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Financing the San Jacinto-Tizate Geothermal Project in Nicaragua

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ABSTRACT

The San Jacinto-Tizate project in Nicaragua is being constructed and anticipates having its first unit in commercial operation in the first quarter of 2005. The original development plan for the project was structured to avoid the need for commercial debt finance during the initial phase in order to demonstrate the technical and commercial viability of the project and thus enhance the attractiveness for subsequent suppliers of project finance. A number of changes have occurred to the financing plan, which include the possibility of commercial equity financing, and these will be described in the paper. Additional developments will be reported at the WGC conference.

1. INTRODUCTION

The San-Jacinto – Tizate geothermal project is located approximately 90 km north-west of Managua, near to the city of Leon. Polaris Energy Corporation, through its Nicaraguan subsidiary San Jacinto Power S.A., holds a 40 km^2 concession area and a Power Purchase Agreement (PPA) for 66 MW. The resource has been investigated by various parties since 1953, as shown in Table 1:

Table 1: Investigation History of the San Jacinto-Tizate Geothermal Resource, Nicaragua

Year	Activity
1953	Heat flow measurements
1969-71	USAID identified high priority resource
1973	UNDP delineated potential resource of 6 km²
1970-80	OLADE surveys & pre-feasibility study
1992	DAL reviewed previous work and conducted surveys
1992	Intergeoterm feasibility study
1993-95	Drilling of 7 wells
1998-2001	PPA, Exploitation Concession and Right to Use of Assets negotiated
2001	POLARIS well testing, due diligence, capital structure
2002	POLARIS feasibility study

The project is the first private sector development of a geotherrmal project in Nicaragua, a fact that has provided a number of challenges in obtaining the financing for the project. The project is also interesting as a private sector development in that a number of wells had already been drilled, including three reasonable production wells and a good injection well. It was the presence of these existing wells, with a demonstrated production output potential of some 25 MW, that provided the basis for the original development strategy.

2. INITIAL PROJECT OWNERSHIP

The original participants of the current project were Kitco, a Nicaraguan company that was owned 40% by Kruger Consultores of Nicaragua and 60% by debis, a subsidiary of Daimler Chrysler Corporation of Germany, and Triton Energy Inc. (TEI), a Panamanian company owned equally by ITM, Tarma and CECSA. ITM is a Canadian based investment group, Tarma is a Bahamas based investment group and CECSA is a Mexican engineering company. Together these parties formed Polaris Energy Corporation in Panama, which in turn, through San Jacinto Power International in Panama, owns San Jacinto Power S.A. This structure is shown in Figure 1.

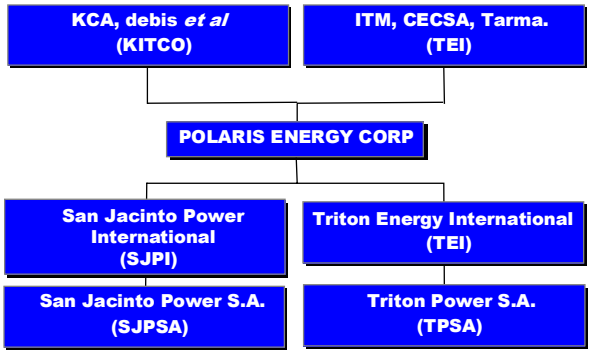

Figure 1 Ownership Structure of San Jacinto Power

In essence, Kitco, which already held the concession and the PPA, would contribute these items to the project, whilst Triton Energy agreed to provide the required fresh equity to undertake the development.

Note that Polaris also owns, through its other subsidiary Triton Power S.A. certain other power development concessions in Nicaragua.

3. FUNDAMENTALS FOR FINANCING

In undertaking the development of San Jacinto, two key elements required by the incoming investors were already in place. These were the Concession Agreement, which is for 20 years, extendable, and a long term Power Purchase Agreement (PPA), also for 20 years, and structured as a 66 MW “Take or Pay” contract.

