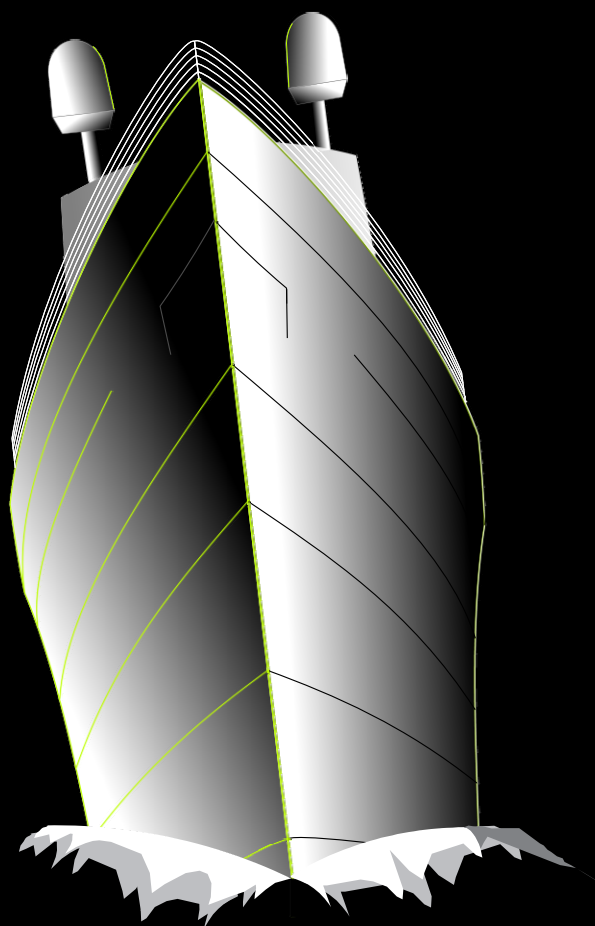


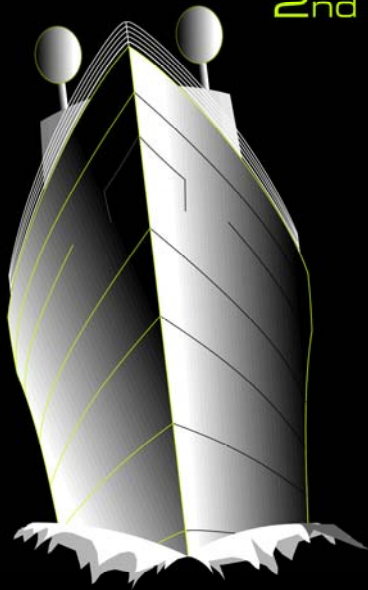
The **comsys** Maritime VSAT Report

2nd edition



comsys maritime vsat markets

2nd edition



comsys has a reputation to uphold and the 1st Edition of the report had something to prove. Here are a few of the comments from customers of the report:

Congratulations on an excellent piece of work; a classic reference source for all with an interest in Maritime VSAT.

Michael Collins, CEO
Vizada

One of the most valuable pieces of information we have ever got into the company.

Jens Ewerling, Product Line Manager Satcom
Maritime Business Unit, Thrane & Thrane

I'm really impressed with the quality of your analysis. Nice job on this report!

Jim Dodez, VP Marketing and Strategic Planning
KVH Industries, Inc.

Excellent report!

Dave Kagan, CEO
MTN

The 2nd Edition of the COMSYS Maritime VSAT Report offers complete and detailed coverage of the maritime VSAT market following four months of intensive research and over 130 interviews with VSAT operators, MSS service providers, industry insiders, maritime experts, hardware vendors and maritime industry associations. The report provides information on the current level of VSAT penetration into the stabilised antenna service business covering the current and prospective stabilised antenna manufacturers, market shares of the major operators, systems in use and market segmentation. Distinction is drawn between the oil & gas and maritime segments of the market.

