Sumitomo Heavy Industries of Japan, Production Machinery of the U.S.A., Cockerill Mechanical Industries of Belgium, Clecim of France, and H. Depiereux of West Germany. Under these partnerships, BIEC gained more marketing reach as well as the ability to delivery both the hardware and software in a combined package from the licensor and its partners.

Selling in Your Own Backyard

Another milestone was reached in 1980 when BIEC convinced its then mother-company, Bethlehem Steel, to permit licensing in the U.S.A. This permission was granted on the basis that the 6- to 7-million-ton U.S.A. market for hot-dip metallic coated sheet could not be significantly penetrated by a single producer of Galvalume. However, the issue was not settled without a lot of internal controversy. The Bethlehem Sales Department was reluctant to relinquish its monopoly product position. A hot debate ensued. Finally, after weeks of intense discussion, the decision

was made in March 1980 to allow BIEC to license Galvalume technology in the U.S.A. Once we received this permission, we put a North American Galvalume technology marketing program into full swing along with our overseas program, which was already in high gear. Now let's take a look at the results.

◀ Achieving Results ▶

All of the preceding combined elements of BIEC's Galvalume licensing program led to many successes. These include the following signed contracts:

- 1980 - National Steel Corporation (U.S.A.)
- 1981 - LTV Steel Company (U.S.A.)
- 1981 - US Steel Corporation (U.S.A.)
- 1981 - Dofasco (Canada)
- 1981 - Nippon Steel (Daido) Corporation (Japan)
- 1982 - Sumitomo Metal Industries (Japan)
- 1983 - British Steel Corporation (U.K.)
- 1983 - Union Steel (Korea)
- 1983 - Ensidesa (Spain)
- 1983 - La Magona (Italy)
- 1985 - Hoogovens (Netherlands)
- 1985 - Industrias Monterrey SA (Mexico)
- 1985 - Comesi (Argentina)
- 1985 - Yodogawa Steel Works (Japan)
- 1986 - An Mau Steel Company (Taiwan)
- 1986 - Hoesch Stahl AG (West Germany)
- 1986 - Compania Siderurgica Huachipato (Chile)
- 1987 - Licensintorg (USSR)

Each of these developments, as well as the earlier signings of JLA, SSAB and Phenix-Arbed, is a story unto itself. Moreover, each negotiation leading to a license agreement had one or more unique features. Some took days to consummate once the basic framework was established, while others took months of back and forth, across the oceans, face-to-face negotiations to complete the contract.

Each contract had one or more special features as it was being

developed, but it would be tedious to describe the story behind each and every license agreement. Let me give you at least two brief examples.

Case History with National Steel

Our first meeting with National Steel Corporation was held in early 1980 at their corporate headquarters in downtown Pittsburgh. Joe O'Keefe and I met with Milt Deaner, then Vice-President of National's engineering department. (Milt is currently the President of the American Iron and Steel Institute.)

Milt epitomizes the word "gentleman." Therefore, I was somewhat startled at his opening gambit: "Your patents are worthless, your technology is shallow, and your fees and royalties are too high! Furthermore, you Bethlehem guys fouled up our royalty stream from one of our developments!" The last point was the key to National's frustration in dealing with Bethlehem steel.

Nevertheless, problems were ironed out to the satisfaction of both parties and we ended up selling Bethlehem technology and patents to National. Milt Deaner, as the negotiator for the licensee, was ready to drive a hard bargain. And he did. Today National Steel is one of BIEC's top licensee companies.

Case History with Company X

Galvalume raises the art of hot-dip metallic coating to its highest level; nevertheless, a company that ultimately became a licensee challenged that premise with disastrous results for its own operations. Prior to signing the technology and patent license agreements with BIEC, the company attempted to develop the product on its own. It felt that as a historical producer of millions of tons of continuous hot-dipped galvanized sheet steel it could figure out the operator know-how in a short time. It embarked on an ambitious pilot research and development program and even announced to its customers it would be offering Galvalume to the marketplace within several months.

It turned out to be a costly mistake. After more than one year,

during which time it produced several hundred tons of scrap, it gave up. The cost was in the millions of dollars. The company had to turn to BIEC for both a patent license and a technology license. After the license agreements were signed the technology was transferred. Within a few months the licensee was producing prime product to the delight and satisfaction of its customers.