An important underlying aspect to any PPA is the identity, strength and stability of the buyer. The PPA was originally with the Government of Nicaragua, through its electricity company, ENEL. Subsequently, as the privatisation of the electricity industry in Nicaragua proceeded, the electricity distribution and retail business of ENEL was split into two companies, Disnorte and Dissur, both of which were sold to Union Fenosa of Spain. Union Fenosa was seen as a reliable company that would support its local subsidiaries and hence

would ensure that the PPA would be bankable. Subsequent events, where Union Fenosa withdrew from its operations in the Dominican Republic introduced an element of doubt in this aspect, which required the issuing of a letter from the Government of Nicaragua stating that in the event of a default by the electricity distributor, the Government is constitutionally required to step in to maintain power supplies and that under such circumstances would honour the project's PPA. A comfort letter was also requested from Union Fenosa confirming their long term intention with regard to the operation of Disnorte and Dissur. Obtaining this letter, whilst not even forming a parent company guarantee, proved to be difficult and was a subsequent contributor to the delays that the project has experienced.

Fundamental to any commercial development requiring offshore financing is the country risk profile. This covers a number of key elements, including political stability, the absence of political interference in commercial operations, and currency stability and convertability. A measure of this risk profile is the eligibility for export credit financing. These aspects were well researched by the incoming investors and it was noted that the country risk for Nicaragua was seen as improving from a very poor position, although there was some initial uncertainty regarding US Exim eligibility. It should be noted that country risk was a major issue for a number of possible debt financiers and was possibly one of the major hurdles to be overcome during the course of the project. Given the potential for geothermal projects in developing countries this is an area that the industry as a whole probably needs to consider in conjunction with potential funding agencies.

The availability of insurance coverage for the project was seen as a very important issue and in this the project was extremely well supported by Aon's office in Toronto, Canada. Normal construction insurance (including delayed start up), business interruption and project operations were among the many insurable risks that were reviewed and provided with coverage by our insurers. It was perhaps noteworthy in this regard that a Canadian based insurer was a real advantage in that various issues related to resource risks were understood and accepted, a situation that does not apply in all markets.

Another early consideration for the developers was the likely availability of carbon credits for the project. Carbon credits were built into the very earliest financial models for the project, although in the early stages it was not possible to define a likely value with much accuracy and hence they were very conservatively estimated. Subsequent events have shown that carbon credits are very likely to have a rather more significant impact than originally estimated.

Finally, the developers recognised the need for external technical assistance both in the actual development of the project and subsequently for project operations. Sinclair Knight Merz Ltd of New Zealand (SKM) were engaged as technical advisers (initially for the incoming investors, Triton Energy Inc, and subsequently for Polaris Energy Inc and San Jacinto Power S.A.), to address geoscience and engineering and subsequently to assist in project management. As a potential operator, GESAL (subsequently renamed as LaGeo) of El Salvador were identified as being very well placed to support the project as operators, with technical backup being so very readily available from their nearby existing operations in El Salvador (Berlin and Ahuachapan). The relationship with LaGeo was subsequently considerably strengthened when it was decided to purchase the plant for the first stage development from them.

4. DUE DILIGENCE

The incoming investors required full due diligence studies to be undertaken, covering all legal and technical issues related to the project. Legal due diligence was undertaken by Vargas, Jimenez & Peralta of Costa Rica, who reviewed all existing documentation, including the concession agreement and the PPA and also the historical trail which had resulted in the concession being assigned to Kitco from previous parties. The legal due diligence concluded that these issues were all correctly in order.

Technical due diligence was undertaken by SKM. This due diligence included a full review of the resource and the status of the existing wells. A resource model was developed which concluded that there was a greater than 90% probability of the resource supporting at least 75 MW, and also noted that a second, un-drilled, resource sector within the concession area was likely to be able to support an additional 60 MW development.

