

Draft Final Report

Deep-Draft Vessel Geometries

A Document with Electronic Supporting Files Prepared for the
U.S. Army Corps of Engineers' R&D Work Unit Entitled
**Economics of Deep Draft Vessel Operations for
Navigation Economic Technologies (NETS)**

by

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Executive Summary

In order to support testing, validation and use of the U.S. Army Corps' program CADET (Channel Analysis and Design Evaluation Tool), a variety of detailed vessel hull geometries have been collected for use with the program and associated research of channel design. A total of one hundred sixty four (164) real, presently or recently operational vessels are provided and have been subdivided into the following categories:

- Barges
- Bulkers
- Casinos and River Boats
- Containerships
- Ferries
- Fishing Vessels
- General Cargo Vessels
- Naval Amphibious Vessels
- Naval Auxiliary Vessels
- Naval Combatants
- Offshore Supply Vessels
- Other Vessels
- Passenger Vessels
- Research Vessels
- RO/ROs
- SWATHS
- Tankers
- Tugboats

The vessel geometries have been provided in electronic format. This document provides details on the file format and tips on viewing and manipulating the files, as well as tabular summaries of the vessels and previews of their geometries.

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Table of Contents

Executive Summary	i
Table of Contents	iii
List of Tables	viii
List of Figures	xii
Introduction	1
Summary of Vessel Geometries	1
Overview	1
Special Codes	8
File Format	8
Viewing and Manipulating the Files	8
Barges	9
Barge 01	9
Barge 02	10
Barge 03	11
Barge 04	12
Barge 05	13
Barge 06	14
Barge 07	15
Barge 08	16
Barge 09	17
Barge 10	18
Barge 11	19
Barge 12	20
Barge 13	21
Bulkers	22
Bulker 01	22
Bulker 02	23
Bulker 03	24
Bulker 04	25
Bulker 05	26
Bulker 06	27
Bulker 07	28
Bulker 08	29
Bulker 09	30
Bulker 10	31
Bulker 11	32
Bulker 12	33
Bulker 13	34
Bulker 14	35
Bulker 15	36
Bulker 16	37
Casinos and River Boats	38
Casino / River Boat 01	38
Casino / River Boat 02	39

Casino / River Boat 03	40
Casino / River Boat 04	41
Casino / River Boat 05	42
Containerships	43
Containership 01	43
Containership 02	44
Containership 03	45
Containership 04	46
Containership 05	47
Containership 06	48
Containership 07	49
Containership 08	50
Containership 09	51
Containership 10	52
Containership 11	53
Containership 12	54
Containership 13	55
Containership 14	56
Containership 15	57
Containership 16	58
Containership 17	59
Containership 18	60
Containership 19	61
Ferries	62
Ferry 01	62
Ferry 02	63
Ferry 03	64
Ferry 04	65
Ferry 05	66
Ferry 06	67
Ferry 07	68
Ferry 08	69
Ferry 09	70
Ferry 10	71
Ferry 11	72
Ferry 12	73
Ferry 13	74
Ferry 14	75
Ferry 15	76
Ferry 16	77
Ferry 17	78
Fishing Vessels	79
Fishing Vessel 01	79
Fishing Vessel 02	80
Fishing Vessel 03	81
Fishing Vessel 04	82

General Cargo Vessels.....	83
General Cargo 01	83
General Cargo 02	84
General Cargo 03	85
Naval Amphibious Vessels.....	86
Naval Amphib 01	86
Naval Amphib 02	87
Naval Amphib 03	88
Naval Amphib 04	89
Naval Auxiliary Vessels	90
Naval Auxiliary 01.....	90
Naval Auxiliary 02.....	91
Naval Auxiliary 03.....	92
Naval Auxiliary 04.....	93
Naval Auxiliary 05.....	94
Naval Auxiliary 06.....	95
Naval Auxiliary 07.....	96
Naval Combatants.....	97
Naval Combatant 01	97
Naval Combatant 02	98
Naval Combatant 03	99
Naval Combatant 04	100
Naval Combatant 05	101
Naval Combatant 06	102
Naval Combatant 07	103
Naval Combatant 08	104
Naval Combatant 09	105
Naval Combatant 10	106
Offshore Supply Vessels (OSVs).....	107
OSV 01.....	107
OSV 02.....	108
Other Vessels	109
Other 01	109
Other 02	110
Other 03	111
Other 04	112
Other 05	113
Other 06	114
Other 07	115
Other 08	116
Other 09	117
Other 10	118
Passenger Vessels	119
Passenger 01	119
Passenger 02	120
Passenger 03	121

Passenger 04.....	122
Passenger 05.....	123
Passenger 06.....	124
Research Vessels.....	125
Research Vessel 01	125
Research Vessel 02	126
Research Vessel 03	127
Research Vessel 04	128
Research Vessel 05	129
Research Vessel 06	130
Research Vessel 07	131
Roll-On/Roll-Off Vessels (RO/ROs).....	132
Ro/Ro 01	132
Ro/Ro 02	133
Ro/Ro 03	134
Ro/Ro 04	135
Ro/Ro 05	136
RO/RO 06	137
RO/RO 07	138
RO/RO 08	139
RO/RO 09	140
Small Waterplane Area Twin Hull Vessels (SWATHs).....	141
SWATH 01	141
SWATH 02	142
SWATH 03	143
Tankers.....	144
Tanker 01	144
Tanker 02	145
Tanker 03	146
Tanker 04	147
Tanker 05	148
Tanker 06	149
Tanker 07	150
Tanker 08	151
Tanker 09	152
Tanker 10	153
Tanker 11	154
Tanker 12	155
Tanker 13	156
Tanker 14	157
Tanker 15	158
Tanker 16	159
Tanker 17	160
Tanker 18	161
Tanker 19	162
Tanker 20	163

Tanker 21	164
Tanker 22	165
Tanker 23	166
Tanker 24	167
Tanker 25	168
Tanker 26	169
Tanker 27	170
Tugboats.....	171
Tugboat 01	171
Tugboat 02	172
APPENDIX A.....	1

List of Tables

Table 1: Summary of Vessels	2
Table 2: Barge 01 Principal Characteristics.....	9
Table 3: Barge 02 Principal Characteristics.....	10
Table 4: Barge 03 Principal Characteristics.....	11
Table 5: Barge 04 Principal Characteristics.....	12
Table 6: Barge 05 Principal Characteristics.....	13
Table 7: Barge 06 Principal Characteristics.....	14
Table 8: Barge 07 Principal Characteristics.....	15
Table 9: Barge 08 Principal Characteristics.....	16
Table 10: Barge 09 Principal Characteristics.....	17
Table 11: Barge 10 Principal Characteristics.....	18
Table 12: Barge 11 Principal Characteristics.....	19
Table 13: Barge 12 Principal Characteristics.....	20
Table 14: Barge 13 Principal Characteristics.....	21
Table 15: Bulker 01 Principal Characteristics	22
Table 16: Bulker 02 Principal Characteristics	23
Table 17: Bulker 03 Principal Characteristics	24
Table 18: Bulker 04 Principal Characteristics	25
Table 19: Bulker 05 Principal Characteristics	26
Table 20: Bulker 06 Principal Characteristics	27
Table 21: Bulker 07 Principal Characteristics	28
Table 22: Bulker 08 Principal Characteristics	29
Table 23: Bulker 09 Principal Characteristics	30
Table 24: Bulker 10 Principal Characteristics	31
Table 25: Bulker 11 Principal Characteristics	32
Table 26: Bulker 12 Principal Characteristics	33
Table 27: Bulker 13 Principal Characteristics	34
Table 28: Bulker 14 Principal Characteristics	35
Table 29: Bulker 15 Principal Characteristics	36
Table 30: Bulker 16 Principal Characteristics	37
Table 31: Casino / River Boat 01 Principal Characteristics	38
Table 32: Casino / River Boat 02 Principal Characteristics	39
Table 33: Casino / River Boat 03 Principal Characteristics	40
Table 34: Casino / River Boat 04 Principal Characteristics	41
Table 35: Casino / River Boat 05 Principal Characteristics	42
Table 36: Containership 01 Principal Characteristics.....	43
Table 37: Containership 02 Principal Characteristics.....	44
Table 38: Containership 03 Principal Characteristics.....	45
Table 39: Containership 04 Principal Characteristics.....	46
Table 40: Containership 05 Principal Characteristics.....	47
Table 41: Containership 06 Principal Characteristics.....	48
Table 42: Containership 07 Principal Characteristics.....	49
Table 43: Containership 08 Principal Characteristics.....	50
Table 44: Containership 09 Principal Characteristics.....	51

Table 45: Containership 10 Principal Characteristics.....	52
Table 46: Containership 11 Principal Characteristics.....	53
Table 47: Containership 12 Principal Characteristics.....	54
Table 48: Containership 13 Principal Characteristics.....	55
Table 49: Containership 14 Principal Characteristics.....	56
Table 50: Containership 15 Principal Characteristics.....	57
Table 51: Containership 16 Principal Characteristics.....	58
Table 52: Containership 17 Principal Characteristics.....	59
Table 53: Containership 18 Principal Characteristics.....	60
Table 54: Containership 19 Principal Characteristics.....	61
Table 55: Ferry 01 Principal Characteristics	62
Table 56: Ferry 02 Principal Characteristics	63
Table 57: Ferry 03 Principal Characteristics	64
Table 58: Ferry 04 Principal Characteristics	65
Table 59: Ferry 05 Principal Characteristics	66
Table 60: Ferry 06 Principal Characteristics	67
Table 61: Ferry 07 Principal Characteristics	68
Table 62: Ferry 08 Principal Characteristics	69
Table 63: Ferry 09 Principal Characteristics	70
Table 64: Ferry 10 Principal Characteristics	71
Table 65: Ferry 11 Principal Characteristics	72
Table 66: Ferry 12 Principal Characteristics	73
Table 67: Ferry 13 Principal Characteristics	74
Table 68: Ferry 14 Principal Characteristics	75
Table 69: Ferry 15 Principal Characteristics	76
Table 70: Ferry 16 Principal Characteristics	77
Table 71: Ferry 17 Principal Characteristics	78
Table 72: Fishing Vessel 01 Principal Characteristics	79
Table 73: Fishing Vessel 02 Principal Characteristics	80
Table 74: Fishing Vessel 03 Principal Characteristics	81
Table 75: Fishing Vessel 04 Principal Characteristics	82
Table 76: General Cargo 01 Principal Characteristics.....	83
Table 77: General Cargo 02 Principal Characteristics.....	84
Table 78: General Cargo 03 Principal Characteristics.....	85
Table 79: Naval Amphib 01 Principal Characteristics	86
Table 80: Naval Amphib 02 Principal Characteristics	87
Table 81: Naval Amphib 03 Principal Characteristics	88
Table 82: Naval Amphib 04 Principal Characteristics	89
Table 83: Naval Auxiliary 01 Principal Characteristics	90
Table 84: Naval Auxiliary 02 Principal Characteristics	91
Table 85: Naval Auxiliary 03 Principal Characteristics	92
Table 86: Naval Auxiliary 04 Principal Characteristics	93
Table 87: Naval Auxiliary 05 Principal Characteristics	94
Table 88: Naval Auxiliary 06 Principal Characteristics	95
Table 89: Naval Auxiliary 07 Principal Characteristics	96
Table 90: Naval Combatant 01 Principal Characteristics	97

Table 91: Naval Combatant 02 Principal Characteristics	98
Table 92: Naval Combatant 03 Principal Characteristics	99
Table 93: Naval Combatant 04 Principal Characteristics	100
Table 94: Naval Combatant 05 Principal Characteristics	101
Table 95: Naval Combatant 06 Principal Characteristics	102
Table 96: Naval Combatant 07 Principal Characteristics	103
Table 97: Naval Combatant 08 Principal Characteristics	104
Table 98: Naval Combatant 09 Principal Characteristics	105
Table 99: Naval Combatant 10 Principal Characteristics	106
Table 100: OSV 01 Principal Characteristics	107
Table 101: OSV 02 Principal Characteristics	108
Table 102: Other 01 Principal Characteristics	109
Table 103: Other 02 Principal Characteristics	110
Table 104: Other 03 Principal Characteristics	111
Table 105: Other 04 Principal Characteristics	112
Table 106: Other 05 Principal Characteristics	113
Table 107: Other 06 Principal Characteristics	114
Table 108: Other 07 Principal Characteristics	115
Table 109: Other 08 Principal Characteristics	116
Table 110: Other 09 Principal Characteristics	117
Table 111: Other 10 Principal Characteristics	118
Table 112: Passenger 01 Principal Characteristics	119
Table 113: Passenger 02 Principal Characteristics	120
Table 114: Passenger 03 Principal Characteristics	121
Table 115: Passenger 04 Principal Characteristics	122
Table 116: Passenger 05 Principal Characteristics	123
Table 117: Passenger 06 Principal Characteristics	124
Table 118: Research Vessel 01 Principal Characteristics	125
Table 119: Research Vessel 02 Principal Characteristics	126
Table 120: Research Vessel 03 Principal Characteristics	127
Table 121: Research Vessel 04 Principal Characteristics	128
Table 122: Research Vessel 05 Principal Characteristics	129
Table 123: Research Vessel 06 Principal Characteristics	130
Table 124: Research Vessel 07 Principal Characteristics	131
Table 125: Ro/Ro 01 Principal Characteristics	132
Table 126: Ro/Ro 02 Principal Characteristics	133
Table 127: Ro/Ro 03 Principal Characteristics	134
Table 128: Ro/Ro 04 Principal Characteristics	135
Table 129: Ro/Ro 05 Principal Characteristics	136
Table 130: RO/RO 06 Principal Characteristics	137
Table 131: RO/RO 07 Principal Characteristics	138
Table 132: RO/RO 08 Principal Characteristics	139
Table 133: RO/RO 09 Principal Characteristics	140
Table 134: SWATH 01 Principal Characteristics	141
Table 135: SWATH 02 Principal Characteristics	142
Table 136: SWATH 03 Principal Characteristics	143

Table 137: Tanker 01 Principal Characteristics.....	144
Table 138: Tanker 02 Principal Characteristics.....	145
Table 139: Tanker 03 Principal Characteristics.....	146
Table 140: Tanker 04 Principal Characteristics.....	147
Table 141: Tanker 05 Principal Characteristics.....	148
Table 142: Tanker 06 Principal Characteristics.....	149
Table 143: Tanker 07 Principal Characteristics.....	150
Table 144: Tanker 08 Principal Characteristics.....	151
Table 145: Tanker 09 Principal Characteristics.....	152
Table 146: Tanker 10 Principal Characteristics.....	153
Table 147: Tanker 11 Principal Characteristics.....	154
Table 148: Tanker 12 Principal Characteristics.....	155
Table 149: Tanker 13 Principal Characteristics.....	156
Table 150: Tanker 14 Principal Characteristics.....	157
Table 151: Tanker 15 Principal Characteristics.....	158
Table 152: Tanker 16 Principal Characteristics.....	159
Table 153: Tanker 17 Principal Characteristics.....	160
Table 154: Tanker 18 Principal Characteristics.....	161
Table 155: Tanker 19 Principal Characteristics.....	162
Table 156: Tanker 20 Principal Characteristics.....	163
Table 157: Tanker 21 Principal Characteristics.....	164
Table 158: Tanker 22 Principal Characteristics.....	165
Table 159: Tanker 23 Principal Characteristics.....	166
Table 160: Tanker 24 Principal Characteristics.....	167
Table 161: Tanker 25 Principal Characteristics.....	168
Table 162: Tanker 26 Principal Characteristics.....	169
Table 163: Tanker 27 Principal Characteristics.....	170
Table 164: Tugboat 01 Principal Characteristics.....	171
Table 165: Tugboat 02 Principal Characteristics.....	172

List of Figures

Figure 1: Barge 01	9
Figure 2: Barge 02	10
Figure 3: Barge 03	11
Figure 4: Barge 04	12
Figure 5: Barge 05	13
Figure 6: Barge 06	14
Figure 7: Barge 07	15
Figure 8: Barge 08	16
Figure 9: Barge 09	17
Figure 10: Barge 10	18
Figure 11: Barge 11	19
Figure 12: Barge 12	20
Figure 13: Barge 13	21
Figure 14: Bulker 01	22
Figure 15: Bulker 02	23
Figure 16: Bulker 03	24
Figure 17: Bulker 04	25
Figure 18: Bulker 05	26
Figure 19: Bulker 06	27
Figure 20: Bulker 07	28
Figure 21: Bulker 08	29
Figure 22: Bulker 09	30
Figure 23: Bulker 10	31
Figure 24: Bulker 11	32
Figure 25: Bulker 12	33
Figure 26: Bulker 13	34
Figure 27: Bulker 14	35
Figure 28: Bulker 15	36
Figure 29: Bulker 15	37
Figure 30: Casino / River Boat 01	38
Figure 31: Casino / River Boat 02	39
Figure 32: Casino / River Boat 03	40
Figure 33: Casino / River Boat 04	41
Figure 34: Casino / River Boat 05	42
Figure 35: Containership 01	43
Figure 36: Containership 02	44
Figure 37: Containership 03	45
Figure 38: Containership 04	46
Figure 39: Containership 05	47
Figure 40: Containership 06	48
Figure 41: Containership 07	49
Figure 42: Containership 08	50
Figure 43: Containership 09	51
Figure 44: Containership 10	52

Figure 45: Containership 11.....	53
Figure 46: Containership 12.....	54
Figure 47: Containership 13.....	55
Figure 48: Containership 14.....	56
Figure 49: Containership 15.....	57
Figure 50: Containership 16.....	58
Figure 51: Containership 17.....	59
Figure 52: Containership 18.....	60
Figure 53: Containership 19.....	61
Figure 54: Ferry 01	62
Figure 55: Ferry 02	63
Figure 56: Ferry 03	64
Figure 57: Ferry 04	65
Figure 58: Ferry 05	66
Figure 59: Ferry 06	67
Figure 60: Ferry 07	68
Figure 61: Ferry 08	69
Figure 62: Ferry 09	70
Figure 63: Ferry 10	71
Figure 64: Ferry 11	72
Figure 65: Ferry 12	73
Figure 66: Ferry 13	74
Figure 67: Ferry 14	75
Figure 68: Ferry 15	76
Figure 69: Ferry 16	77
Figure 70: Ferry 17	78
Figure 71: Fishing Vessel 01	79
Figure 72: Fishing Vessel 02	80
Figure 73: Fishing Vessel 03	81
Figure 74: Fishing Vessel 04	82
Figure 75: General Cargo 01	83
Figure 76: General Cargo 02	84
Figure 77: General Cargo 03	85
Figure 78: Naval Amphib 01	86
Figure 79: Naval Amphib 02	87
Figure 80: Naval Amphib 03	88
Figure 81: Naval Amphib 04	89
Figure 82: Naval Auxiliary 01	90
Figure 83: Naval Auxiliary 02	91
Figure 84: Naval Auxiliary 03	92
Figure 85: Naval Auxiliary 04	93
Figure 86: Naval Auxiliary 05	94
Figure 87: Naval Auxiliary 06	95
Figure 88: Naval Auxiliary 07	96
Figure 89: Naval combatant 01	97
Figure 90: Naval Combatant 02	98