INTERZAC — POST LICENSING SERVICES

One aspect of BIEC's Galvalume licensing program that may set it apart from most is our InterZac organization and its activities. InterZac is an acronym for international zinc-aluminum (alloy) coaters. The organization was created following the suggestion of the other co-inventor of Galvalume, Dr. Jim Horton (former R&D manager of Bethlehem Steel). Shortly before he retired, Jim suggested that BIEC create this forum to allow all Galvalume licensees to meet on a regular basis to exchange technical information relating to product and process improvements as well as to share data on quality control and product testing. Thus, InterZac serves as a neat mechanism for fulfilling the grant-back clauses of the many Galvalume license agreements.

The first meeting took place in Baltimore, Maryland, in September 1981. Subsequent sessions were held in Sydney, Australia, in February 1983; Chicago, Illinois, September 1984; Maui, Hawaii, February 1986; and London, England, in September 1987. The sessions lasted for one full week, and, since the Chicago conference, included an exchange of marketing information relating to applications engineering.

InterZac has indeed become one of the most prestigious international steelmakers organizations. Representatives at the executive level, researchers, operating people, and marketing officers attend these fully packed week-long conferences. InterZac conferences feature technical papers, commercial presentations, production-facility tours, field inspections and even a

mini-trade show.

The trade show portion of InterZac gives firms that supply equipment, materials and services a marvelous opportunity to meet key influentials of major hot-dip metallic coated sheet steel companies all over the world. Meeting them in one location over several days beats the alternative of traveling tens of thousands of miles to all parts of the globe in serial business trips. BIEC's next sponsored InterZac conference will be Osaka, Japan, in 1989.

InterZac has become such an important element in the success of BIEC's Galvalume licensing program that we formed three action groups to implement technical and commercial programs on a regional basis. Thus, NamZac (North American producers), EuroZac (European producers), and PacZac (Pacific Basin producers) meet on a more frequent basis to carry out joint technical and market-development programs of specific interest to producers in those global regions.

GALVALUME GOALS AND OUTLOOK

Our ultimate objective is to have Galvalume capture 25% of the world's hot-dip metallic coated sheet steel business. We believe this goal will be achieved by the turn of the century and will represent about 8 to 10 million tons of Galvalume production annually. In 1975, only 20,000 tons was being produced annually. Today, worldwide production is between one and a half and two million tons per year. By 1990, when our more recent Galvalume licensees have their production facilities up and running, we should have about four million tons of global capacity available. As a reference point, consider the remarkable success achieved in a nation of 16 million people by BHP's Coated Products Division, formerly John Lysaght (Australia) Ltd., which currently produces and sells approximately one-half million tons per year of Zinalume, their trade name for Galvalume. This tonnage represents about 50% of the hot dip metallic coated sheet

used annually in Australia. Accordingly, since Australia marketing people are about twice as good as marketers anywhere else in the world, our goal of a 25% global penetration is realistic.

In summary, the success of the Galvalume licensing program can partially be measured by the signing of 22 licensees throughout the world, tens of millions of U.S. dollars in cash flow through licensing alone, the more than four billion U.S. dollars in product sales worldwide, the nearly nine million tons produced and sold to date, and the network of key industrial influentials that are making Galvalume the fastest-growing steel mill product in the fiercely contested materials engineering world of the late 1980s.

Now let's turn to the last chapter of this fascinating story, which describes the first licensee company, John Lysaght (Australia) Ltd., now BHP's Coated Products Division, purchasing the licensor company, BIEC, from its owner Bethlehem Steel!

PART III — By Noel M. Doyle

INVITATION

When Walt Williams, then President of Bethlehem Steel Company, contacted us in March 1986 and inquired whether we were interested in acquiring Bethlehem International Engineering Corporation, there was a strong sense of a new business opportunity and a high interest in why a major steel company with renowned research capability and producing a high-quality product would want to sell a profitable subsidiary company integrally involved in the worldwide marketing of intellectual property associated with that product.

In my initial discussion with executives of Bethlehem, I attempted to persuade them to either retain BIEC or form a joint venture for the continuing supervision of this highly successful licensing program.

Bethlehem made it clear that the decision to sell BIEC had been taken to meet its own specific planning requirements, and BHP was being given the first option to buy.

