

**Title:** **Blips on the Radar Screen: The Case for Sustained Stability in New Subsea Systems Development Market**

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**Abstract:** The resurgence of substantial growth in the telecom services sector has fueled a sharp increase in activity in the submarine fiber cable industry. While many industry observers interpret these developments as the beginnings of another boom-bust cycle, many of the underlying key ingredients that lead to past cycles are absent from today's market and unlikely to return. This paper presents evidence that despite the many announcements to complete major new cable builds by 2008, a variety of mitigating factors will more likely cause schedules for many of those cables to be pushed farther out in time, while the supply industry sees a return to near full-capacity operating conditions that will endure for several years without major expansions over current levels.

## **1. Introduction**

The submarine cable industry has been plagued by a series of boom-bust cycles over much of its life. The most recent cycle saw the most dramatic swings ever as suppliers rapidly expanded production to meet a highly frenzied and unprecedented level of demand for new systems as new cable operators rushed into the market and existing operators expanded their networks globally. This resulted in over-capacity not only along some cable routes but also within the supplier community which led to severe write-downs in assets across the board during the multi-year drought in major systems building.

Having now re-adjusted to the reduced levels of demand, the supply community now faces the prospect of another spike in systems demand. Adding production capacity has high associated costs as well as relatively lengthy time frames. The costs might not be fully recovered if doing so satisfies demand in the very short term and cannibalizes the future. Not expanding – on an individual supplier basis – risks losing market share. Beginning an expansion program raises fixed costs against an uncertain payoff over a period of future business that, at least according to past experience, tends to decrease as rapidly as it increases.

In today's marketplace there may be structural impediments to expanding capacity significantly beyond current levels which may, in the final analysis, lead to higher factory utilization over a broader period and force customers to cooperate or at least re-think strategies that otherwise might lead to a repetition of over-building and under-utilized network capacity.

## **2. Makings of a Potential Spike in Demand for Systems Supply**

Calendar year 2006 marked a robust recovery for the submarine cable industry. Following the beginnings of a turnaround during 2005, the past year has not only seen a level of stability return to the market, but the volume and nature of the cables that have been announced and the supply contracts that have been awarded point to a market that is quite healthy in terms of new orders and contracts signed with continuing growth for at least the next two years (2007-2008.)

There were twenty-four (24) cable systems contracted in 2006, up from seventeen (17) in 2005. Although the twenty-four systems under contract represent total 35,388 route-kilometers of cable – the healthiest

level of the past five years, but far from long-term average norms of the pre-boom era – what made 2006 went beyond these numbers.

## **2.1 From Niches to Broad-based Growth**

One of the key factors for gauging the future health of the industry evidence of broadly based patterns of growth. As the industry began its gradual recovery in 2004 and early 2005, a clear pattern began to develop. During the nascent recovery, growth was concentrated in relatively short, regional cables in the Indian Ocean and Caribbean regions and the companies moving forward were the traditional operators in countries that had little or no competition in their home telecom markets. These were the few companies that still had the funds on hand to build cables or the cash flow from their ongoing operations to be able to raise money from the banks that had turned away from the submarine cable industry during the drought that began in 2002.

For the rest of 2005 and throughout 2006, however, there was no single pattern of growth but instead new systems deployment has become more broadly based with projects representing a wide variety of sizes, motives and means of funding. Although the Indian Ocean and Caribbean markets remained strong, cables were built or announced throughout the world – from well-developed markets in the Pacific and Mediterranean to some of the world's most remote regions.

The scale of projects also now varies more widely, once again up to and including transoceanic systems. To the familiar names behind the development of projects is now added such new creations as Bredband Finnmark and KKFL. Even Global Crossing, whose cable-building period ended in 2002 and has been through two bankruptcies, returned to announce a new cable during 2006. And the successor to the Asia Global Crossing branch of that colossus, Asia Netcom, is getting back into the cable building game as well with the announcement of a major new transpacific network.

Funding methods for the new projects also vary more radically among the more recent cable projects. What is clear is that funding sources have become available once again for new cable systems and developers are responding with good projects worthy of being funded. Moreover, many governments are also providing funds to support new projects that serve relatively small markets and that without government financial support would be difficult to justify on pure economics.

## **2.2 Return of Transoceanic Systems**

Perhaps the one development that occurred in 2006 that demonstrated the recovery beyond any other was the return of transoceanic cable projects. Following the collapse of the industry in 2002, it appeared that the era of the transoceanic cable was at an end for quite a while. The transatlantic and transpacific markets had become “overbuilt”, traffic growth appeared to be throttling back considerably from year-on-year doubling and there appeared to be enough inexpensive capacity on those cables to satisfy carriers for many years to come.