Figure 91: Naval Combatant 03	99
Figure 92: Naval Combatant 04	100
Figure 93: Naval Combatant 05	101
Figure 94: Naval Combatant 06	102
Figure 95: Naval Combatant 07	103
Figure 96: Naval Combatant 08	104
Figure 97: Naval Combatant 09	105
Figure 98: Naval Combatant 10	106
Figure 99: OSV 01	107
Figure 100: OSV 02	108
Figure 101: Other 01	109
Figure 102: Other 02	110
Figure 103: Other 03	111
Figure 104: Other 04	112
Figure 105: Other 05	113
Figure 106: Other 06	114
Figure 107: Other 07	115
Figure 108: Other 08	116
Figure 109: Other 09	117
Figure 110: Other 10	118
Figure 111: Passenger 01	119
Figure 112: Passenger 02	120
Figure 113: Passenger 03	121
Figure 114: Passenger 04	122
Figure 115: Passenger 05	123
Figure 116: Passenger 06	124
Figure 117: Research Vessel 01	125
Figure 118: Research Vessel 02	126
Figure 119: Research Vessel 03	127
Figure 120: Research Vessel 04	128
Figure 121: Research Vessel 05	129
Figure 122: Research Vessel 06	130
Figure 123: Research Vessel 07	131
Figure 124: Ro/Ro 01	132
Figure 125: Ro/Ro 02	133
Figure 126: Ro/Ro 03	134
Figure 127: Ro/Ro 04	135
Figure 128: Ro/Ro 05	136
Figure 129: RO/RO 06	137
Figure 130: RO/RO 07	138
Figure 131: RO/RO 08	139
Figure 132: RO/RO 09	140
Figure 133: SWATH 01	141
Figure 134: SWATH 02	142
Figure 135: SWATH 03	143
Figure 136: Tanker 01	144

Figure 137: Tanker 02.....	145
Figure 138: Tanker 03.....	146
Figure 139: Tanker 04.....	147
Figure 140: Tanker 05.....	148
Figure 141: Tanker 06.....	149
Figure 142: Tanker 07.....	150
Figure 143: Tanker 08.....	151
Figure 144: Tanker 09.....	152
Figure 145: Tanker 10.....	153
Figure 146: Tanker 11.....	154
Figure 147: Tanker 12.....	155
Figure 148: Tanker 13.....	156
Figure 149: Tanker 14.....	157
Figure 150: Tanker 15.....	158
Figure 151: Tanker 16.....	159
Figure 152: Tanker 17.....	160
Figure 153: Tanker 18.....	161
Figure 154: Tanker 19.....	162
Figure 155: Tanker 20.....	163
Figure 156: Tanker 21.....	164
Figure 157: Tanker 22.....	165
Figure 158: Tanker 23.....	166
Figure 159: Tanker 24.....	167
Figure 160: Tanker 25.....	168
Figure 161: Tanker 26.....	169
Figure 162: Tanker 27.....	170
Figure 163: Tugboat 01.....	171
Figure 164: Tugboat 02.....	172

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Introduction

In order to support testing, validation and use of the U.S. Army Corps' program CADET (Channel Analysis and Design Evaluation Tool), a variety of detailed vessel hull geometries have been collected for use with the program and associated research of channel design. It is expected that the catalog of available vessels will be valuable to channel designers for analysis of ship behavior and channel design parameters such as underkeel clearance (UKC).

All of the vessels included here are real, presently or recently operational vessels, typically operating in U.S. waterways. There are a few exceptions, such as the ULCC tankers, which never call directly into U.S. ports and waterways, but do operate in U.S. territorial waters. These vessel geometries have been obtained from a variety of sources, both public and private. Note that many vessels have proprietary restrictions and should not be used beyond the stated purpose within the Corps without obtaining permission. It is expected that these vessel hull geometries will be used for channel design purposes, and not at any time for ship design purposes.

Summary of Vessel Geometries

Overview

A total of one hundred sixty four (164) hull geometries are included. The vessels have been subdivided into the following categories:

- Barges
- Bulkers
- Casinos and River Boats
- Containerships
- Ferries
- Fishing Vessels
- General Cargo Vessels
- Naval Amphibious Vessels
- Naval Auxiliary Vessels
- Naval Combatants
- Offshore Supply Vessels (OSVs)
- Other Vessels
- Passenger Vessels
- Research Vessels
- RO/ROs
- SWATHS
- Tankers
- Tugboats

Table 1 summarizes the vessels. The vessels range in length from 90 ft (27 m) to 1200 ft (366 m), in beam from 32 ft (9.8 m) to 266 ft (81 m), in draft up to 72 ft (22 m).

Each draft value given here is reported design draft, which is typically at or near the vessel's maximum operational draft.

Table 1: Summary of Vessels

Category	ID#	Description	Potential Proprietary Issue?	Govt / Municipal Owner?	Involved in Casualty?	Length (ft)	Length (m)	Beam (ft)	Beam (m)	Depth (ft)	Depth (m)	Draft (ft)	Draft (m)	Disp (LT)	Disp (mt)
Barge	01	Coastal Tank Barge	X		X	325.7	99.3	54.0	16.5	22.0	6.7	18.0	5.5	7,910	8,037
Barge	02	ITB Barge only	X			585.0	178.3	85.0	25.9	45.0	13.7	32.0	9.8	35,400	35,966
Barge	03	ITB Barge/Tug Combination	X			647.5	197.4	85.0	25.9	45.0	13.7	32.0	9.8	38,050	38,659
Barge	04	ITB Barge only	X			420.0	128.0	80.0	24.4	40.0	12.2	22.0	6.7	11,375	11,557
Barge	05	Ocean Freight Barge	X			400.0	121.9	76.0	23.2	20.0	6.1	14.3	4.4	11,150	11,328
Barge	06	Freight Barge	X		X	274.6	83.7	76.0	23.2	18.0	5.5	12.0	3.7	6,120	6,218
Barge	07	Barge	X		X	330.0	100.6	78.0	23.8	20.0	6.1	15.0	4.6	8,820	8,961
Barge	08	Dredge	X			145.0	44.2	48.0	14.6	8.5	2.6	6.0	1.8	1,010	1,026
Barge	09	Freight Barge	X			250.0	76.2	72.0	21.9	18.0	5.5	12.0	3.7	5,500	5,588
Barge	10	Barge	X		X	170.0	51.8	35.0	10.7	10.0	3.0	8.0	2.4	1,180	1,199
Barge	11	Inland Tank Barge	X			195.0	59.4	54.0	16.5	12.0	3.7	9.5	2.9	2,700	2,743
Barge	12	Barge	X		X	312.0	95.1	68.0	20.7	19.0	5.8	14.5	4.4	7,300	7,417
Barge	13	Tank Barge	X		X	297.5	90.7	54.0	16.5	12.0	3.7	8.0	2.4	3,200	3,251
Bulker	01	Medium Bulker	X		X	626.4	190.9	83.7	25.5	50.0	15.2	33.7	10.3	39,700	40,335
Bulker	02	Large Bulker	X			855.0	260.6	105.8	32.2	64.5	19.7	45.0	13.7	96,675	98,222
Bulker	03	Cement Carrier	X		X	572.5	174.5	75.0	22.9	46.4	14.1	32.8	10.0	30,885	31,379
Bulker	04	Laker	X			1000.0	304.8	105.0	32.0	44.9	13.7	26.5	8.1	71,920	73,071
Bulker	05	Laker	X			1000.0	304.8	105.0	32.0	56.0	17.1	34.0	10.4	94,170	95,677
Bulker	06	Laker	X			990.0	301.8	105.0	32.0	47.7	14.5	30.0	9.1	82,000	83,312
Bulker	07	OBO	X			820.0	249.9	104.5	31.9	51.0	15.5	33.0	10.1	65,000	66,040
Bulker	08	OBO	X			860.0	262.1	105.8	32.2	63.2	19.3	46.0	14.0	99,500	101,092
Bulker	09	OBO	X			880.0	268.2	105.8	32.2	58.3	17.8	38.0	11.6	85,350	86,716
Bulker	10	Laker	X			800.0	243.8	75.0	22.9	38.0	11.6	28.3	8.6	40,700	41,351
Bulker	11	Laker	X			770.0	234.7	92.0	28.0	52.0	15.8	34.0	10.4	60,850	61,824

Bulkер	12	Laker		X	720.0	219.5	75.0	22.9	39.0	11.9	27.0	8.2	34,300	34,849
Bulkер	13		X		650.0	198.1	95.0	29.0	56.2	17.1	37.0	11.3	52,920	53,767
Bulkер	14	Laker	X		988.8	301.4	105.0	32.0	56.7	17.3	34.0	10.4	93,975	95,479
Bulkер	15		X		540.0	164.6	85.5	26.1	43.0	13.1	30.0	9.1	26,950	27,381
Bulkер	16				865.0	263.7	105.8	32.2	62.5	19.1	46.0	14.0	99,400	100,990
Casino/River Boat	01	Gulf Coast Casino Vessel	X		225.0	68.6	72.0	21.9	12.5	3.8	7.0	2.1	2,350	2,388
Casino/River Boat	02	Classic Mississippi Riverboat	X		285.0	86.9	60.0	18.3	13.0	4.0	9.5	2.9	2,945	2,992
Casino/River Boat	03	Upper Miss Casino Vessel	X		293.0	89.3	78.0	23.8	14.0	4.3	8.5	2.6	3,520	3,576
Casino/River Boat	04	Gulf Coast Casino Vessel	X		254.0	77.4	78.0	23.8	14.0	4.3	7.3	2.2	2,510	2,550
Casino/River Boat	05	Casino Vessel	X		240.0	73.2	63.0	19.2	10.8	3.3	6.0	1.8	1,435	1,458
Containership	01	2838 TEU Fast Containership			814.3	248.2	105.8	32.2	62.4	19.0	41.0	12.5	63,990	65,014
Containership	02	Prepositioning Ship	X	USNS	652.0	198.7	105.8	32.2	61.5	18.7	36.0	11.0	48,000	48,768
Containership	03	1779 TEU Containership	X		597.0	182.0	100.1	30.5	53.2	16.2	37.0	11.3	39,800	40,437
Containership	04	Container Chemical Carrier	X		610.0	185.9	78.0	23.8	54.5	16.6	31.5	9.6	26,670	27,097
Containership	05	Prepositioning Ship		USNS	689.0	210.0	100.0	30.5	51.5	15.7	38.1	11.6	52,880	53,726
Containership	06	2500 TEU Containership	X		810.0	246.9	105.8	32.2	66.0	20.1	38.7	11.8	54,980	55,860
Containership	07	Fast Sealift		USNS	946.0	288.3	105.8	32.2	67.0	20.4	36.6	11.2	55,350	56,236
Containership	08	Naval Auxiliary Cont - Ro/Ro		X	821.0	250.2	105.8	32.2	68.0	20.7	34.0	10.4	51,612	52,438
Containership	09	Naval Auxiliary Containership		X	652.0	198.7	105.8	32.2	67.0	20.4	34.0	10.4	48,000	48,768
Containership	10	3918 TEU	X		925.0	281.9	105.8	32.2	70.5	21.5	38.0	11.6	67,175	68,250
Containership	11		X		594.0	181.1	78.2	23.8	49.5	15.1	31.5	9.6	26,670	27,097
Containership	12	2470 TEU	X		810.0	246.9	100.3	30.6	54.0	16.5	34.0	10.4	48,950	49,733
Containership	13	1800 TEU	X		710.0	216.4	100.3	30.6	54.0	16.5	34.0	10.4	39,520	40,152
Containership	14	1664 TEU	X		677.0	206.3	95.0	29.0	54.0	16.5	36.0	11.0	41,325	41,986
Containership	15	2400 TEU	X		671.5	204.7	105.8	32.2	54.8	16.7	38.0	11.6	42,190	42,865
Containership	16	2386 TEU	X		780.0	237.7	90.0	27.4	53.0	16.2	34.0	10.4	43,650	44,348
Containership	17	2230 TEU	X		650.5	198.3	105.8	32.2	62.3	19.0	36.5	11.1	45,960	46,695
Containership	18	1400 TEU	X		686.3	209.2	76.1	23.2	43.0	13.1	36.0	11.0	40,500	41,148
Containership	19				665.0	202.7	90.0	27.4	50.5	15.4	28.0	8.5	27,630	28,072

Ferry	01	Great Lakes Railroad Ferry	X		410.5	125.1	59.5	18.1	24.0	7.3	18.0	5.5	7,500	7,620	
Ferry	02	Medium Coastal Ro/Pax Ferry	X		175.0	53.3	40.0	12.2	14.0	4.3	10.0	3.0	792	805	
Ferry	03	Large Oceangoing Ferry	X	AMHS	380.0	115.8	85.1	25.9	24.0	7.3	17.5	5.3	7,650	7,772	
Ferry	04	Double Ended Open Deck Ferry	X	TEXDOT	263.4	80.3	65.4	19.9	15.5	4.7	11.0	3.4	1,725	1,753	
Ferry	05	Double Ended Multi Deck RoPax	X	NYCDOT	294.0	89.6	69.0	21.0	20.5	6.2	15.0	4.6	2,496	2,536	
Ferry	06	Double Ended Multi Deck RoPax	X	NYCDOT	310.0	94.5	70.0	21.3	20.0	6.1	13.8	4.2	3,340	3,393	
Ferry	07	Large Oceangoing Ferry	X	AMHS	338.0	103.0	85.0	25.9	25.5	7.8	17.5	5.3	7,500	7,620	
Ferry	08	Double Ended Multi Deck Ferry	X	WASHDOT	328.0	100.0	78.7	24.0	23.0	7.0	16.5	5.0	3,310	3,363	
Ferry	09	Double Ended Open Deck Ferry	X		260.0	79.2	44.0	13.4	16.5	5.0	9.8	3.0	1,550	1,575	
Ferry	10	Medium Oceangoing Ferry	X	AMHS	370.0	112.8	73.6	22.4	23.5	7.2	17.1	5.2	5,520	5,608	
Ferry	11	Double Ended Multi Deck RoPax	X		300.0	91.4	52.0	15.8	16.5	5.0	9.3	2.8	2,025	2,057	
Ferry	12	Double Ended Open Deck Ferry	X	TEXDOT	263.4	80.3	65.4	19.9	15.5	4.7	11.0	3.4	1,725	1,753	
Ferry	13	Large Coastal Ro/Pax Ferry	X		250.0	76.2	53.0	16.2	18.0	5.5	12.0	3.7	2,000	2,032	
Ferry	14	Double Ended Open Deck Ferry	X	AMHS	319.0	97.2	73.5	22.4	23.5	7.2	17.0	5.2	4,319	4,388	
Ferry	15	Double Ended Open Deck Ferry	X	VDOT	200.0	61.0	64.6	19.7	15.0	4.6	9.8	3.0	790	803	
Ferry	16	Small Oceangoing Ferry	X	AMHS	235.0	71.6	57.0	17.4	19.0	5.8	14.0	4.3	2,100	2,134	
Ferry	17	Large Double Ended Multi Deck	X	WASHDOT	418.0	127.4	90.0	27.4	25.8	7.8	16.3	5.0	4,850	4,928	
Fishing Vessel	01	Fishing Vessel	X		X	142.7	43.5	38.0	11.6	24.0	7.3	11.7	3.6	1,025	1,041
Fishing Vessel	02	Fishing Vessel Tender	X			186.0	56.7	41.5	12.6	28.0	8.5	17.7	5.4	2,680	2,723
Fishing Vessel	03	Factory Stern Trawler	X			308.0	93.9	51.0	15.5	36.0	11.0	19.0	5.8	6,445	6,548
Fishing Vessel	04	Fishing Trawler	X			376.0	114.6	60.0	18.3	37.5	11.4	21.3	6.5	9,725	9,881
General Cargo	01	General Cargo	X		X	522.0	159.1	68.9	21.0	41.3	12.6	23.8	7.2	16,170	16,429
General Cargo	02	Small Breakbulk, Heavy Lift	X		X	289.3	88.2	50.9	15.5	28.2	8.6	15.1	4.6	3,525	3,581
General Cargo	03	Ice Strengthened Break Bulk				507.0	154.5	69.0	21.0	35.0	10.7	26.8	8.2	16,000	16,256
Naval Amphib	01	Dock Landing Ship		X		553.0	168.6	85.0	25.9	52.6	16.0	19.2	5.8	14,000	14,224
Naval Amphib	02	Dock Landing Ship		X		580.0	176.8	84.0	25.6	53.0	16.2	21.0	6.4	16,360	16,622
Naval Amphib	03	Amphibious Assault Ship		X		568.0	173.1	84.0	25.6	76.5	23.3	29.0	8.8	20,285	20,610
Naval Amphib	04	Amphibious Dock Transport		X		661.0	201.5	105.0	32.0	62.3	19.0	23.0	7.0	25,000	25,400
Naval Auxiliary	01	Fast Combat Support		X		754.0	229.8	107.0	32.6	66.2	20.2	38.3	11.7	48,800	49,581

