STS
Innovation In Motion
ACN 142651812

PRESENTATION OF THE FREIGHT STRING TRANSPORT SYSTEMS

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1. OVERVIEW

This document is the Presentation of the innovative bulk commodities haulage company – String Transport System Limited (hereinafter referred to as "STS Ltd"). The Presentation aims to demonstrate the technical and economic efficiency of the String Transport System (STS). The document also intends to attract investments to the String Transport Systems Limited (ACN 142 651 812) to facilitate practical implementation of STS for highly efficient transportation of bulk commodities in Australia.

The proposed mining resources tax and the global financial crisis have had a positive role to play in the implementation of the STS Projects and their entry into the Australian and International Markets. The existing modes of transportation are very cost-intensive in terms of their construction, maintenance and operation. At the present time there is an urgent need for a principally new transport system based on the innovative technologies and standards capable to bring the radical changes in the ways bulk commodities are transported. It is String Transport Systems that is capable to become such a system.

STRING TRANSPORT SYSTEM – is the transportation system of the "second level[1]" which has the world's novelty and international patent protection. It consists of an original string-rail track structure, infrastructure (loading and unloading terminals, electrical systems, automatic control system, rolling stock servicing depots, logistics control centre, string port, etc.) and specialized rolling stock – self-propelled rail freight cars – String Transport Modules (STMs). Thanks to its unique technical and economic characteristics, the system is positioned to become the most demanded service in the world's market of bulk commodities haulage. STS's advantages can be summed up as follows:

- ✓ String Technologies are associated with the low labour requirements and low CAPEX and OPEX. STS's OPEX can be 50-70% lower than that of traditional transportation systems of the "first level". A typical implementation of an STS project will have a payback period of between 2-5 years;
- ✓ Fuel (energy) efficiency of STS is 300-500% better than motor and up to 30% better than railway transport; Just 3 liters per 10 tons of freight per 100 km;
- ✓ STS has low dependence on terrain. There is no need for extensive ground preparation. The spans between the supports range from 30 to 2000 meters and enable the track to pass across marshlands, sands, water barriers, mountains and other challenging terrain;
- ✓ STS track structure has a service life of more than 50 years;
- ✓ STS is all weather operational, including: cyclones, earthquakes, floods and landslides;
- ✓ STS has the lowest footprint, usually of around 100 m² per kilometer of track;
- ✓ STS is efficient for application in all natural-climatic zones of the Earth. It is operational in the temperature ranges from -70°C to +100°C, at the travel speeds ranging from 40 to 120 km/h.

The aforementioned advantages make it possible within the short time frame to implement a principally new type of freight transportation system for mining haulage and to solve the problems of bulk commodities haulage from any location, including those with challenging terrain and severe climate. At the same time the environment impact will be significantly minimized. STS's implementation will (CAPEX and OPEX) and will improve recoupment and profitability of mining projects. Ore composition will be improved; the lumps to fines ratio will be improved due to smoother motion of a rolling stock and fewer loading-unloading cycles during all stages of ore transportation from mine to ship hold.

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[1] **Second level – track structure is raised above the terrain and mounted on supports.**

2. MULTI MODAL OPERATIONS —

We find the way where others retreat!

String Transport Systems has two versions – supported (above-the rail) and suspended (under-the rail).

Each of these systems has its unique characteristics and advantages.

The choice of STS system's version will, first of all, depend on specific technical conditions of the project, the capacity requirments and certain climatic conditions.

Fig. 1. Supported STS 50 MTPA (STM with load capacity of 160 tons).

Fig. 2. Suspended STS 30 MTPA (STM with load capacity of 8 tons)

In the document entitled «Technical specifications of freight string transport system (STS) for highly efficient transportation of bulk commodities» (July, 2010) the comprehensive technical analysis of both versions of STS is represented.

Their advantages have been presented and major engineering analysis has been conducted.

2.1. The Advantages of Suspended STS[2]

The reason that suspended STS is more efficient in remote areas, is that the supports of a suspended STS can be installed at a distance of up to 2000 meters from each other, crossing difficult terrain with just one span.

A suspended STS doesn't interfere with the land (as there's no need for embankment, while other earthworks are limited to erection of supports).

Fig. 3. STMs have lower noise and vibration

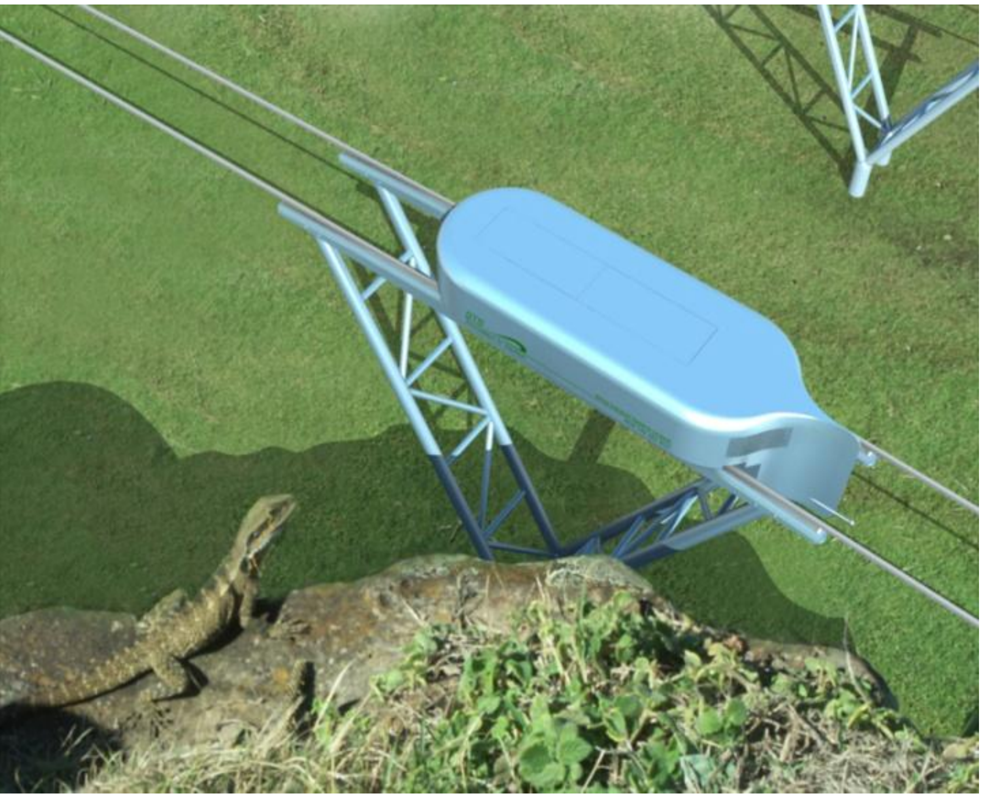

Fig. 4. STS is the most environmentally sustainable system

There is no need for deforestation and the ecosystem is "protected and preserved" in its original form.

The freight STM is located above the ground; it does not disturb wildlife and animal migrations.

STS track structure does not need embankments, culverts, tunnels, bridges and overpasses.

STS track structure does not disturb the flow of ground and surface waters, nor does it affect fertile soil.

[2] This Presentation and economic indices and analysis apply to suspended STS.

STS is Environmentally Sustainable

- ✓ Minimum interruption to natural wildlife.
- ✓ Lowest footprint.
- ✓ No interference with natural hydrology.
- ✓ Negligible disturbance of surrounding ecosystems.
- ✓ Reduced noise and vibration

Suspended STS – engineering excellence

- ✓ String rail has 20-fold safety margin
- ✓ STS is ideally suited for rugged terrain & harsh climates
- ✓ Spans from 200 m to 2 km
- ✓ String rail is the lightest elevated structure

Advantages of Suspended STS

- ✓ All-terrain capability
- ✓ No at grade crossings
- ✓ All-weather operation
- ✓ Unrivalled ecological sustainability
- ✓ Low maintenance
- ✓ Fully automated
- ✓ Preservation of Ore's composition and quality

STS Reliability & Durability

STS has long 50+ years service life and low maintenance cost, due to:

- ✓ Low maintenance track structure;
- ✓ Optimised wheel/rail interface geometry;
- ✓ Favourable operating conditions of the rolling stock;
- ✓ Main structural element (tensioned strings) is hermetically encapsulated and protected from corrosion;
- ✓ Piles of the supports are unaffected by floods and other weather conditions.

Suspended STS is the most environmentally friendly and cost-efficient transportation technology of the XXI Century.

This is due primarily to the fact that STM's fuel consumption is only 3 liters per 10 tons of freight per 100 km. There are no joints or deformities in the track structure. The string rail rests on the supports through the system of inner dampers which intercept and reduce low and high-frequency vibrations. This results in reduced vibration and noise level.

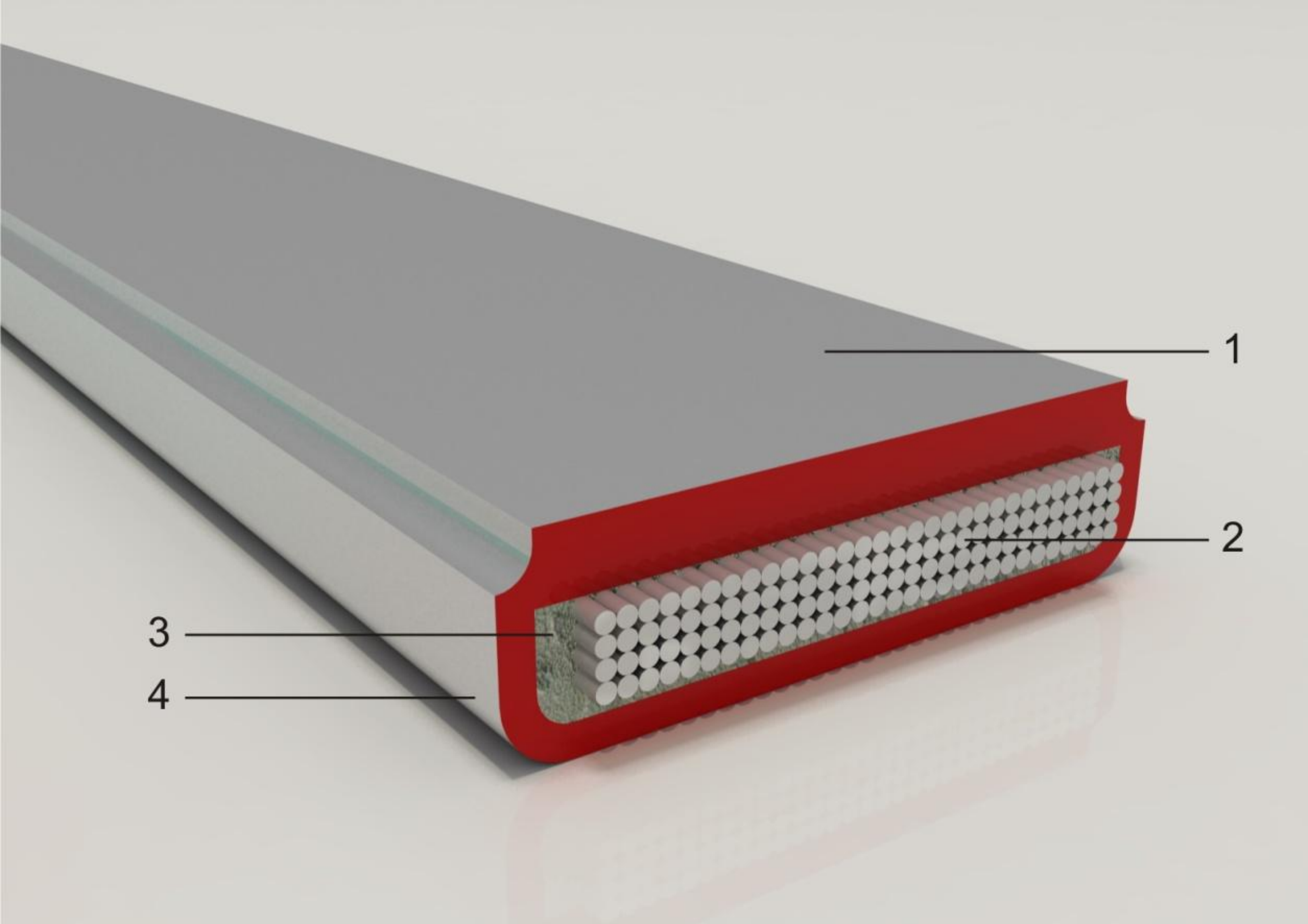

Fig. 5. String-rail of a suspended STS, scale1:1 (design alternative):
1 –rail head; 2 – strings (highly tensioned steel wires); 3 – filler; 4 – body

String-rail – is a continuous steel and concrete beam supplied with a rail head and additionally reinforced with pre-stressed (tensioned) strings (high strength steel wires). The tension per rail can range from 50 to 500 tons depending on the span length, mass and travel speed of the rolling stock. The string-rail combines the qualities of a flexible thread (at the large span between the supports) and a rigid beam (at the small span, under the module's wheels and above the support). This ensures smooth movement of wheels both in the middle of a span and above the supports. The string-rail is characterized by the high strength, rigidity, evenness, technological production and installation, low material consumption and a wide range of operating temperatures – ranging from -70 C° to +100 C°. The lack of technological or expansion joints along the whole length (a rail head is welded as a single continuous beam) provides an ideally smooth surface for the wheels. In terms of its margin of safety a string-rail is superior to other elevated structures. The STS's track structure has a twenty-fold margin of safety.

The technical and economic characteristics of suspended and supported STS are similar and are equally attractive to Potential Investors. This Presentation refers specifically to a suspended STS due primarily to the advantages listed above as well as the ability to integrate with the string ports[3].