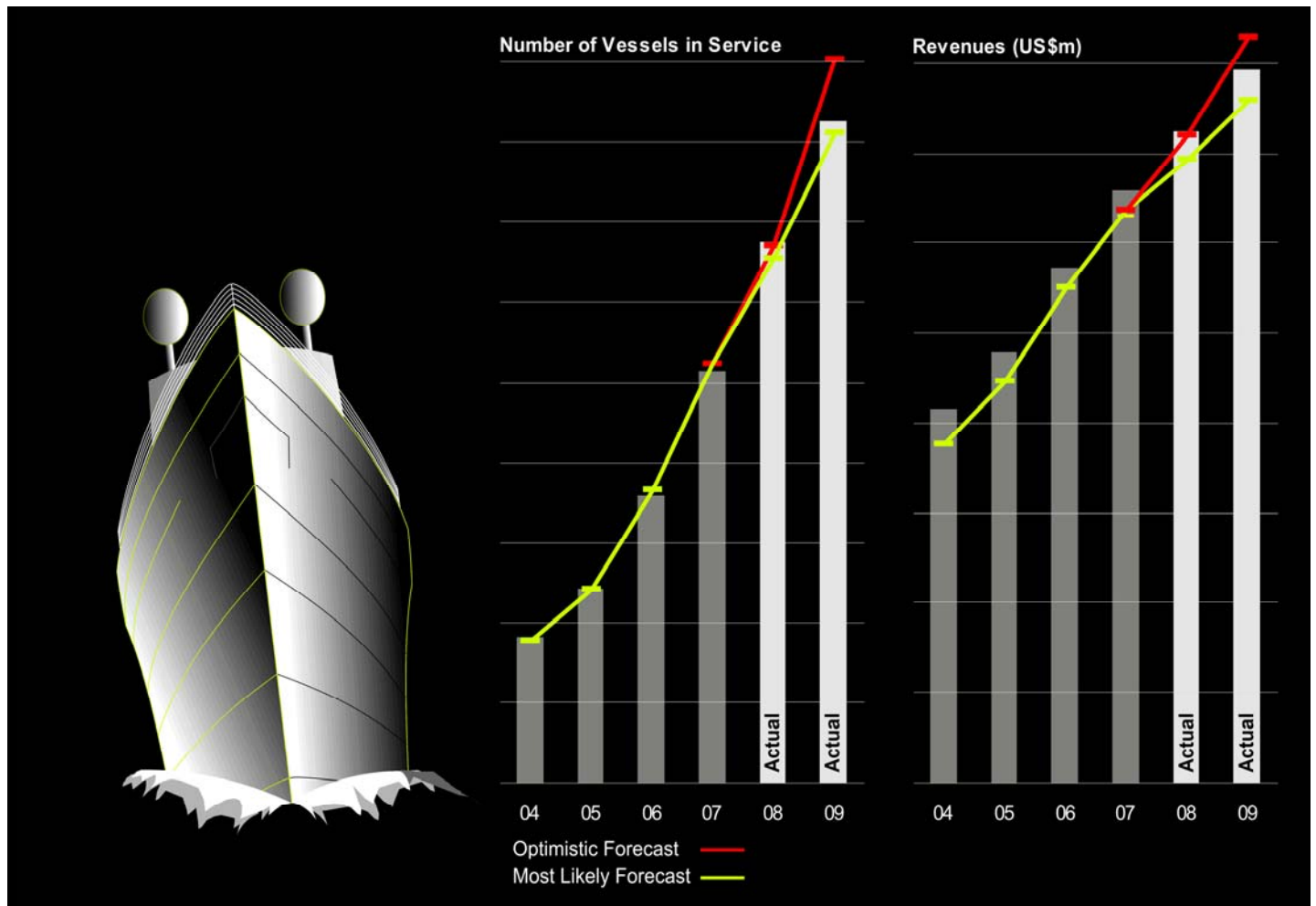
Building on the already-extensive knowledge base within COMSYS, we have extended our maritime VSAT database with details of vessels and rigs in service with more than 85 operators worldwide. The report draws on this data to offer an unrivalled view of the how this market has developed over the past five years and the trends and demands that are driving it forward today.

Almost 120 pages containing 41 tables and 84 charts and figures provide a statistical analysis of the service market by number of vessels in service and revenues, both historically and forecasting over the next five years. As always, COMSYS bases its information on primary research and builds from the ground up. The COMSYS Maritime VSAT Report is provided in PDF form and includes:

- Current VSAT penetration by operator and maritime segment type by number of vessels and revenues.
- Competing technologies to VSAT.
- Analysis of the stabilised VSAT antenna manufacturers, production, technology trends, pricing, market shares and revenues.
- Size of the maritime market segmented as O&G Rigs & Platforms; High-End Commercial; Mainstream Commercial; Fishing; Leisure; Military & Government; and, Inland Waterways.
- Available and addressable markets for stabilised VSAT services.
- Market drivers and inhibitors.
- Five year "Most Likely" and "Optimistic" forecasts by number of vessels and revenues by maritime segment.