Naval Auxiliary	02	Fast Combat Support		x		795.0	242.3	107.0	32.6	55.9	17.0	39.0	11.9	53,000	53,848
Naval Auxiliary	03	Destroyer Tender		x		642.0	195.7	85.0	25.9	66.5	20.3	25.0	7.6	20,265	20,589
Naval Auxiliary	04	Submarine Tender		x		643.0	196.0	85.0	25.9	56.5	17.2	29.0	8.8	23,400	23,774
Naval Auxiliary	05	Yard Patrol Craft		x		108.0	32.9	24.0	7.3	15.3	4.6	8.0	2.4	260	264
Naval Auxiliary	06	LASH		x		811.7	247.4	100.2	30.5	55.4	16.9	38.0	11.6	44,600	45,314
Naval Auxiliary	07	Hospital Ship		x		894.0	272.5	105.8	32.2	64.5	19.7	32.8	10.0	69,360	70,470
Naval Combatant	01	Frigate		x		453.0	138.1	45.0	13.7	30.0	9.1	16.3	5.0	4,100	4,166
Naval Combatant	02	Destroyer (older)		x		490.0	149.4	47.5	14.5	28.2	8.6	14.7	4.5	4,855	4,933
Naval Combatant	03	Destroyer (current)		x		505.0	153.9	66.0	20.1	41.3	12.6	31.3	9.5	8,935	9,078
Naval Combatant	04	Cruiser		x		567.0	172.8	55.0	16.8	42.0	12.8	33.0	10.1	10,000	10,160
Naval Combatant	05	Battleship		x		888.0	270.7	109.0	33.2	53.0	16.2	36.1	11.0	57,270	58,186
Naval Combatant	06	Aircraft Carrier		x		1100.0	335.3	133.0	40.5	99.2	30.2	37.3	11.4	89,600	91,034
Naval Combatant	07	Aircraft Carrier		x		1100.0	335.3	134.0	40.8	100.2	30.5	39.8	12.1	100,000	101,600
Naval Combatant	08	Cruiser		x		721.0	219.8	73.0	22.3	45.0	13.7	24.9	7.6	17,525	17,805
Naval Combatant	09	High Endurance Cutter		x		378.0	115.2	43.0	13.1	27.0	8.2	15.2	4.6	3,250	3,302
Naval Combatant	10	Coastal Patrol Craft		x		179.0	54.6	25.0	7.6	14.7	4.5	8.5	2.6	392	398
OSV	01	Small OSV	X			170.0	51.8	40.0	12.2	14.0	4.3	9.0	2.7	1,090	1,107
OSV	02	Large OSV	X			310.0	94.5	52.0	15.8	21.8	6.6	14.5	4.4	3,790	3,851
Other	01	Maritime Academy Training Ship	X	MARAD		476.0	145.1	72.0	21.9	42.0	12.8	30.5	9.3	16,260	16,520
Other	02	TLP	X			355.0	108.2	221.0	67.4	120.0	36.6	70.0	21.3	19,327	19,636
Other	03	TLP	X			266.5	81.2	266.5	81.2	157.5	48.0	60.0	18.3	36,500	37,084
Other	04	Maritime Academy Training Ship		USMMA		224.0	68.3	43.0	13.1	20.0	6.1	14.9	4.5	2,120	2,154
Other	05	Cable Repair Ship		USNS		513.0	156.4	73.0	22.3	53.6	16.3	26.0	7.9	14,935	15,174
Other	06	LNG - 134,500	X			920.0	280.4	135.1	41.2	70.6	21.5	36.0	11.0	96,650	98,196
Other	07	LNG - 125,000	X			913.2	278.3	145.0	44.2	89.0	27.1	36.0	11.0	96,000	97,536
Other	08	LNG - 114,000	X			910.0	277.4	125.0	38.1	91.0	27.7	38.0	11.6	92,100	93,574
Other	09	LASH	X			835.0	254.5	107.0	32.6	60.5	18.4	35.0	10.7	56,875	57,785
Other	10	LNG				720.0	219.5	114.0	34.7	73.5	22.4	42.0	12.8	67,520	68,600
Passenger	01	Small Passenger Vessel	X			136.0	41.5	34.5	10.5	10.0	3.0	5.3	1.6	235	239

Passenger	02	Medium Ocean Liner			632.0	192.6	89.0	27.1	52.8	16.1	30.0	9.1	29,900	30,378
Passenger	03	Large Modern Cruise Ship	X		840.0	256.0	105.8	32.2	26.3	8.0	22.1	6.7	36,670	37,257
Passenger	04	Medium Modern Cruise Ship	X		775.0	236.2	105.8	32.2	67.3	20.5	24.0	7.3	32,800	33,325
Passenger	05	Large Ocean Liner			921.0	280.7	101.5	30.9	70.5	21.5	31.0	9.4	43,500	44,196
Passenger	06				980.0	298.7	110.5	33.7	51.9	15.8	28.0	8.5	42,880	43,566
Research Vessel	01	Academic/Scientific Research Vessel	X	NOAA	187.0	57.0	33.0	10.1	19.0	5.8	11.5	3.5	765	777
Research Vessel	02	Academic/Scientific Research Vessel	X	NSF	184.5	56.2	33.0	10.1	18.5	5.6	10.7	3.3	1,150	1,168
Research Vessel	03	Academic/Scientific Research Vessel	X		273.2	83.3	52.5	16.0	26.5	8.1	17.0	5.2	3,510	3,566
Research Vessel	04	Ice Capable Research Vessel		NSF	300.0	91.4	60.0	18.3	31.0	9.4	17.3	5.3	4,585	4,658
Research Vessel	05	Academic/Scientific Research Vessel		ONR	273.0	83.2	52.5	16.0	26.5	8.1	17.0	5.2	3,510	3,566
Research Vessel	06	Oceanographic Survey		USNS	328.5	100.1	58.0	17.7	28.0	8.5	19.0	5.8	5,070	5,151
Research Vessel	07	Academic/Scientific Research Vessel		NOAA	163.0	49.7	33.0	10.1	14.2	4.3	12.7	3.9	650	660
RO/RO	01	RRF Ro/Ro		USNS	627.4	191.2	88.6	27.0	57.8	17.6	28.3	8.6	24,550	24,943
RO/RO	02	RRF Ro/Ro		USNS	697.0	212.4	105.8	32.2	45.0	13.7	38.1	11.6	53,650	54,508
RO/RO	03	Strategic Sealift		USNS	950.0	289.6	150.0	45.7	89.0	27.1	37.5	11.4	69,950	71,069
RO/RO	04	Large Medium Speed Ro/Ro		USNS	895.0	272.8	105.8	32.2	89.3	27.2	35.8	10.9	65,000	66,040
RO/RO	05	Pure Car Carrier	X		623.4	190.0	105.8	32.2	45.0	13.7	31.4	9.6	31,380	31,882
RO/RO	06	Naval Auxiliary RO/RO		X	749.0	228.3	105.8	32.2	66.5	20.3	35.0	10.7	51,010	51,826
RO/RO	07	Naval Auxiliary RO/RO		X	647.0	197.2	105.0	32.0	66.7	20.3	32.0	9.8	32,055	32,568
RO/RO	08		X		744.2	226.8	92.8	28.3	34.9	10.6	31.0	9.4	38,475	39,091
RO/RO	09	Containership Ro/Ro	X		713.0	217.3	105.5	32.2	43.4	13.2	29.0	8.8	32,275	32,791
SWATH	01	SWATH Research Vessel			190.0	57.9	80.0	24.4	48.3	14.7	24.8	7.6	3,350	3,404
SWATH	02	SWATH Crewboat	X		106.0	32.3	44.0	13.4	19.0	5.8	10.0	3.0	250	254
SWATH	03	SWATH Dive Support Vessel	X		211.0	64.3	87.0	26.5	47.5	14.5	23.0	7.0	3,135	3,185
Tanker	01	Medium Products Tanker			662.5	201.9	90.1	27.5	46.2	14.1	35.0	10.7	33,200	33,731
Tanker	02	Fast Oiler		USNS	633.2	193.0	97.5	29.7	49.2	15.0	35.0	10.7	42,760	43,444
Tanker	03	Small Products Tanker	X		310.0	94.5	51.5	15.7	30.9	9.4	18.5	5.6	5,875	5,969
Tanker	04	SMALL VLCC Double Hull Crude	X		945.0	288.0	166.0	50.6	88.0	26.8	64.5	19.7	217,415	220,894
Tanker	05	Large VLCC	X		1100.0	335.3	178.0	54.3	89.5	27.3	65.0	19.8	292,430	297,109

Tanker	06	Large ULCC	X		X	1200.0	365.8	229.7	70.0	95.1	29.0	72.0	21.9	440,150	447,192
Tanker	07	Small VLCC	X		X	950.0	289.6	166.0	50.6	88.7	27.0	64.5	19.7	240,140	243,982
Tanker	08	Small VLCC	X			952.7	290.4	166.0	50.6	78.0	23.8	59.3	18.1	216,650	220,116
Tanker	09	Small ULCC	X			1050.0	320.0	197.0	60.0	98.0	29.9	72.0	21.9	352,500	358,140
Tanker	10	Fleet Oiler		X		615.0	187.5	90.0	27.4	54.0	16.5	36.0	11.0	39,625	40,259
Tanker	11	Large ULCC				1160.0	353.6	227.8	69.4	94.5	28.8	72.0	21.9	435,800	442,773
Tanker	12	Large VLCC				1060.0	323.1	177.5	54.1	93.5	28.5	68.0	20.7	308,630	313,568
Tanker	13	Small VLCC				1056.5	322.0	143.7	43.8	91.0	27.7	71.0	21.6	262,550	266,751
Tanker	14					900.0	274.3	105.8	32.2	66.0	20.1	49.0	14.9	111,230	113,010
Tanker	15					825.3	251.6	133.3	40.6	72.4	22.1	52.0	15.8	132,165	134,280
Tanker	16					825.0	251.5	136.0	41.5	71.7	21.9	42.0	12.8	109,265	111,013
Tanker	17					786.0	239.6	105.0	32.0	57.0	17.4	43.0	13.1	82,200	83,515
Tanker	18					785.0	239.3	124.8	38.0	54.5	16.6	42.0	12.8	91,820	93,289
Tanker	19					633.9	193.2	90.1	27.5	47.9	14.6	37.0	11.3	48,620	49,398
Tanker	20					780.0	237.7	141.0	43.0	61.4	18.7	45.0	13.7	109,610	111,364
Tanker	21					708.0	215.8	102.0	31.1	50.0	15.2	40.0	12.2	66,000	67,056
Tanker	22					688.5	209.9	90.0	27.4	47.0	14.3	35.0	10.7	46,850	47,600
Tanker	23					675.5	205.9	99.2	30.2	50.0	15.2	36.0	11.0	54,550	55,423
Tanker	24					639.0	194.8	84.0	25.6	50.7	15.5	32.0	9.8	36,865	37,455
Tanker	25					636.5	194.0	100.0	30.5	49.5	15.1	36.9	11.2	53,070	53,919
Tanker	26					610.0	185.9	91.6	27.9	61.7	18.8	34.0	10.4	37,750	38,354
Tanker	27	Double Hull Products Carrier	X			619.8	188.9	105.8	32.2	62.8	19.2	40.0	12.2	97,650	99,212
Tugboat	01	Harbor Tug	X			90.0	27.4	32.0	9.8	15.0	4.6	12.0	3.7	485	493
Tugboat	02	Tug				110.0	33.5	34.0	10.4	19.0	5.8	17.0	5.2	1,010	1,026

Special Codes

Note that many of the hull geometries have special codes annotated in their description. These codes are as follows:

- **P** = Vessel geometry or other information may be subject to proprietary restrictions
- **G** = Vessel is government or municipally-owned
- **C** = Vessel has been involved in a documented casualty

File Format

The detailed vessel geometries are provided electronically in General Hydrostatics System (GHS) geometry file (GF) format. GHS is a marine hydrostatics software package developed by Creative Systems, Inc. The GHS GF format is a simple, ASCII-based file format that is widely used in the marine field. Other basic and advanced marine design and analysis programs import and export this file format, and the data in the GHS GF format can also be easily manipulated by even a novice programmer. Appendix A provides file format details.

When more than one file exists for a particular vessel, e.g., *.GF and *.GF1, the *.GF file is always the basic external hullform. The additional files typically include subdivision (such as tankage) definition information.

Viewing and Manipulating the Files

As mentioned, most marine software programs import and export GHS GF format files. In addition, a free utility program called “Deadweight” is available online that can read the files and can export AutoCAD or Rhinoceros 3D format files from the GHS GF. The program can be downloaded from <http://www.deadweight.com>.

Barges

Barge 01

Table 2: Barge 01 Principal Characteristics

Reference ID:	Barge 01
Description:	Coastal Tank Barge
Special Codes:	P, C
Length:	325.7 ft 99.3 m
Beam:	54.0 ft 16.5 m
Depth:	22.0 ft 6.7 m
Draft:	18.0 ft 5.5 m
Displacement:	7,910 LT 8,037 mt

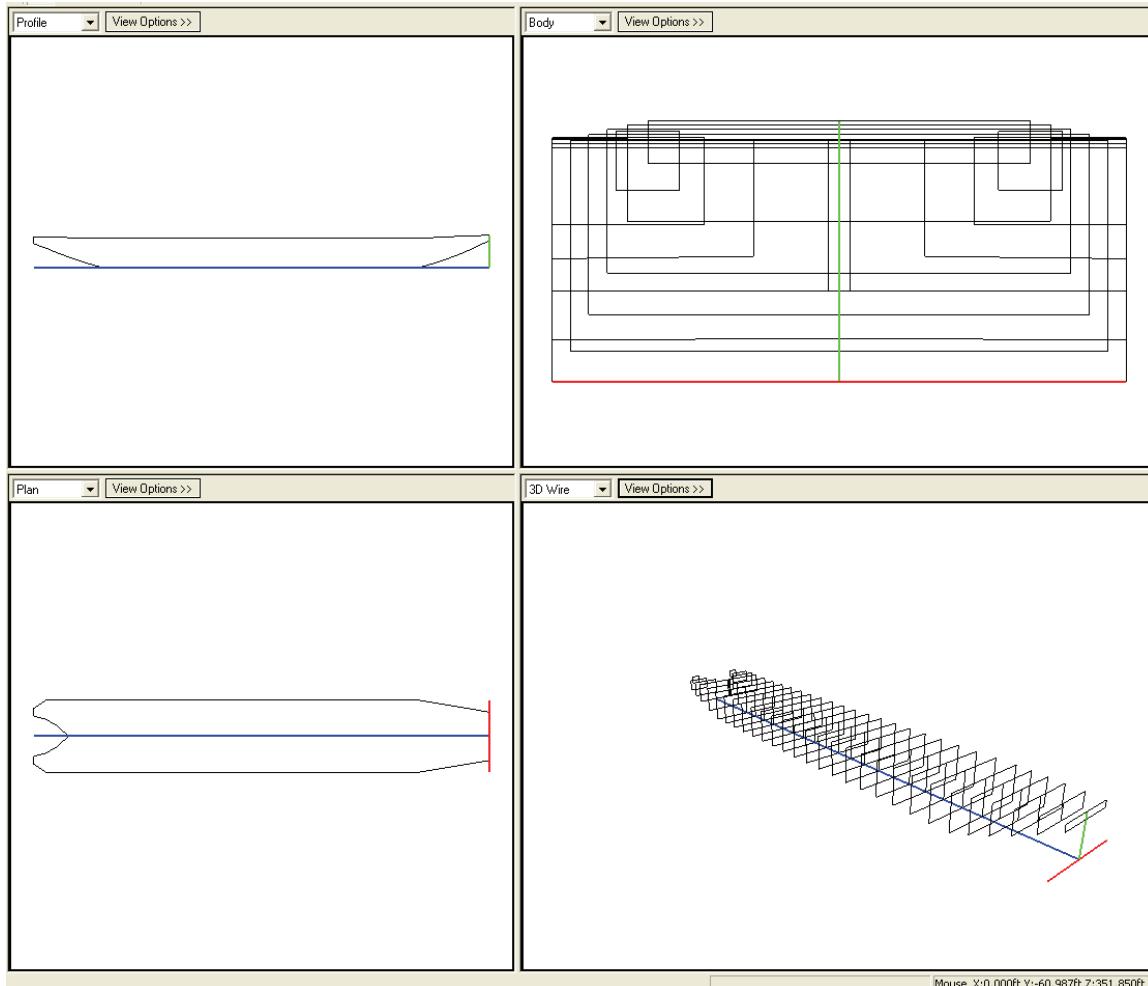


Figure 1: Barge 01

Barge 02

Table 3: Barge 02 Principal Characteristics

Reference ID:	Barge 02	
Description:	ITB Barge	
Special Codes:	P	
Length:	585.0	ft
	178.3	m
Beam:	85.0	ft
	25.9	m
Depth:	45.0	ft
	13.7	m
Draft:	32.0	ft
	9.7	m
Displacement:	35,400	LT
	35,966	mt