2.2. STM's Technical Specifications

SPECIFICATION	SPECIFICATION VALUES (description)
Load capacity, t	15
Dead weight, t	9.75
Body capacity, m^3	7.5
Overall dimensions, mm: - length - width -height	 8200 2575 2150
Gage, mm	1750
Maximum operational speed, km/h	85
Time of acceleration to the speed , minutes	3.5
Maximum climbing ability, %: - loaded with 15 t - empty	 8.0 13.0
Braking distance (initial speed of), m	200
Propulsion system - Diesel-electric	GEKO , VEM, Germany
Fuel consumption g /t ×km	3.9
Braking system: electro dynamical & electromechanical	Mayr, Germany
Ore loading	Through upper hatches
Ore off-loading	Through bottom hatches
Turning radius, m	20
Control system	automatic

[3] **Further mentioning of the term STS in this document refers to suspended STS.**

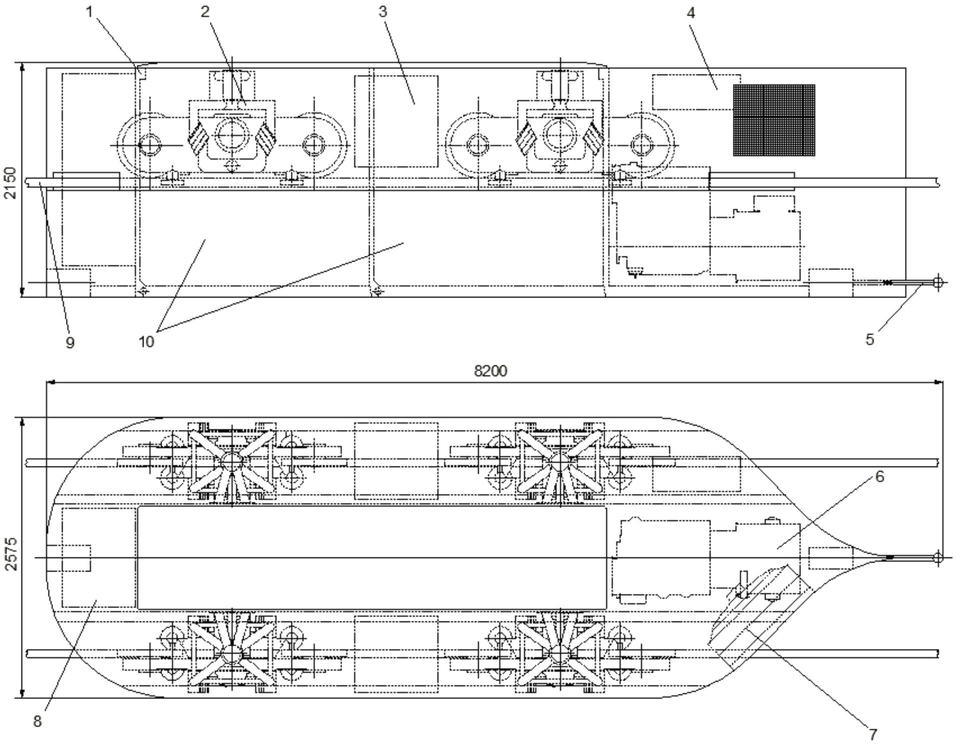

Fig. 6. Suspended STM with load capacity of 15 tons for ore transportation:

1 – body;

2 –motor bogie;

3 – power converter;

4 – on-board control device;

5 – coupling unit;

6 – diesel-electric aggregate;

7 – cooling unit;

8 – main fuel tank;

9 – string rail;

10 – cargo hold.

2.3. ILOCS - Intelligent Logistics Control System

STS logistics process is the fully optimized scheme of bulk commodities transportation from mines to the ports.

ILOCS ensures true multiuser access for group of customers as well as delivery to specified storage location and correct blending of ore.

STS spur lines converge into a single line via the turnout switches. Then STS line runs along the shortest and the most convenient route to the coast line to cross it and goes into the designated stockpiles or directly to String Port.

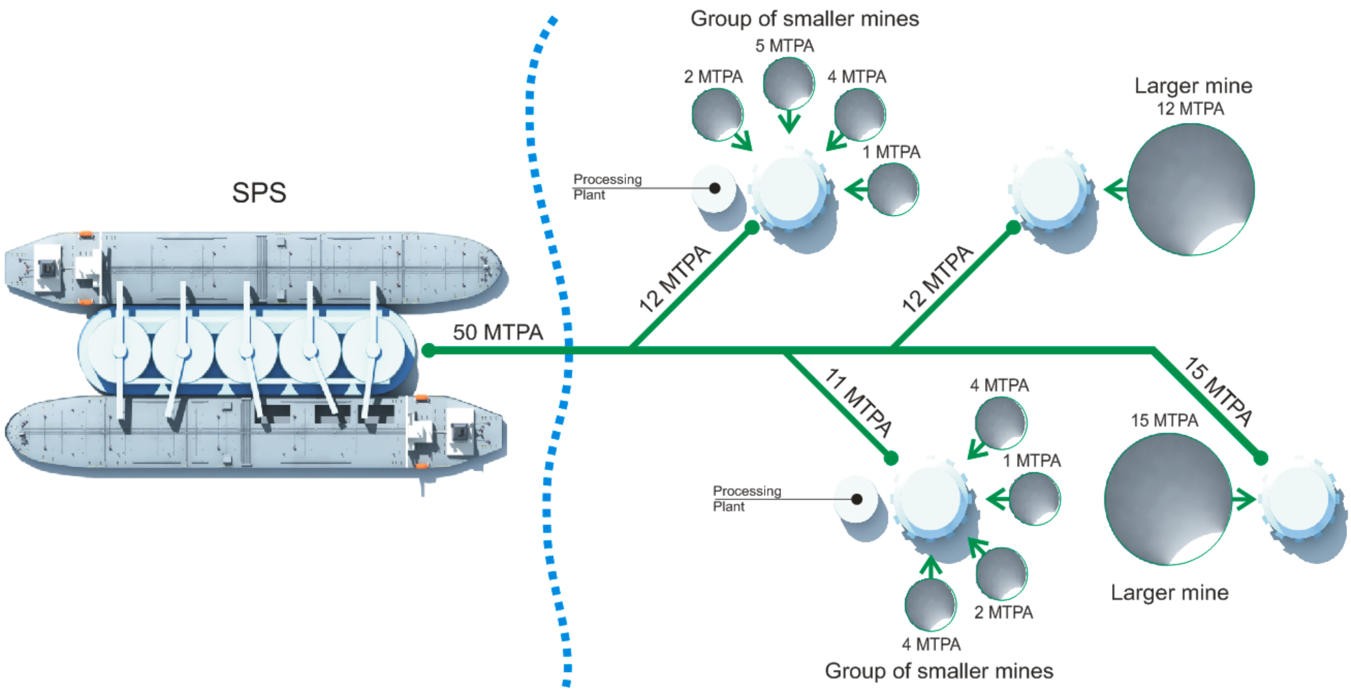

Fig. 7. ILOCS's principal scheme.

The Intelligent Logistics Control System enables a STS line to be utilized to its full capacity by several different mines. This is vitally important for the emerging producers as they need a haulage service that expands capacity in line with their own production plans. The track structure and infrastructure are designed for full capacity of 50 MTPA, but the rolling stock is only acquired by each user as required to meet a mine's output.

If for instance a miner commences production at 4 MTPA the first year and plans to scale up its production to 8 MTPA the following year, then all he needs to do is to purchase additional rolling stock required to meet the increased capacity.

ILOCS has been specifically designed to provide a financially sustainable solution for multiple users as the infrastructure and track structure CAPEX of a STS network is out of reach for most emerging miners on their own.

With a number of mines being in relative close proximity to one another, they can share in the overall CAPEX at a price they can all afford with guaranteed capacity now and in the future. Compared to Road Haulage (insufficient capacity) Railway (unaffordable) and Mine Gate Sales (reduced profits) a multi user STS network is the most financially sensible long term solution.
ILOCS can guarantee that the right product, from the right mine gets to the right stockpile at the right time, every time.

2.4. STS and SPS Loading and Unloading Terminal Station

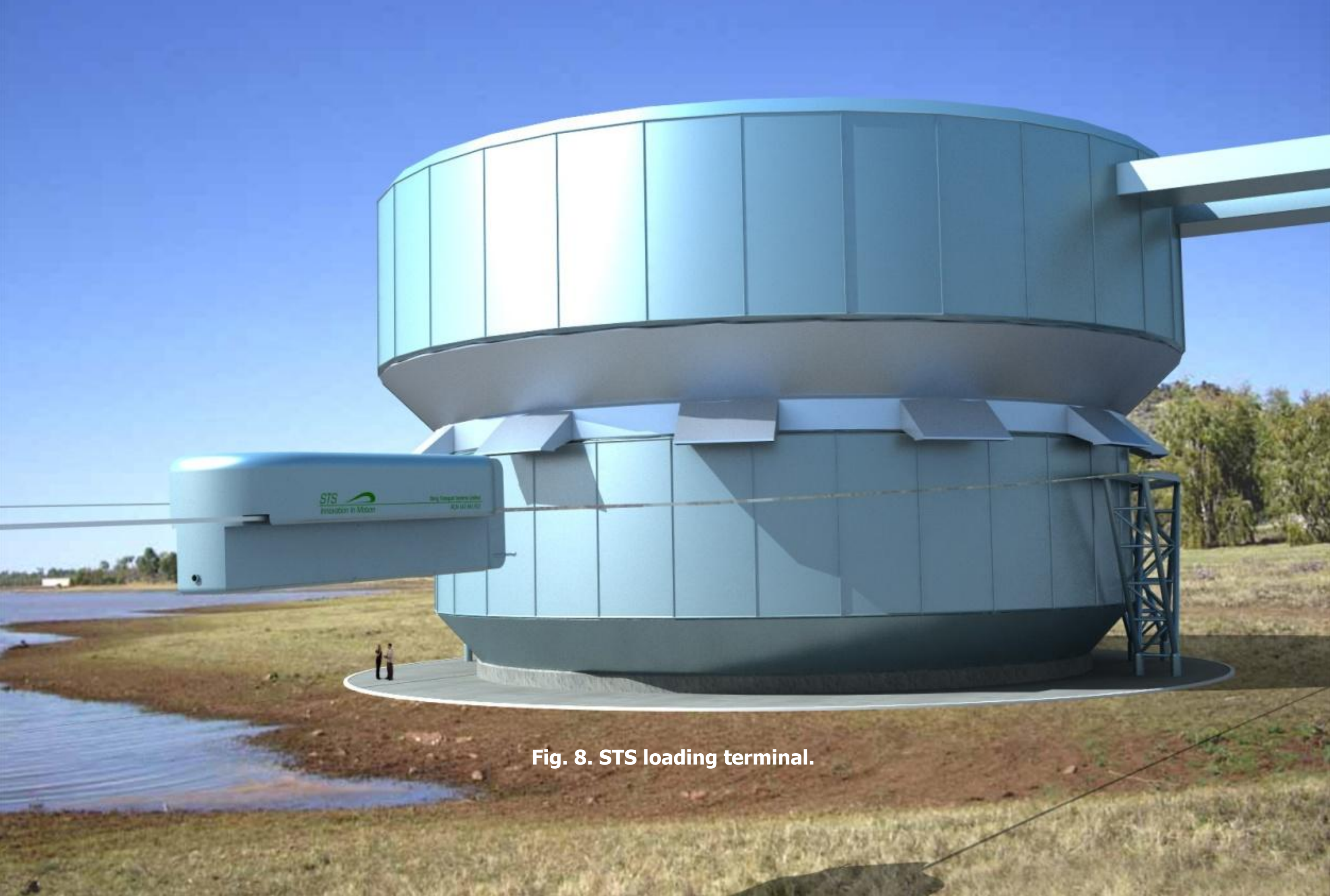

Fig. 8. STS loading terminal.

STS loading terminals will be situated at the strategic locations enabling easy access for all users. It may be equipped with up-to-date sampling laboratory. Before receiving and loading of the ore, controlling sampling will take place at a loading terminal. In case if its data coincide with the data from the mine, STS accepts the ore and loads it to suspended freight STMs. Each STM is equipped with an electronic chip, containing the data of ore supplier, sampling results and cargo weight.

An important advantage of STS loading terminal in comparison with a conventional railroad terminal is the fact that it does not need large areas for the storage of ore when it is accepted. A single stockpile often needs to store 100,000 tons of commodities or more. Nowadays one train consists of approx. 200–240 wagons; it takes 2.5 hours+ to load 20,000 tons+ of cargo. Similar time is needed for the train to be unloaded.

To provide capacity of 30 MTPA, STS terminal's loading productivity should be 84,000 tons per twenty-four hours and 3,500 tons per hour. Loading capacity of freight STM is between 8–10 tons, STMs traffic interval at the point of loading is 8.2–10.3 seconds. STS loading terminal is specifically designed to provide multiuser access. The system ensures that ore is transported to precisely determined storage depending on its producer, Fe content etc.

Reduced length of STM (STM's length is about 6 meters), universality of a loading terminal and the possibility to perform loading and unloading process on the go; results in decreased energy consumption by a terminal. Consequently the power consumption of a terminal is only 200kW.

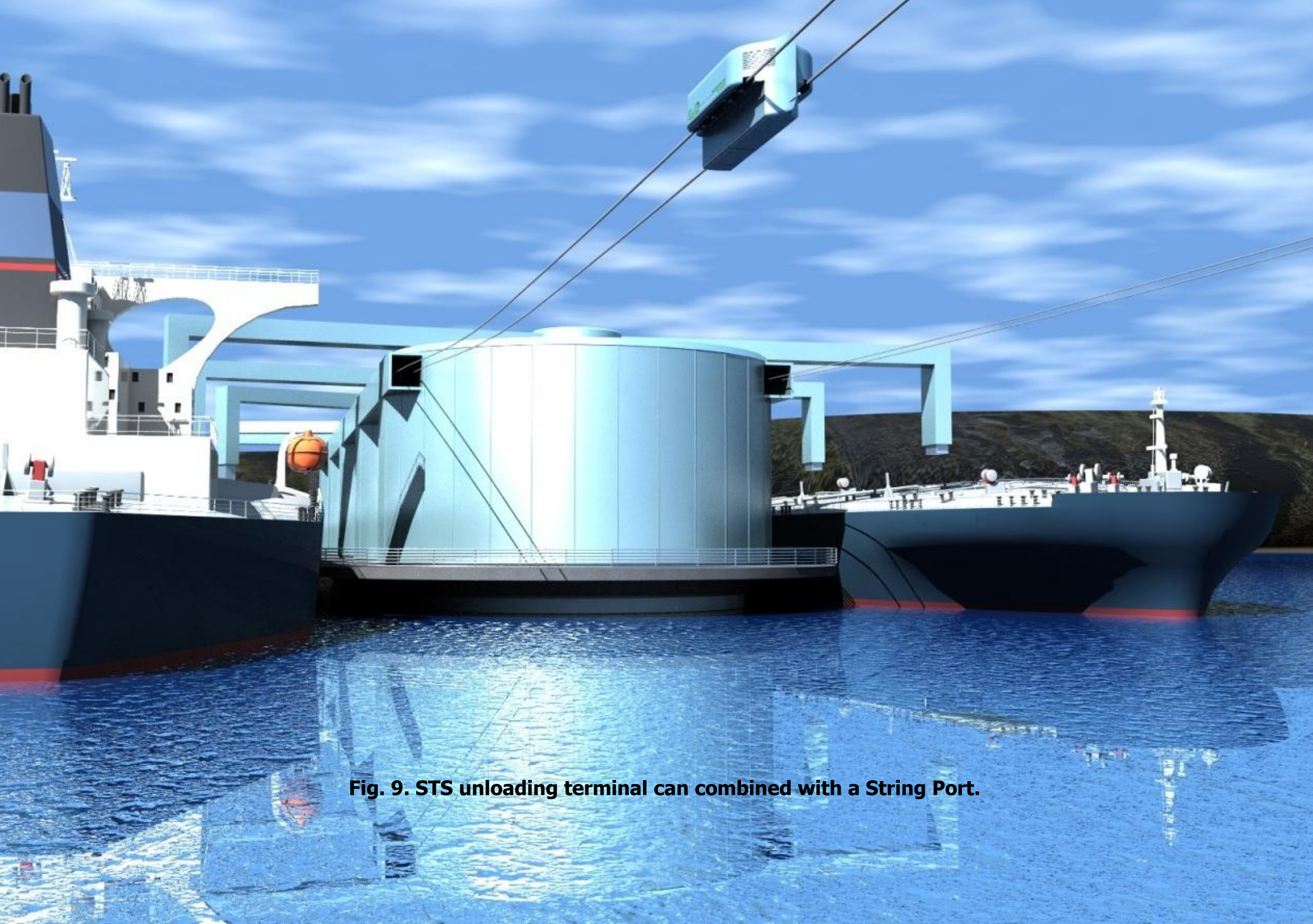

Fig. 9. STS unloading terminal can combined with a String Port.