Following from the technical due diligence, SKM were further engaged to prepare a preliminary feasibility study for the project. As part of this process, it was necessary to determine the development strategy for the project. This strategy was strongly influenced by the perceived difficulties of raising commercial debt finance for a geothermal project, by a first time developer, in Nicaragua. The existing presence of three production wells with proven capacity provided the basis for a staged development with the initial stages to be brought on line without the need for further drilling. It was also identified that LaGeo had two unused 5 MW back-pressure units originally intended for Chipilapa in El Salvador, but never installed, and initial discussions indicated that these could be purchased under reasonable terms. This meant that an initial development of 10 MW could be installed quickly and at low capital cost. A second stage of development could use the exhaust stem from the back-pressure units in a binary plant to produce approximately a further 10 MW, still without additional drilling. Once the project was constructed, operating and generating revenue, it was perceived that the project would be viewed by commercial banks as being much more credible and therefore easier to finance.

It was therefore decided to undertake the development as follows:

<u>Phase I:</u>
Stage 1 – 2 x 5 MW back-pressure units, to be purchased second hand from El Salvador, with the development to be financed entirely by equity. Total generation 10 MW.
Stage 2 – 1 x 10 MW (or 2 x 5MW) binary plant to be financed primarily by supplier credits. Total generation 20 MW.

<u>Phase II:</u>
2 x 23 MW MW condensing units, plus additional production and injection drilling, to be financed by equity, commercial debt finance, supplier credits and operating income from Phase I. Total generation 66 MW.

On the basis of the legal and technical due diligence, the incoming investors decided to proceed with the project development as outlined in the preliminary feasibility study.

A formal shareholder agreement was drawn up that identified the terms and amount of equity funding to be

provided. Two classes of shareholder were identified as follows:

Class A – Non Contributing in terms of equity. These were the members of Kitco who brought to the project the concession agreement and the PPA, plus, as part of the concession agreement, the right to use the existing assets of the San Jacinto – Tizate project which the Government had inherited from a previous development group in which it had been a joint venture partner.

Class B – Equity Contributors. These were the members of Triton Energy Inc., who would be financing the new equity contributions required for the project to be developed.

The shareholder agreement also defined, amongst other things, the way in which equity would be contributed by the Class B shareholders and the way in which revenue would be returned to the shareholders.

5. PHASE I IMPLEMENTATION

Implementation of Phase I commenced in later 2002 with a contract being established with LaGeo for the purchase of the two 5 MW units ex Chipilapa. This task was undertaken by one of the Class B shareholders, who structured the contract such that ownership passed through his own company. Unfortunately, that shareholder decided to make no further equity contributions to the project and defaulted on calls for equity contributions. This situation resulted in two problems for the project, namely a shortfall in expected equity and non-availability of the ex-Chipilapa units, which were legally tied up with the defaulting shareholder. Steps were immediately put in place to resolve these linked situations.

Regarding the availability of the units, LaGeo were most cooperative in agreeing instead to sell to the project the two similar units that they had installed in their Berlin project, but which were then no longer in service. Both SJPSA and LaGeo cooperated together to obtain the eventual release of the title to the original two units back to LaGeo.

5.1 Commercial Bank Loan

The shortfall in equity required a very urgent decision to seek additional funding in the form of commercial bank debt. Based on some earlier very preliminary discussions with a number of banks, a formal proposal was accepted from Standard Bank of London (SBL) to act as lead financial advisers, to coordinate supplier credits and to arrange a loan for Phase I of US$ 10 million, in two tranches of US$ 5 million each for Stage 1 and Stage 2.

The participation of SBL is interesting. They are originally a South African bank, with a long experience in the mining and minerals sector. As such, they were much more open to consideration of a resource based project than many other main stream banks with no experience in geothermal would have been. Furthermore, aside from wanting to establish a presence in Central America, they also were interested in the financing of Phase II. There is no doubt that a US$ 10 million loan on what is essentially a project finance basis is not an efficient use of funds because of the legal and other costs associated with establishing the loan (for example, the due diligence costs are essentially the same, whatever the size of the loan). However, by linking their participation to Phase II, they are able to limit their exposure during the higher risk process of establishing the project as a viable operation in Nicaragua whilst positioning themselves to move much more cost effectively for the larger loan.

SBL identified that they needed the participation of at least one regional development bank, and of other development bank(s) if possible. They therefore brought to their syndicate CABEI (Central American Bank of Economic Integration) and DEG from Germany.