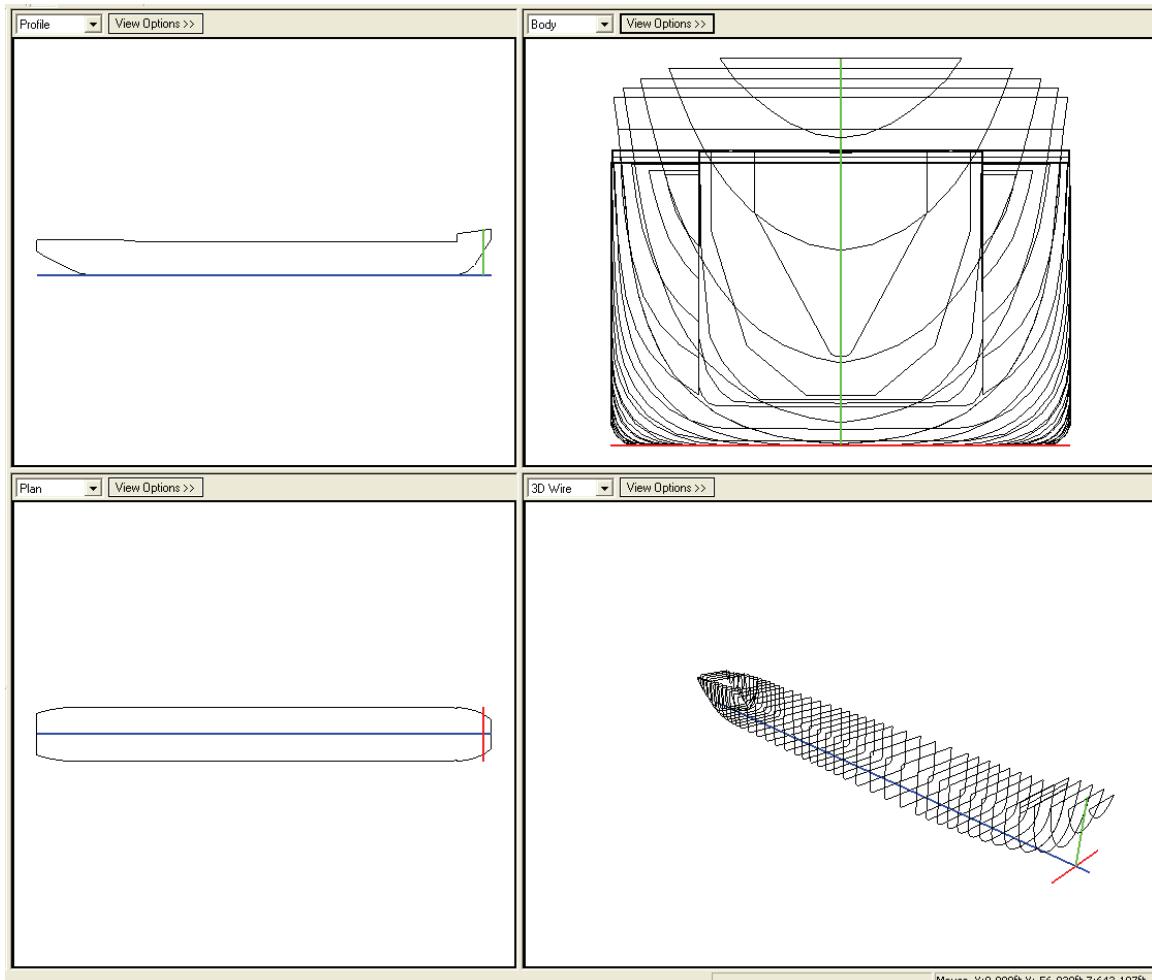


Figure 2: Barge 02

Barge 03

Table 4: Barge 03 Principal Characteristics

Reference ID:	Barge 03	
Description:	ITB Barge/Tug Combination	
Special Codes:	P	
Length:	647.5	ft
	197.4	m
Beam:	85.0	ft
	25.9	m
Depth:	45.0	ft
	13.7	m
Draft:	32.0	ft
	9.8	m
Displacement:	38,050	LT
	38,658	mt

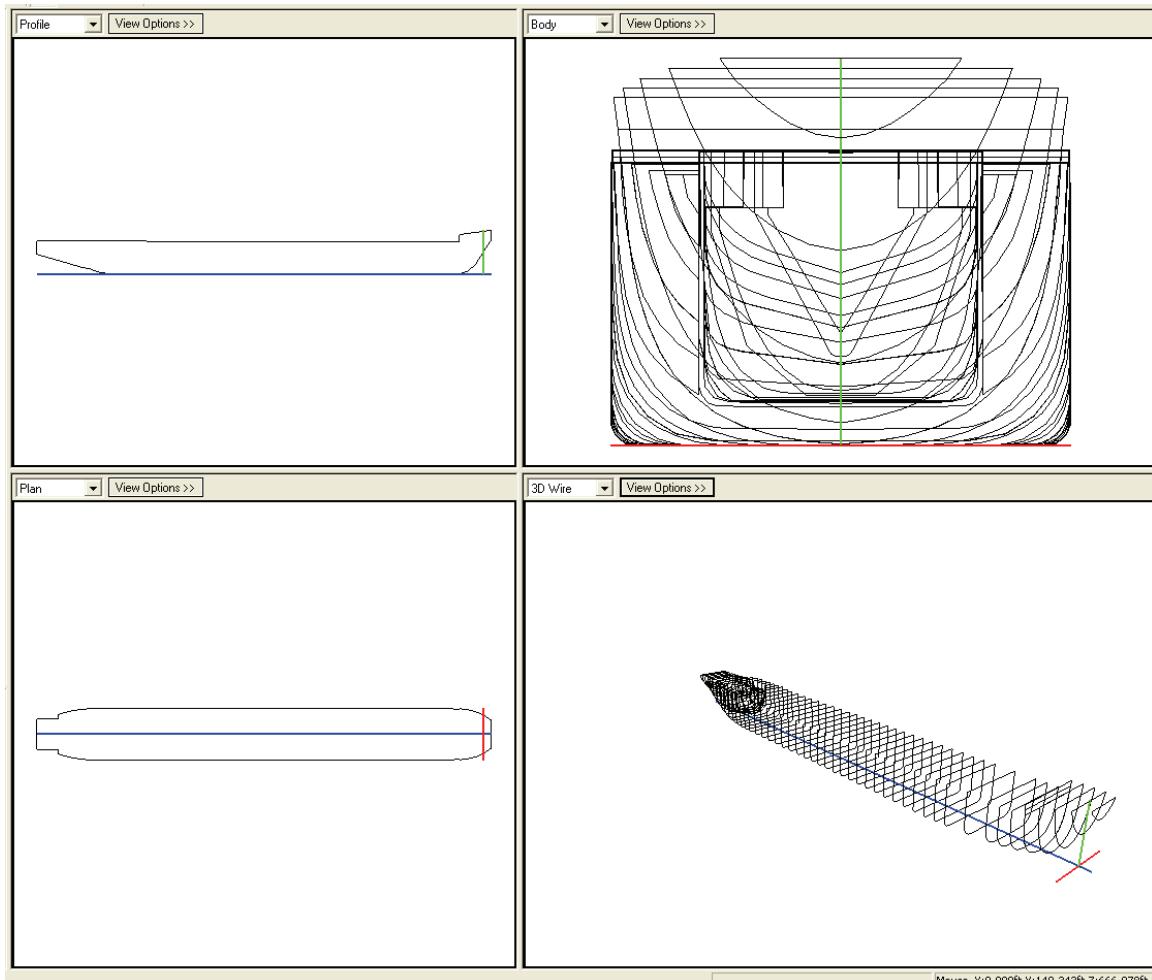


Figure 3: Barge 03

Barge 04

Table 5: Barge 04 Principal Characteristics

Reference ID:	Barge 04	
Description:	ITB Barge only	
Special Codes:	P	
Length:	420.0	ft
	128.0	m
Beam:	80.0	ft
	24.4	m
Depth:	40.0	ft
	12.2	m
Draft:	22.0	ft
	6.7	m
Displacement:	11,375	LT
	11,557	mt

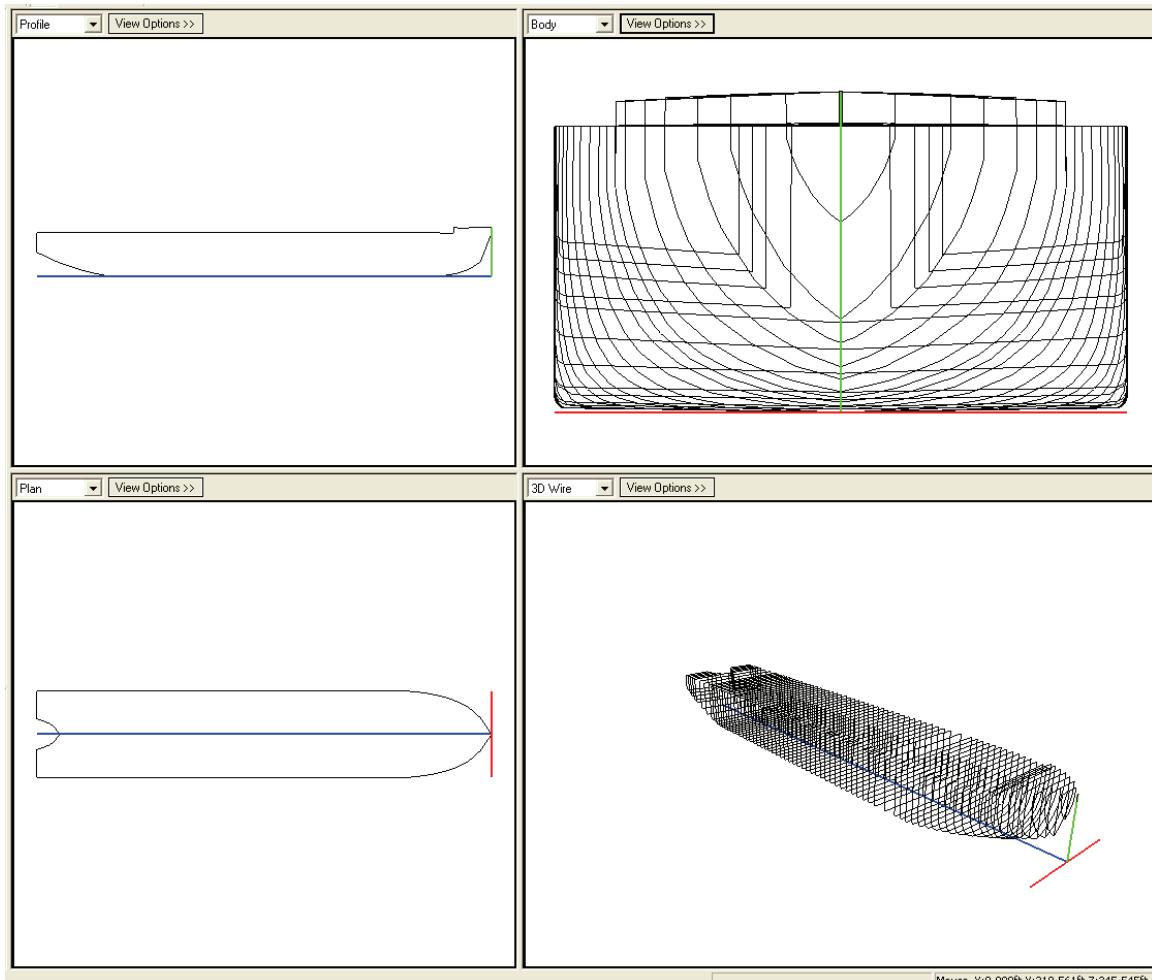


Figure 4: Barge 04

Barge 05

Table 6: Barge 05 Principal Characteristics

Reference ID:	Barge 05	
Description:	Ocean Freight Barge	
Special Codes:	P	
Length:	400.0	ft
	121.9	m
Beam:	76.0	ft
	23.2	m
Depth:	20.0	ft
	6.1	m
Draft:	14.3	ft
	4.4	m
Displacement:	11,150	LT
	11,328	mt

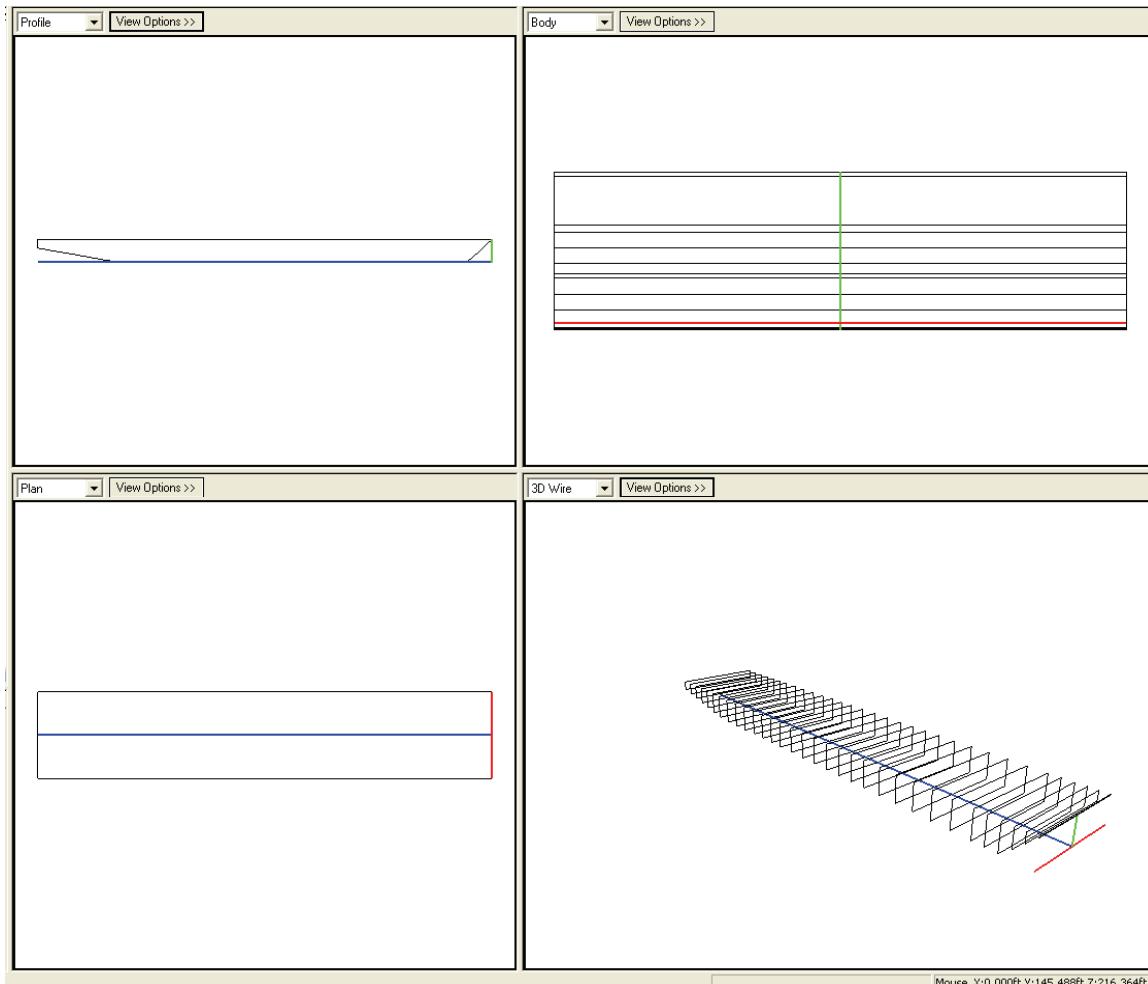


Figure 5: Barge 05

Barge 06

Table 7: Barge 06 Principal Characteristics

Reference ID:	Barge 06	
Description:	Freight Barge	
Special Codes:	P, C	
Length:	274.6	ft
	83.7	m
Beam:	76.0	ft
	23.2	m
Depth:	18.0	ft
	5.5	m
Draft:	12.0	ft
	3.7	m
Displacement:	6,120	LT
	6,218	mt

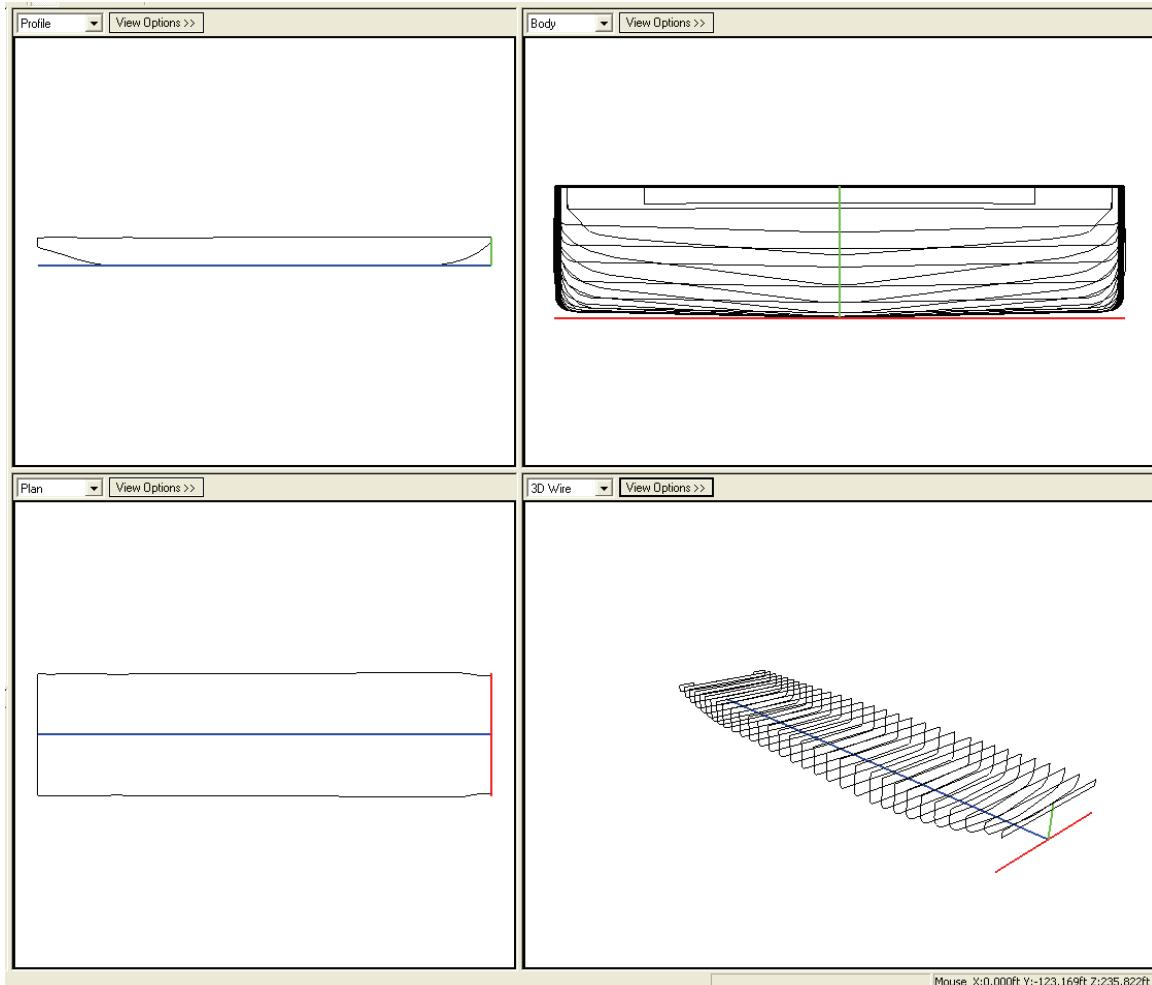


Figure 6: Barge 06

Barge 07

Table 8: Barge 07 Principal Characteristics

Reference ID:	Barge 07	
Description:	Barge	
Special Codes:	P, C	
Length:	330.0	ft
	100.6	m
Beam:	78.0	ft
	23.8	m
Depth:	20.0	ft
	6.1	m
Draft:	15.0	ft
	4.6	m
Displacement:	8,820	LT
	8,961	mt

