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# INTEGRATED ALLIANCE INVESTMENT MODEL FOR SOLUTION OF INVESTMENT GEOTHERMAL IN INDONESIA

By : Helmi Maemozax , ST. MM [1]
PT. Ilham Treda Industri
13 th , Jl. Salemba Tengah Jakarta, 10440, Indonesia
[1] e-mail:maemozax@ilhamtreda.com

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## ABSTRACT

When Indonesia needs more investment in Geothermal, There are many ways to speed up the process on Investment. Several company use the project financing , issuing bonds, corporate financing and many more technique for fund raise the project.

Our presentation describe our *unconventional* technique for investment and applicable in Indonesian geothermal current condition which is needs more fund and investment especially in exploration stages which is much more risk by the Project Developer.

The concept of contract of this investment is based one the alliance contract of expertise in Geothermal exploration which involve many parties of expertise starting from the studies ,drilling activities, power plants , operation and maintenance. Our alliance of expertise with take care all risk in several liability during the part of the split of work and split of responsibility.

The activity of this Alliance investment are proceed the product and service called *Steam Searching Services.* ***S3 concept*** will implemented the looking for steam until we get the suitable and enough steam for first package of electricity.

The attractiveness of this scheme could be share to all parties and stake and sharing the risk to the investor and not invite the risk to the local Indonesian partners. And the success of the field could be shares as a part of the success of another field and become the success of the Indonesian Geothermal.

With this presentation , we do believe that we could be a part of Indonesia Geothermal success story for Financing and Investment side.

## Introduction

Since its launched for acceleration in Geothermal development, there are too much impact for developing the new geothermal field due to some barrier and terms of development. The industry just start development and new more participation to creates the rules and value together.

Geothermal industries is different with Oil industry which is all regulation and industry comes to the maturity stages and has a proven regulation and terms which is agreed by the investor and the government. Oil industry has constribute for long history period and comes to the benefit for all stake holder. One of the agreed tems and condition in Oil and Gas is cost recovery, which could not applicable in Geothermal Industries.

The regulation was change from previous contract, separately , as Steam sales agreement (Stages 1 )and Power Plant agreement ( Stages 2 ). Today , the contract in one packages as a steam sales agreement and power purchase agreement where the investor will serve all stages starting from study, drilling , and power plant investment.

## INTEGRATED ALLIANCE INVESTMENT

Definition:

A **strategic alliance** is an agreement between two or more parties to pursue a set of agreed upon objectives need while remaining independent organizations. This form of cooperation lies between Merger and acquisition and organic growth.

Partners may provide the strategic alliance with resources such as products, servicesmanufacturing capability, project funding, capital equipment, knowledge, expertise, or intellectual property. The alliance is a cooperation or collaboration which aims for a synergy where each partner hopes that the benefits from the alliance will be greater than those from individual efforts. The alliance often involves technology transfer (access to knowledge

and expertise), economic specialization, shared expenses and shared risk.

**Terminology**

Various terms have been used to describe forms of strategic partnering. These include 'international coalitions' (Porter and Fuller, 1986), 'strategic networks' (Jarillo, 1988) and, most commonly, 'strategic alliances'. Definitions are equally varied. An alliance may be seen as the 'joining of forces and resources, for a specified or indefinite period, to achieve a common objective'.

There are seven general areas in which profit can be made from building alliances.[2]

**Typology**

One typology of strategic alliances conceptualizes them als horizontal, vertical or inter-sectoral:[3]

- *Horizontal strategic alliance*: Strategic alliance characterized by the collaboration between two or more firms in the same industry,
- *Vertical strategic alliances*: Strategic alliance characterized by the collaboration between two or more firms along the vertical chain,
- *Intersectoral strategic alliances*: Strategic alliance characterized by the collaboration between two or more firms neither in the same industry nor related through the vertical chain,

Another typology distinguishes between four forms of strategic alliances: joint venture, equity strategic alliance, non-equity strategic alliance, and global strategic alliances:

- *Joint venture* is a strategic alliance in which two or more firms create a legally independent company to share some of their resources and capabilities to develop a competitive advantage.
- *Equity strategic alliance* is an alliance in which two or more firms own different percentages of the company they have formed by combining some of their resources and capabilities to create a competitive advantage.
- *Non-equity strategic alliance* is an alliance in which two or more firms develop a contractual-relationship to share some of their unique resources and capabilities to create a competitive advantage.
- *Global Strategic Alliances* working partnerships between companies (often more than two) across national boundaries and increasingly across industries, sometimes formed between company and a foreign government, or among companies and governments.