5.2 Cost Increases

The default of the one shareholder directly caused considerable delays to the project, both in resolving the supply of machinery from LaGeo and also in arranging for the SBL bank loan, which required a full due diligence and various other negotiations. During the period of delay, which amounted to in excess of 12 months, the project continued to accrue general and administration costs, although severe measures were implemented to minimise these. Further delays subsequently occurred in achieving full financial closure, especially with CABEI and DEG – in fact DEG eventually withdrew from the SBL syndicate as they were unable to accommodate a number of features of a private sector development. All of these delays led to costs increases both in directly incurred G&A costs, but also as a result of escalation, particularly in material costs. The second half of 2003 saw unprecedented increases principally in steel costs, but also in many other construction commodities.

5.3 Financial Model

The impact of cost increases, plus the decision to bring in a commercial bank, led to the need for a complete revision of the original financial model that had been prepared with the bankable feasibility study.

The financial model was prepared by the bank's analyst with significant input and assistance by project staff. The model went through many iterations until it was acceptable to all parties. The bank, of course, was primarily interested in demonstrating that the project could meet its loan commitments, whilst the project owners wanted to be sure that the longer term performance of the project was strong.

Despite the efforts required and the time that it took to prepare the final financial model, the discipline involved was certainly most useful in identifying weaknesses in the project financing and assisting in strengthening the overall project. Amongst other things, the model identified the importance to the project of obtaining adequate supplier credits – to a level higher than had been originally anticipated.

5.4 Additional Equity from the Share Market

The financial model also emphasised the need to find replacement equity, partly to replace the delinquent shareholder but also in response to the cost over-run that had occurred because of the delays to the project. After careful consideration it was decided by the remaining Class B shareholders to take their shares public on a major North American stock exchange.

The selected stock exchange was the Toronto Stock Exchange – Ventures board (TSE-V). The choice of exchange was very important. The Canadian economy is historically largely based on natural resource based operations and the Toronto exchange is the largest market for minerals and mining stocks. The market there understands and is comfortable with the uncertainties of resource estimates and was therefore open to the sort of resource analysis that is normally presented for a geothermal project. Additionally, there is an appetite in Canada for "green energy" projects, probably linked to the country's

desire to be able to exploit its large (and "un-green") tar sands oil reserves.

The process of taking the company public was at first sight somewhat complicated, but in fact was relatively fast. It was accomplished by a combination of a private placement of shares and a reverse take-over of an existing listed company.

The company was formed as Polaris Geothermal Inc (PGI) and was registered in Yukon, Canada. The place of registration was important as Yukon regulations do not require Yukon resident directors. Investment bankers were selected – Dundee Securities and Fraser MacKenzie – and they carried out their own legal and technical due diligence investigations (by this time the project team were getting very proficient at supporting due diligence studies!). The investment bankers proceeded to initiate a private placement of shares in January 2004, which closed in March 2004.

At the same time, a target, Iriana Resources, was identified for the reverse takeover. Iriana was an existing company listed on the TSE-V exchange, but was not then trading. Successful negotiations were carried out with the majority owners of Iriana and application was made to the TSE-V for listing. The listing was approved at the end of August 2004 and the full equity contributions from the private placement became available to PGI, with the majority being passed through to SJPSA.

The role of PGI is of great interest to the project team as the company, which now controls some 67% of Polaris Energy Corporation and hence SJPSA, has been formed and floated on the stock market with the express purpose of developing renewable energy projects, including geothermal, not just San Jacinto. The company thus provides a vehicle for raising finance for other projects in the future, including the other energy concessions already held by Polaris Energy Corporation, and is already actively researching additional prospects in Central America and elsewhere. This extended opportunity is reflected in the project's Nicaraguan ownership interest having surrendered it's a Class shareholding in Polaris in exchange for shares in PGI, thus actually increasing PGI's ownership of Polaris to a controlling 68%.

The resultant ownership of the project is shown in Figure 2.