Purchase not only meant the assets and income stream but also the liabilities and commitment for support that goes with such an extensive, worldwide program.

WHY PURCHASE BIEC?

When JLA commenced production of Zinalume in 1976, a bold decision was made to market this new, high-quality product as a total replacement for all the galvanized material sold to sheet steel building component markets in Australia, South East Asia and the Pacific Islands. This vast area represents by far the biggest section of the sheet steel market, and a successful market launch was critical to the reputation and continuing viability of JLA's business. This market approach was completely different from that adopted by Bethlehem in the U.S.A. and demonstrated our total commitment to this new product.

The rapid growth in demand for Zinalume, together with the need to continually improve process techniques and application potential, involved JLA in considerable research activities leading to BIEC inviting JLA to enter into a joint licensing arrangement in 1981/82.

Having created a very high profile for this quality product, with a substantial investment in marketing and research activities, JLA, which is now BHP's Coated Products Division (CPD), is now necessarily committed to maintain a strong influence over its continued development and improvement of the product as well as expanding the range of its applications.

BHP/JLA INTERNATIONAL ACTIVITIES

Since 1965, the JLA and its subsequent identity of BHP-CPD, through its International Business Division, had established 38 downstream manufacturing centers throughout South East Asia, Pacific Islands and the West Coast of the U.S.A. to supply markets with high-quality building components and provide a captive market for Australian Zinalume exports. The division is also actively engaged in

the licensing of patented process technology relating to the Lysaght Mini-Galvanizing line that was specifically developed for the Asian steel roofing and walling market. Six of these licenses have been signed, and plants are operating successfully in Malaysia, Indonesia, Philippines, Thailand and India.

Jim Forand and his team demonstrated an ability to operate an effective, profit-oriented business unit that is very synergistic with the licensing and manufacturing activities of our International Business Division and could significantly contribute to the further growth of BHP's Steel International Group's manufacturing and licensing activities worldwide.

BIEC's excellent relationships with the leading steel companies around the world provide a substantial intangible benefit in developing associations that could lead to the Group becoming more world-competitive and profitable.

We had never previously examined the financial feasibility of acquiring an intellectual property transfer company, and the financial and business analysis of BIEC presented an interesting challenge. Though the extant patents underpinning the licensing program had only three to six years before expiring, we had to be confident that the revenue stream would be sufficient to adequately cover the investment and provide sufficient cash flow for a larger research program directed toward further improvements of the product and process that would enhance the prospect of supporting a continuation of the business in the longer term.

Personnel

Jim Forand's approach to recruiting a strong, technically oriented transcultural and multilingual sales and marketing team has provided an excellent mix of expertise that cannot be found in many companies. We all know that the success of any business is a direct reflection of the capability, direction and leadership of its people, and the post-acquisition business and financial success of BIEC speaks highly for Jim and his competent team.

NEGOTIATIONS FOR PURCHASE

The first and most important element of the negotiation to purchase the business was to be assured that the key management executives were genuinely interested in transferring to the BHP Group. Most of the executives had very long terms of service with Bethlehem, and the proposed move into any new, foreign company would not have been an easy decision. The unanimous and positive approach by the

key executives satisfied me that we only had to get the financial equation correct and cope with legal documentation and would then be able to move forward to complete the purchase.

Although the setting of the price was completed reasonably quickly, we had protracted negotiations regarding responsibility for known and contingent liabilities. It was only our confidence in the product, process and the technical capability of people in BHP and BIEC that enabled our respective attorneys

to develop wording satisfactory to both parties.

The purchase of the BIEC business involved the assignment of 130 worldwide patents together with a number of trademarks.

Having become the owner of the U.S.A. extant patent, we then had to license Bethlehem to continue production in the U.S.A.

As this interesting Galvalume/Zincalume history has shown, we surely have here a classic case of "Full Circle" in technology licensing.

ERRATUM

The author of the article "View of Belgian Compulsory Licensing" was incorrectly identified on Page 78 of the June 1988 issue of *les Nouvelles*. The writer was given as John Debentencourt. The authors should have been identified as Mrs. Mia Declercq and Alain Huyghe, members of the Brussels Bar, Crousse, De Keyser, Hinnekens, Correspondant Office of Baker & McKenzie. The editors regret the error.