**Advantages/Disadvantages**

**Advantages**

The advantages of forming a strategic alliance include:

- Allowing each partner to concentrate on their competitive advantage.
- Learning from partners and developing competencies that may be more widely exploited elsewhere.
- Adequate suitability of the resources and competencies of an organization for it to survive.
- To reduce political risk while entering into a new market.

**Disadvantages**

- Risk of losing control over proprietary information, especially regarding complex transactions requiring extensive coordination and intensive information sharing.
- Coordination difficulties due to informal cooperation settings and highly costly dispute resolution.
- Agency costs: As the benefit of monitoring the alliance's activities effectively is not fully captured by any firm, a free rider problem arises (the free rider problem seems to be less pronounced in settings with multiple strategic alliances due to reputational effects).
- Influence costs because of the absence of a formal hierarchy and administration within the strategic alliance.

**Stages of Alliance Formation**

A typical strategic alliance formation process involves these steps:

- **Strategy Development**: Strategy development involves studying the alliance's feasibility, objectives and rationale, focusing on the major issues and challenges and development of resource strategies for production, technology, and

people. It requires aligning alliance objectives with the overall corporate strategy.

- **Partner Assessment**: Partner assessment involves analyzing a potential partner's strengths and weaknesses, creating strategies for accommodating all partners' management styles, preparing appropriate partner selection criteria, understanding a partner's motives for joining the alliance and addressing resource capability gaps that may exist for a partner.
- **Contract Negotiation**: Contract negotiations involves determining whether all parties have realistic objectives, forming high calibre negotiating teams, defining each partner's contributions and rewards as well as protect any proprietary information, addressing termination clauses, penalties for poor performance, and highlighting the degree to which arbitration procedures are clearly stated and understood.
- **Alliance Operation**: Alliance operations involves addressing senior management's commitment, finding the calibre of resources devoted to the alliance, linking of budgets and resources with strategic priorities, measuring and rewarding alliance performance, and assessing the performance and results of the alliance.
- **Alliance Termination**: Alliance termination involves winding down the alliance, for instance when its objectives have been met or cannot be met, or when a partner adjusts priorities or re-allocates resources elsewhere.

**Strategy Development**

Features common to transactions that are natural candidates for strategic alliances are:

- High impediments to comprehensive contracting resulting in a major degree of contract incompleteness
- High complexity minimizing the auxiliary potential of the body of law for resolving issues not specified in the contract
- Both allies have to invest in relationship-specific assets resulting in potential for mutual hold-ups
- Excessive cost for one party to develop the expertise to carry the transaction itself
- Transitory or uncertain character of market opportunity making a merger or vertical integration unattractive
- Need for a local party in a country due to regulatory environment (as is often the case in China)

While strategic alliances have received a great deal of attention from designer, manufacturer Construction operation and maintenance academic researchers and all practitioners, we know remarkably little about the contracts that govern these alliance relationships. Through an exploration of all Indonesian geothermal study develop geothermal field between a major play Geothermal Industri and fifteen different alliance partners, we seek to understand the structure and purpose of these alliance contracts. The alliance investment we study are designed to spread risk, facilitate the exchange of knowledge, specify roles and responsibilities, and provide a means for resolving disputes during the high risk period. What emerges from this paper is a better understanding of how firms use the Investment to not only protect themselves from potential opportunism, but also to facilitate learning and align the incentives of the parties.

Alliances have been show to be effective mechanisms for transferring knowledge (e.g., Doz, 1996), spreading risk (Hennart, 1988), and learning (Inkpen and Crossan, 1995). While the ability to effectively manage alliances can improve organizational performance (Kale, Singh & Perlmutter 2000; Anand & Khanna 2000a), we still know relatively little about how to do this.