Each bin of a terminal station is loaded with the ore of certain composition, Fe content and impurities in accordance with sampling data. Intake from a bin and loading to a ship is implemented with the help of conventional loading equipment. To provide each customer with the ore of necessary quality and composition, necessary quantity of ore is taken from a certain bin for desired composition to be achieved.

The use of loading equipment for ore shipping with productivity of 3 tons per second will ensure Cape size vessel's loading (loading capacity of 240,000 t) in twenty-four hours and Handimax loading (loading capacity of 100,000 t) in ten hours. The main advantage of this is significantly reduced demurrage. Today, demurrage of a vessel can be as much as USD $90 – 120 thousands per 24 hours, and is considered one of the main problems of conventional ports. Solving transport capacity is only partial solution; equally important for an expanding operation is port capacity. STS seamlessly integrates with String Port to deliver a solution that matches overall network capacity and port capacity. With just one reloading point between the mine and the port, smoother transition times and travel ensures more lump and less fines being loaded onto a ship. More profit per shipload and matching haulage and port capacity from the one service provider is very attractive.

2.5. SPS – String Port Systems

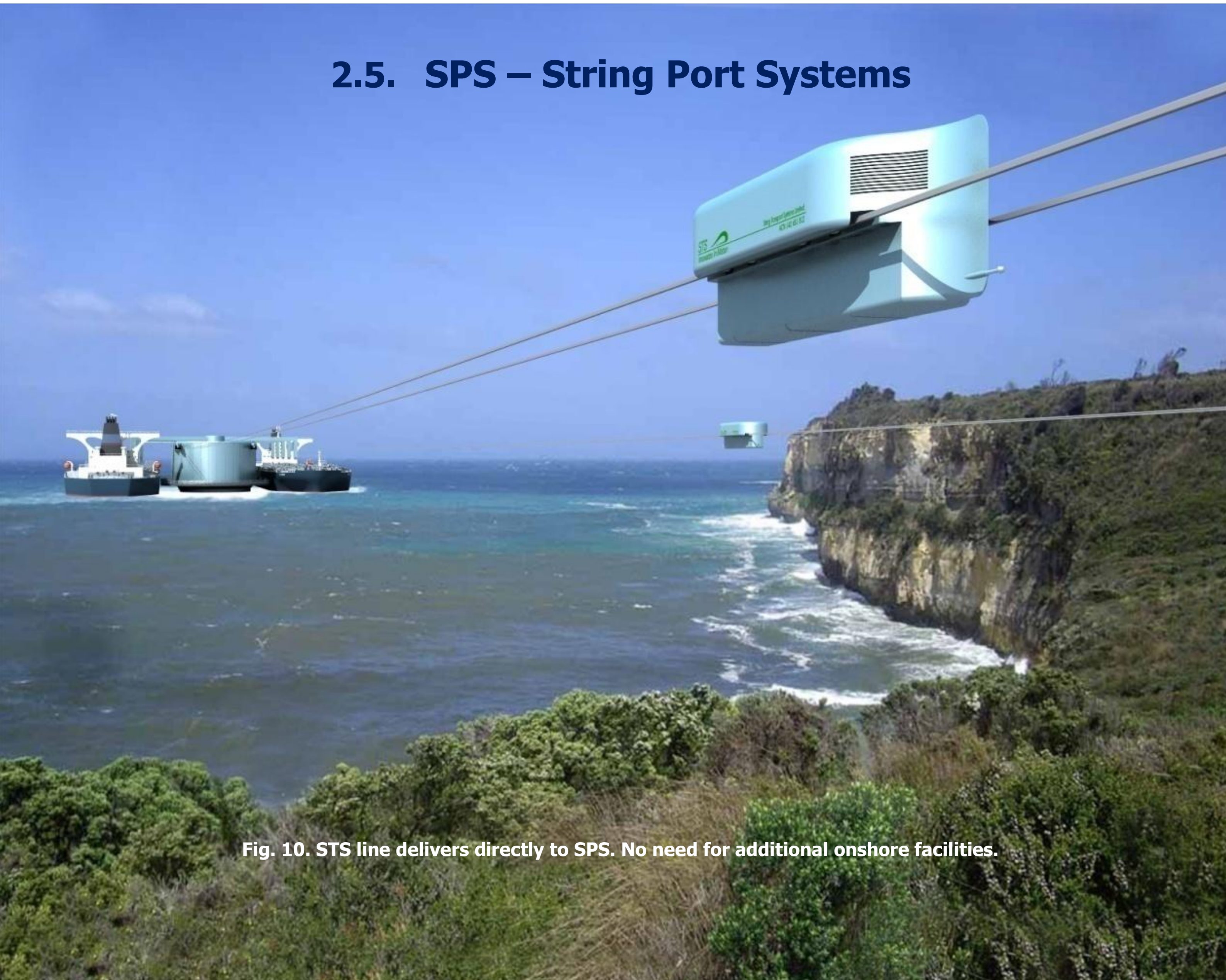

Fig. 10. STS line delivers directly to SPS. No need for additional onshore facilities.

Implementation of suspended STS in Mining Freight Haulage will provide immediate integration with String Port without the need for conventional Stockpiles. String Port is a complex of multi-functional and high-performance systems, created on the basis of string technologies at sea and on the land. These systems are interconnected to provide the most technologically effective and at the same time the most economically efficient solutions. String Port is referred to as String Port System (SPS). SPS might be located at any distance from the coast that ensures suitable depth for vessels.

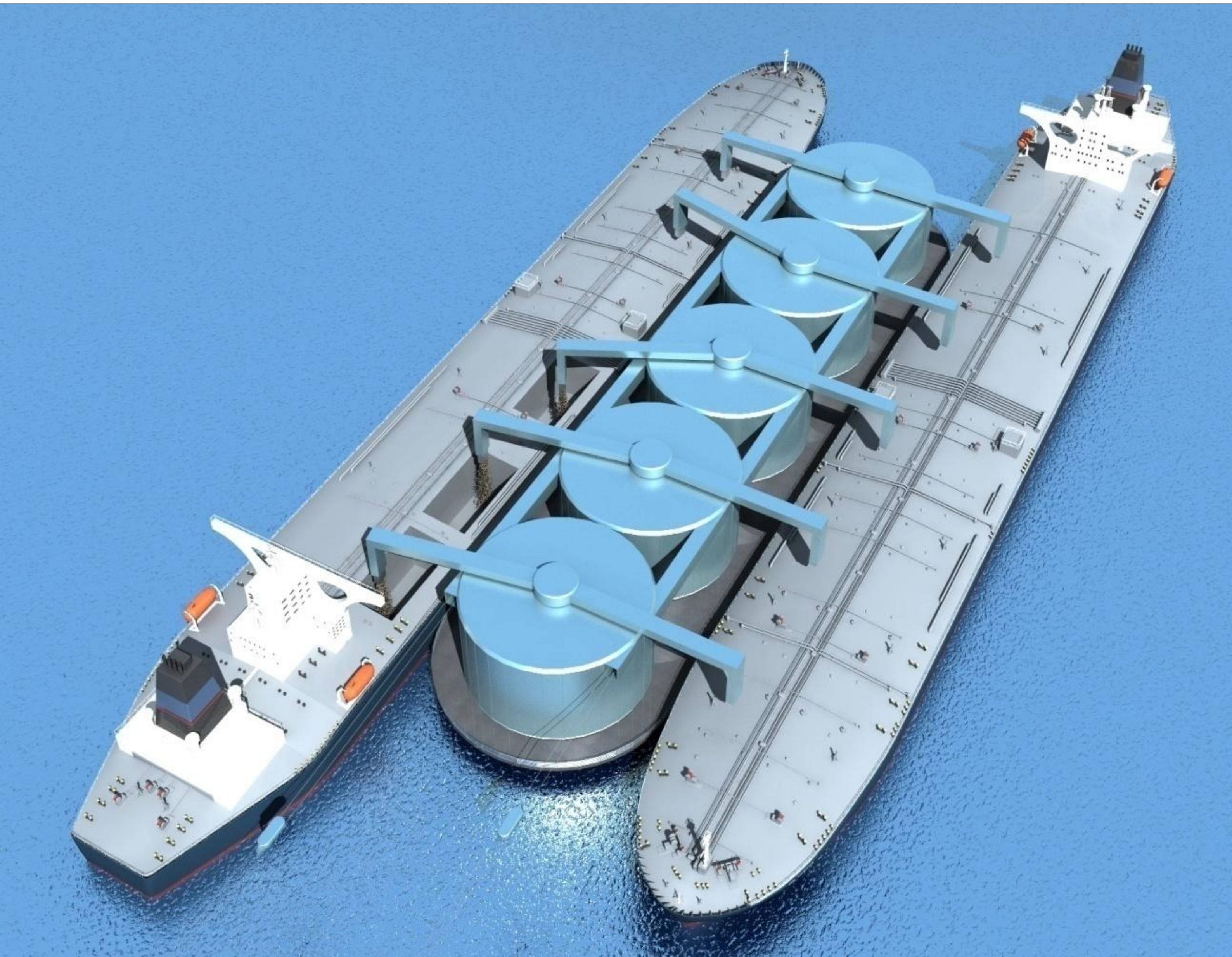

Fig. 11. SPS – top view.

SPS is a number of Ferro Concrete cylinders 40-50 meters high and 30-40 meters in diameter. These cylinders are installed in a row on the ocean's floor and secured with fill and piles. If required the cylinders may be installed on a special foundation. The cylinders are assembled in dry docks on shore, and then delivered afloat to the installation site and are flooded.

The factors that determine the required depth for a string port installation are: ebb and the current of the ocean, stormy waves, maximum draft of laden ship and such natural phenomena as earthquakes, tsunami and hurricanes. Therefore, minimum operating depth of a port at the approach of a vessel is

25 meters. Due to simplified maneuvering of ships in String Port's operating zone, the time of their approaching to a pier is significantly reduced. The String Port is built in close proximity to the shore, and yet at the same time there is no need for dredging of a channel to provide access, which is the most cost intensive part of a port's construction.

The STS may reach SPS in the ocean, because its supports will be installed in the relatively shallow waters. If necessary the SPS can be kilometers from the shore. Considering the cost of STS in shallow waters only marginally higher, the economic advantages are significant.

The unique combination of STS and SPS working in synergy will provide the most cost effective complete logistics solution.

The significant savings are achieved by reducing the need for stockpile areas and especially by reduction in channel dredging. Compact and efficient architecture of SPS will ensure lower energy consumption for loading operations as well as decrease in labour requirements due to higher level of automation. Safety of the vessels is ensured with an operational dampened pier. SPS is operational in a wide range of weather conditions.

2.6. Smooth Transportation of Ore – Improved Ore Composition and Quality

Integration of STS loading terminal and SPS located off the shore enables to ship ore, coal and other bulk materials via one transfer reloading to a bin of SPS terminal. Each loading/unloading cycle reduces cargo's quality by 2-3% and more. This is an acute problem of ore transportation, because ore abrades at every loading/unloading cycle.

STS + SPS working in synergy ensure unprecedented quality of transportation service.

Quality of Transportation Service is determined by acceleration load, vibrations frequency and amplitude. It is especially important for commodities such as ore, coal, grain, etc. Vibration acceleration defines the interaction force of cargo fractions. Frequency is the number of interactions per time unit. Improved quality of transportation minimizes damage to cargo, which in the case of iron ore for instance improves the lump/fines ratio.

During loading/unloading cycle and in the process of ore blending and transportation along the track the fractions of bulk material interact with bin sides. It results in increase of dust-like fractions in the cargo and the change of its composition. It may worsen the quality of ore and decrease its value by 20–30% and more. For example, price difference of Lump (< 32 mm) and Fines (< 8 mm) in case of iron ore can be as much as $30/t.

The ideally smooth STS track, independent suspension of STM and optimized wheel-rail interface geometry, result in decreased vertical acceleration of 0.1 m/sec and less (the vertical acceleration for other modes of transport is: 2-3 m/sec for trucks and 1.5-2 m/sec for conventional rail). Vibration frequency of STS rolling stock depends on the span length and designed speed. The supports of suspended STS will be installed at a distance of 200m, thus at a speed of 72km/h (20 m/sec), vibration frequency will be 0.1 Hz (the vibration frequency for other modes of transport is: 5-10 Hz for trucks and 1–2 Hz, for conventional rail).

2.7. Competitive Advantages of STS + SPS Transport System

The main benefits of STS and SPS transport solution are:

- ✓ Ability to develop difficult to access deposits, with lack of infrastructure and challenging terrain;
- ✓ STS's service life is 50 years and more;
- ✓ STS is resistant to such natural disasters as earthquakes, floods and landslides. It has a twenty-fold margin of safety;
- ✓ STS does not disturb sensitive ecosystems. There is minimum interference with wildlife and migration of wild animals. The ecosystems are "protected and preserved" in their original form;
- ✓ Reduced fuel consumption, low vibration and noise levels;
- ✓ SPS is the optimized port. Significantly reduced CAPEX, lower energy consumption and higher level of automation;
- ✓ STS and SPS transport solution is able to provide the shortest possible path from mine to the loading point;
- ✓ Reduction in the number of loading/unloading cycles. This improves composition of the product and lumps/fines ratio;
- ✓ ILOCS ensures collection of the cargo from either large mines or from separate groups of smaller mines. There is a possibility of productivity rate increase;
- ✓ Considerable decrease of CAPEX and OPEX in Bulk Commodities Haulage – Projects Efficiency Increase – Shortened payback period and increase in profitability;
- ✓ New Philosophy in Mining Industry – New Ways of Business Development – New Horizons and Approaches to Work.