5.5 Stage 1 Construction

Construction work on the project had commenced in December 2002 with bulk earthworks for the power plant platform. However, when the problem with the delinquent shareholder became apparent in early 2003, construction activity was reduced to a minimum until March 2004, when it became apparent that financial closure of the SBL loan would be achieved. At that time, work recommenced using shareholder's equity. Civil works were started to upgrade the site access road and LaGeo started to dismantle the units at Berlin.

Construction contracts had already been prepared, ready for execution on closure of the bank loan, which was achieved in July 2004. However a number of further delays occurred with the funding. First of all there was a considerable delay between SBL closing on their part of the loan and CABEI releasing their funds. This produced a temporary hiatus in cash availability. Of more serious concern was that the supplier credits had not been properly established in advance. This action had been overlooked both by SJPSA and by SBL, who were actually responsible for it. The majority of the anticipated supplier credit was to be in the form of a US Exim credit guarantee line, to be routed through SBL and/or CABEI. In the event, SBL did not submit a formal application until late in July and a decision was not made by Exim until mid October. The overall result was a critical cash flow shortage which caused yet more delays to the project implementation as it was not possible to establish normal letters of credit and so contractors would only undertake work at the rate at which SJPSA was able to pay cash in advance. At the time of writing it is anticipated that this situation will resolve by the end of October, with full pace construction then continuing through until commissioning in March 2005.

5.6 Stage 2

Based on the cost increases seen in Stage 1, a revised budget estimate was prepared for Stage 2. Although Stage 2 will not have to carry the extended delay related G&A costs that had such an impact on Stage 1, it does face similar capital cost escalation impacts and the budget was accordingly increased by nearly 20%. Clearly, although the supplier credits will be increased proportionately with the capital cost increase, additional equity will be required. This will be met by means of an additional private placement to be undertaken in late 2004.

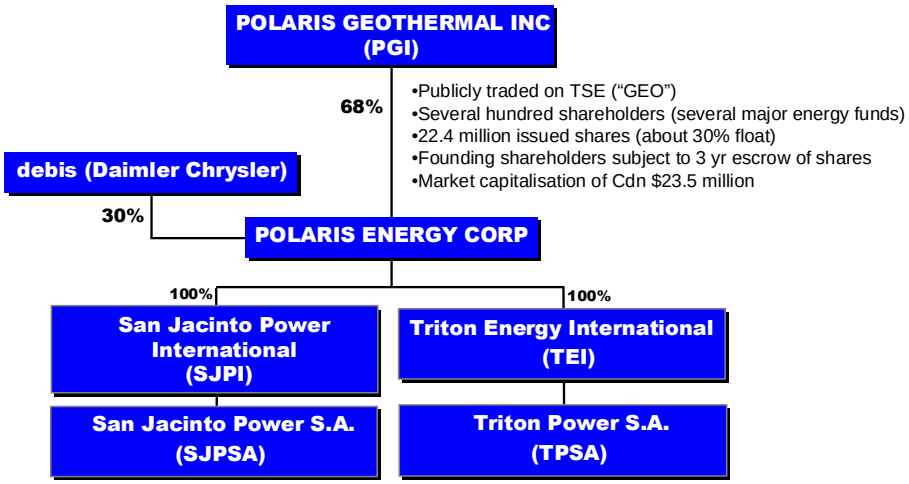

Figure 2 Current Ownership Structure of San Jacinto Power

In the meantime, approval of the second tranche of the bank loan is expected in late October or early November. This second tranche will be funded by SBL themselves with CABEI, bringing both portions to a total of US$ 5 million for each participant. It had originally been expected that DEG would contribute most of the second tranche but, with their withdrawal, CABEI have moved into a more significant role than originally anticipated. Participation of this form in a private sector development is a relatively new activity for CABEI, but new management is particularly keen to expand into this type of development.

With the impending release of bank financing for Stage 2, preliminary engineering work has been commissioned to ensure that the plant is sufficiently defined to permit a target of 70% of the capital cost to be based on firm vendor quotations before placing an EPC contract for the power plant. There will be no steamfield additions required for this stage, although there may be some minor rearrangement to optimise the overall plant.