Different Investment have different views of what a Investment should do, and thus what it should contain. The primary theory for analyzing Investment has been transaction cost economics, which has provided a theoretical framework for hundreds of empirical studies of contracting (see Boerner and Macher (2003) for an overview). Transaction cost economics has focused on how Investment are used to provide a safeguard against potential opportunistic behavior by the exchange partner. Thus a contract should clearly define the exchange and provide a mechanism for resolving disputes when they arise (Williamson, 1991). The resource-based view of the firm has not addressed Investment directly, but implies that they should be focused on the overarching goal of facilitate learning and the development of new capabilities. While learning is clearly an important part of many alliances, we don't know how contracts can facilitate learning.

The purpose of this paper is to explore the content of alliance Invesment in order to understand the roles of the various terms and conditions and how they fit together to create a cohesive agreement. We study fifteen alliances entered Services that involved of integrated

drilling program & for development for allwells for drilling eleven different alliance partners. .

We find that alliance Investment serve four distinct purpose that align very well with implications from transaction cost economics and the resource-based view of the firm. First, the Investment are also used to clearly define the roles and responsibilities of each party and how they will interact during the alliance. Second, the contract helps define how disputes will be resolved so that they don't result in early termination of the alliance. Third, the Investment aligns the incentives of the parties. Fourth, we find that contracts are used to specify the types of information and knowledge that will be transferred during the alliance. While part of this transfer is geared towards verification activities, much of it deals with transferring technical knowledge and related capabilities between the firms.

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The alliance investment are lengthy documents, with a median length of over 100 pages. Rather than presenting the agreements chronologically, we have organized the presentation of the contracts according to four key functions the contracts were designed to perform that arose from our reading of the contracts and our discussions with Drilling Company personnel. First, the Investment were designed to clarify the structure of the relationship and how the parties would interact. Second, the Investment outlined the exchange of information, resources and knowledge between the firms. Third, the Investment spread the risk between the two parties so as to align their incentives for the alliance to succeed. Fourth, the Investment defined how disputes would be resolved to minimize the chances of termination in the event of unanticipated disturbances.

*Structure and Administrative Process*

Duration and Continuing Responsibilities

The first striking characteristic of these agreements is the long duration. The initial agreements range from 13 to 36 years, with a median length of 20 years.[1] Moreover, the agreements automatically renew after the specified termination date unless one party informs the other in writing several months in advance of a desire to end the alliance.

Even when terminated, the agreements live on because of continuing obligations of the collaborator. Even if they wish to exit the relationship, collaborators must continue to fulfill certain obligations to Drilling Company such as providing technical information for future development, to facilitate repairs, maintenance of parts, third party liability, and other support for existing engines.

The collaborators also shoulder certain costs related to engine development and improvements. If Drilling Company decides to

[1] Two contracts do not specify a termination date.

develop post-certification[2] extensions to the engine (perhaps for an upgraded or new model aircraft), then, with limited exceptions, the collaborators *must* also participate. By placing themselves in such a position, the collaborators are making long-term strategic commitments. Many interfirm relationships leave open the possibility for involvement in future extensions or alliances, but very few require such involvement. In addition, some of the collaborative agreements also contain a clause granting the collaborator the right to be a part of future engine development programs if they wish.

**Program Management**

An active management role is required due to the complexity and interdependence of the tasks involved in developing, manufacturing, and marketing an aircraft engine and its spare parts. The agreements set up a structure within which decisions can be made. The following clause is typical of the management responsibilities found in the agreements.

> [Drilling Company] shall have the authority and responsibility for overall management of the Program, including but not limited to direction of [Collaborator1]'s efforts in manufacture and support of the Engine and Spare Parts…[Collaborator1] shall appoint experienced and qualified personnel who shall have responsibility for the management of [Collaborator1]'s portion of the Program under the overall direction of [Drilling Company]. (Article 2 of agreement dated 9/21/89 for Engine3)

In addition, the financial arrangements require a significant degree of structure in the relationship. The collaborators are entitled to receive a percentage of the revenues from the engine program in exchange for an up-front payment and a steady supply of parts. The parts they provide, however, must be monitored continually to ensure that they are providing enough parts to cover their share of the manufacturing target cost (which matches their share of the revenues). To ensure that manufacturing costs, shared expenses and revenues are properly accounted for, Drilling Company and the collaborators conduct semi-annual meetings that last for 2 - 3 days, and involve a thorough review of the entire Drilling program.