3. A COMPARATIVE ANALYSIS –

We earn where others quit!

Officers of public companies are tasked with maximizing profitability of their respective enterprises. When it comes to mining operations the choice of the mode of transportation is of fundamental importance. This is due mainly to the fact that logistics is the crucial component and often represents as large a part of the CAPEX and OPEX as all the other production costs combined. Today the haulage market is dominated by two modes of transport – road haulage by trucks and railway haulage. Highly specialized haulage solutions (conveyor and pulp pipeline) are only applicable in certain cases. It is the choice between road and rail haulage that miners are faced with. Ultimately the specific technological solutions must provide the most efficient and cost effective solution enabling miners to maximize profits.

What is the best solution: Trucks vs Railroad vs STS

Road haulage is the most flexible mode of transportation requiring the least upfront capital expenditure, it is also the fastest to deploy. At the same time trucks are extremely energy inefficient and maintenance intensive but the main disadvantage of road haulage is the capacity limitations. It is generally accepted that this limitation is around 2 MTPA.

Rail haulage is by far the most efficient and desirable solution. Railways however are very capital intensive and it takes time to deploy them. Consequently rail haulage is only accessible to a very exclusive club of well capitalized companies controlling very large deposits.

STS networks on the other hand are suitable for a wide range of operating capacities. In essence, STS networks have flexibility of road haulage while also providing the efficiency superior to the rail haulage. The important advantage of STS networks is the scalable capacity which can grow in line with growth in production. None of the existing modes of transport compares to STS in terms of flexibility, scalability, efficiency and ultimately economic attractiveness.

STS is more efficient and cost effective than other modes of transport.

Investing in STS network is very profitable and affects the economics of mining projects in the most positive way. These advantages are prominent under the wide range of operating capacities as shown in the cases below.

Structurally the analyzed cases are divided into 2 groups.

1st group of cases for smaller capacities (up to 5 MTPA) compares STS with road haulage. The results are summarized in the table below:

Option	Case	CAPEX	OPEX	NPV	IRR
1	2 MTPA truck/ship	$ 82.0M	$ 47.0 /t	$ 160.7M	49.62
2	2 MTPA STS/ship	$ 82.0M	$ 31.6 /t	$ 192.0M	41.52
3	2/5 MTPA STS/ship	$ 82.0M/110.5M	$ 28.3 /t	$ 354.3M	54.33

STS provides the unique opportunity to reduce OPEX from $47.0/t to $28.3/t, while CAPEX is the same as for the road haulage. Under the 3rd case STS enables to reinvest profits into ramping up of production to 5 MTPA. This makes STS significantly more attractive then road haulage. More than twofold increase in NPV ($354.3M - $160.7M) and corresponding increase in IRR to 54.3% make the case for STS's implementation very convincing.

2nd group of cases deals with capacity of 20 MTPA and compares STS to rail haulage.

Option	Case	CAPEX	OPEX	NPV	IRR
4	20 MTPA railway/ship	$ 700.0M	$ 35.0 /t	$ 1,091.7M	31.57
5	20 MTPA STS/ship	$ 460.0M	$ 27.5 /t	$ 1,526.1M	57.13
6	30 MTPA STS/ship	$ 700.0M	$ 27.2 /t	$ 3,060.1M	69.91
7	30 MTPA STS/SPS	$ 700.0M	$ 23.6 /t	$ 3,193.6M	71.99

Results are impressive. CAPEX of STS network with the capacity of 20 MTPA is $240M less than the railway. These funds can be reinvested into ramping up of the production, exploration or acquisition of other deposits. The scenario of ramped up production is dealt with in case 6. Assuming the same CAPEX as railway of $700 M, the STS's capacity can be increased to 30 MTPA. The increase in NPV under this scenario exceeds $1,500 M. This difference is bound to be recognized by market which will not fail to reward the company with higher valuation. Mining operations already are profitable, implementation of STS can only improve this profitability even further. This fact is confirmed by the 7th case which deals with the impact of STS being implemented in synergy with String Port.

Comparison of the 1st and 2nd groups of cases IRRs shows the difference of 15% and more. This clearly demonstrates that the efficiency of STS increases in line with increase in the system's capacity, especially so in synergy with String Port. The deference in project's financials (IRR) is not as pronounced in case of smaller capacities of up to 5 MTPA. This demonstrates that STS is more efficient for larger capacities 10 MTPA and more. Therefore it is more advantageous for smaller mines to gain access to STS on pay–as-you-use basis as opposed to financing their own networks. This scenario is dealt with in the next section.

Our economic analysis compares the effectiveness of the STS with the conventional modes of transportation - trucks and railway. As a starting point for our analyses, we take a typical situation for a mining industry player: Giralia Resources' Project Daltons[4]. This project allows for different transportation methods. June 2010 reports by Macquarie Group[5] and Bell Potter Securities, which

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[4] Project Daltons is a joint venture of Giralia Resources NL (75% interest) and Haoma Mining NL (25% interest). This project is described in detail below.

[5] **Macquarie private Wealth Listed Research – Giralia Resources as of 30.06.2010**

Project Daltons perform a comparative analysis of two traditional haulage methods: trucks and rail. We enhance these analyses by adding an innovative alternative, the String Transport System. The reports state that if Giralia, instead of using trucks for haulage (maximum capacity 2 MTPA, CAPEX A$50-A$115M), were to construct a railroad (capacity 20 MTPA, CAPEX A$700M), it would considerably decrease OPEX from A$47.0/t to A$35.0/t. As a result, the intrinsic value per Giralia's share would greatly increase from A$0.41 to A$1.25. The data for these two cases is summarized in the following table:

Case	Description	Capex	Opex	Value per 1 share
1	2 MTPA truck/ship via Port Hedland	A$ 50 - 115M	A$ 42.1 - 47.0/t	A$ 0.41
2	20 MTPA railway/ship via Port Hedland	A$ 700M	A$ 35.0/t	A$ 1.25

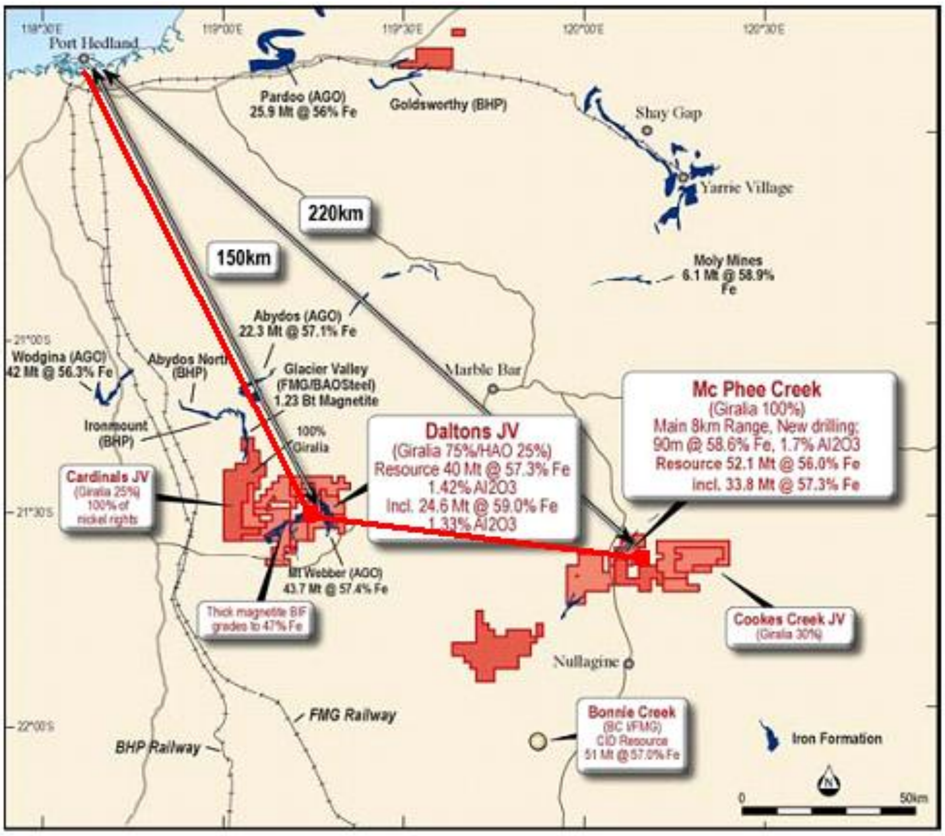
While Project Daltons is used as an example, the analyses and conclusions hold in the broadest sense across the industry and geographic locations globally. At the same time the specific case for the Daltons Project constitutes a specific business case for Giralia Resources Limited. The analysed cases are conducted and modelled based on industry average technical and cost characteristics.

PROJECT DALTONS JOINT VENTURE (Giralia 75%, Haoma Mining NL 25%)

Late in the quarter (17 December 2009) the Company reported the findings of an independent Scoping Study by ProMet Engineers Pty Ltd ("ProMet") on development options for the Mt Webber iron ore deposit, part of the Daltons Joint Venture (Giralia 75% interest, Haoma Mining NL ("Haoma") 25% interest), located 150 kilometres south of Port Hedland in the Pilbara region of Western Australia.

The Daltons JV's Mt Webber deposit has an Inferred Mineral Resource reported on 14 September 2009 of **40 million tonnes @ 57.3% Fe**, including **33.8 million tonnes @ 57.9% Fe, 1.44% Al2O3 (63.06% CaFe)** in the Main Southern Zone. The Daltons JV tenements at Mt Webber directly adjoin Atlas Iron Limited's Mt Webber prospect, which has a reported resource of 43.7 million tonnes @ 57.4% Fe.

The Daltons JV commissioned ProMet to prepare a Scoping Study for its Mt Webber Iron Ore Project, targeting the production of direct shipping iron ore ("DSO") at 2 million tonnes per year by open pit mining.



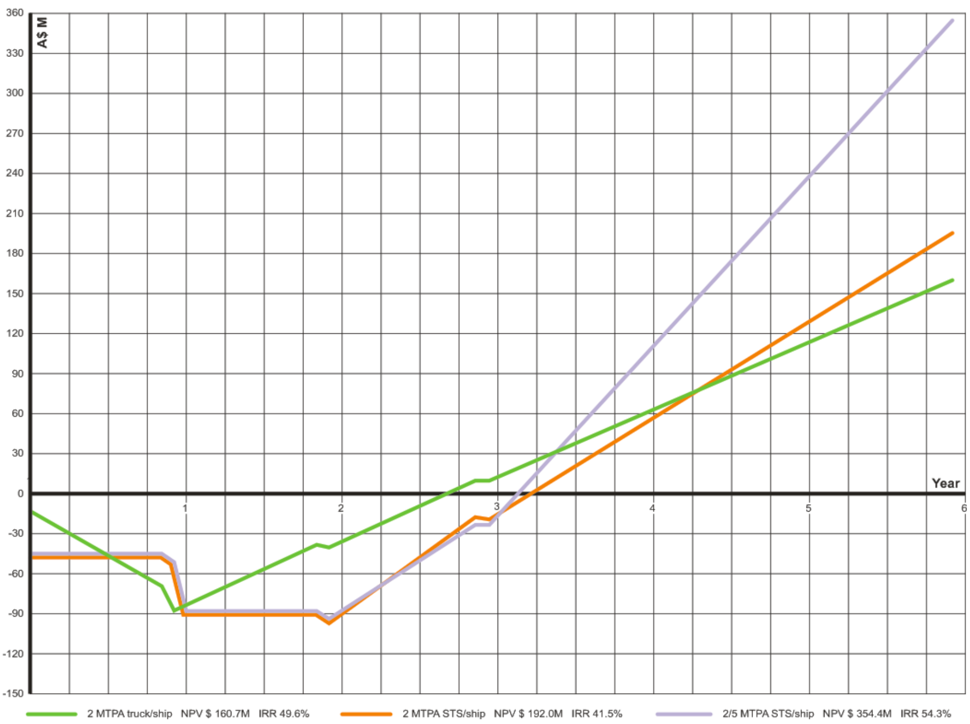
Delivery from Mt Webber mine to Port Hedland , the distance of 150 km, primary productivity of 4-5 MTPA. Line prolongation up to 90 km to Mc Phee mine and productivity increase up to 10-15 MTPA, covering traffic flow of neighboring mines of other companies, increasing productivity up to 10-15 MTPA. The route is indicated in red.

THE CONCLUSIONS ON FIRST THREE PROJECT CASES - for Road Haulage and capacity 2 MTPA

Combined data for Giralia Cases with Capex rate of $82M

Option	Case	CAPEX	OPEX	NPV	IRR	DPB	ARR	PI	MIRR
1	2 MTPA truck/ship	$ 82.0M	$ 47.0 /t	$ 160.7M	49.62	34	46.41	2.78	18.61
2	2 MTPA STS/ship	$ 82.0M	$ 31.6 /t	$ 192.0M	51.52	40	49.97	3.00	20.08
3	2/5 MTPA STS/ship	$ 82.0M	$ 28.3 /t	$ 354.3M	54.33	40	78.15	4.69	29.37

Dynamic graphs of recoupment comparing all of three cases.



Compare NPV cases #1 and #2. There is two times difference at the same volume of investments. STS Operations 2/5 MTPA have decreased in comparison with the second version (5.28 –3.24) at least by two times.

And the possibility of profit reinvestment starting from the 5th year of the Project implementation makes the grey line of the graph 2/5 MTPA approach to the zone of larger profits in comparison with orange line of 2 MTPA graph.

Reinvestments in the volume of $28.5M do not influence the state of NPV 2/5 MTPA curve.

The results speak for themselves and they are impressive.

STS is the best solution for Bulk Commodities.

And now let's move on to the second group of cases, which are more complex and prove the efficiency of STS haulage for the capacity of 20-30MTPA and more. This capacity ensures significant revenue is realized and economies of scale are achieved. Dear reader, we will show you the way STS performs at such volumes of traffic flow.