This compares our forecasts for 2008 and 2009 from the Maritime VSAT Report, 1st Edition compared with what the market actually did:



In summary, our forecasts for the number of vessels in service were accurate for 2009 at the Most Likely scenario by 2% and by 9% for the Optimistic Scenario. For revenues, both Most Likely and Optimistic forecasts were within a 5% margin of error. For 2008 Most Likely forecasts for both vessels and revenues were within 5% of actual results and the Optimistic scenarios were within 1%!

Customers have already commented on the uniqueness of The Maritime VSAT Report - there has been nothing else like it to date. The maritime communications niche has long been extremely small and specialised, dominated by the L-band MSS providers except in high-bandwidth or mission-critical industry segments. However, the past two years have seen VSAT services break-out from the oil & gas, cruise and ferry sub-segments into the mainstream commercial, fishing and leisure segments, challenging the dominance of L-band. Until now, there has been no definitive research on this high-margin business and therefore no true visibility on how demand for broadband at sea is growing.



Table of Contents

| | |
|--|------------|
| 1. Introduction | 7 |
| 1.1. Data Sources & Study Methodology..... | 10 |
| 2. The Maritime Market | 11 |
| 2.1. Overview..... | 11 |
| 2.1.1. VSAT Maritime Customer Database Methodology | 12 |
| 2.2. L-band Maritime Services | 12 |
| 2.2.1. Inmarsat | 12 |
| 2.2.2. Iridium..... | 17 |
| 2.2.3. Other L-Band Providers | 19 |
| 2.2.4. Other Satellite Services | 20 |
| 2.2.4.1. Hybrid FSS/MSS..... | 20 |
| 2.3. Alternative Maritime Communication Services | 21 |
| 2.3.1. Offshore Fibre Systems | 21 |
| 2.3.2. Microwave Networks | 23 |
| 2.3.3. Offshore Cellular..... | 24 |
| 2.3.4. Land-based Cellular | 24 |
| 2.3.5. WiMAX & WiFi..... | 24 |
| 2.3.6. Marginal Technologies..... | 25 |
| 3. Maritime VSAT Services | 26 |
| 3.1. Services | 30 |
| 3.1.1. Current Operator Analysis | 30 |
| 3.1.2. Service Revenues | 37 |
| 3.2. Hardware | 43 |
| 3.2.1. Stabilised Antenna Systems..... | 43 |
| 3.2.2. Access Types & Modems | 56 |
| 3.3. Segmentation | 59 |
| 3.4. Geographic Distribution | 63 |
| 4. Market Sizing | 65 |
| 4.1. Total Market Size | 65 |
| 4.1.1. Market Database Methodology..... | 65 |
| 4.1.2. Maritime Market Growth | 66 |
| 4.2. Market Drivers & Inhibitors..... | 75 |
| 4.2.1. Deck Real-Estate & Antenna Siting..... | 75 |
| 4.2.2. Installation..... | 76 |
| 4.2.3. Support & Logistics | 77 |
| 4.2.4. Crew | 77 |
| 4.2.5. Value Added Services..... | 79 |
| 4.2.6. Regulations..... | 80 |
| 4.2.7. Maritime Industry Structure..... | 81 |
| 4.2.8. Space Segment..... | 82 |
| 4.3. Addressable & Potential Market Size | 84 |
| 4.3.1. Oil & Gas Rigs and Platforms..... | 85 |
| 4.3.2. High End Commercial..... | 87 |
| 4.3.3. Military/Government | 89 |
| 4.3.4. Commercial..... | 91 |
| 4.3.5. Fishing | 93 |
| 4.3.6. Leisure | 95 |
| 4.3.7. Inland Waterways..... | 99 |
| 4.4. Addressable Market Summary..... | 102 |
| 5. Market Forecasts | 103 |
| 5.1. Vessels in Service Forecasts | 105 |



| | | |
|-----------|---|------------|
| 5.1.1. | Most Likely | 105 |
| 5.1.2. | Optimistic..... | 106 |
| 5.2. | Service Revenue Forecasts | 107 |
| 5.2.1. | Most Likely | 107 |
| 5.2.2. | Optimistic..... | 108 |
| 5.3. | Stabilised Antenna Forecasts | 109 |
| 6. | Sources..... | 111 |
| 7. | Glossary & Abbreviations | 115 |
| 7.1. | COMSYS Regional Definitions | 115 |
| 7.2. | Length Conversion Table | 116 |
| 7.3. | Abbreviations..... | 116 |