The nature of the payments to collaborators and their responsibility for certain program expenses requires a detailed accounting structure and significant program administration effort. A collaborator will ultimately receive its program share of revenues collected by Drilling Company from the sale of engines and spare parts, reduced by amounts either deducted by Drilling Company or paid by the collaborator for certain program expenses. These expenses are comprised of a negotiated percentage to cover disproportionate overhead expenses such as marketing, warranty and program administration cost, and the collaborator's program share of other significant program costs such as post certification engineering.

**Adjustments to Drilling Target Cost**

Interestingly, there are no prices to Drilling Company for parts supplied by a collaborator. At the outset of each program, Drilling Company develops a Drilling target cost (DTC) for each part of the engine and for the engine as a whole, based on what Drilling Company estimates it would cost to perform the work internally. As a result of this exercise, each part bears a DTC that is a percentage of the DTC for the engine as a whole.

The principal performance responsibilities of the collaborators are to manufacture and, in some cases, to design and test parts. If a collaborator's contribution comes up short of its percentage share (which has occurred in multiple instances), the Investment may be amended and the collaborator given responsibility to Drilling additional Drilling components. There is an explicit clause in most contracts allowing Drilling Company to modify the parts allocated to the collaborator in order to keep the collaborator's share of the Drilling target cost in line with the collaborator's share of revenues. This allocation issue is very complex. Reallocation of parts to collaborators is generally driven by two factors: technological changes and a transition from sales of engines to spare parts which affects the quantity of various parts that are required.

Technological changes can cause the DTC to change dramatically, and, therefore, the percentage value of any given part in relationship to the whole. Indeed some parts manufactured by collaborators may be eliminated entirely by a technical change or upgrade to an engine. This can result in collaborators having to supply additional parts to satisfy their program share.

[2] Once an engine is certified, it can be sold to aircraft manufacturers. It is often the case that engine manufacturers will start with a certified and commercially successful engine and then develop a follow-on engine that uses many of the same parts and potentially a common architecture.

It is also important to recognize that each collaborator is affected by changes in any aspect of the engine or in the total DTC of an engine, not just by changes to the parts Drilling by that collaborator. A traditional supplier, by Investment, is affected only by changes to parts it provides. For example, consider the case in which a collaborator were producing parts that totaled $60,000 in DTC (per engine) that fulfilled its requirement for 2% of the DTC of $3M for the entire Drilling. If a change occurred that increased the total DTC of the engine to $4M, then the collaborator would need to provide parts equivalent to $80,000 in DTC (an increase of $20,000) in order to maintain its 2% share of the Drilling program. The collaborator would be impacted regardless of whether the changes were to parts they produced.

Alliances also differ from most supply relationships in the treatment of changes to a part produced by the supplier or collaborator. Under a traditional supply Investment, if the buyer directs a change to a part, then the buyer is typically obligated to compensate the supplier for the costs of incorporating the change and for any increased cost of producing the changed part. Under the alliance agreements, by contrast, the collaborators bear their own costs of implementing changes (such as tooling costs), with a few exceptions for extraordinary costs. When a change increases the cost of a collaborator's part, the only potential form of relief is to adjust the DTC of that part so that that collaborator will be required to produce fewer parts in order to meet its percentage production requirements. For example, suppose a collaborator is producing Part A, with an DTC of $40,000, and then a change to Part A increases its DTC to $60,000. The collaborator would have to bear its own cost of implementing the change, whatever the cost. However, Drilling Company would also adjust the DTC of Part A (and of the engine) upward by $20,000, which would reduce the number of parts that the collaborator producing Part A would be required to produce to meet its production obligations. This would affect the DTC of the entire Drilling, so all collaborators would also be affected the change.

**Entry into Alliance Agreements**

Since revenues are tied directly to the commercial success of the overall Drilling program, a firm would not enter an alliance with an Drilling if it lacked confidence in the ultimate success of the Drilling program itself. The decision of what parts to provide is finalized after deciding to work as alliance partners. Each collaborator is not simply supplying a part. Thus, the analysis of the overall future for the Drilling program becomes important because it directly affects the collaborator's compensation. By contrast, a traditional supplier would look primarily at the parts to be provided and whether it could provide the parts at a cost and price that would leave it with a comfortable profit margin.