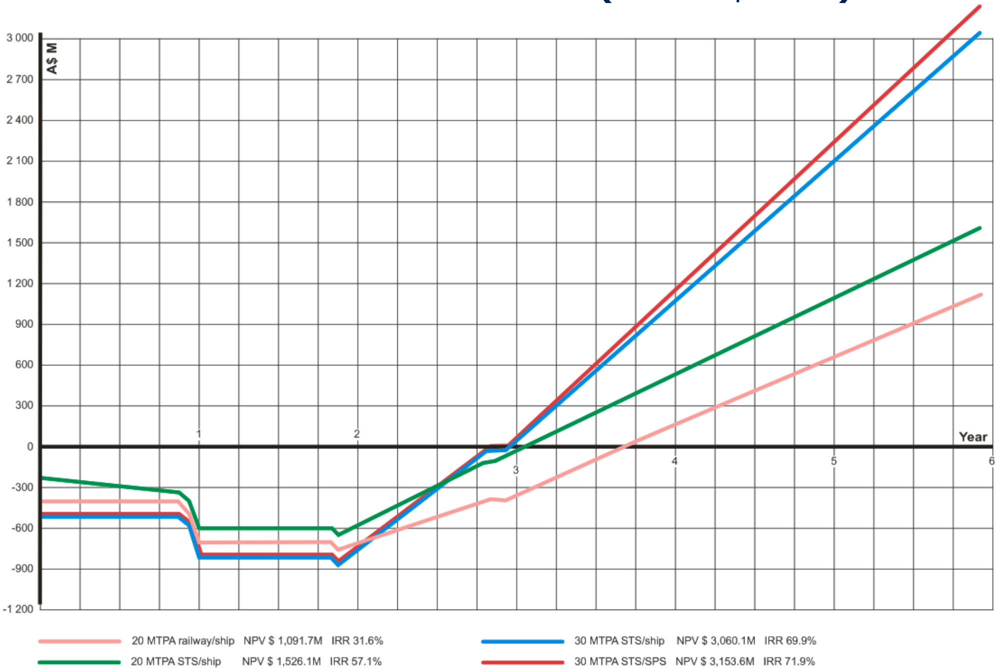
THE CONCLUSIONS ON THE SECOND GROUP OF SCENARIOS (CAPEX $700M)

In Macquarie's analyst report of June 2010 it was estimated that at 2 MPTA being tracked to Port Headland and FOB OPEX of $47/t, Giralia's McPhee Creek would account for $0.41 ps in an upside scenario for McPhee Creek with a 140 mt resource and 10 MPTA of production via a dedicated rail link (CAPEX $700 m) and an operating costs of $35 /t the attributed value per share would rise to $1.25 p/s this is more than 300% increase which highlights the value of a dedicated haulage system. With Giralia announcing JORC resource upgrade to 161.4 mt at McPhee Creek and with $700 m CAPEX, STS could provide 30 MPTA in capacity at an OPEX of $27.20. Logically this would increase the value per share of the McPhee Creek operation dramatically, as evidenced by the following table and graphs.

Combined data relating to the second group of scenarios (CAPEX $700m) for Giralia

Option	Case	CAPEX	OPEX	NPV	IRR	DPB	ARR	PI	MIRR
4	20 MTPA railway/ship	$ 700.0M	$ 35.0 /t	$ 1,091.7M	31.57	43	42.66	2.56	16.96
5	20 MTPA STS/ship	$ 460.0M	$ 27.5 /t	$ 1,526.1M	57.13	35	69.87	4.19	26.98
6	30 MTPA STS/ship	$ 700.0M	$ 27.2 /t	$ 3,060.1M	69.91	33	87.21	5.23	31.76
7	30 MTPA STS/SPS	$ 700.0M	$ 23.6 /t	$ 3,193.6M	71.99	33	90.29	5.42	32.53

Dynamic graphs of recoupment showing (NPV) for the second group of scenarios (CAPEX $700M)



What can be seen here is that, the 20 MTPA railway/ship scenario would produce the lowest returns.

Firstly, if Giralia were to implement 20 MTPA STS its CAPEX would lower significantly to $460 m as opposed to $700 m for a conventional dedicated rail link. At the same time the project's NPV would grow to $1,526 m compared to $1,091 m under the railway/ship scenario. This will have the most positive effect on project's IRR which will grow by 25.56% (57.13% – 31.57%).
The excess capacity could be utilized with a spur line to Mt Webber and Giralia's Dalton JV.

The overall advantages of deploying STS as opposed to other haulage options would appear to be in the best interest of all stakeholders.
Secondly, by investing the same $700 m in STS haulage infrastructure the system's capacity of 30 MPTA could be achieved. This will increase project's NPV to 3,060.1m. This means a 300% increase in NPV on the same CAPEX! This makes it a very attractive scenario beyond any reasonable doubt.
STS guarantees that its innovative transportation technology which is based on tried and proven engineering processes, solutions and materials is the most technically efficient and the most sound in commercial sense. Returns per dollar invested grow with the increase in capacity while economies of scale ensure that the OPEX decrease correspondingly. This enables Giralia to maximize shareholder value.
We are confident that the market will not fail to recognize the growth in share value and reward Giralia with very attractive growth.

THE CONCLUSIONS ON ALL CASES

Combined data for the complete range of scenarios for Giralia

Option	Case	CAPEX	OPEX	NPV	IRR	DPB	ARR	PI	MIRR
1	2 MTPA truck/ship	$ 82.0M	$ 47.0 /t	$ 160.7M	49.62	34	56.41	2.78	18.61
2	2 MTPA STS/ship	$ 82.0M	$ 31.6 /t	$ 192.0M	51.52	40	59.97	3.00	20.08
3	2/5 MTPA STS/ship	$ 82.0M	$ 28.3 /t	$ 354.3M	54.33	40	78.15	4.69	29.37
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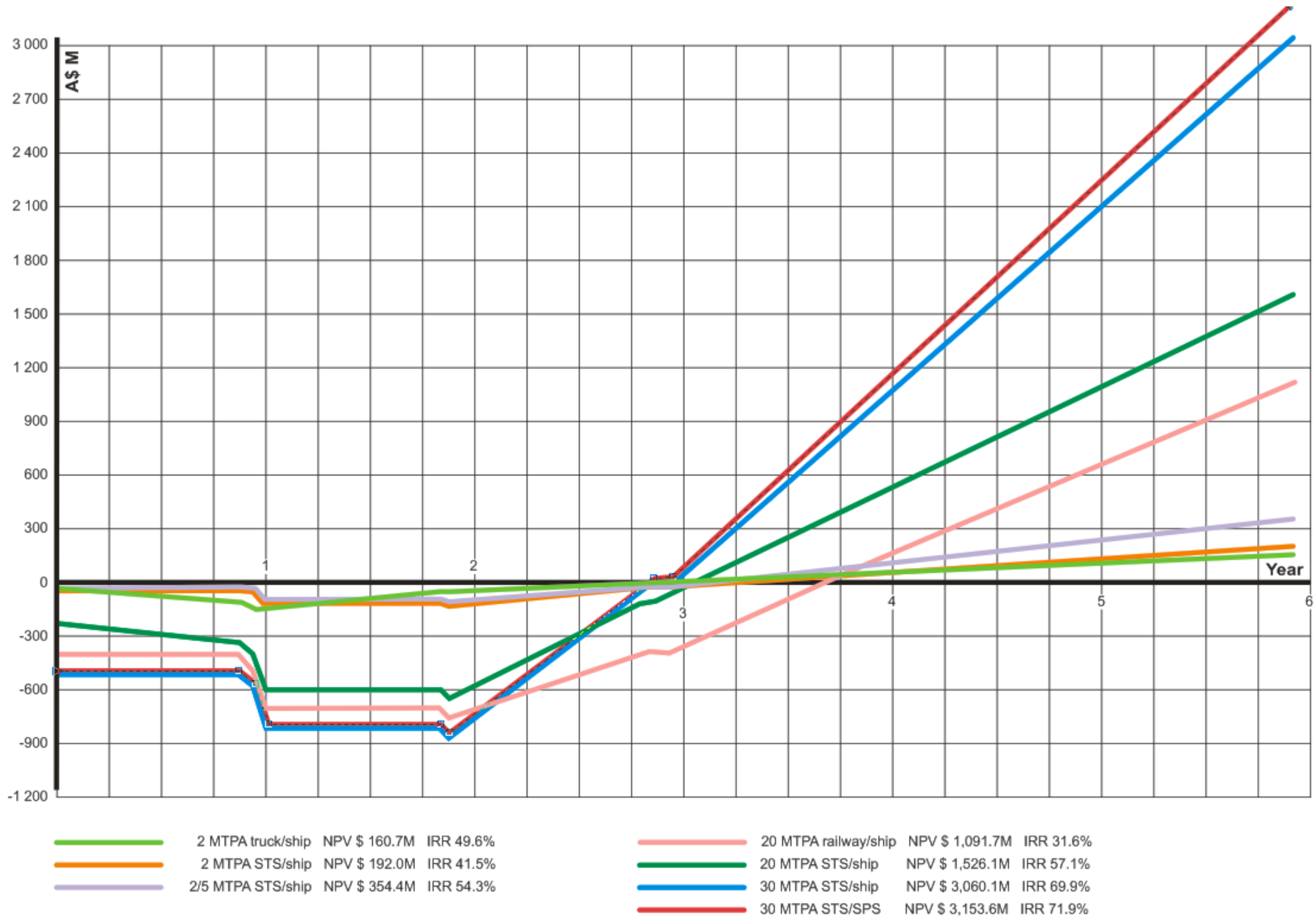
6	30 MTPA STS/ship	$ 700.0M	$ 27.2 /t	$ 3,060.1M	69.91	33	87.21	5.23	31.76
7	30 MTPA STS/SPS	$ 700.0M	$ 23.6 /t	$ 3,193.6M	71.99	33	90.29	5.42	32.53

Combined dynamic graphs of recoupment for the complete range of all scenarios for Giralia



STS haulage networks have number of significant advantages in comparison with truck and railway haulage:

- ✓ STS haulage networks are more flexible and enable high range of scalable capacities. This is a unique competitive advantage of STS.
- ✓ STS's CAPEX as well as lifetime costs of the system are up to 50% less than the alternatives.
- ✓ STS OPEX is lower by 50% or more as compared to conventional systems. This is due to: full automation of the process, increased energy efficiency, lower loads on the track structure and increased speed and frequency of haulage.
- ✓ STS ensures increase in NPV by 300% for larger and by 200% for smaller capacities, as compared with conventional haulage systems.
- ✓ Payback period depends on system's capacity. At 20 MTPA + the payback occurs by 20% faster as compared to conventional railway.
- ✓ Implementation of STS in synergy with String Port significantly improves economics of any project. STS and SPS provide scalable capacity and reduce the operational risk.
- ✓ Projects utilizing STS haulage networks will have significantly better economics. Correspondingly capitalization of such companies will grow in excess of industry's averages. This is due to reduced CAPEX and OPEX that STS affords the end user.
- ✓ Improved profitability of projects utilizing STS will have positive effect on business valuation and consequently higher intrinsic value of shares. In the medium to long term this shall result in higher capitalization.
- ✓ The direct results of STS implementation are: lower costs, higher profits and secure capacity.

4. STS's OFFER

We stand for success and promotion!

STS Ltd is here to solve the most pressing problem faced by emerging miners – lack of initial project finance.

Mining is capital intensive business. Extraction, crushing, processing and beneficiations all require significant upfront capital and more capital still to ramp up production. Yet this is only part of the overall picture. The miner only gets paid FOB ship. Therefore logistics is the crucial component and often represents as large a part of the CAPEX and OPEX as all the other production costs combined. We recognize this problem and offer the most favorable conditions to emerging miners. The solution is simple and efficient - zero CAPEX!

We have already analyzed and demonstrated the economics of owning and operating alternative transport systems. Clearly STS is the system of choice (significantly more efficient than road and rail haulage) and yet there is a better solution still. The core of our proposal is: STS ltd will build-own-operate the bulk commodities STS networks and offer miners the "all inclusive" price per t/km. This means that we accept all technical, financial and operational risks. This ultimately means that miners can concentrate on their core business – mining, without having to worry about logistics. This also means that the profits can be reinvested directly into ramping up production without having to worry about how to get this additional product to the customer. In essence we are talking about "complete on demand transportation capacity".

The proposed "modus operandi" is as follows:
STS will install loading terminals in strategic locations conveniently accessible to our core clients. There it will be accepted, sampled and delivered directly to the appropriate storage facility in either conventional stockpile or String port. The easiest comparison is an automobile that takes a suburban road to a highway and then goes directly to its final destination.

When planning the STS networks we will take into consideration the location and capacity (both initial and ultimate) of our clients mines. This is why it is crucially important to commence our cooperation as early as possible.

Help us to help you!

We anticipate that combined capacity of a single STS line will be in the range of 30-50 MTPA. This will enable our clients to ramp up production to a mine's capacity, knowing that the transport capacity is there ready to take it.

We know that the proposed solution makes the most sense financially. This is not our assumption but the conclusion based on rigorous financial analysis. The IRR of a miner who contracts haulage to STS Ltd improves significantly as compared to one who owns and operates networks. Let us demonstrate it using Giralia's Dalton's JV as an example.

Option	Case	CAPEX	NPV	IRR
	10 of own production capacity			
5	20 MTPA STS /ship	$ 460.0M	$ 1,526.1M	57.1
8	**10 MTPA STS /ship**	**$ 130.0M**	**$ 786,6M**	**81.4**
	20 of own production capacity			
6	30 MTPA STS /ship	$ 700.0M	$ 3,060.1M	69.9
9	**20 MTPA STS /ship**	**$ 250.0M**	**$ 1,615.6M**	**88.0**

Above you can see the comparison for two groups of cases. Case 5 is for Giralia transporting 20 MTPA, 10 MTPA of its own ore and 10 MTPA of others. Case 6 is for Giralia transporting 30 MTPA, 20 MTPA of its own ore and 10 MTPA of others. Cases 8 and 9 demonstrate decrease in overall CAPEX and improved IRR in when contracting haulage to STS Ltd. This comparative analysis demonstrates that contracting haulage makes the most economic sense (as proven beyond any reasonable doubt by increase in IRR by more than 25%). Another important conclusion that can be drawn is that mining profits are better of being reinvested into ramping up mining production. Contracting haulage to STS Ltd enables just that and is therefore the most efficient allocation of resources.

Scenarios these groups of cases (#8-10) are presented Annexure. As well as the economic effect of integrating the String Port with the contracting haulage to STS Ltd.

Option	Case	CAPEX	NPV	IRR
8	10 MTPA STS /ship	$ 130.0M	$ 786,6M	81.4
9	20 MTPA STS /ship	$ 250.0M	$ 1,615.6M	88.0
10	20 MTPA STS /SPS	$ 250.0M	$ 1,793.5M	94.1

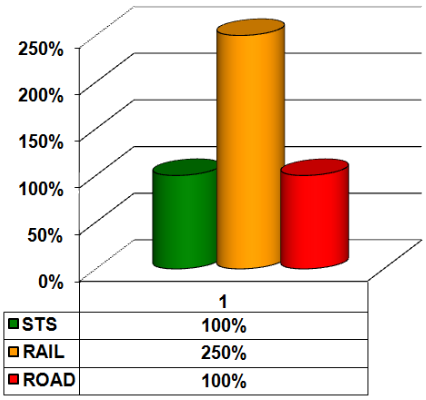
5. UNIQUE COMPETITIVE CHARACTERISTICS OF STS

Innovation in motion!