List of Tables

| | |
|---|-----|
| Table 1 - O&G and Maritime VSAT Growth by Operator, Vessels in Service 04-09..... | 32 |
| Table 2 - Maritime Stabilised VSAT Growth by Operator, Vessels in Service 04-09 | 34 |
| Table 3 - All Stabilised Antenna VSAT Service Revenue Growth by Operator, 04-09 | 37 |
| Table 4 - Maritime Stabilised VSAT Service Revenue Growth by Operator, 04-09..... | 39 |
| Table 5 - Stabilised VSAT Antenna Manufacturer Sales, 04-09..... | 54 |
| Table 6 - Stabilised VSAT Antenna Production by Diameter..... | 54 |
| Table 7 - Known Stabilised Antenna System Summary | 55 |
| Table 8 - Stabilised VSAT Vessel Growth by Segment and Macro-Segment, 04-09..... | 59 |
| Table 9 - Stabilised VSAT Revenue Growth by Segment, 04-09..... | 62 |
| Table 10 - Gross Addressable Maritime Market for VSAT Systems | 66 |
| Table 11 - Growth of Rigs in Service and New Builds by Type, 05-09 | 70 |
| Table 12 - European Fishing Vessels, 1995-2008..... | 72 |
| Table 13 - Total Market Size, O&G Rigs and Platforms by Type..... | 85 |
| Table 14 - Estimated O&G Rig/Platform Sub-Segment Addressable Potential..... | 85 |
| Table 15 - Current O&G Sub-Segment Penetration & Available Market | 85 |
| Table 16 - Total Market Size, High End Commercial by Segment and Weight | 87 |
| Table 17 - Estimated HE Commercial Sub-Segment Addressable Potential | 88 |
| Table 18 - Current HE Commercial Sub-Segment Penetration & Available Market..... | 88 |
| Table 19 - Total Market Size, Military/Government by Segment and Weight | 89 |
| Table 20 - Estimated Mil/Govt Sub-Segment Addressable Potential..... | 90 |
| Table 21 - Current Mil/Govt Segment Penetration & Available Market..... | 90 |
| Table 22 - Total Market Size, Commercial by Segment and Weight..... | 91 |
| Table 23 - Estimated Commercial Sub-Segment Addressable Potential | 92 |
| Table 24 - Current Commercial Segment Penetration & Available Market..... | 92 |
| Table 25 - Total Market Size, Fishing by Segment and Weight..... | 93 |
| Table 26 - Estimated Fishing Sub-Segment Addressable Potential | 94 |
| Table 27 - Current Fishing Segment Penetration & Available Market | 94 |
| Table 28 - Total Market Size, Leisure by Sub-Segment and Length | 95 |
| Table 29 - Estimated Leisure Sub-Segment Addressable Potential..... | 96 |
| Table 30 - Current Leisure Segment Penetration & Available Market..... | 96 |
| Table 31 - Total Market Size, Inland Waterways by Segment and Weight..... | 99 |
| Table 32 - Estimated Inland Sub-Segment Addressable Potential | 100 |
| Table 33 - Current Inland Segment Penetration & Available Market | 100 |
| Table 34 - Stabilised VSAT Addressable Market Summary | 102 |
| Table 35 - Forecast VSAT Market Growth, Sites in Service 06-14 (Most Likely) | 105 |
| Table 36 - Segment Summary Market Growth, Sites in Service 06-14 (Most Likely)..... | 105 |
| Table 37 - Forecast Market Growth, Sites in Service 06-14 (Optimistic)..... | 106 |
| Table 38 - Segment Summary Market Growth, Sites in Service 06-14 (Optimistic)..... | 106 |
| Table 39 - Forecast Market Growth, Service Revenues 06-14 (Most Likely)..... | 107 |
| Table 40 - Segment Summary Market Growth, Service Revenues 06-14 (Most Likely) | 107 |



| | |
|---|-----|
| Table 41 - Forecast Market Growth, Service Revenues 06-14 (Optimistic)..... | 108 |
| Table 42 - Segment Summary Market Growth, Service Revenues 06-14 (Optimistic) | 108 |
| Table 43 - Stabilised Antenna Forecast Production & Demand, 06-14 (Most Likely) | 109 |
| Table 44 - Stabilised Antenna Forecast Production & Demand, 06-14 (Optimistic)..... | 110 |