**Right to Drilling**

The alliance agreements contain rather unique provisions involving who has the right to Drilling components. If Drilling Company has excess in-house capacity, it can, in many cases, pull work back from suppliers in order to avoid excess internal capacity. By Investment, collaborators are obligated to provide the parts that make up their program share for the life of the Drilling and Drilling Company cannot take back Drilling responsibility.

Offset[3]

Another rather unusual clause found in these agreements stipulates that Drilling Company foreign customers do not regard parts provided by the collaborators as satisfying Drilling Company offset obligations. Purchases from a foreign supplier traditionally count against offset obligations. The relationship between Drilling Company and the collaborators is such that the standard buyer-supplier exchange that is required to meet an offset obligation is not regarded as satisfied.

In terms of structure, the Drilling Company collaborative agreements provide interesting examples of the structure of strategic alliances. The interaction between the parties is very structured and contains complex administrative processes designed manage the relationship. These relationships are characterized by a complex system of repeated interactions, monitoring, and continuing obligations.

*Exchange of Information, Knowledge and Competence*

**Breadth of Information Exchanged**

Since Drilling Company has not committed to buy a specified quantity of parts, Drilling Company provides regular long-term engine program forecasts to the collaborators at least once a year in order for them to manage their supply responsibilities. Drilling Company also provides general information regarding the status of the entire engine program to collaborators.

A broad array of other information is also exchanged as part of these arrangements. Since the collaborator's return on investment hinges upon the revenues of the entire Drilling program, Drilling Company has held semi-annual meetings to review the entire Drilling program in order to update the

[3] Offset obligations are agreements entered into by a firm to purchase a specified dollar value of material from suppliers in a particular country.

collaborators on the technical, financial, and sales details. Collaborators are informed of any discounts given to major customers, significant technological changes (to any part of the Drilling), plans for future development of the Drilling platform, and other details that may affect the revenues from the Drilling, or require the collaborators to provide additional funds. Drilling Company also informs collaborators about comparisons between the Drilling Company /collaborator engine and competing Drilling regarding performance, reliability, and maintainability. Collaborators are also informed about upcoming marketing campaigns. Suppliers, by contrast, generally are informed only about issues surrounding the parts that they provide.

**Required Disclosure**

Another element to the information exchange between Drilling Company and their collaborators is that the collaborators are required to inform Drilling Company of any unique part production and product support information they have about the parts they produce that might affect Drilling Company. One such clause reads as follows (from Article 4 of agreement for Engine3 dated 8/9/95):

> With respect to parts produced by [Collaborator4], [Collaborator4] shall provide [Drilling Company] that information uniquely available to [Collaborator4] because of its position as the part producer and needed by [Drilling Company] to fulfill product support requirements (such as but not necessarily limited to the preparation of engine manuals, service tooling, and customer advice).

Thus Drilling Company has access to any new process technologies developed by an alliance partner for Drilling Company parts. This ensures that even if the collaborator has to back out of the engine program, Drilling Company could take over production of the components without a significant reduction in quality. This also has the effect of removing any potential bargaining power from the collaborator, which reduces the risk of hold-up by the collaborator—perhaps in an attempt to argue for a greater share of the engine program.

**Exchange of Personnel**

One factor that speaks clearly to the parties' perceived need to exchange information is the inclusion of a specific clause in most of the collaborative agreements calling for the exchange of personnel. Co-location of personnel is generally required only in close working relationships that require a great deal of communication and are not common in most supplier relationships.

**Exchange of Intellectual Property**

Drilling CXompany provides technical assistance to the collaborators that it would not provide to standard suppliers. Drilling Company frequently provides collaborators with "operation sheets" that detail the step-by-step instructions for Drilling a part. Any improvements to the operation sheets must be shared with Drilling Company. Suppliers are typically expected to develop their own operation sheets. The reason for this differential treatment of collaborators and suppliers is to provide incentives to potential collaborators to enter an alliance with Drilling Company. The collaborators are able to learn from Drilling Company and improve their Drilling processes. Even when assistance with production documentation was not mentioned in the agreement, Drilling Company personnel indicated that such support was still typically provided. The following clause is typical of the support provided by Drilling Company to the collaborators.