String Transport Systems is a transport of the new generation. During 33- year of its development more than USD $150 million and more than 1,000 man/years of high-professional labour were invested. Labour requirements for STS deployment and operation are also low. Therefore operational costs of STU in the aggregate will be by 3-5 times less as compared with traditional transport systems; the average cost recovery period of STS networks ranges from 2 to 5 years. Unique technical and economic characteristics of STS will ensure revolutionary changes in logistics of mining operations.

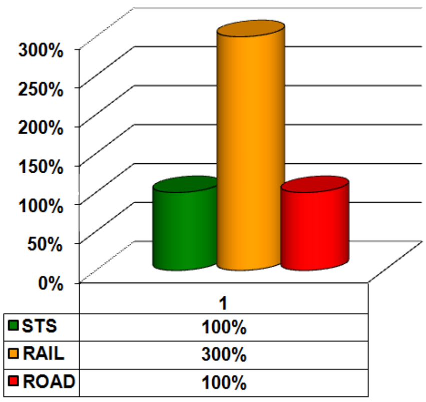
COMTPARATIVE ANALYSIS OF STU AND OTHER TRANSPORT SYSTEMS

LOWEST CAPITAL COST OF THE SYSTEM IS ACHIEVED BY



- ✓ Low material consumption for construction of the track structure
- ✓ Low dependence on terrain
- ✓ Use of inexpensive and widely available materials
- ✓ Use of off the shelf vehicles, units and components
- ✓ Simplified infrastructure
- ✓ Reduced rolling stock requirement due to optimized organization of traffic
- ✓ Low land usage
- ✓ Low volume of earthworks
- ✓ Optimized progressive assembly construction technology

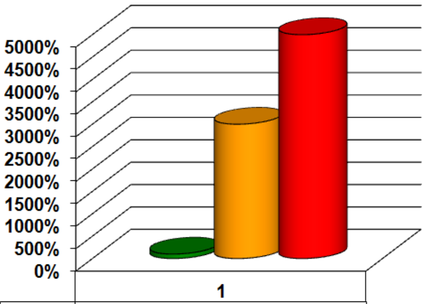
AVERAGE COMBINED COSTS OF TRANSPORTATION PER TONNE PER KM



- ✓ Lowest base capital cost of the system
- ✓ Lower depreciation due to increased longevity of the system
- ✓ Low maintenance track structure
- ✓ Unrivalled energy efficiency
- ✓ Reduced rolling stock maintenance due to its more favourable operating conditions

COMTPARATIVE ANALYSIS OF STU AND OTHER TRANSPORT SYSTEMS

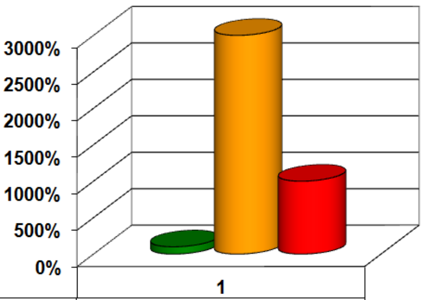
COMBINED LAND USAGE SQM



	1
STS	100%
RAIL	3000%
ROAD	5000%

- ✓ Construction of fully elevated track structure on supports.
- ✓ Elimination of at grade track structure requiring embankment

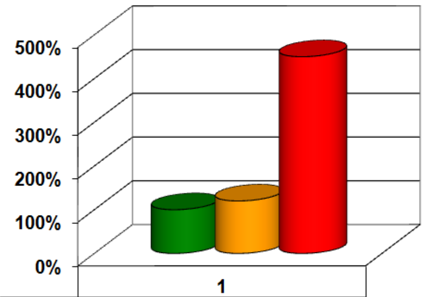
VOLUME OF EARTHWORKS



	1
STS	100%
RAIL	3000%
ROAD	1000%

- ✓ Construction of fully elevated track structure on supports.
- ✓ Elimination of at grade track structure requiring embankment

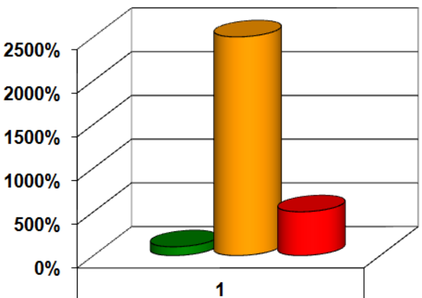
ENERGY EFFICIENCY



	1
STS	100%
RAIL	120%
ROAD	450%

- ✓ Optimized wheel-rail interface geometry ensuring lowest possible rolling resistance
- ✓ Optimized aerodynamics of a trailer ensuring lowest possible aerodynamic resistance (drag)
- ✓ Elevation of the vehicles which eliminates ground effect
- ✓ Lower dry mass of the vehicles
- ✓ Continuously welded, polished rail which reduces rolling resistance

COMBINED NEGATIVE EVIRONMENTAL IMPACT RESULTING FROM OVERALL CONSTRUCTION

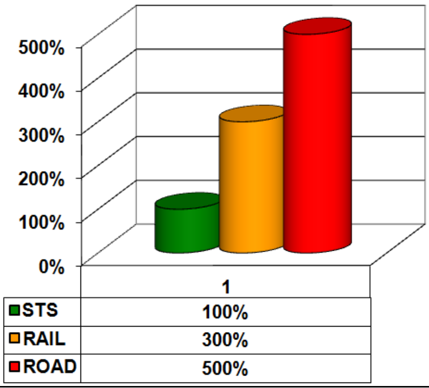


	1
STS	100%
RAIL	2500%
ROAD	500%

- ✓ Significantly reduced material consumption and corresponding reduction in heavy machinery operating time, fuel usage, destruction of adjacent ecological systems, interference with natural hydrology, noise pollution etc.

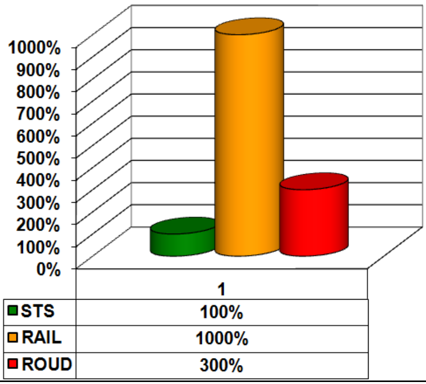
COMTPARATIVE ANALYSIS OF STU AND OTHER TRANSPORT SYSTEMS

COMBINED OPERATIONAL AND MAINTENANCE COSTS



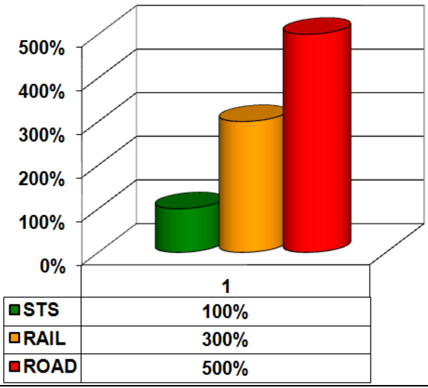
- ✓ Lowest combined operational and maintenance costs are achieved by:
- ✓ Unrivalled energy efficiency
- ✓ Low maintenance track structure
- ✓ Favorable conditions of rolling stock operation resulting in longer service life
- ✓ All weather operation
- ✓ Improved durability of track structure resulting in lower repair costs

COMBINED MATERIAL CONSUMPTION FOR CONSTRUCTION OF TRACK STRUCTURE INFRASTRUCTURE AND ROLLING STOCK



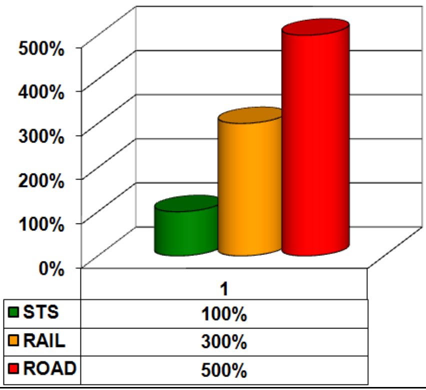
- ✓ Eliminating the need for ballast and embankment
- ✓ Eliminating the need for bridges, tunnels, retaining walls, culverts etc.
- ✓ Eliminating the need for contact network

ALL COMBINED ACCIDENT RATES



- ✓ Full elevation of the system which eliminates possibility of collision with other vehicles, people and animals
- ✓ Anti derailment side wheels which eliminate possibility of derailment
- ✓ Track structure is resistant to most natural disasters, including: earthquakes, floods, hurricanes etc.
- ✓ Track structure is most resistant against any potential terrorist attack

COMBINED NEGATIVE ENVIRONMENTAL IMPACT FROM SYSTEM OPERATION



- ✓ Unrivaled energy efficiency which minimizes harmful emissions
- ✓ Lowest footprint which minimizes interference with ecological systems, natural hydrology and soil vegetation

ENVIRONMENTAL QUALITIES OF STS

Application of STS will ensure:

- ✓ Reduction in consumption of non-renewable energy carriers (oil, petrol products, coal and gas), nonmetal materials, ferrous and non-ferrous metals; this is due to the fact that STS track structure and supports are characterized by the lower material consumption as compared with other modes of transport; construction of STS does not require embankment, ballast, culverts, bridges and other resource-intensive structures;
- ✓ reduced environmental pollution and greenhouse emissions as the result of: low energy consumption (by 500-1000% and more as compared with automobile transport); possibility of integration of STS with alternative types of energy (wind, solar, etc.);
- ✓ reduced footprint and interference with fertile lands due to the low land requirements of STS (less than 0.1 ha/km);
- ✓ reduced noxious emissions. Due to elimination of dusty embankments and ballast; considerably lower deterioration of rails, wheels and brakes;
- ✓ reduced noise and vibration. STS produces less noise and soil vibration as compared, for example, with rail. A string-rail track structure is provided with a system of internal dampers capable to suppress and capture the low- and high-frequency vibrations of the track. Furthermore, a mass of any model of STM will be considerably less than that of a railway wagon;
- ✓ conservation of natural landscapes and sensitive eco systems – STS does not require deforestation, does not interfere with natural hydrology, does not require removal of a vegetation layer of soils.

SAFETY OF STS

STS is the safest mode of transportation compared to competing modes of transport (road/rail). This is due to considerable reduction in the accidents causes and application of rigorous criteria and innovative approaches to the future safety standards and requirements. Let us discuss these **Safety Criteria:**

Destruction of a track structure is the most dangerous for rail transport. Let us consider this possibility for a suspended STS. According to SNiP 2.05.03-84* "Bridges and pipes" permitted design tensions in the high-strength wire of span structures of bridges for a wire of 5 mm diameter, are equal to 10,750 kgs/cm^2. In this case the threshold (destructive) tensions for this wire are equal to 17,600 kgs/cm^2. During the whole service life (100 years) of an under-the-rail STU a tensile stress in the string of its track structure will be changed within the range of 7,500 - 10,750 kgs/cm^2 under the impact of various factors such as: temperature (for example, from -0°C to +100°C) – by 2,400 kgs/cm^2, maximal wind (200 km/hour) – 50 kgs/cm^2, maximal icing (20 kg of ice per 1 running meter of a string-rail) – 200 kgs/cm^2, the rolling stock (two coupling unibuses moving in the middle of a span with a working one pulling a non-working one) – 600 kgs/cm^2. In this case a safety factor of the string under the emergency operation conditions (double overloading) will be as follows: (17,600 kgs/cm^2 — 10,750 kgs/cm^2) / 600 kgs/cm^2 = 11,4 times. Today none of the existing transport technologies has a similar (eleven-fold) safety factor under the emergency operation regime while in STU it is ensured thanks to a particular, peculiar to a string system kinematic scheme of string loading with the external loads (that are practically cross-sectional in relation to the string). The above given example shows that a string breaking is only possible under the impact of a train consisting of 23 rail cars with the total weight of more than 90 tons (but not two coupling designed STM with the total weight of 8 tons) or a wind speed exceeding 500 km/hour or frost below -100°C which is practically impossible.

Stability of STMs moving along the track structure is very high thanks to the availability of steel wheels equipped with an anti-derailment system, an independent suspension and high aerodynamic qualities of their body. Various emergency situations were modeled with the use of operational models at scales 1:15, 1:10 and 1:5 at the pilot STS section. STS rolling stock is operational under hurricane winds. For example, in order to derail a STM a side wind should have a strength considerably exceeding a module weight and its speed should be more than 300 km/hour which is highly improbable. It is possible to design STM resistant to any wind loads including cyclones. In this case it is just necessary to additionally strengthen an anti-derailment system of a STMs, string rails and supports.

Emergency transportation. In case of a STM failure they are equipped with the coupling devices, which ensure that the failed STM will be pushed by the following one to the repair point.

STS accident rates. Due to elevation of the system the accident rates will be well below existing modes of transport due to absence of at grade intersections with pedestrians, animals and other modes of transport.

Doubling of vitally important systems of STS. STS and its rolling stock are not only doubled and tripled as, for example, in aviation (in 2008 the number of deaths as a result of air crashes in the world was less than 1,000) but are provided with a four-fold degree of safety. For example, independent propulsion for each wheel.

Considering all safety criteria of STS in the aggregate the leading designers of STS headed by its general designer implement a **comprehensive safety system** to be applied in the operational STS. STS is going to integrate into a single system the following vitally important functions:

- ✓ automatic control system with a function of independent estimation of peak loads to put into operation additional STM as required;
- ✓ a system of automatic and independent testing of a rail track structure, supports and the rolling stock in combination with an automatic response of a control system to identify possible failures and supply the relevant information to the central control's board;
- ✓ a system of automatic fire detection and automatic fire extinguishing combined with a control system.

6. HISTORY OF STRING TRANSPORT

In 2001-2009 building technology of a string-rail track structure and supports as well as the key nodes and components of a freight String Transport were successfully tested at the full scale test track built in October 2001 in the town of Ozyory, Moscow Region (see fig. 3.1.)

Key characteristics of the testing ground:

- Length of the structure – 150 m;
- Summary tension of strings in the track structure – 450 ts (at +20ºC);
- Height of the supports – up to 15 m;
- Maximal span – 48 m;
- Maximal mass of a moving load – 15 t;
- Relative rigidity of the largest span under the load – 1/1500;
- Metal consumption of a string-rail track structure – 120 kg/m;
- Track slope – 10%.