However, Internet-related capacity demand surged in 2005 and 2006 with new bandwidth-hungry applications along with a major shift from content provider-to-service subscriber delivery patterns to an additional measure of equally large peer-to-peer (user-to-user) traffic flow that continues to grow. Broadband access growth at the end-user level has enabled the peer-to-peer market to blossom and is spreading rapidly in large-volume domestic markets translating into huge needs for international capacity. As a result, the transpacific market is now considered to be underserved and available lit capacity is rapidly dwindling across the Atlantic.

During 2006, at least four new transpacific cable projects have been proposed – Asia-America Gateway (a consortium led by Telekom Malaysia), Trans-Pacific Express Cable Network (proposed by China Telecom and China Netcom), EAC Pacific (Asia Netcom) and FLAG Telecom's NGN Pacific (Reliance). Whether or not all of these will come to fruition remain to be seen, but all four projects have strong financial backing.

Meanwhile, the prospects for another US-Australia cable may be increasing. Southern Cross announced in late 2005 that it had sold US\$218 million in capacity during a six-month stretch that year. In the two

years that followed a 2003 capacity upgrade, the company reported that utilization of the network had more than doubled and 32% of the upgraded network capacity on the Australasia-US ring was already in use, with network utilization expected to top 40% shortly thereafter.

In August 2006, the company said it had the capacity to meet anticipated demand from Australia for five more years (i.e. through 2011.) Although a relatively long time from a sales and marketing perspective, the prospect of reaching maximum capacity within only four years from now highlights the need to begin planning a new system to Australia. Southern Cross is more than 30,000 kilometers long, representing a supplier contract value of more than US\$1 billion.

As only two D-WDM cables serve Australia's East Coast (Southern Cross and Australia-Japan Cable) and one its West (SEA-ME-WE-3), a clear need for a new cable is emerging. In fact, at the end of 2006, a new Australian player, PIPE Networks, along with VSNL International announced plans to build a cable linking Australia and Guam. It seems unlikely that Telstra and Optus, the largest Australian carriers and owners of the existing submarine cables, would sit idly by while a new player brings capacity to the market as their own cables fill up. The prospect of yet another new system by the 2010 timeframe would seem to be quite good.

Although the progression of additional wavelengths attainable from existing fiber networks continues to beyond original ultimate design capacity at time of construction, increasing the capacity of a cable places inordinate reliance on a single network. Given the experience of the recent Taiwanese earthquake, the desire for and advantages of network physical route-path diversification would also seem to bolster the case for additional facilities for serve the Australian market.

### **2.3 Next Transatlantic Cable?**

Although no new transatlantic cables were announced in 2006, there were some major developments regarding owners of existing cables. Hibernia Atlantic, a cable system that was in bankruptcy only three years ago and now under new ownership and management, reported that in the eleven-month period ending in February 2006, it had sold or leased 220 Gbps of capacity, which the company believed to be a record for a transatlantic cable at that time.

If true, the record did not last long. Days later, Level 3 announced that it was buying 300 Gbps of capacity, with the rights to 300 Gbps more, on Cable & Wireless' Apollo cable. Level 3 has its own transatlantic cable, called Yellow, which is operating at capacity, hence the need to buy on Apollo. Level 3 said at the time that it had 480 Gbps of traffic on its transatlantic network and that the amount had doubled in the previous 12 months. The company also said that 85% of that traffic was currently in service and being utilized.

Just a few months later, T-Com, the broadband/fixed line strategic business area of Deutsche Telekom AG, announced that it was buying 180 Gbps of transatlantic capacity from FLAG Telecom. According to FLAG's and DT's studies, the total used capacity on the Europe-USA route has grown at around 48% year on year between 2002 and 2006 and is expected to clock a similar or higher growth rate in the coming years. This is consistent with reports of 50% year-on-year growth broadly across most of the major international telecom routes.

It is clear that demand on the transatlantic routes is exploding and that available lit capacity is being bought-up at rates not considered possible two or three years ago. Given this explosive demand, increasing utilization rates of lit capacity and the questionable economics of implementing cable upgrades at today's capacity price points, new transatlantic cables could even be possibly considered before the end of the decade.

### **2.4 Large Capacity Sales Driving Growth and Upgrades Across Other Regions**

Large capacity sales were not limited in 2006 to the transatlantic routes. During the year, FLAG Telecom announced major sales in the Pacific and Indian Ocean regions. Contracts to upgrade at least seven submarine cable systems were awarded in 2006. These included EAC, Mid Atlantic Crossing (MAC), SAm-1, ARCOS, SEA-ME-WE-3, VSNL's transpacific cable and Global Crossing's UK-Ireland cables.