List of Figures

| | |
|--|----|
| Figure 1 - Primary Research Interviews by Type..... | 10 |
| Figure 2 - Inmarsat Registered Maritime Terminals, 04-09 | 13 |
| Figure 3 - Inmarsat Maritime Traffic Growth, 04-09 | 14 |
| Figure 4 - Inmarsat vs. VSAT Maritime Revenue Growth Comparison, 02-09 | 15 |
| Figure 5 - Net New Maritime Connections, Inmarsat vs VSAT..... | 16 |
| Figure 6 - Inmarsat FBB-500 Terminal (JRC) | 16 |
| Figure 7 - Iridium Maritime Terminal, Thrane & Thrane SC4000..... | 18 |
| Figure 8 - Iridium OpenPort Terminal & Router..... | 18 |
| Figure 9 - Thuraya Maritime Terminal..... | 19 |
| Figure 10 - BP's GoM Fiber Optic Network..... | 22 |
| Figure 11 - Fibre Networks in the North Sea..... | 22 |
| Figure 12 - Broadpoint's Gulf of Mexico Cellular Coverage..... | 24 |
| Figure 13 - Maritime VSAT Operator Growth, 2004-2010 | 26 |
| Figure 14 - KVH ArcLight Ku-band Coverage | 29 |
| Figure 15 - Ship Equip/NewWave Broadband Ku-band Coverage..... | 29 |
| Figure 16 - O&G and Maritime VSAT Operator Market Share, Vessels in Service 2009 ... | 30 |
| Figure 17 - Oil & Gas and Maritime VSAT Growth by Operator, Vessels in Service 04-09 . | 31 |
| Figure 18 - Maritime Stabilised VSAT Growth by Operator, Vessels in Service 04-09..... | 35 |
| Figure 19 - Maritime VSAT Service Provider Market Share, Vessels in Service 2009 | 36 |
| Figure 20 - All Stabilised Antenna VSAT Service Revenue Growth by Operator, 04-09..... | 37 |
| Figure 21 - All Stabilised Antenna VSAT Operator Service Revenue Shares, 2009..... | 39 |
| Figure 22 - Stabilised Antenna VSAT Service Revenue Growth by Operator, 04-09 | 40 |
| Figure 23 - Maritime Stabilised Antenna VSAT Operator Service Revenue Shares, 2009.. | 42 |
| Figure 24 - Sea Tel 4006 1.0 metre Antenna..... | 43 |
| Figure 25 - Sea Tel Sales and Revenue Performance, 02-09 | 44 |
| Figure 26 - Orbit Marine Sales and Revenue Performance, 02-09 | 45 |
| Figure 27 - Orbit AL-7103 "Orsat" 1.15 metre Antenna | 46 |
| Figure 28 - Stabilised VSAT Antenna Manufacturer Market Shares, 2009..... | 47 |
| Figure 29 - Schlumberger SpaceTrack Antenna | 47 |
| Figure 30 - Stabilised VSAT Antenna Manufacturer Unit Sales, 05-09 | 48 |
| Figure 31 - Stabilised VSAT Antenna Manufacturer Market Shares, 05-09 | 48 |
| Figure 32 - Stabilised VSAT Antenna Manufacturer Revenues, 05-09 | 49 |
| Figure 33 - Stabilised VSAT Antenna Manufacturer Market Revenue Shares, 05-09 | 49 |
| Figure 34 - Maritime Broadband C-Bird Stabilised Antenna | 50 |
| Figure 35 - KNS SuperTrack Z12 MK2 1.2 metre Antenna..... | 50 |
| Figure 36 - C2Sat 1.2 metre Antenna..... | 51 |
| Figure 37 - EPak 0.60 metre Antenna | 52 |
| Figure 38 - Intellian 0.60 metre Antenna | 52 |
| Figure 39 - WiWorld Marine Stabilised Antenna..... | 53 |
| Figure 40 - Antennas Produced by Diameter 2006-09..... | 54 |
| Figure 41 - Maritime VSAT Modem Installation Shares, 04-09 | 56 |
| Figure 42 - Modem/Technology Deployment in the Maritime VSAT Segment, 2009 | 57 |
| Figure 43 - Access Schemes in Service in the Maritime VSAT Segment, 05-09 | 58 |
| Figure 44 - Stabilised VSAT Vessel Growth and Rates by Segment, 04-09..... | 61 |
| Figure 45 - Stabilised VSAT Revenue Growth by Segment and Macro-Segment, 04-09..... | 62 |
| Figure 46 - All Stabilised VSAT Antenna Services by Region..... | 63 |
| Figure 47 - All Stabilised VSAT Antenna Services by Regional Shares, 2009..... | 63 |
| Figure 48 - Forecast Growth of Major Commercial Shipping Sub-Segments, 2010-2014.. | 67 |