6. PHASE II

The Phase II development of 2 x 23 MW condensing steam turbines will require additional production and injection drilling, plus associated expansion of the steamfield installations, expansion of the switchyard and the addition of a second transmission circuit onto the Stage 1 single circuit pole line.

The financing plan for Phase II calls for further equity injection from PGI, plus supplier credits and a new commercial bank loan. It is anticipated that the bank loan will again be led by SBL, but, because of the then proven operation of the Phase I project, with considerably better terms (interest rate and tenor) than the loan provided for Phase I. The Phase II loan will, in fact, replace the Phase I loan, which will be repaid from the first draw down of the Phase II loan.

Participation in the larger Phase II loan will likely be expanded beyond SBL and CABEI, although both parties have indicated their interest in continuing their involvement in the project. Strong interest is being shown from a number of other commercial banks and regional institutional lenders. Commercial bank interest is particularly strong from banks based in the Central America region, and this interest is seen as being indicative of growing confidence in the Nicaraguan economy and country risk profile.

Current expectations are that closure of the financing for Phase II will be achieved by the middle of 2005.

7. LESSONS LEARNED

The financing of the San Jacinto project has been a challenging task. It is gratifying to now see the entire funding plan coming together and to contemplate being able to proceed at full speed to commissioning of Stage 1, followed by Stage 2 and Phase II in a timely sequence. However, with the benefit of hindsight, there are a number of lessons that can be taken forward to future projects.

1) **Know your partners**. The fundamental cause of the delays and cost over runs lies in the default of one shareholder. In defaulting, not only was the project faced with having to find new equity participation, but in this case there were significant additional problems caused by the unusual structure of the contract which that shareholder had negotiated with the supplier of the intended main plant equipment.

2) **Small loans cost proportionately much more than big ones**. The costs associated with placing the first US$ 5 million tranche of the SBL loan were quite out of proportion with the amount of cash that was eventually made available. By the time a number of fees, capitalised interest during construction and reserves had been deducted from the loan, the project actually received in cash only about 50% of the loan amount. This was after separate payments had been made for due diligence and other activities. The only comfort in this is that the cost of the second tranche is very much less and the ground work already done by the bank will be carried through to establishing the Phase II loan.

3) **Require contractors to bring supplier credits with them**. These credits will usually (although not always) be supported by export credit agencies. In the case of San Jacinto Stage 1 there was some confusion about the relative security requirements of the first ranked bank loan and any second ranked security required by the export credit agencies. This is one reason why the supplier credits were not pursued at an earlier time, before closure of the Stage 1 loan. However, the need to make retrospective applications for export credits has threatened the grant of the credit and has resulted in significant cash flow problems for the project. The confirmed availability of supplier credits will be a future requirement for the award of any significant contracts for the project.

4) **The share market can be a valuable source of equity**. This requires careful consideration of which share market is going to be accessed and consideration must be given to the share and management control dilution that will occur following a public or private placement, plus the considerably increased reporting and similar requirements which will be placed on the project. However, if the developers are not willing to invest further equity themselves this may be a sensible choice. Note that there may also be very good grounds for a limited share offering in the host country where the development is taking place. In some countries there may be available sources of equity which would be interested in participating in a domestic development project (but in some countries it is actually very difficult to mobilise domestic equity resources, which see their own equity market as being less than attractive).

5) **Patience is a virtue.** Financing a project is hard, hard work and it takes much longer than would appear to be required. Lots of things can go wrong along the way and frustration with local authorities, banks that do not understand the technology or the project risks, overseas investors (including banks) that do not really understand the country risks will abound. Perseverance is an absolute requirement.

8. CONCLUSION

The San Jacinto project will commission the 10 MW Stage 1 in March 2005, with an additional 10 MW Stage 2 following some 12 months after that and the final 46 MW addition in mid 2007 bringing the total generation output up to 66 MW.

Getting to that point will have involved a lot of hard work, confidence by the project team in their ability to deliver, some bad luck and some good luck. In the end, it will have been worth it and the experience will make subsequent projects easier.