Still unconfirmed by public announcements as of this writing is the widely rumored upgrade of the Japan-US consortium cable for later in 2007. And other cable upgrades are likely to also be implemented throughout the coming year such as on PC1, announced at PTC 2007.

Clearly there is robust demand for new submarine cable systems and capacity now driving renewed growth in the industry. An estimated 170,000 route-km of cable are on the radar screen for announced deployment over the next two years. In addition, other projects are projected for the 2009/2010 time frame totaling approximately 155,000 route-km. [see Figure 1]

### **3. What's the Same, What's Not the Same**

It's tempting to conclude that the industry is headed for another round of irrational, exuberantly optimistic behavior, particularly in the Indian Ocean where at least five major operators each want their own cables extending eastward and westward from the subcontinent. However, several significant factors that contributed to overbuilding in the previous boom are not present today. The first of these is "easy money."

During the previous boom period, literally dozens of the world's leading investment banks were pursuing submarine cable financing deals on the heels of several very successful private project financings that ultimately lead to relatively quick and lucrative initial public stock offerings (IPOs.) Very nearly all of these banks remain absent from the market for investing in or lending directly to submarine fiber cable projects as stand-alone businesses.

Some of those august institutions have returned to the telecom finance market, however, it generally has been in the wireless or other end-users services arena. This highlights the second major difference in the submarine cable development environment of today. Far fewer cables are being planned under the purely independent carriers' carrier model with the result being that most of the cables being built or planned for the very near term are not overly dependent on selling into to the wholesale marketplace for survival. Most cable developers and developments today have service provider adjuncts to one degree or another either as the primary, main line of business or through a related company or companies.

This makes the decision to build the cable less of a "field of dreams" proposition – build it and customers will come. The cable capacity today among the cable builders is needed more to support thriving end-user customers with telecoms or data services, the scale and sum of the margins through a broader value chain of which can support the capital required to build the cable, either alone or with a small number of like-minded partners.

The cable is merely another cost of doing business and not necessarily the main cost of the business. In a pure carriers' carrier business model, the cable cost is the primary cost of the business and the cable capacity itself is a relatively undifferentiated wholesale commodity with fewer built-in customer loyalty features and margins deeply affected by competitors that have acquired their capacity assets during the bankruptcy reorganizations at pennies on the dollar.

#### **3.1 Networks Systems and Subsystems Supply**

In assessing the ability of the submarine cable supply industry to adequately serve the emergent demand for new systems, the general consensus in the supplier community seems to be that the gating factors revolve around cable production volume and cable ship installation capability. Given levels of demand and these two constraints, terminal equipment and repeater production seem to be adequate, at least for the moment, barring any significant expansion in both ships and cable. But it is unlikely that these constraints to systems supply will soon be alleviated

In the cable realm – and the discussion here revolves around repeated type systems, the vast majority of which is lightweight (LW) cable – current industry capacity is pegged variously by suppliers and others at a maximum of 80,000 kilometers annually and as low as 60,000 kilometers, by some sources. This stands in stark contrast to the approximately 200,000 km of cable installed in the peak year of the

previous boom cycle and is still significantly lower than the 100,000-km per year long-run norm prior to that period.

The supply contraction undertaken in terms of cable manufacturing plants shuttered or production lines closed has for the most part been permanent. With the exception of some brick and mortar assets, the specialized cable manufacturing equipment has been written off and disposed of during the bust.

The prospects of a repetition of a production volume build-up that occurred during the boom period would appear to remain remote. All telecom equipment manufacturers remain under heavy pressure from shareholders to increase profitability from existing assets much less expanding in a sector of the market in which demand fell off so quickly immediately following the last build-up.

It could be quite difficult to convince Board-level management and shareholder alike that the current boom is anything more than another temporary aberration. The fact that the time frame needed for the design, procurement, installation, de-bugging, and operator training required for round-the-clock continuous production following a decision to expand cable capacity would likely push the introduction of commercial production out beyond a year and require a minimum of another two years of steady-state production beyond that just to break even does not favor a positive decision.

### **3.2 New Entrants**

As it so happens, the introduction of new entrants in the repeatered systems supply market has been attempted at or around each of the previous two SubOptic conferences, by Dorsal Networks in Kyoto in 2001 and by Red Sky Systems in Monaco in 2004. Each effort both times ended in failure to launch a commercially viable product in the marketplace despite promising markets and attractive technology offerings. Today's aspiring new entrant(s) – widely speculated to emanate from Asia – will face most, if not all, of the same barriers to entry faced by Dorsal and Red Sky which for the most part remain unchanged today.