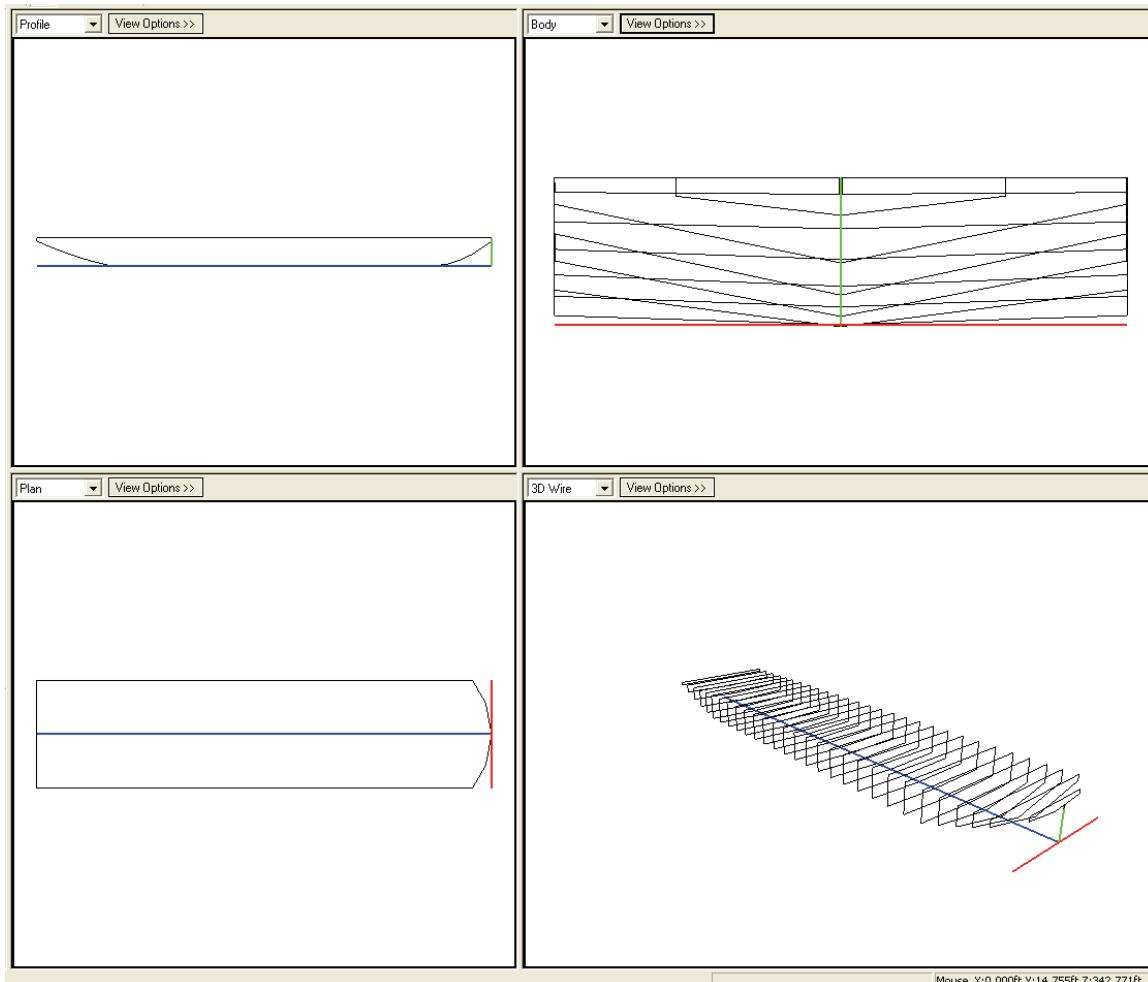


Figure 7: Barge 07

Barge 08

Table 9: Barge 08 Principal Characteristics

Reference ID:	Barge 08	
Description:	Dredge	
Special Codes:	P	
Length:	145.0	ft
	44.2	m
Beam:	48.0	ft
	14.6	m
Depth:	8.5	ft
	2.6	m
Draft:	6.0	ft
	1.8	m
Displacement:	1,010	LT
	1,026	mt

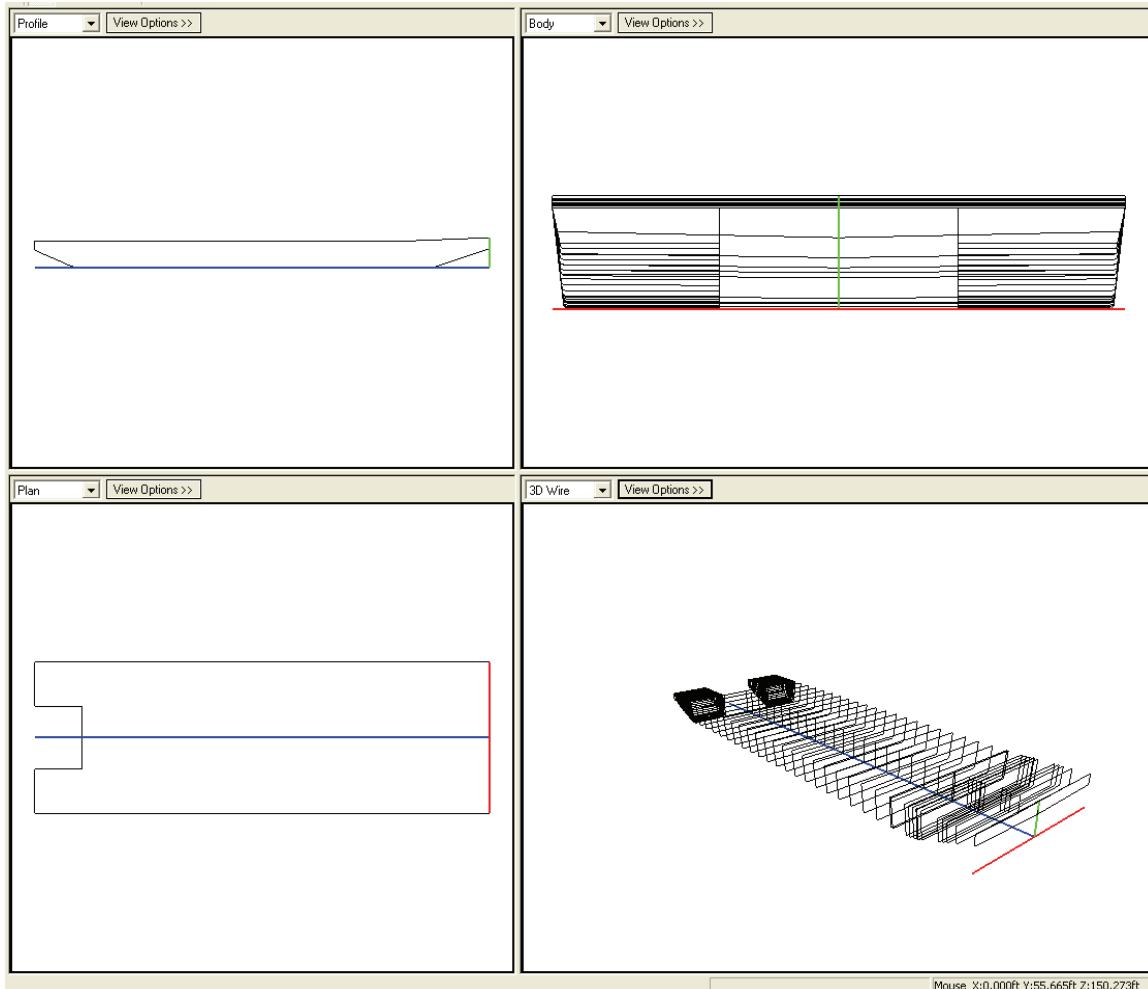


Figure 8: Barge 08

Barge 09

Table 10: Barge 09 Principal Characteristics

Reference ID:	Barge 09	
Description:	Freight Barge	
Special Codes:	P	
Length:	250.0	ft
	76.2	m
Beam:	72.0	ft
	21.9	m
Depth:	18.0	ft
	5.5	m
Draft:	12.0	ft
	3.7	m
Displacement:	5,500	LT
	5,588	mt

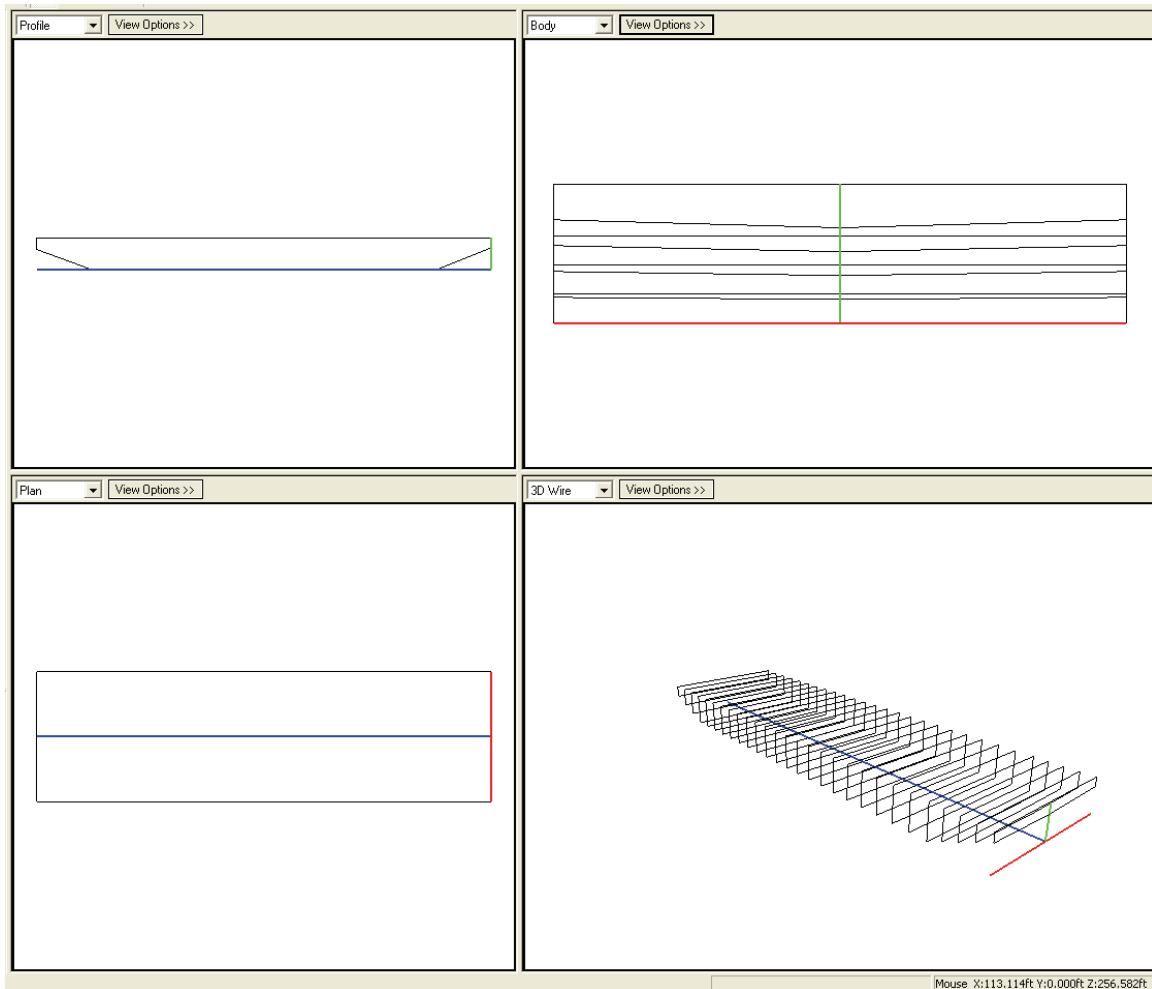


Figure 9: Barge 09

Barge 10

Table 11: Barge 10 Principal Characteristics

Reference ID:	Barge 10	
Description:	Barge	
Special Codes:	P, C	
Length:	170.0	ft
	51.8	m
Beam:	35.0	ft
	10.7	m
Depth:	10.0	ft
	3.0	m
Draft:	8.0	ft
	2.4	m
Displacement:	1,180	LT
	1,199	mt

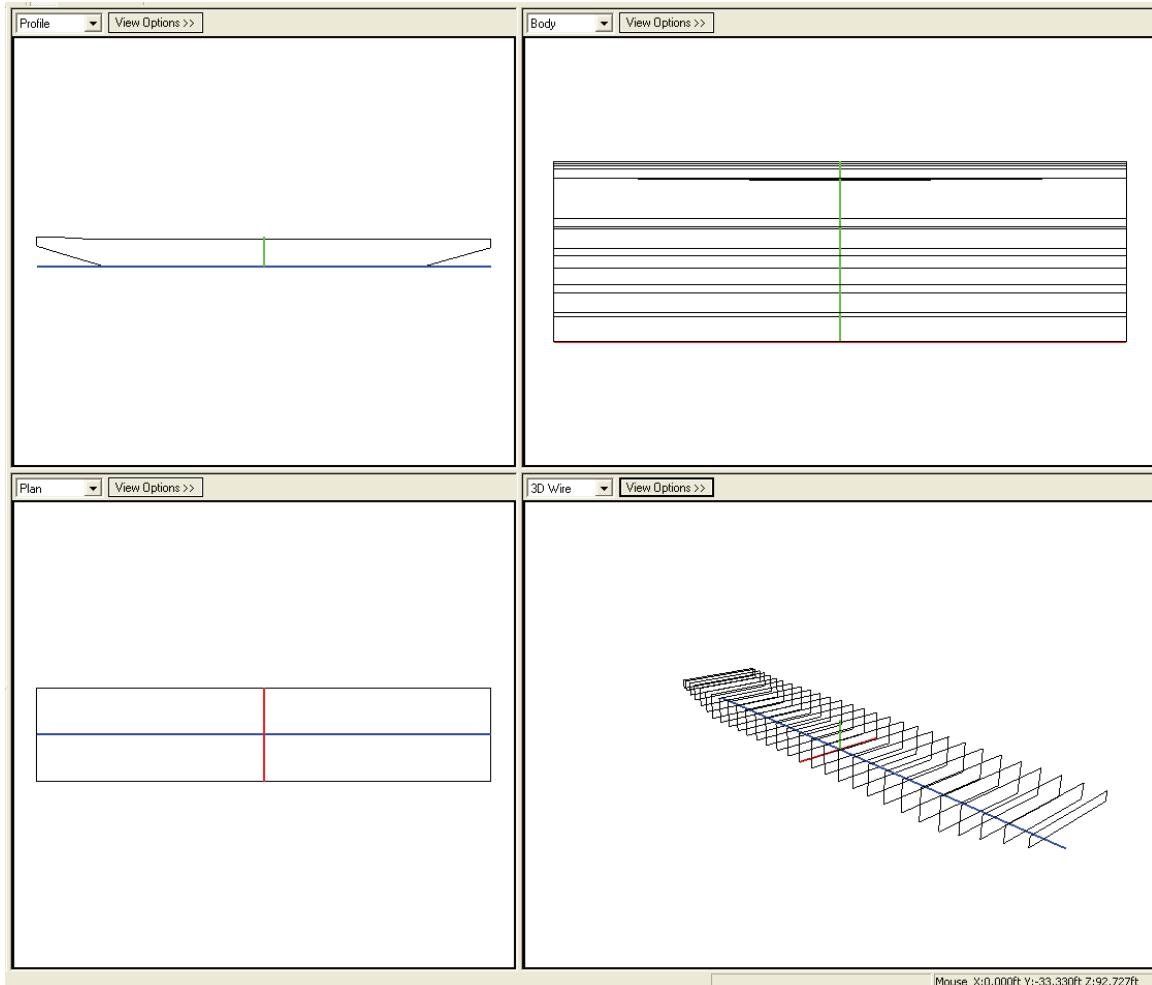


Figure 10: Barge 10

Barge 11

Table 12: Barge 11 Principal Characteristics

Reference ID:	Barge 11	
Description:	Inland Tank Barge	
Special Codes:	P	
Length:	195.0	ft
	59.4	m
Beam:	54.0	ft
	16.5	m
Depth:	12.0	ft
	3.7	m
Draft:	9.5	ft
	2.9	m
Displacement:	2,700	LT
	2,743	mt