Fig. 12. String Transport full scale test track

The following units and components were tested at the full scale test track:

✓ various strings (twisted cables with 27 mm and 15.2 mm diameter made of wires with 3 mm and 5 mm diameter, respectively);
✓ string anchorage;
✓ relaxation of pre-stressed strings (relaxation of K-7 cable with 15.2 mm diameter with the design tension of 10,400 kgs/cm^2 during 8 years was not detected);
✓ pile-supported, drill-injection and plate foundations of intermediate and anchor supports;
✓ special high-strength concrete for filling string-rails;
✓ two-rim steel wheel damped with a rubber interlayer between the rim and the nave;
✓ wheel-rail cohesion (a minimal friction coefficient in a "wheel-rail" pair during the rain or icing is 0.15-0.2 which makes it possible to design STS with prolonged slopes of up to 15%);
✓ accuracy of static and dynamic estimates of durability, rigidity and stability of supports, track structure and strings under the load impact of the rolling stock, seasonal change of temperatures, wind, icing, etc.

AUTHOR OF STU – ANATOLY YUNITSKIY

He has more than 200 scientific papers, 7 monographs and more than 120 inventions and is Academician of the Russian Academy of Natural Sciences.

Scientific papers focused on the String Transportation include 6 monographs, 32 scientific reports and articles; 67 inventions were made.

Soviet Peace Foundation:

- ✓ Grant for the development of string technologies and their applications used for ground and space (alternative to a rocket) transportation systems (USD 220,000, in 1988);

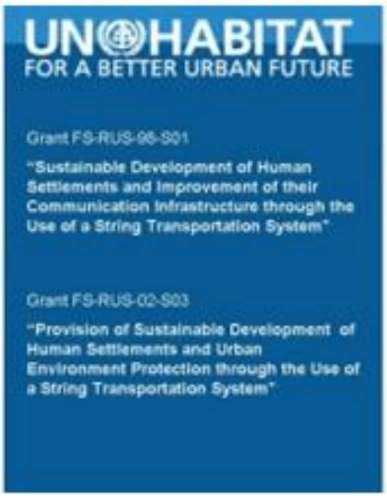
USSR Federation of Cosmonautics:

- ✓ Grant for the development of a concept of a Planetary Transport Vehicle (non-rocket transport system to launch objects into space that is based on the string technologies), USD 60,000, in 1988.

The novelty of inventions was confirmed by the following main patents (a list of intellectual property related to STS is attached in Annexure B):

Scientific, production and technological experience of STS Limited team and significant achievements

United Nations support:



- ✓ UN Grant for the project No. FS-RUS-02-S03: "Provision of sustainable development of human settlements and environment protection through the use of a String Transport System" (USD 180,000, years 2002-2004);
- ✓ UN Grant for the project No. FS-RUS-98-S01: "Sustainable development of human settlements and improvement of their communication infrastructure through the use of a String Transport System" (USD 250,000, years 1998-2000).

Awards:

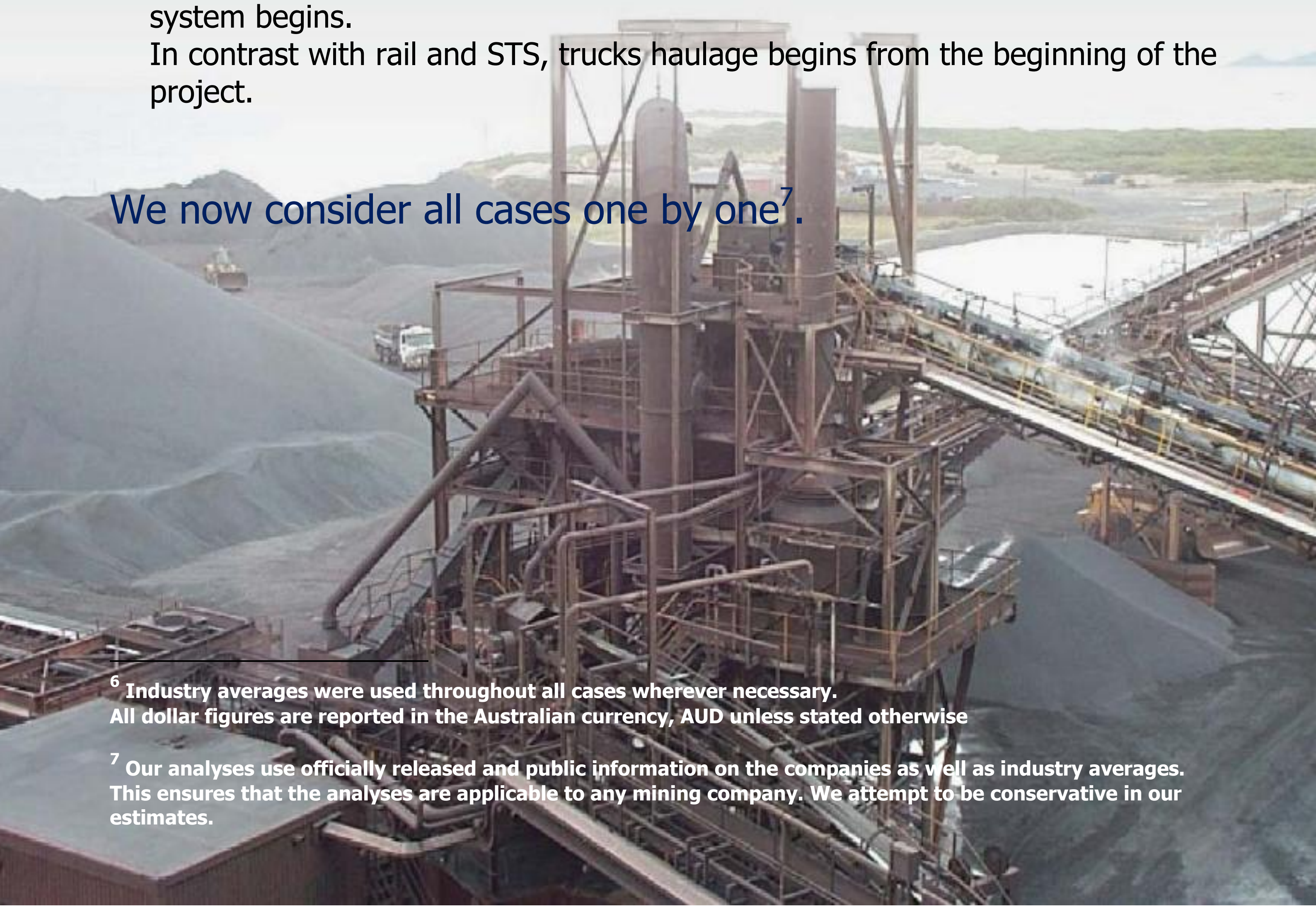
- ✓ National Award of the Transportation Sector of Russia – "Golden Chariot", nomination – "Project of the Year of the Transportation Sector of Russia", 2009;
- ✓ 2 Gold Medals of VVC: 2002 and 1998;
- ✓ Diploma of the International Transport Symposium in Libya, 2003;
- ✓ Diploma of the International Exhibition "Transport for cities, resorts and recreation zones" for the development of advanced environmentally-safe transport vehicles, components and equipment, 2002;
- ✓ Diploma of the International specialized exhibition of industrial transport and transportation services "PromTrans", 2002;
- ✓ Diploma of the International exhibition: "Industry and Transport: Cooperation and Collaboration", 2001;
- ✓ Diploma of the International exhibition: "Spectransport", 2001;
- ✓ Certificate of a Laureate of the national competition: "Russian Mark" – rewarding "String Transport Technologies" with a golden quality mark - "Russian Mark". Decision of the Higher Council of the "Russian Mark" No. 14 of October 16, 2001, Moscow;
- ✓ Certificate of a Laureate of the national competition "Russian Mark" – rewarding the "Project of a Passenger Module" with a golden quality mark - "Russian Mark". Decision of the Higher Council of the "Russian Mark" No. 14 of October 16, 2001, Moscow;
- ✓ Certificate of a Laureate of the national competition "Russian Mark" – rewarding the "Project of a Freight Module" with a golden quality mark - "Russian Mark". Decision of the Higher Council of the "Russian Mark" No. 14 of October 16, 2001, Moscow;
- ✓ Diploma of the International specialized fair-exhibition "MOBECO" for the presentation of the project of the high-speed String Transport of Unitsky, 2000;
- ✓ Diploma of the 1st degree of the International fair-exhibition "Innovations-98" to the winner in the competition of scientific-technological developments for the String Transport of Unitsky. October 20-23, 1998 (Moscow, All-Russia Exhibition Centre).

ANNEXURE A

Assumptions Common to All Cases[6]:

- The mining company builds, owns and operates the transportation system.
- Project duration: 6 years (medium term horizon).
- 30% of own assets and 70% of borrowed assets.
  The loan term three years at 10% per annum.
  The loan is repayed in years 2 and 3 in equal installments.
- Discount rate: 10% per annum.
- For rail and STS, the first 2 years of the project are spent building the transportation system.
- Starting from year 3 of the project commencement, operation of the transport system begins.
  In contrast with rail and STS, trucks haulage begins from the beginning of the project.

We now consider all cases one by one[7].



[6] **Industry averages were used throughout all cases wherever necessary.**
All dollar figures are reported in the Australian currency, AUD unless stated otherwise

[7] **Our analyses use officially released and public information on the companies as well as industry averages. This ensures that the analyses are applicable to any mining company. We attempt to be conservative in our estimates.**

Case 1 – 2 MTPA truck/ship.

Owner owns and operates the plant and equipment.

This case serves a reverse-engineering purpose as follows. Given the Giralia's officially disclosed final economic and financial indicators, a model was built in order to back out OPEX value to be used as a constant market input value in all subsequent cases (except truck haulage). Our CAPEX value equals A$82M, and it belongs to Giralia's declared CAPEX range A$50M-A$115M.

Case-Specific Inputs:

Haulage distance: 150 km
NPV: A$160M
IRR: 49.9%
OPEX $47.0/t (haulage contractor 44% of OPEX)

Results:

Financial and Economic Indicators	
CAPEX	$82M
Net present value – NPV	$161M
Internal rate of returns – IRR	49.6%
Payback Period – DPB	34 months
Average rate of profitability – ARR	56.4%
Profitability index – PI	2.8
Modified internal rate of returns – MIRR	18.6%

The data on Opex and Capex for 2 MTPA truck/ship:

Operating Costs	Opex ($/t)
Mining	13.26
Processing	2.25
Truck Operations	20.68
Port Operations	10.81
Total	47.00

Capital Costs	Capex ($Though)
Mine, Processing and Infrastructure	23,700
Truck and road	47,300
Contingency	11,000
Total	82,000

Thus, the numeric outcomes from this case will be used in the subsequent cases.

Case 2 – 2 MTPA STS/ship (with Capex $82M).

Under this case we analyzed the STS system that can be constructed using the same CAPEX as road haulage of $82M.

Before we start to make calculations some technical data will be provided. The productivity of 2 MTPA is too low for STS construction, as STS minimum productivity is 5 MTPA. The thing is that STS margin of safety and raw materials used for its construction result in construction of high-performance and low-cost systems. STS might construct 2 MTPA system as well as the system with capacity of 5 MTPA. In analysis of this case construction costs of 5MTPA system were taken into account and the profits were calculated with caution to 2 MTPA system.

Case-Specific Inputs:

Capex: $82M,
Haulage distance: 150 km
The values of Opex for Mining, Processing and Port Operations are taken from Case 1.

Results:

Financial and Economic Indicators	
CAPEX	$82M
Net present value – NPV	$192M
Internal rate of returns – IRR	51.6%
Payback Period – DPB	40 months
Average rate of profitability – ARR	59.9%
Profitability index – PI	3.0
Modified internal rate of returns – MIRR	20.1%

The data on Opex and Capex for 2 MTPA STS/ship:

Operating Costs	Opex ($/t)
Mining	13.26
Processing	2.25
STS Operations	5.27
Port Operations	10.81
Total	31.59

Capital Costs	Capex ($Though)
Mine, Processing and Infrastructure	20,470
STS and rail structure	56,530
Contingency	5,000
Total	82,000

Such conclusions might be drawn on the 2nd case. The first thing we see is decrease in IRR and PB rates, and it can easily be explained. The implementation period is four years as opposed to three years when using the road haulage. Consequently the borrowed funds are engaged for longer period. STS with 2 MTPA capacity is a complex technical installation and at least two years will be spent for the project implementation from its commencement. The loan will be repaid from profits. It will take 3-4 years from the project's commencement.

Case 3 – 2/5 MTPA STS/ship.

The increase of all other indices can be noted. Over the longer term Giralia would have earned in total extra $31M (see the increase in NPV); there is however another significant advantage, that is completely unavailable to Giralia were it to opt for road haulage. That is significant reduction in transportation OPEX, (which drops by $15.40 in comparison with the use of road haulage $20.68 – $5.28) to $5.28. The higher is the STS's capacity the lower is its OPEX. Thus, STS's OPEX of $5.28 proves that 2 MTPA STS/ship solution is more efficient than 2 MTPA truck/ship solution.

Additionally STS affords Giralia unique opportunity to ramp up ore production and transportation up to 5 MTPA with only a marginal additional CAPEX. In order to increase STS's capacity Giralia has an option to reinvest its profits to ramp up ore production and purchase additional rolling stock for STS. There is no need for upgrading of the STS's track structure and infrastructure as it was initially designed for 5 MTPA capacity. The capacity of 2 MTPA requires use of two hundred of 5 ton STMs. The capacity of 5 MTPA would require about 485 STMs. One STM in serial production will cost approx $30,000. Therefore additional CAPEX required to bring the capacity up to 5 MTPA is $8.5 M. Now let's analyze this scenario, and see what effect it will have on OPEX and how it will influence the company indices.

Case-Specific Inputs:

The data from Case 2.
Reinvesting of profits at the end of year 4 for capacity increase to 5 MTPA.

Results:

Financial and Economic Indicators	
CAPEX	$82M
Net present value – NPV	$354M
Internal rate of returns – IRR	54.3%
Payback Period – DPB	40 months
Average rate of profitability – ARR	78.2%
Profitability index – PI	4.7
Modified internal rate of returns – MIRR	29.4%

The data on Opex and Capex for 2/5 MTPA STS/ship:

Operating Costs	Opex ($/t)
Mining	12.08
Processing	2.17
STS Operations	3.24
Port Operations	10.81
Total	28.30

Capital Costs	Capex 1 ($Though)	Capex 2 ($Though)
Mine, Processing and Infrastructure	20,470	16,970
STS and rail str.	56,530	8,550
Contingency	5,000	3,000
Total	82,000	28,520

Case 4 – 20 MTPA railway/ship (with Capex $700M, Opex $35.0/t).

Just to remind the scenario analyzed by Macquarie Group's and Bell Potter Securities' experts: If Giralia invests A$700M in Project Daltons JV to construct a railroad with capacity 20 MTPA, it will considerably decrease Opex from A$47.0/t to A$35.0/t. Let us analyze these figures. First of all, Giralia would have to construct the 240 km road as required by the terms of the project.