From a customer point of view, there are at least three (3) key aspects affecting the prospects for a new entrant to the subsea systems supply industry: (1) experience, (2) intellectual property and (3) substantial financial backing (i.e. “deep pockets”) and/or other means of financial risk mitigation.

For a systems supplier, experience is required in all aspects of system and network design, project management, manufacturing, implementation including acquiring real estate for landing stations, securing rights of way, obtaining environmental and other types of permits, land-based systems integration (backhaul), and city-to-city supply capability. This need is driven by the turn-key, all-inclusive nature of most supply contracts.

Patents are being filed continuously in the optical communications arena that can easily entangle a newcomer to the business if it is not very careful. Patent suits can also be used by incumbent suppliers to drain the resources and attention of a new entrant while the merits of the suit(s) are being considered by the courts.

Moreover, network operators want to be sure that whatever supplier they choose will have staying power, that it will be in business not only for the duration of a manufacturing and construction of a project plus the warranty period, but also for the lifetime of the system. Network owners need to know that the supplier will be sharing financial risk against delays or defects and should anything go wrong, covering those risks either independently or through a parent company, partner, or investors to which it can turn to for resources.

Ultimately, any new supplier will face a skeptical market, one with customers reluctant to be the first to risk their network on a new and un-proven entity with no long-term track record.

The same criteria hold for any new cable repeatered subsea cable manufacturer. Physical integrity of the cable and fiber within is paramount to system reliability and even long-experienced suppliers have stumbled in the past.

### **3.3 Cable Ships**

It has been stated by ship operators that the existing number of cable ships in the telecom cable industry today is actually adequate to meet most of the foreseeable demand scenarios purely in terms of route-km installation capability on an annual basis. The key issue that gives rise to a constraint on systems supply is the utilization rate, or rather underutilization of those existing ships.

Deepwater cable maintenance and repair ships have similar capabilities as main lay transoceanic installation ships. The underutilization is attributable to the mandatory emergency standby requirements of cable maintenance agreements which idles otherwise productive cable laying capacity to assure the ready availability of a ship in the event of a cable fault.

As mentioned above with regard to the recent Taiwanese earthquake and the commendable response from all cable ship operators in quickly mobilizing to repair the damage swiftly, it is unlikely that cable owners (read: cable maintenance customers) are likely to be motivated to reduce their standby requirements any time soon so that ships may be made more generally available for installation work and consequently less available to respond to cable fault damage.

The answer to relieving the cable supply constraint due to lack of cable ships would therefore seem to lie in once again expanding the industry's cable ship fleet. In considering that possibility, the same CapEx decision process affects the cable ship sector as does cable manufacturing production capabilities, with an additional factor that lessens the likelihood of new cable ships entering the market to any large degree in the near future.

As with cable production lines, cable ships are long-lead production items, but even longer in gestation than cable plants – generally ranging about two years from order to delivery under the best of circumstances. Again, the risk is investing in a high-capital item that may miss the current boom entirely.

One way around this lengthy gestation for a new cable ship – and one of the primary methods used to gear-up for the last boom – is to retrofit other working-class ships for cable work. This can generally save substantial time and expense. However, it assumes the availability of suitable hulls with DPS-capable navigation and propulsion systems that are of critical importance for precise and reliable cable laying.

The major stumbling block, however, is that most every available DPS ship in the world, and most similar vessels under construction in shipyards worldwide, have been requisitioned and commissioned for work in the energy sector while oil and gas prices remain buoyant. Adding to the impediment for telecoms industry, these sophisticated work-horse vehicles command day rates two- to three-time (2X to 3X) higher in oil and gas than is typical for a cable ship.

So it appears that even with a possible expansion of whole systems production and/or increased capacity to produce any one or more critical path items such as cable or repeaters, these systems would be left in the cable holding tanks at the factory or on the docks until the next installation ship were to become available for its installation.

### **4. Conclusion**

Given the robust demand for large-scale regional systems and renewed interest in multiple transoceanic networks along several different routes and simultaneous constraints on systems supply, it is likely that rather than spike and then quickly fade away, systems volume would remain buoyant and factory utilization would remain relatively high over the next two to three-year period.

There is also a very apparent irony here in that if the market could reliably remain robust then some investment to expand capacity at the margins could be justifiable. However, it would require a very delicate balancing act not to re-ignite a mutually destructive market share war with all players expanding in equal, increments, resulting in cables being installed over a much shorter period, potentially for lower

profit margins due both to greater competition to win bids and higher production costs owing to the new CapEx for expanded production capacity.

In addition, many of the new systems announced over the past twelve to fifteen months have still yet to be contracted, leading to the very high likelihood that many of the aspired ready for service (RFS) dates would naturally be pushed back in time as resources on both sides of the equation equilibrate.

[GRAPHICS]