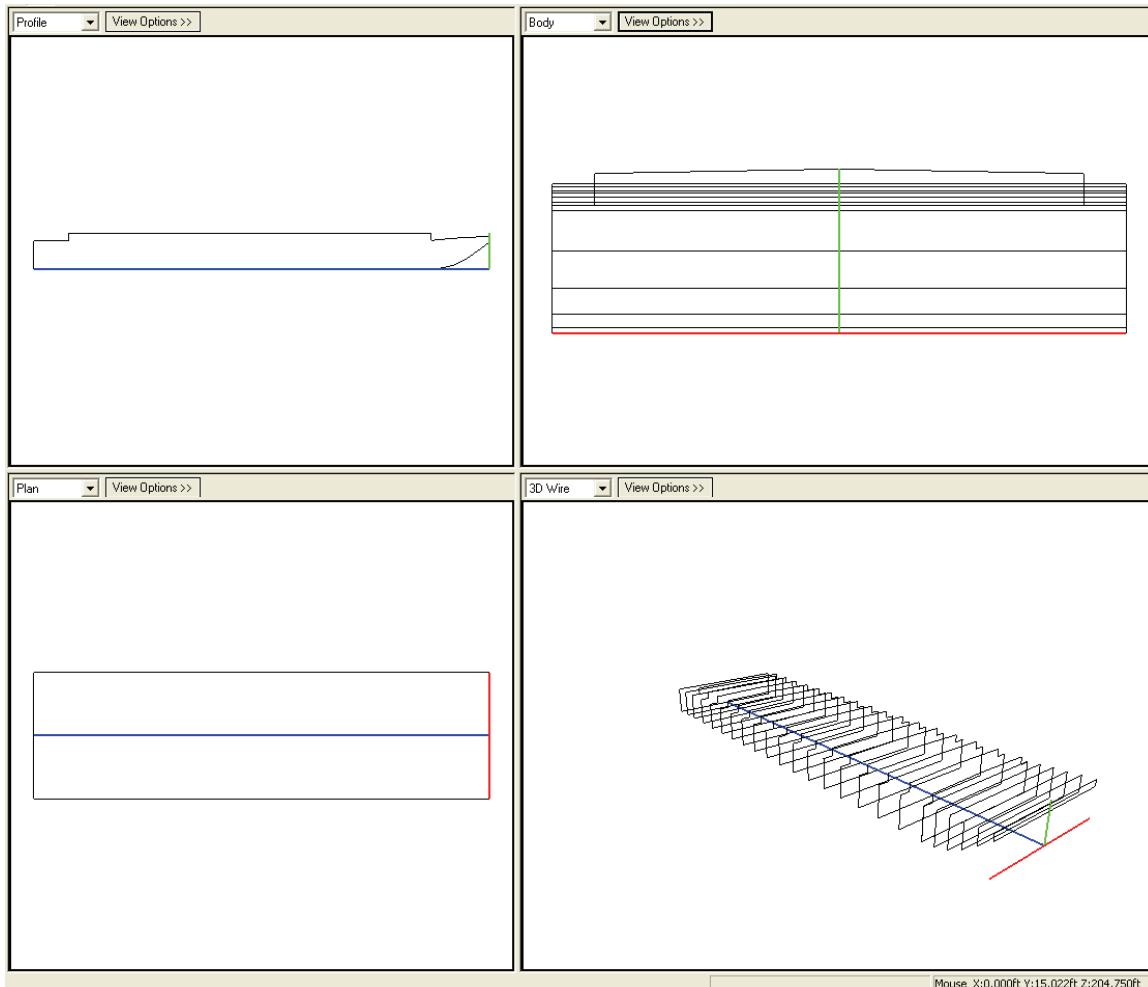


Figure 11: Barge 11

Barge 12

Table 13: Barge12 Principal Characteristics

Reference ID:	Barge 12	
Description:	Barge	
Special Codes:	P, C	
Length:	312.0	ft
	95.1	m
Beam:	68.0	ft
	20.7	m
Depth:	19.0	ft
	5.8	m
Draft:	14.5	ft
	4.4	m
Displacement:	7,300	LT
	7,417	mt

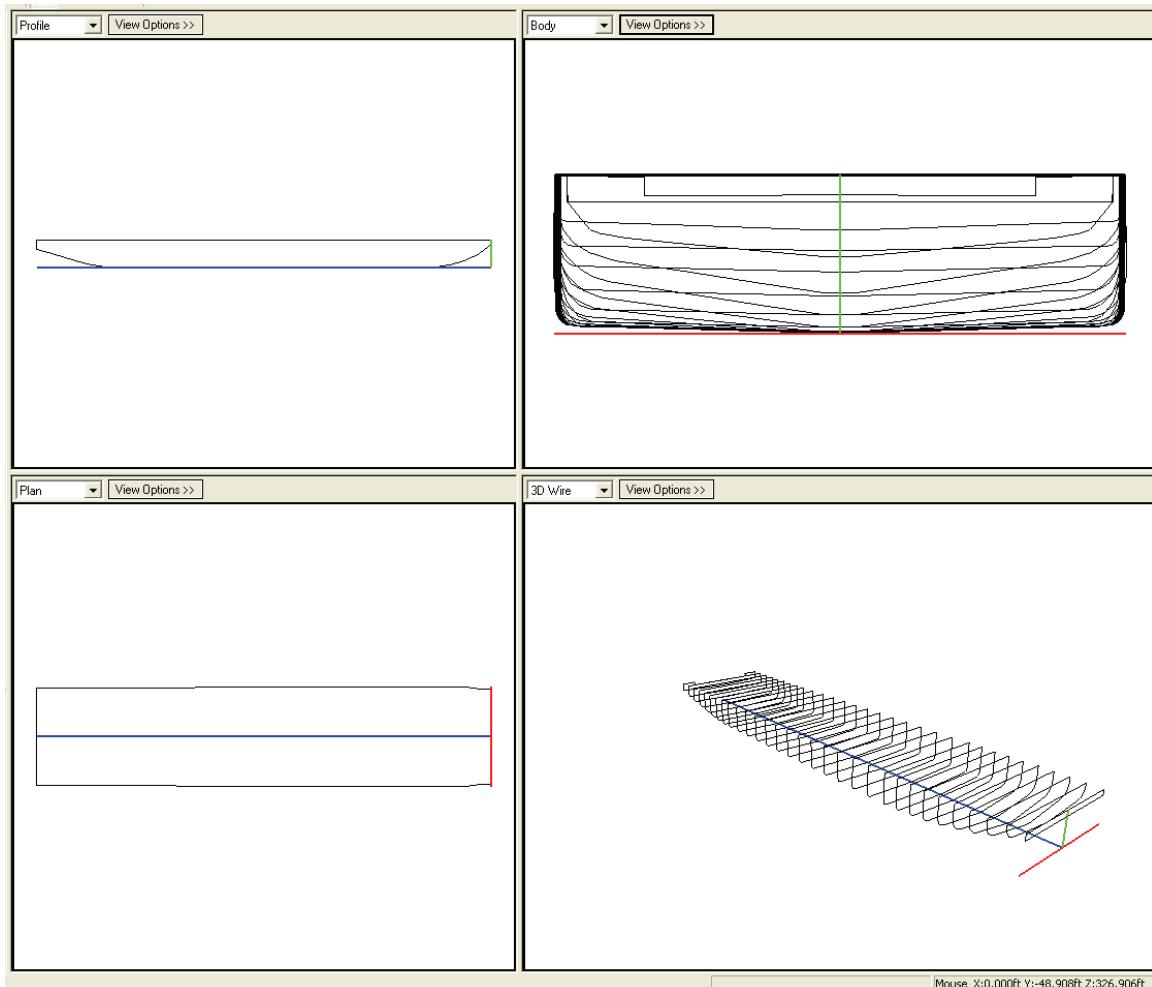


Figure 12: Barge 12

Barge 13

Table 14: Barge 13 Principal Characteristics

Reference ID:	Barge 13	
Description:	Tank Barge	
Special Codes:	P, C	
Length:	297.5	ft
	90.7	M
Beam:	54.0	ft
	16.5	M
Depth:	12.0	ft
	3.7	M
Draft:	8.0	ft (baseline)
	2.4	M
Displacement:	3,200	LT
	3,251	Mt

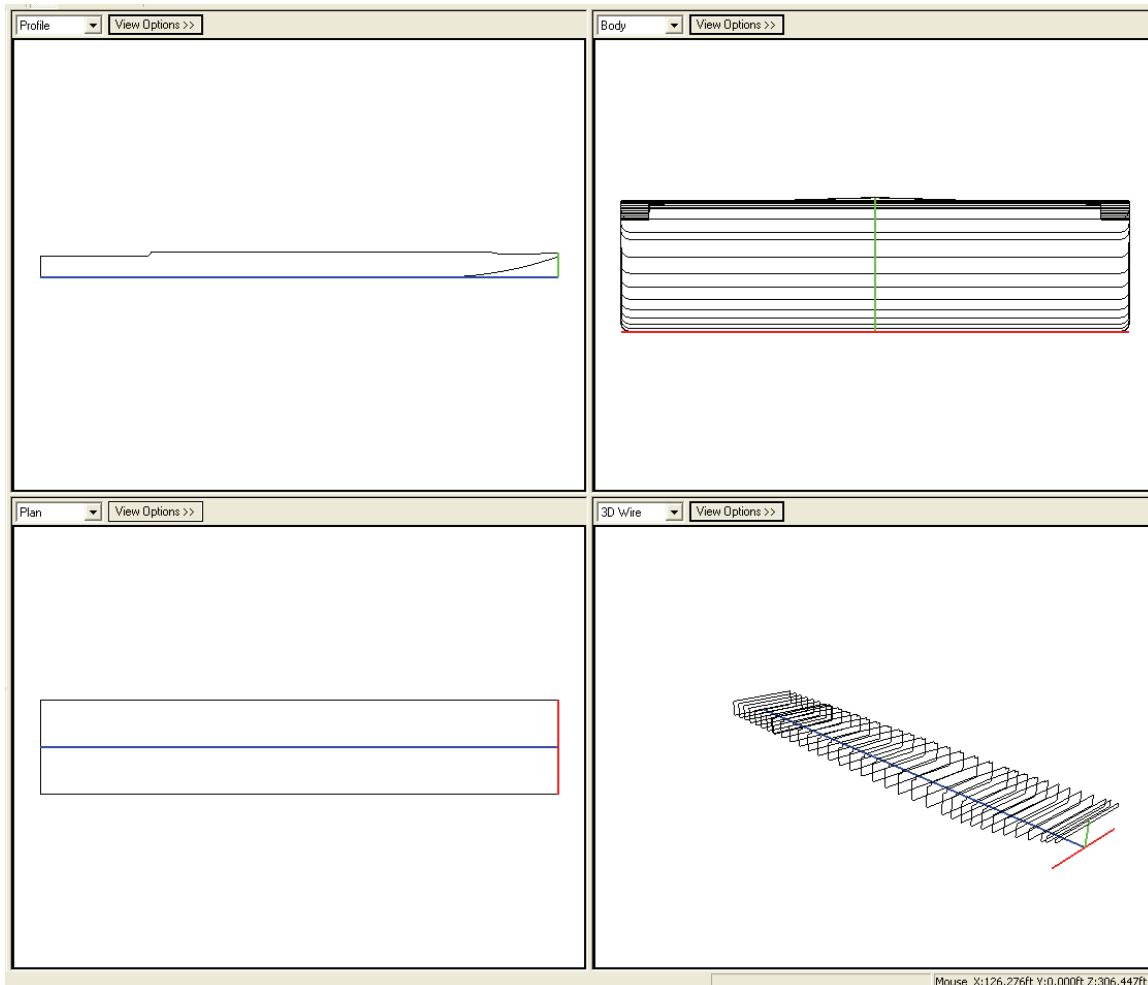


Figure 13: Barge 13

Bulkers

Bulker 01

Table 15: Bulker 01 Principal Characteristics

Reference ID:	Bulker 01	
Description:	Medium Bulker	
Special Codes:	P, C	
Length:	626.4	ft
	190.9	m
Beam:	83.7	ft
	25.5	m
Depth:	50.0	ft
	15.2	m
Draft:	33.7	ft
	10.3	m
Displacement:	39,700	LT
	40,335	mt

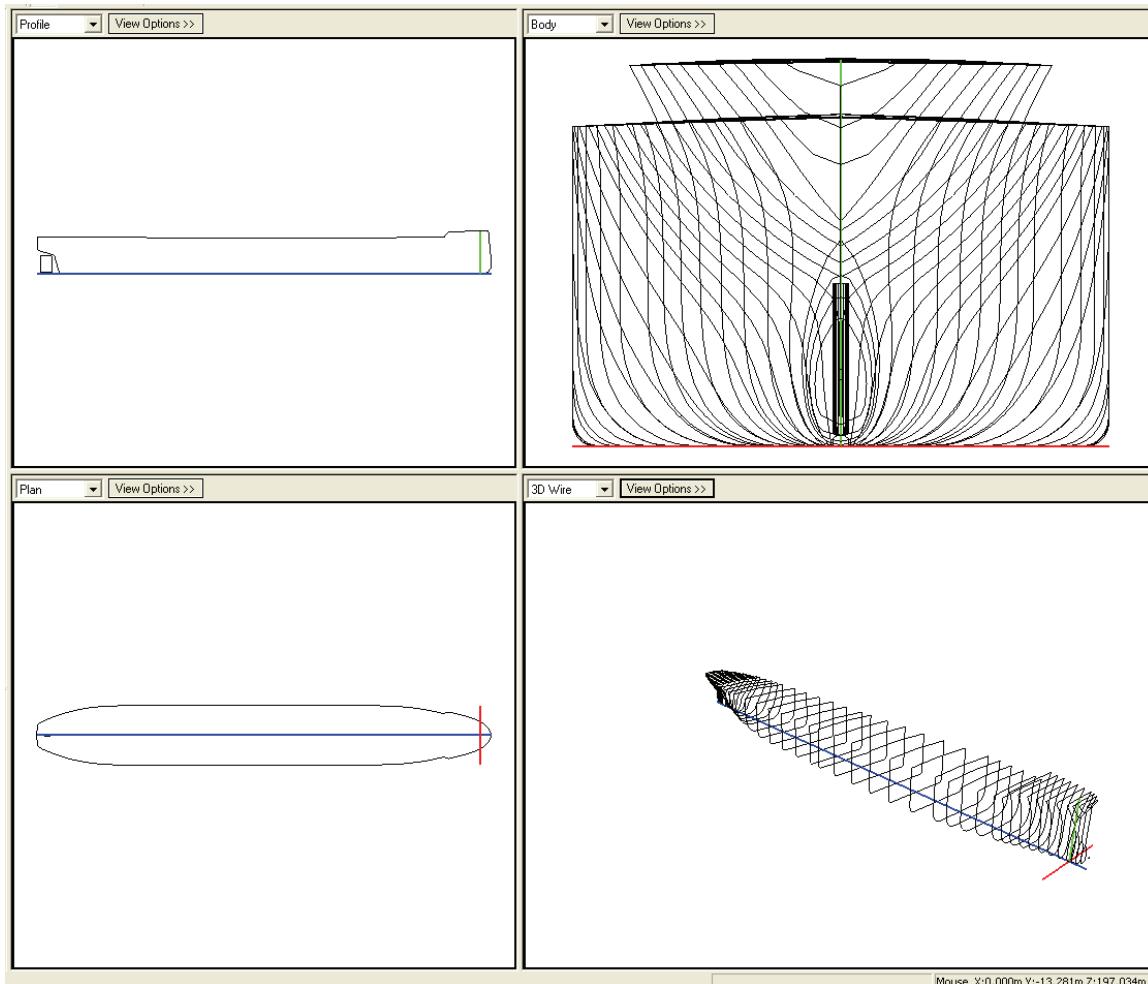


Figure 14: Bulker 01

Bulker 02

Table 16: Bulker 02 Principal Characteristics

Reference ID:	Bulker 02	
Description:	Large Bulker	
Special Codes:	P	
Length:	855.0	ft
	260.6	m
Beam:	105.8	ft
	32.2	m
Depth:	64.5	ft
	19.7	m
Draft:	45.0	ft
	13.7	m
Displacement:	96,675	LT
	98,222	mt

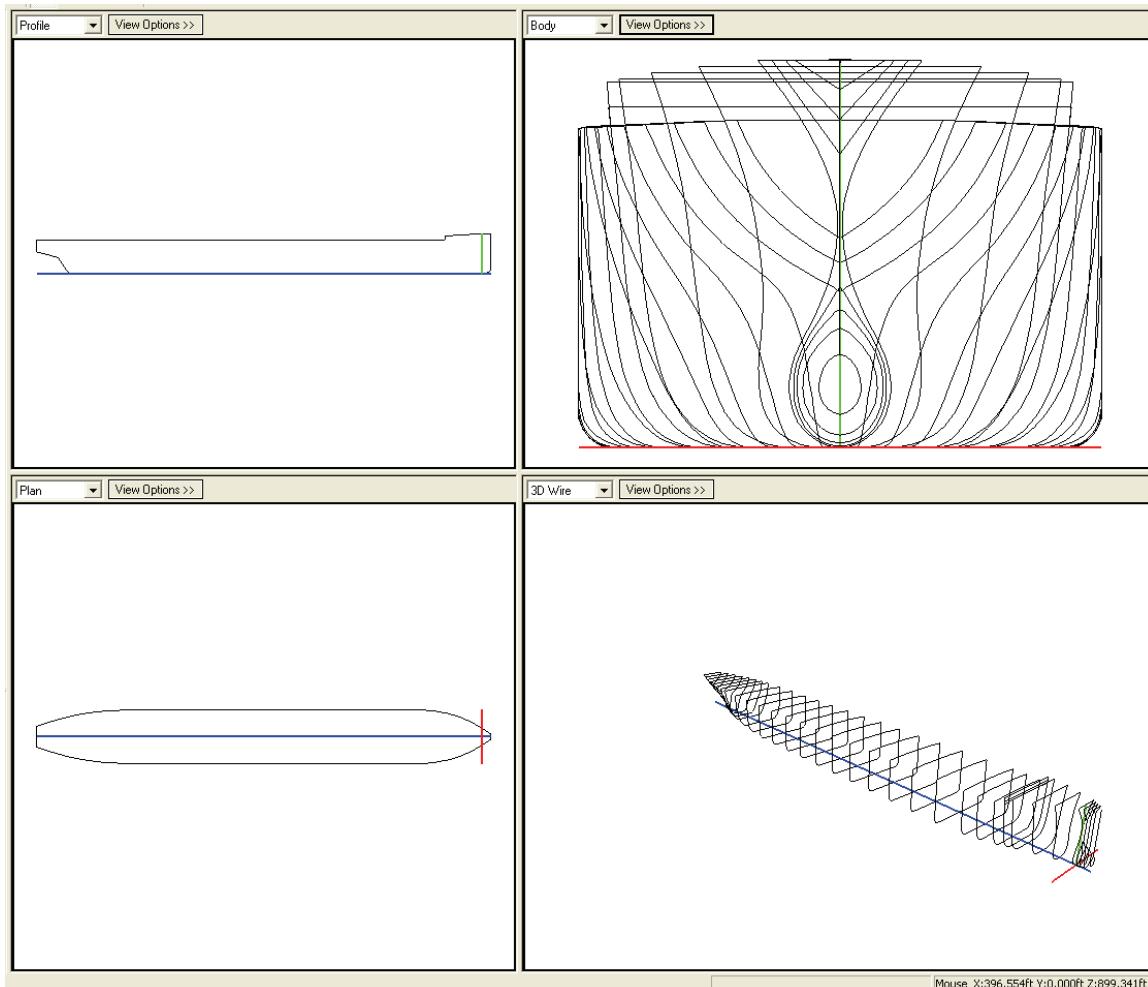


Figure 15: Bulker 02

Bulk 03

Table 17: Bulk 03 Principal Characteristics

Reference ID:	Bulk 03	
Description:	Cement Carrier	
Special Codes:	P, C	
Length:	572.5	ft
	174.5	m
Beam:	75.0	ft
	22.9	m
Depth:	46.4	ft
	14.1	m
Draft:	32.8	ft
	10.0	m
Displacement:	30,885	LT
	31,379	mt