> Drilling Company shall cooperate with Collaborator3 and will provide Collaborator3 with updated drawings and relevant specifications and, if available, production documentation for any parts of Drilling Company design and to be manufactured by Collaborator3. (From Article 4.5 of agreement for Engine3)

Drilling company also provides collaborators, but generally not other suppliers, with: (1) technical team assistance at the outset of production, (2) engineering assistance to achieve cost reduction (when requested), and (3) detailed analyses and descriptions justifying changes to all parts.

Another very important aspect of the alliance agreements is that Drilling Company receives a lifetime royalty-free license to any technology used by a collaborator in the fulfillment of its program share. Intellectual property developed by most suppliers is generally not automatically licensed royalty free to the buyer.

**Confidentiality**

Another relevant aspect of the agreements is the scope of the confidentiality clauses. These clauses are very explicit about what may be passed along to third parties (including subcontractors) and what each party must approve before the other can communicate it outside the alliance. Since collaborators have access to financial, marketing, and other strategic information (in addition to detailed technological information), the

confidentiality clauses must be broader than are found in standard supplier relationships.

**Production Assistance**

Some collaborators take longer than anticipated to develop the capacity and capabilities to produce the required parts. If a collaborator is unable to fulfill its production obligations early in the program, then Drilling Company may produce a collaborator's parts for them—at the collaborator's expense. Suppliers, by contrast, cannot have their production obligations fulfilled by Drilling Company.

*Risk Distribution*

The alliance agreements have several features related to the assignment of risk. Risk is shared in proportion to revenue by the collaborators and Drilling Company. Several aspects of the risk distribution merit attention.

**Lack of Specified Prices**

The collaborators are not paid a specified price per unit produced. The collaborator receives no revenue at the time the part is received by Drilling Company. The collaborator agrees to take on a specific percentage of the engine program. For example, if the collaborator takes on 2% of the Drilling program, then it will be assigned to produce parts that represent 2% of the cost of the engine and will receive 2% of the revenue from the sale of all engines and spare parts. A price for each component is not specified in the agreements. In lieu of a price, the parties agree on the estimated Drilling target cost (DTC) for each component and for an entire engine. At the time the agreement is signed, the collaborator does not know how much revenue it will receive in exchange for fulfilling its contractual obligations. The collaborator also does not know exactly how much maintaining its program share will cost (i.e. cost to manufacture parts to meet their program share and reimburse Drilling Company for overhead and other expenses). The financial structure of the collaborative agreements is such that the focus of the parties is entirely on the distribution of revenue upon the sale of an Drilling or spare part, rather than on prices of components supplied.

The collaborator is not paid until an engine or spare part is sold. Unlike standard supplier contracts, the collaborator is not paid within a standard number of days from delivery of the parts to Drilling Company. Revenue payments to the collaborator do not occur, until Drilling Company has sold the assembled product to its customer *and* has received payment. This links the revenue stream of the collaborator directly to the revenue stream of Drilling Company. This arrangement serves to distribute the risks faced by Drilling Company in that the collaborator is only paid when Drilling Company is paid. If an Drilling or an engine component becomes obsolete or is damaged or sold at a low price, the collaborator suffers along with Drilling Company. The collaborator also shares in the risk of customer default, as they are paid a percentage of revenue received by Drilling Company—not just a percentage of the price paid by the buyer.

**Up-Front Payment**

There are two other aspects of the revenue sharing mechanism that serve to distribute risk among Drilling Company and the collaborators: the up-front payments made to Drilling Company and the timing of the revenue share distribution to the collaborators.

With one exception, all collaborators were required to make up-front payments to participate in the engine program and gain access to technology. The schedule for the payments has varied, but all amounts generally have been due within five years of signing the contract. The amount of the payments has varied according to the collaborator's share of the engine development program but the median is approximately $20 million.[4] The payments made to Drilling Company serve to distribute the risks of the development program by providing funds to Drilling Company at a time when Drilling Company typically has incurred significant costs associated with developing a new engine. The collaborators recover this payment directly from the program only if the engine is a commercial success. This arrangement aligns the incentives of Drilling Company and the collaborator by linking the revenue streams of both firms to the same event—the sale of an engine or spare parts.