The existing 150 km route needs to be extended by an additional 90 km to Mc Phee mine. This will also cover the traffic flow of the neighboring mines of other companies, increasing productivity to 10-15 MTPA. Secondly, taking into account current realities of the transportation market, where the average construction cost of 1 km of railroad is $3.5M[8], with a $700M investment, GIR can construct a 20 MTPA railway and enhance its mining capacity to 10 MTPA. GIR will transport additional 10 MTPA of ore from the neighboring mines.

[8] The Association of Mining and Exploration Companies (AMEC) final submission to the National Competition Council. April 2008

Case-Specific Inputs:

Capex: $700M,
Opex: $35.0/t,
Haulage distance: 150 km + 90 km =240 km
The data on Mining, Processing and Port Operations is market-averaged
Traffic flow of 20 MTPA starting from year 3 of the Project implementation (10 MTPA of own production carriage and 10 MTPA of ore carriage from the neighboring mines).
The cost of ore carriage from the neighboring mines is $0.12/tkm

Results:

Financial and Economic Indicators	
CAPEX	$700M
Net present value – NPV	$1,091M
Internal rate of returns – IRR	31.6%
Payback Period – DPB	43 months
Average rate of profitability – ARR	42.6%
Profitability index – PI	2.6
Modified internal rate of returns – MIRR	17.0%

The data on Opex and Capex for 20 MTPA railway/ship:

Operating Costs	Opex ($/t)
Mining	13.26
Processing	2.25
Rail Operations	8.68
Port Operations	10.81
Total	35.00

Capital Costs	Capex ($Though)
Mine, Processing and Infrastructure	120,000
Railway	570,000
Contingency	10,000
Total	700,000

What can we say, looking at the figures of case 4? First of all we see the decrease of costs. This fact was also mentioned by the experts. We can see that GIR, having its own assets of $210M on the start, invests $700M to the Project, taking a loan at 10% per annum. Within 7 years of the Project implementation GIR repays its loan and gets NPV $1,091.8M at IRR 31.57%. This result can not be achieved with railway haulage. In Bulk Commodities to date there was no other opportunity for growth and increase of traffic flows beside railroad construction. That is why the experts predicted the increase of 1GIR share price from A$0.41 to A$1.25. But let’s compare financial indices of this case with the data on the analogous system STS 20 MTPA STS/ship. It is interesting, which data will prove to be more efficient.

Case 5 – 20 MTPA STS/ship.

Let's analyze, what will be the Capex of GIR, if it constructs analogous transport system STS 20 MTPA. Look at the results.

Case-Specific Inputs:

STS Capasity: 20 MTPA,
Haulage distance: 240 km
The values of Opex for Mining, Processing and Port Operations are taken from Case 4.
The data on Opex and Capex for 20 MTPA STS/ship:

Operating Costs	Opex ($/t)
Mining	12.08
Processing	1.40
STS Operations	3.21
Port Operations	10.81
Total	27.50

Capital Costs	Capex ($Though)
Mine, Processing and Infrastructure	110,000
STS and rail structure	340,000
Contingency	10,000
Total	460,000

Results:

Financial and Economic Indicators	
CAPEX	$460M
Net present value – NPV	$1,526M
Internal rate of returns – IRR	57.13%
Payback Period – DPB	35 months
Average rate of profitability – ARR	69.9%
Profitability index – PI	4.2
Modified internal rate of returns – MIRR	27.0%

The result is evident. First of all, there is no need in such capital investments. The rate of CAPEX needed is $460M. If the company has $210M of its own assets (30% of Capex $700M), it may take a loan for a period of 3 years (not for 4 years) and repay it by one payment within the 3rd year of the Project implementation. To make an objective picture, CAPEX rate was formed taking into account system productivity of 10 MTPA, as it was done in the previous case. CAPEX decrease for Mine, Processing and Infrastructure is due to simplification of STS loading terminal. Additional benefit is that there is no need for stockpiles. This results in considerable decrease in OPEX.

Case 6 – 30 MTPA STS/ship.

By analogy with the previous case study, we'll first of all analyze what Giralia will be able to construct at CAPEX of $700 M. It will take $470M in CAPEX to construct STS 30 MTPA system with the length of 240 km. $230M of may be reinvested to ramp up production to 20 MTPA.

Case-Specific Inputs:

The data on OPEX and CAPEX for 30 MTPA STS/ship:

Operating Costs	Opex ($/t)
Mining	11.98
Processing	1.40
STS Operations	3.01
Port Operations	10.81
Total	27.20

Capital Costs	Capex ($Though)
Mine, Processing and Infrastructure	230,000
STS and rail structure	460,000
Contingency	10,000
Total	700,000

STS Capasity: 30 MTPA,
Mine Capasity: 20 MTPA,
Haulage distance: 240 km
The values of OPEX for Mining, Processing and Port Operations are taken from Cases 4 and 5.
Capacity of 30 MTPA starting from year 3 of the Project implementation (20 MTPA of own production carriage and 10 MTPA of ore carriage from the neighboring mines).
The price charged for haulage is $0.12 t/km

Results:

Financial and Economic Indicators	
CAPEX	$700M
Net present value – NPV	$3,060M
Internal rate of returns – IRR	70%
Payback Period – DPB	33 months
Average rate of profitability – ARR	87.3%
Profitability index – PI	5.2
Modified internal rate of returns – MIRR	31.7%

This enables Giralia to redistribute their finances and build more efficient system than Railway is. At the same time its own mining capacity will be increased up to 20 MTPA. It means that Giralia will be able to transport its own ore at the rate of 20 MTPA and additionally transport the ore from the neighboring mines at the rate of 10 MTPA. Let's see, how it results in financial indices.

Case 7 – 30 MTPA STS/SPS.

Let's analyze the final case to make conclusions on the results of all cases. We have yet to incorporate the unique STS and String Port into our analysis. We assume that String Port is constructed by operator and the capacity is sold to miners.

A huge competitive benefit of such String Ports is decrease in Port Operations by at least 30%. If the reader asks how it is possible, we will answer that CAPEX of String Ports construction is up to 300-500% lower than CAPEX of conventional ports construction. Besides, String Ports are automated, efficient and have low energy consumption. So we can make a conclusion, that to be competitive enough they will decrease Port Operations at least by 30%. Let's analyze this example. All the data is taken from the previous case, but Port Operations are decreased to the rate of $7.56. Here are the results.

Case-Specific Inputs:

STS Capasity: 30 MTPA,
Mine Capasity: 20 MTPA,
Haulage distance: 240 km
The values of Opex for Mining, Processing and Port Operations are taken from Case 6.
The data on Opex and Capex for 30 MTPA STS/SPS:

Operating Costs	Opex ($/t)
Mining	11.98
Processing	1.10
STS Operations	2.96
Port Operations	7.56
Total	23.60

Capital Costs	Capex ($Though)
Mine, Processing and Infrastructure	230,000
STS and rail structure	460,000
Contingency	10,000
Total	700,000

Results:

Financial and Economic Indicators	
CAPEX	$700M
Net present value – NPV	$3,194M
Internal rate of returns – IRR	72%
Payback Period – DPB	33 months
Average rate of profitability – ARR	90.3%
Profitability index – PI	5.4
Modified internal rate of returns – MIRR	32.5%

Case 8 – STS Haulage 10 MTPA STS/ship.

This case is based on the same assumptions as case 6 (Giralia invests in construction of STS with the capacity of 20 MPTA). We will use the assumption for Mining Processing and Infrastructure CAPEX of $230M to ensure production capacity of 10 MPTA.

Taking into consideration that STS Ltd accepts all the risks and expenses associated with implementation of STS network, the contracted haulage price will be higher than rail but lower than road haulage. Our modeling indicates that such price could be $0.12 per t/km.

Case-Specific Inputs:

CAPEX on Mine, Processing and Infrastructure:	$130M
Mine Capasity:	10 MTPA
Haulage distance:	240 km
STS Haulage cost:	$0.12/tkm

The values of Opex for Mining, Processing and Port Operations are taken from Case 5.

Results:

Financial and Economic Indicators	
CAPEX	$130M
Net present value – NPV	$786,3M
Internal rate of returns – IRR	81.4%
Payback Period – DPB	31 months
Average rate of profitability – ARR	117.5%
Profitability index – PI	7.1
Modified internal rate of returns – MIRR	38.5%

Case 9 – STS Haulage 20 MTPA STS/ship.

Case-Specific Inputs:

CAPEX on Mine, Processing and Infrastructure:	$250M
Mine Capasity:	20 MTPA
Haulage distance:	240 km
STS Haulage cost:	$0.12/tkm

The values of Opex for Mining, Processing and Port Operations are taken from Case 6.

Results:

Financial and Economic Indicators	
CAPEX	$250M
Net present value – NPV	$1,615.6M
Internal rate of returns – IRR	88.0%
Payback Period – DPB	30 months
Average rate of profitability – ARR	117.5%
Profitability index – PI	7.5
Modified internal rate of returns – MIRR	39.8%

Case 10 – STS Haulage 20 MTPA STS/SPS

Case-Specific Inputs:

CAPEX on Mine, Processing and Infrastructure:	$250M
Mine Capasity:	20 MTPA
Haulage distance:	240 km
STS Haulage cost:	$0.12/tkm

The values of Opex for Mining, Processing and Port Operations are taken from Case 7.

Results:

Financial and Economic Indicators	
CAPEX	$250M
Net present value – NPV	$1,793.5M
Internal rate of returns – IRR	94.1%
Payback Period – DPB	30 months
Average rate of profitability – ARR	136.2%
Profitability index – PI	8.2
Modified internal rate of returns – MIRR	41.9%

ANNEXURE B

The list of intellectual property objects of STU

- ✓ Unitsky A.E. Linear transport system. Patent of the Russian federation No. 2080268, cl. B 61 B 5/02, 1994;
- ✓ Yunitsky Anatoly. Linear Transport System. Patent of Republic of South Africa № 95/2888, classification B 659, 1994;
- ✓ Unitsky A.E. Linear transport system. Patent of Ukraine No. 28057, cl. B 61 B 13/04, 1994;
- ✓ Unitsky A.E. Rail of Transport System of Unitsky (alternatives) (2 inventions). Eurasian patent No. 003484, cl. E 01 B 5/08, 2001;
- ✓ Unitsky A.E. Rail of Transport System of Unitsky. Eurasian patent No.003485, cl. E 01 B 5/08, 2001;
- ✓ Unitsky A.E. High-speed transport module. Eurasian patent No. 003490, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. High-speed transport module. Eurasian patent No. 003533, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. High-speed transport module. Eurasian patent No. 003534, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. High-speed transport module. Eurasian patent No.003535, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. High-speed transport module of Transport System of Unitsky. Patent of the Russian Federation No.2201368, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. High-speed transport module of Transport System of Unitsky. Patent of the Russian Federation No. 2201369, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. Rail of Transport System of Unitsky (alternatives) (2 inventions). Patent of the Russian Federation No.2201482, cl. E 01 B 25/00, 2001;
- ✓ Unitsky A.E. High-speed transport module of Transport System of Unitsky. Patent of the Russian Federation No. 2203194, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. High-speed transport module of Transport System of Unitsky. Patent of the Russian Federation No. 2203195, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. Rail of Transport System of Unitsky. Patent of the Russian Federation No. 2204636, cl. E 01 B 25/00, 2001;
- ✓ Unitsky A.E. Rail of Transport System of Unitsky, manufacturing and assembly techniques (2 inventions). Patent of the Russian Federation No. 2204637, cl. E 01 B 25/00, 2001;
- ✓ Unitsky A.E. Rail of Transport System of Unitsky. Patent of the Russian Federation No. 2204638, cl. E 01 B 25/00, 2001;
- ✓ Unitsky A.E. Rail of Transport System of Unitsky, its manufacturing techniques (2 inventions). Patent of the Russian Federation No. 2204639, cl. E 01 B 25/00, 2001;

- ✓ Unitsky A.E. Rail of Transport System of Unitsky. Patent of the Russian Federation No. 2204640, cl. E 01 B 25/00, 2001;

- ✓ Unitsky A.E. Rail of Transport System of Unitsky. Patent of the Russian Federation No. 2208675, cl. E 01 B 25/00, 2001;
- ✓ Unitsky A.E. High-speed transport module of Transport System of Unitsky. Patent of the Russian Federation No. 2211781, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. Transport System. Patent of the Russian Federation No. 2211890, cl. E 01 B 25/00, 2001;
- ✓ Unitsky A.E. High-speed transport module of Transport System of Unitsky. Patent of the Russian Federation No. 2217339, cl. B 62 D 35/00, 2001;
- ✓ Unitsky A.E. Transport System of Unitsky (alternatives) and its construction techniques (4 inventions). Patent of the Russian Federation No. 2220249, cl. E 01 B 26/00, 2002;
- ✓ Unitsky A.E. Transport System of Unitsky (alternatives) and its construction techniques (3 inventions). Patent of the Russian Federation No. 2223357, cl. E 01 B 26/00, 2002;
- ✓ Unitsky A.E. Transport System of Unitsky (alternatives) and its construction techniques (3 inventions). Patent of the Russian Federation No. 2224064, cl. E 01 B 26/00, 2002;
- ✓ Unitsky A.E. Transport System of Unitsky and its construction techniques (2 inventions). Eurasian patent No. 004917, cl. E 01 B 26/00, 2002;
- ✓ Unitsky A.E. Construction techniques of high-rise buildings through the use of concrete forms and shaft-wall system (2 inventions). Eurasian patent No. 004188, cl. E 04 B 1/35, 2002;
- ✓ Unitsky A.E. Rail track structure of Transport System of Unitsky (alternatives) (3 inventions). Eurasian patent No. 004391, cl. E 01 B 25/00, 2003;
- ✓ Unitsky A.E. String Transport System (alternatives), manufacturing and assembly techniques of a span section of the string-rail thread (3 inventions). Eurasian patent No. 005017, cl. E 01 B 25/24, 2003;
- ✓ Unitsky A.E. Transport System. Eurasian patent No. 005534, cl. E 01 B 25/00, 2004;
- ✓ Unitsky A.E. Transport System of Unitsky (alternatives) and its construction techniques (4 inventions). Eurasian patent No. 006359, cl. B 61 B 3/00, 2004;
- ✓ Unitsky A.E. Transport System of Unitsky (alternatives) and its construction techniques (3 inventions). Eurasian patent No. 006111, cl. B 61 B 3/00, 2004;
- ✓ Unitsky A.E. Transport System of Unitsky (alternatives) and construction techniques (3 inventions). Eurasian patent No. 006112, cl. B 61 B 3/00, 2004;
- ✓ Unitsky A.E. String Transport System of Unitsky. Patent of the Russian Federation No. 2324612, cl. B 61 B 5/00, 2006.