

**Invited paper**

**Review of 20 years of undersea optical fiber transmission system  
development and deployment since TAT-8**

Stuart Abbott

Tyco Telecommunications; 250 Industrial Way West; Eatontown, NJ, 07724; USA  
sabbott@tycotelecom.com

**Abstract**

*TAT-8 was the first optical transatlantic undersea system, starting a dramatic expansion of the global telecommunications network. This paper reviews the drivers and products that emerged since TAT-8 was developed, and looks at the close ties of the undersea transmission industry to the terrestrial long-haul network and transmission research.*

**Extended Abstract**

In 1980, carriers recognized that transmission systems based on traditional coaxial cable technology could no longer satisfy the growing demand for intercontinental communications. This triggered a bold initiative to bring optical fiber transmission technology into this lucrative market. TAT-8, the eighth transatlantic telecommunications cable, was the result. Since this first fiberoptic cable, undersea system development has been tightly coupled to the research, development, and deployment of long-haul transmission technology. We have seen emerging technologies quickly deployed in new products, and just as quickly disappearing as even better technologies are proven in. The traditionally conservative undersea product development process was replaced by aggressive, market driven, innovations tempered by a requirement of high-reliability. Development cycles have been compressed from 8 years (TAT-8) to as little as two years. At the same time, both the customer base and supplier base have been transformed by market forces, and the scars of the downturn in the industry in the early 2000's has dampened enthusiasm for expanding manufacturing capacity to meet the recent demand for new systems. System design using dense WDM architectures have relaxed the bond between initial cost and ultimate capacity, which has also created new dynamics in the market for capacity upgrades.



**Stuart Abbott**

Stuart Abbott is Managing Director of the Undersea Development department at Tyco Telecommunications, Eatontown, NJ (USA). His current responsibilities include optical path design and electro-optical design of repeaters and branching units for undersea systems manufactured by Tyco Telecom. His career in undersea systems began in 1980 as a member of the Undersea Systems Laboratory of Bell Telephone Laboratories, where he was part of the AT&T design team for TAT-8.