**Timing of Revenue Distribution**

The timing of the revenue distributions to the collaborator also promotes risk sharing because negative cash flow may be associated with a new engine development and initial production. The long period between the initial payment to Drilling Company and the revenue distributions enhances the difference between a standard supply Investment and an alliance agreement. In most supply relationships, a predetermined payment is due within a specified period (generally 30 to 90 days) after receipt of an order and the supplier bears little risk. The success of the buyer's product typically has no bearing on the payments received by the supplier. At the time the alliance agreement is signed, neither party knows with certainty the

[4] The up-front payments range from $5,600,000 to $151,900,000.

revenue that will be received for the parts, services, initial investment, and other contributions provided by the collaborator.

***Shared Liability***

The alliance agreements fundamentally differ from standard supply contracts regarding third-party liability. Typically, a supplier is liable for third-party property damage or injury only if the part it produced is defective. Under the alliance agreements, by contrast, the collaborator shares the risk of third-party liability from a defect in the design or production of the engine, even if the defect is found in another part of the engine for which the collaborator had no production or design responsibility. If the collaborator has a 2% share of the engine program, then that collaborator is responsible for 2% of any judgment against Drilling Company related to that engine program.

***Dispute Resolution***

While standard supply contracts are either terminated or submitted to arbitration in the event of a dispute, Drilling Company collaborative agreements specify several mechanisms that are designed to facilitate adaptation in the event of changing circumstances. Drilling Company collaborative agreements include provisions for amendments, arbitration, and independent audits.

***Amendments to the Alliance Agreements***

Thirteen of the fifteen collaborative agreements have been amended (or clarified in a side letter) at least once, and one has been amended seven times. The fact that the parties have been able to modify their relationship in the face of unanticipated developments indicates their preference for adaptation over termination in the event of disputes. For example, amendments have been made increasing a collaborator's share of an engine program, adjusting the components for which a collaborator is responsible, assigning the agreement to a third party,[5] extending the duration of the agreement, and addressing many other issues.

In industries characterized by high levels of demand and technological uncertainty, changes are a common occurrence. The agreements, however, have proven to be very resilient. The parties adapt to changes instead of terminating the relationship. While some alliances have terminated, it has taken extreme circumstances (generally bankruptcy) to lead to termination. More effort generally is spent trying to save alliance relationships than would typically be the case in most supply relationships.

[5] Assigning the agreement happened only in two cases.

**Arbitration**

Court resolution of disputes is time consuming, costly, and often detrimental to the exchange relationship. The alliance agreements include a clause requiring the parties to submit to arbitration in the event of a dispute. Choosing to submit to arbitration rather than attempt court enforcement or termination indicates that the parties recognize the need to resolve disputes quickly and in a manner that does not damage their working relationship.

**Auditing**

To ensure that it receives an appropriate credit for delivered parts, a collaborator may confirm by independent audit that Drilling Company has assigned the correct DTC to the collaborator's parts, has accounted for the proper quantity of parts delivered, and has credited the collaborator with the correct amounts against its production obligations. Allowing for independent audits is an attempt to minimize the likelihood that disputes requiring third party intervention will arise.

Drilling Company and the collaborators not only work to resolve disputes, they also take steps to avoid them. The administrative controls and information sharing mechanisms described above are designed to avoid confusion and to prevent even the appearance of opportunistic action. Reviews to reallocate parts in proportion to a collaborator's program share are conducted annually in order to ensure a fair and appropriate distribution of revenues and costs.

An analysis of how the parties handle, and attempt to avoid, disputes clearly indicates the Drilling Company and their collaborators intend to work towards the resolution of disputes and maintain the relationship rather than leaving the relationship or litigating when disputes arise. The parties attempted to adapt rather than terminate the relationships in the face of unanticipated change.

Alliances and Standard Supply Relationships

The alliance contracts were very different than Drilling Company supplier contracts. All four of the functions of the alliance contracts were either missing or incorporated in much more modest ways in supplier contracts. The differences between the alliance partners and standard suppliers are so extreme that one collaborator requested that the alliance agreement be terminated and that it be allowed to return to a traditional supplier relationship. This collaborator was

perfectly competent in producing their parts under the agreement, but they could not handle the additional responsibilities of being an alliance partner. Design, production and service capabilities are sufficient to be a good supplier, but more collaborative skills are required to be a good alliance partner.

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