| | |
|---|-----|
| Figure 49 - Development of International Seaborne Trade, 1970-2008..... | 68 |
| Figure 50 - World Seaborne trade in 2008, by Type of Cargo & Country Group..... | 68 |
| Figure 51 - Baltic Dry Index/Dow Jones Industrial Average 2008 to mid-2010..... | 69 |
| Figure 52 - Growth of Rigs in Service by Type, 05-09..... | 70 |
| Figure 53 - Growth of New Build Rigs by Type, 05-09..... | 70 |
| Figure 54 - Global Floater versus Jackup Utilisation Trends..... | 71 |
| Figure 55 - Yachts 30m and Over, Post-War Completions 51-07..... | 72 |
| Figure 56 - European Inland Cargo Vessels by Weight (gt), 99-04..... | 73 |
| Figure 57 - ECDIS Implementation Schedule..... | 81 |
| Figure 58 - Total Market Size, O&G Rigs/Platforms by Segment & Weight..... | 85 |
| Figure 59 - Total Market Size, High End Commercial..... | 87 |
| Figure 60 - Total Market Size, High End Commercial by Segment & Weight..... | 87 |
| Figure 61 - Addressable High End Commercial Segment & Penetration..... | 88 |
| Figure 62 - Total Market Size, Military/Government..... | 89 |
| Figure 63 - Total Market Size, Military/Government by Segment & Weight..... | 89 |
| Figure 64 - Addressable Military/Government Segment & Penetration..... | 90 |
| Figure 65 - Total Market Size, Commercial..... | 91 |
| Figure 66 - Total Market Size, Commercial by Segment & Weight..... | 91 |
| Figure 67 - Addressable Commercial Segment & Penetration..... | 92 |
| Figure 68 - Total Market Size, Fishing..... | 93 |
| Figure 69 - Total Market Size, Fishing by Segment & Weight..... | 93 |
| Figure 70 - Addressable Fishing Segment & Penetration..... | 94 |
| Figure 71 - Total Market Size, Large Leisure Yachts and above..... | 95 |
| Figure 72 - Total Market Size, Leisure Yachts by Sub-Segment..... | 95 |
| Figure 73 - Addressable Leisure Yacht Segment & Penetration..... | 96 |
| Figure 74 - Total Market Size, Inland Waterways..... | 99 |
| Figure 75 - Total Market Size, Inland by Segment & Weight..... | 100 |
| Figure 76 - Addressable Inland Waterway Segment & Penetration..... | 101 |
| Figure 77 - Available & Addressable Stabilised VSAT Market Summary..... | 102 |
| Figure 78 - Forecast VSAT Market Growth, Sites in Service 06-14 (Most Likely)..... | 105 |
| Figure 79 - Forecast VSAT Market Growth, Sites in Service 06-14 (Optimistic)..... | 106 |
| Figure 80 - Forecast VSAT Market Growth, Sites in Service 06-14 (Most Likely)..... | 107 |
| Figure 81 - Forecast VSAT Market Growth, Sites in Service 06-14 (Optimistic)..... | 108 |
| Figure 82 - Stabilised Antenna Forecast Production & Demand, 05-14 (Most Likely)..... | 109 |
| Figure 83 - Stabilised Antenna Forecast Production & Demand, 05-14 (Optimistic)..... | 110 |