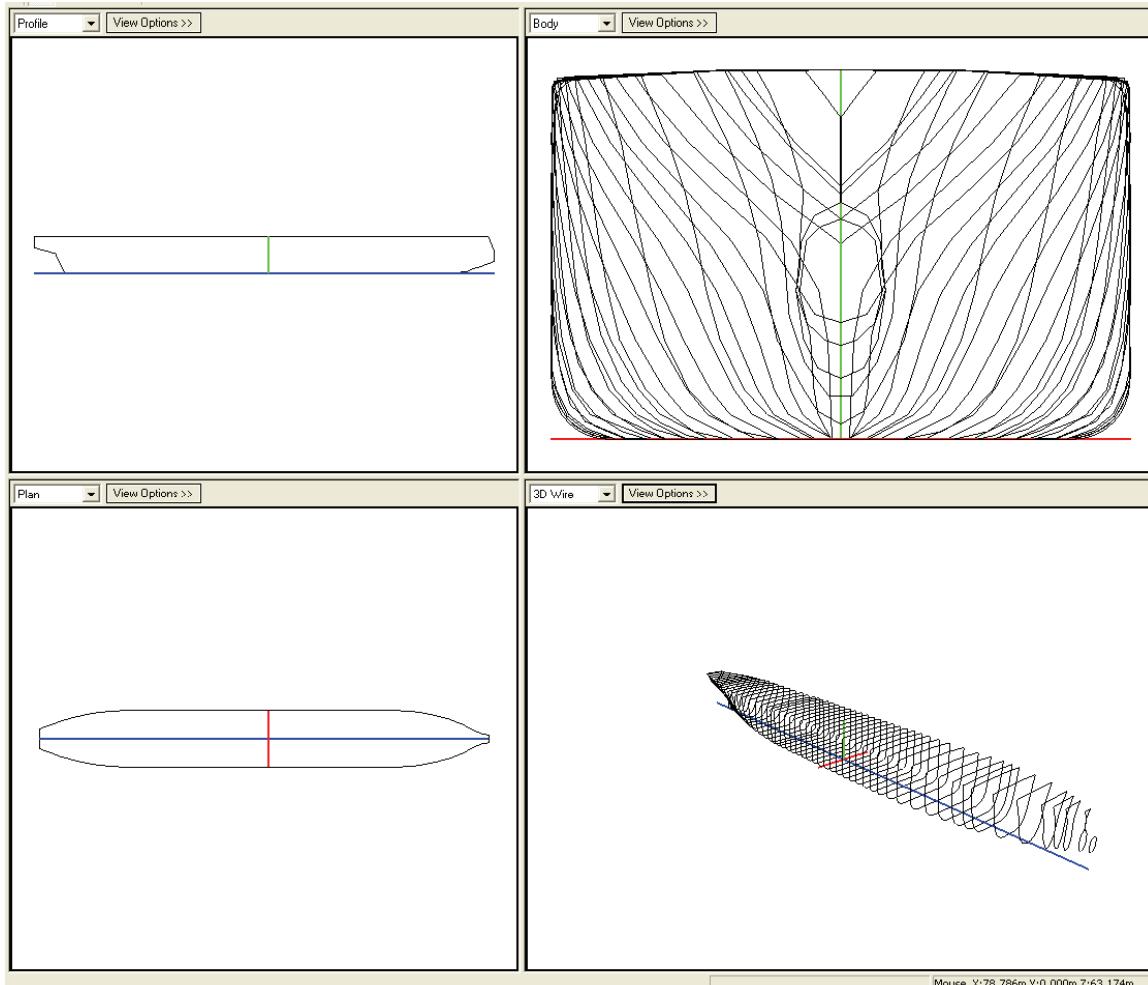


Figure 16: Bulk 03

Bulker 04

Table 18: Bulker 04 Principal Characteristics

Reference ID:	Bulker 04	
Description:	Laker	
Special Codes:	P	
Length:	1,000.0	ft
	304.8	m
Beam:	105.0	ft
	32.0	m
Depth:	44.9	ft
	13.7	m
Draft:	26.5	ft
	8.1	m
Displacement:	71,920	LT
	73,071	mt

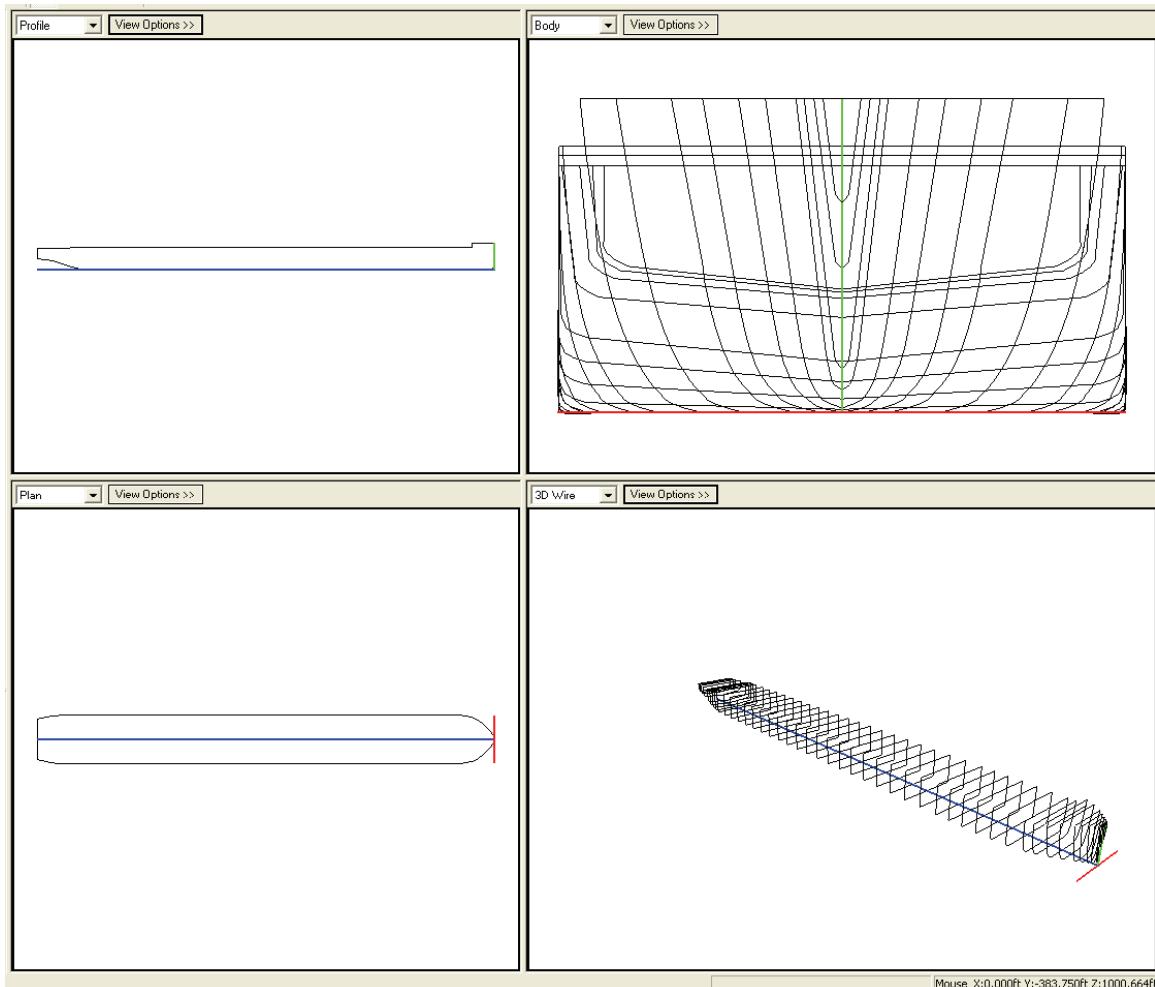


Figure 17: Bulker 04

Bulk 05

Table 19: Bulk 05 Principal Characteristics

Reference ID:	Bulk 05	
Description:	Laker	
Special Codes:	P	
Length:	1,000.0	ft
	304.8	m
Beam:	105.0	ft
	32.0	m
Depth:	56.0	ft
	17.1	m
Draft:	34.0	ft
	10.4	m
Displacement:	94,170	LT
	95,677	mt

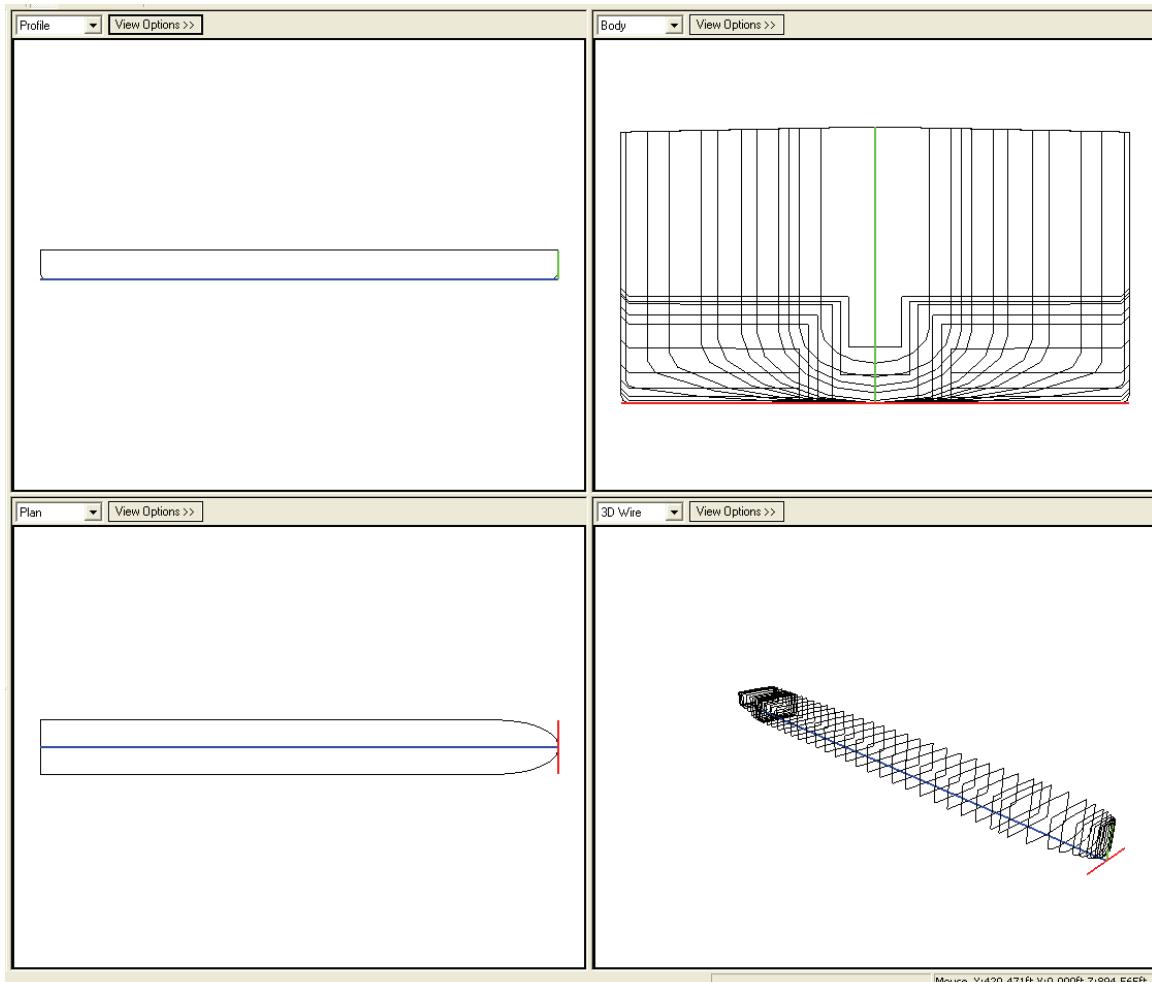


Figure 18: Bulk 05

Bulker 06

Table 20: Bulker 06 Principal Characteristics

Reference ID:	Bulker 06	
Description:	Laker	
Special Codes:	P	
Length:	990.0	ft
	301.8	m
Beam:	105.0	ft
	32.0	m
Depth:	47.7	ft
	14.5	m
Draft:	30.0	ft
	9.1	m
Displacement:	82,000	LT
	83,312	mt

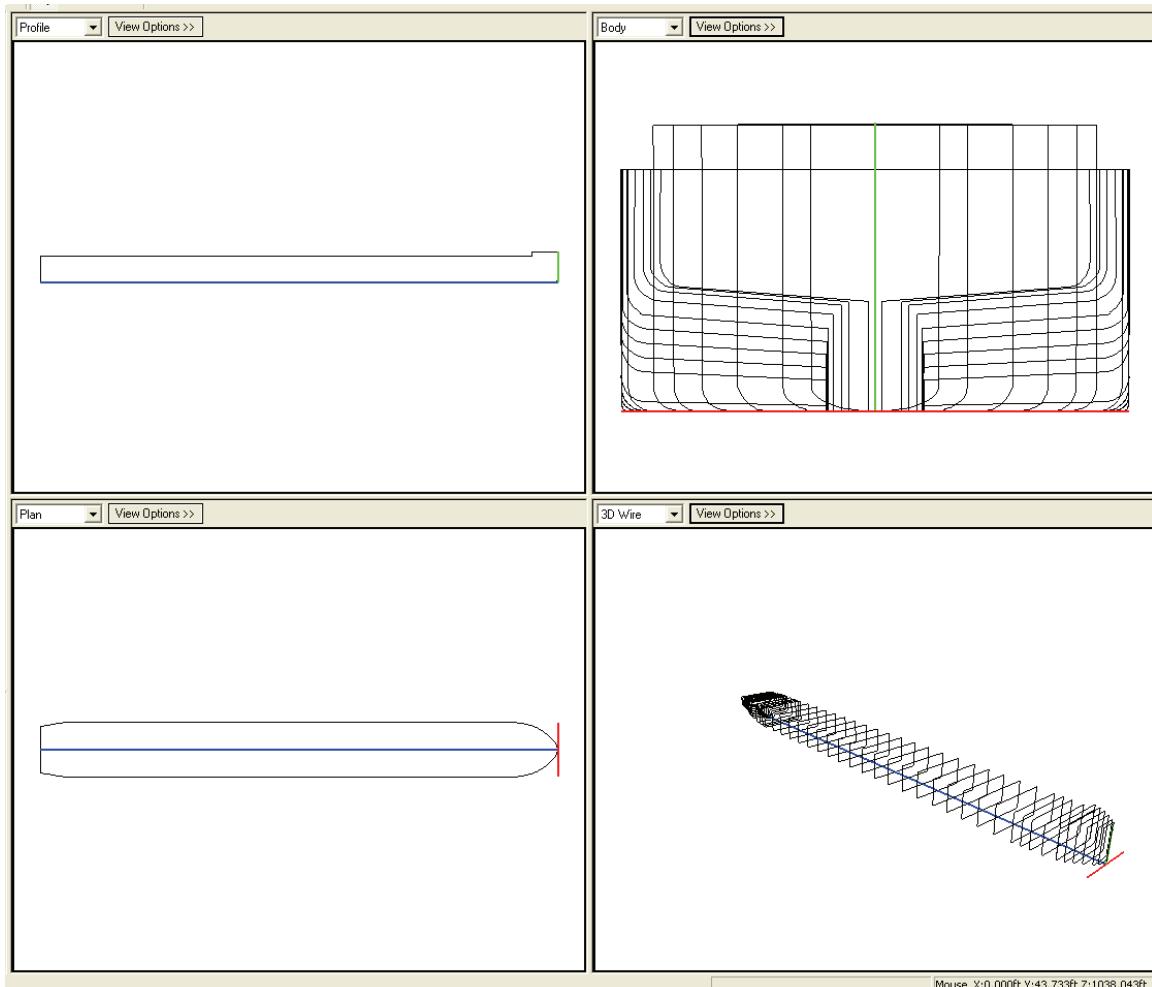


Figure 19: Bulker 06

Bulk 07

Table 21: Bulk 07 Principal Characteristics

Reference ID:	Bulk 07	
Description:	OBO	
Special Codes:	P	
Length:	820.0	ft
	249.9	m
Beam:	104.5	ft
	31.9	m
Depth:	51.0	ft
	15.5	m
Draft:	33.0	ft
	10.1	m
Displacement:	65,000	LT
	66,040	mt

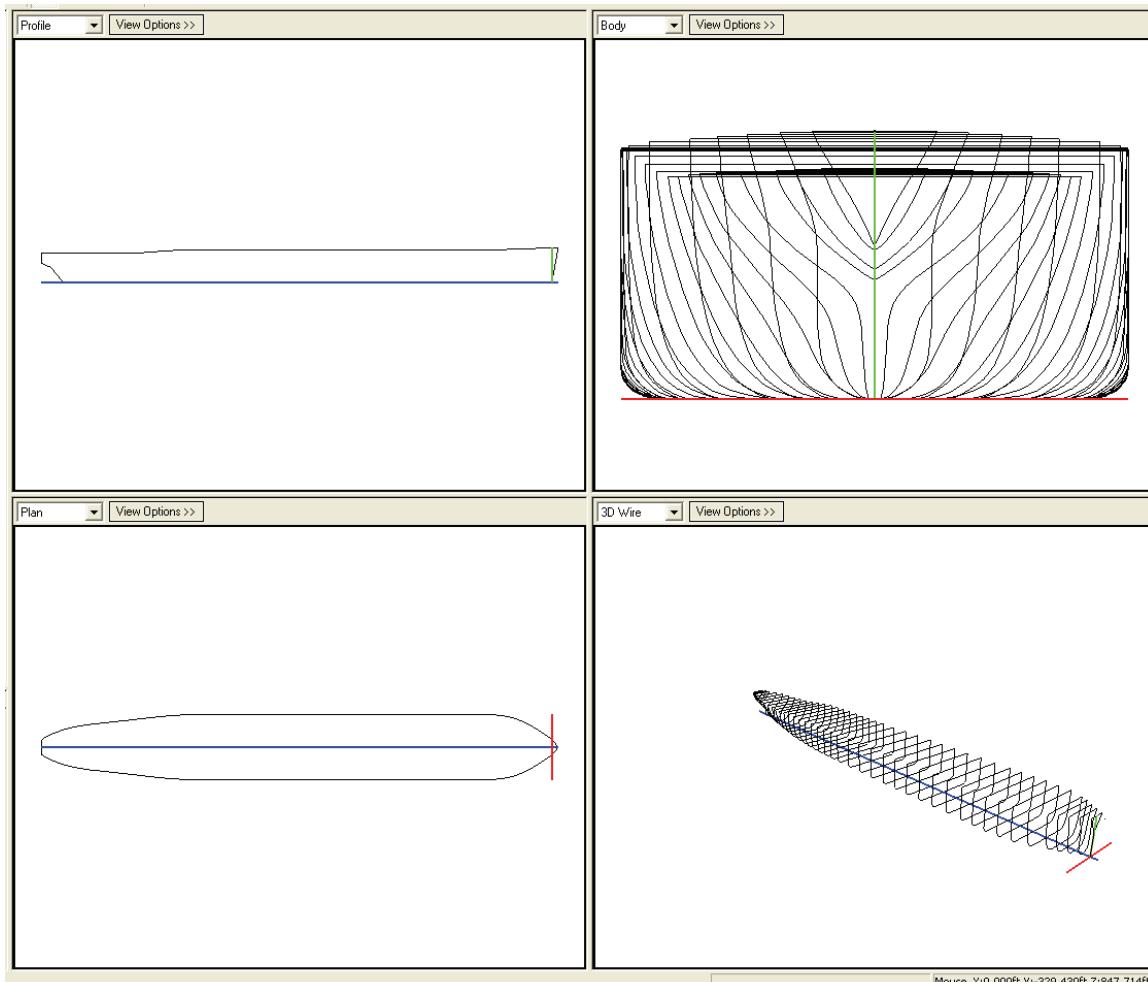


Figure 20: Bulk 07

Bulker 08

Table 22: Bulker 08 Principal Characteristics

Reference ID:	Bulker 08	
Description:	OBO	
Special Codes:	P	
Length:	860.0	ft
	262.1	m
Beam:	105.8	ft
	32.2	m
Depth:	63.2	ft
	19.3	m
Draft:	46.0	ft
	14.0	m
Displacement:	99,500	LT
	101,092	mt

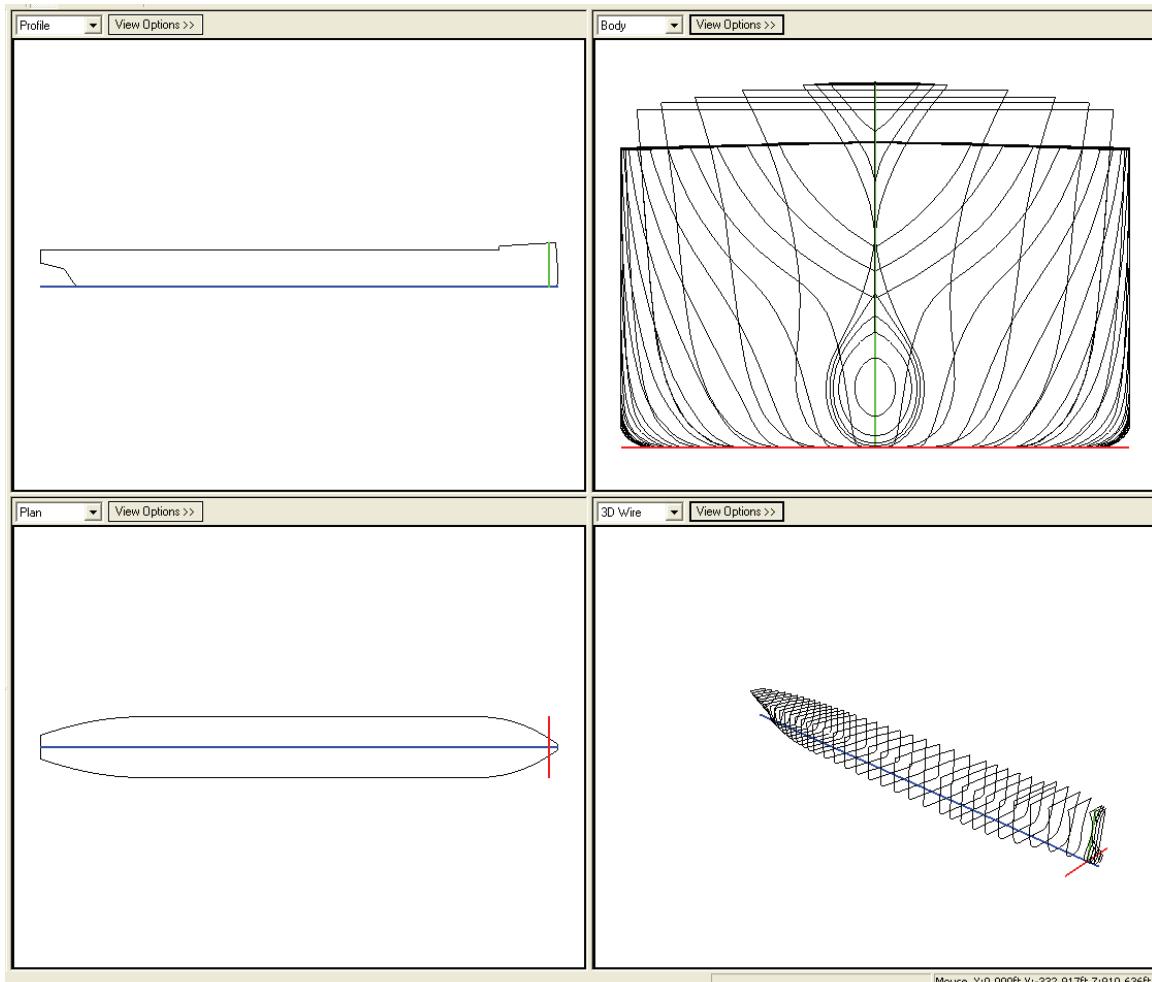


Figure 21: Bulker 08

Bulk 09

Table 23: Bulk 09 Principal Characteristics

Reference ID:	Bulk 09	
Description:	OBO	
Special Codes:	P	
Length:	880.0	ft
	268.2	m
Beam:	105.8	ft
	32.2	m
Depth:	58.3	ft
	17.8	m
Draft:	38.0	ft
	11.6	m
Displacement:	85,350	LT
	86,716	mt

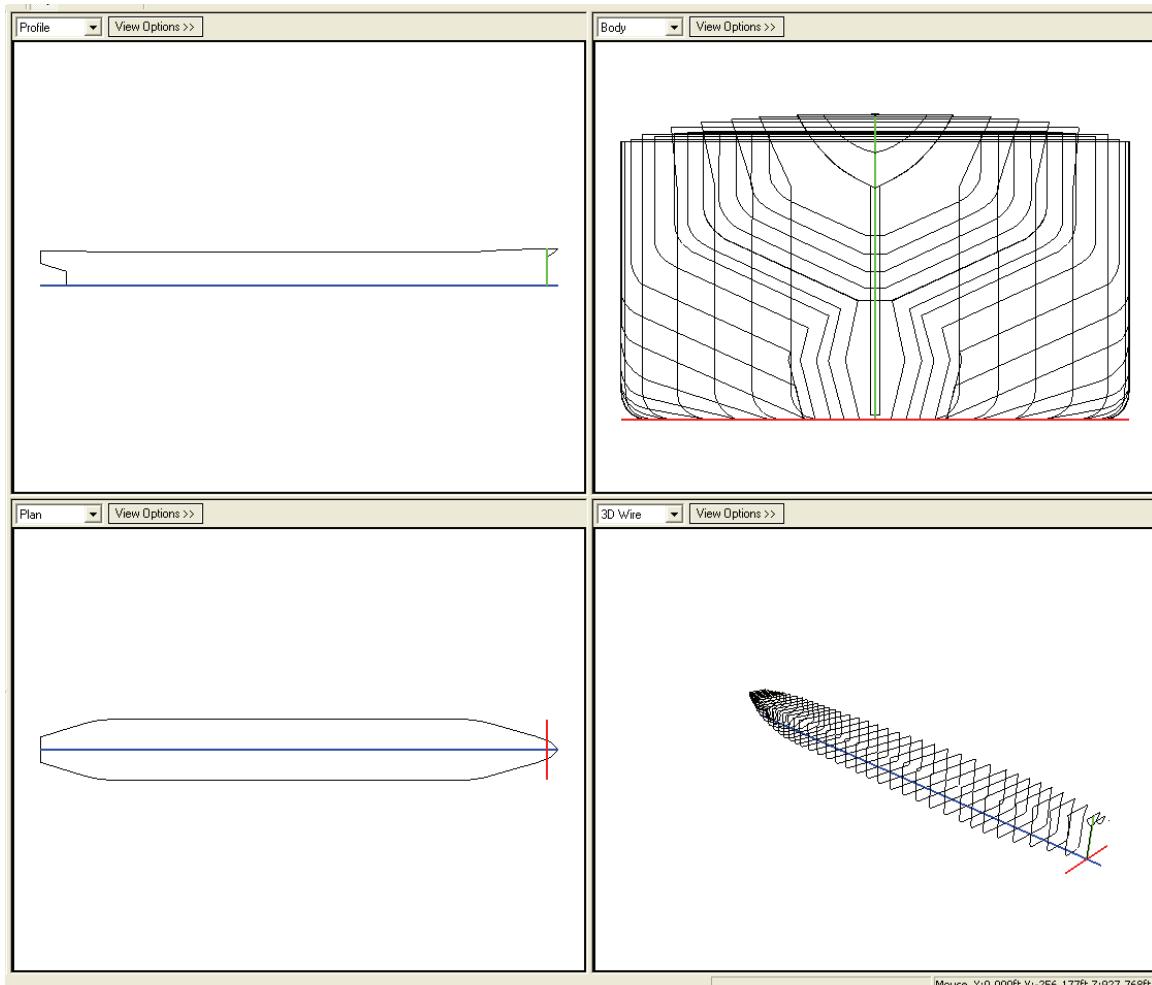


Figure 22: Bulk 09

Bulk 10

Table 24: Bulk 10 Principal Characteristics

Reference ID:	Bulk 10	
Description:	Laker	
Special Codes:	P	
Length:	800.0	ft
	243.8	M
Beam:	75.0	ft
	22.9	M
Depth:	38.0	ft
	11.6	M
Draft:	28.3	ft
	8.6	M
Displacement:	40,700	LT
	41,351	Mt

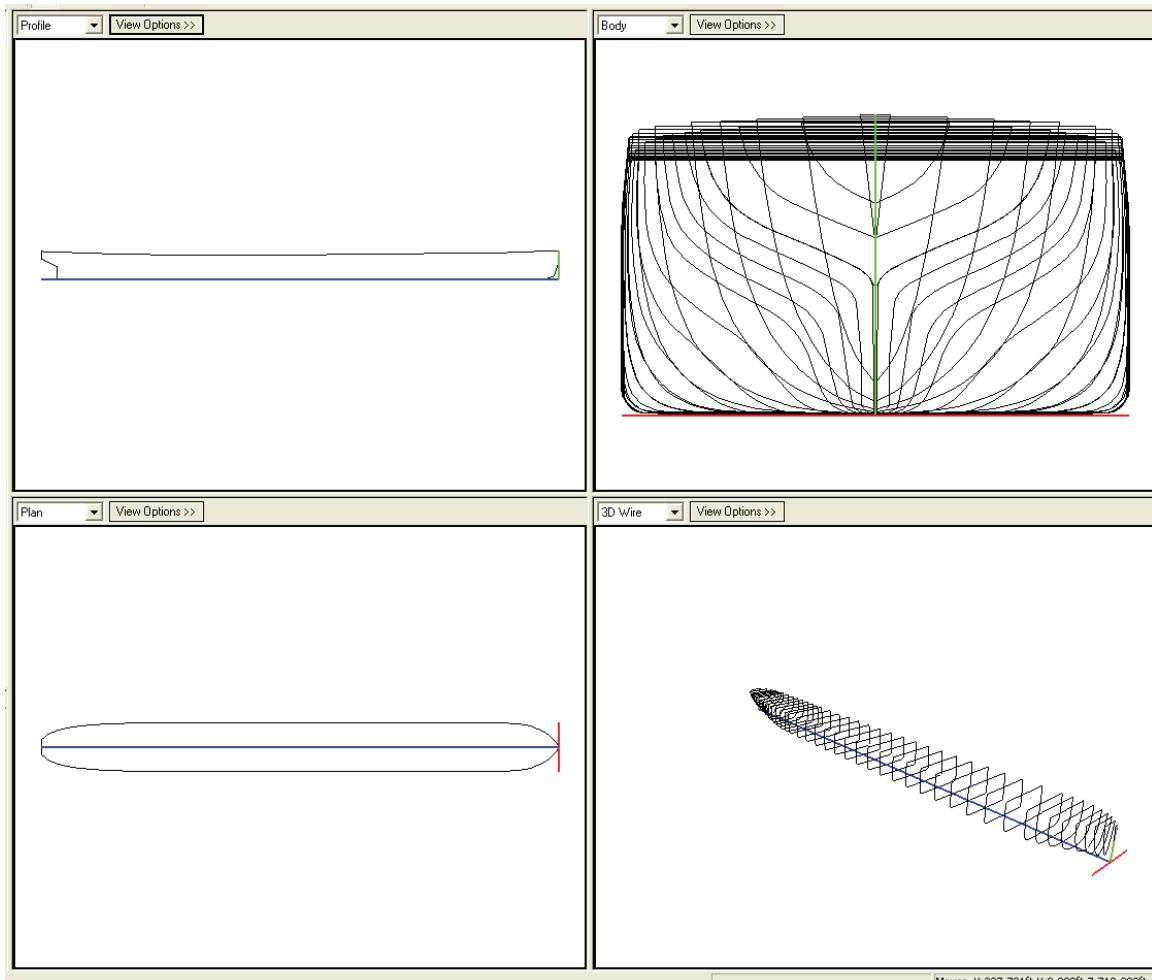


Figure 23: Bulk 10

Bulk 11

Table 25: Bulk 11 Principal Characteristics

Reference ID:	Bulk 11	
Description:	Laker	
Special Codes:	P	
Length:	770.0	ft
	234.7	m
Beam:	92.0	ft
	28.0	m
Depth:	52.0	ft (above baseline)
	15.8	m
Draft:	34.0	ft
	10.4	m
Displacement:	60,850	LT
	61,824	mt

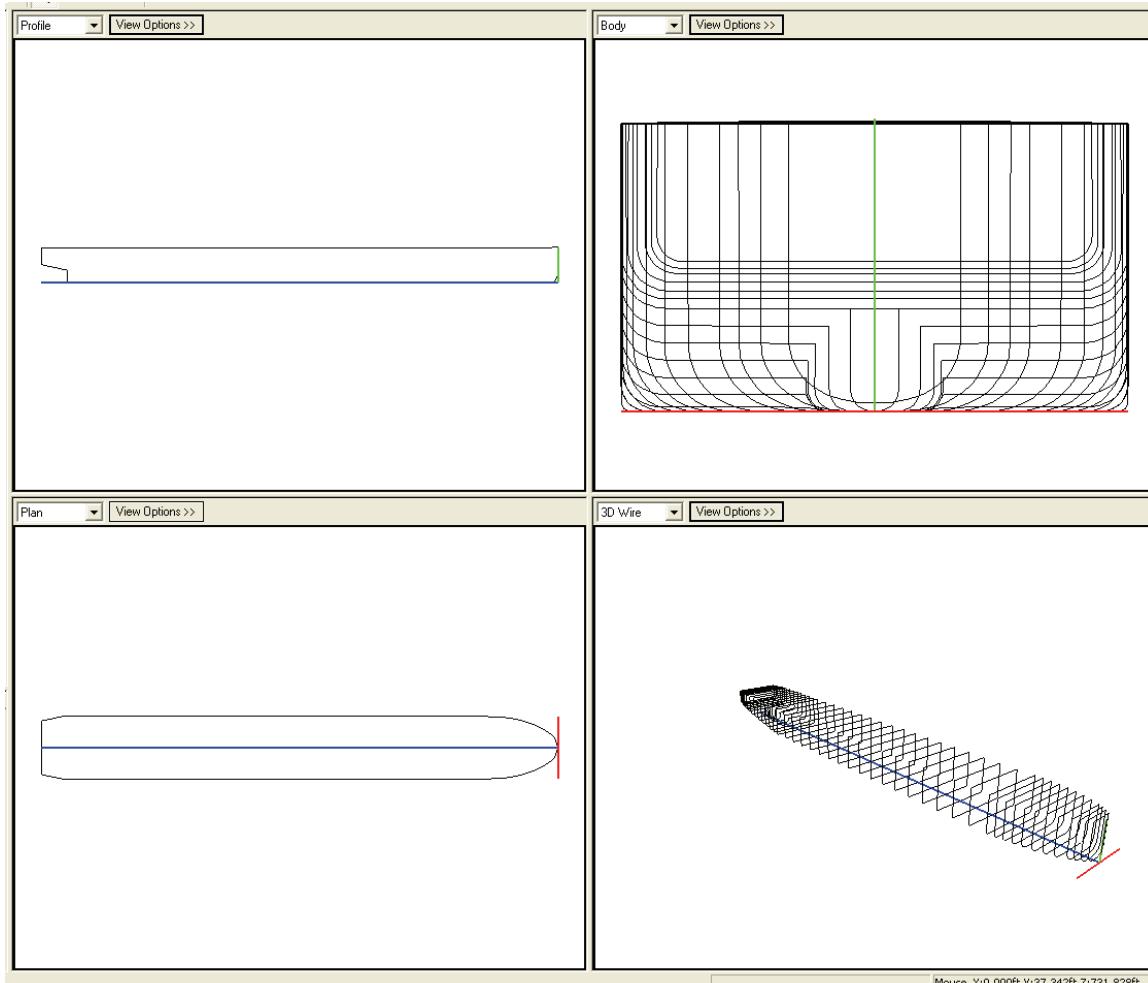


Figure 24: Bulk 11

Bulker 12

Table 26: Bulker 12 Principal Characteristics

Reference ID:	Bulker 12	
Description:	Laker	
Special Codes:	C	
Length:	720.0	ft
	219.5	m
Beam:	75.0	ft
	22.9	m
Depth:	39.0	ft (above baseline)
	11.9	m
Draft:	27.0	ft
	8.2	m
Displacement:	34,300	LT
	34,849	mt

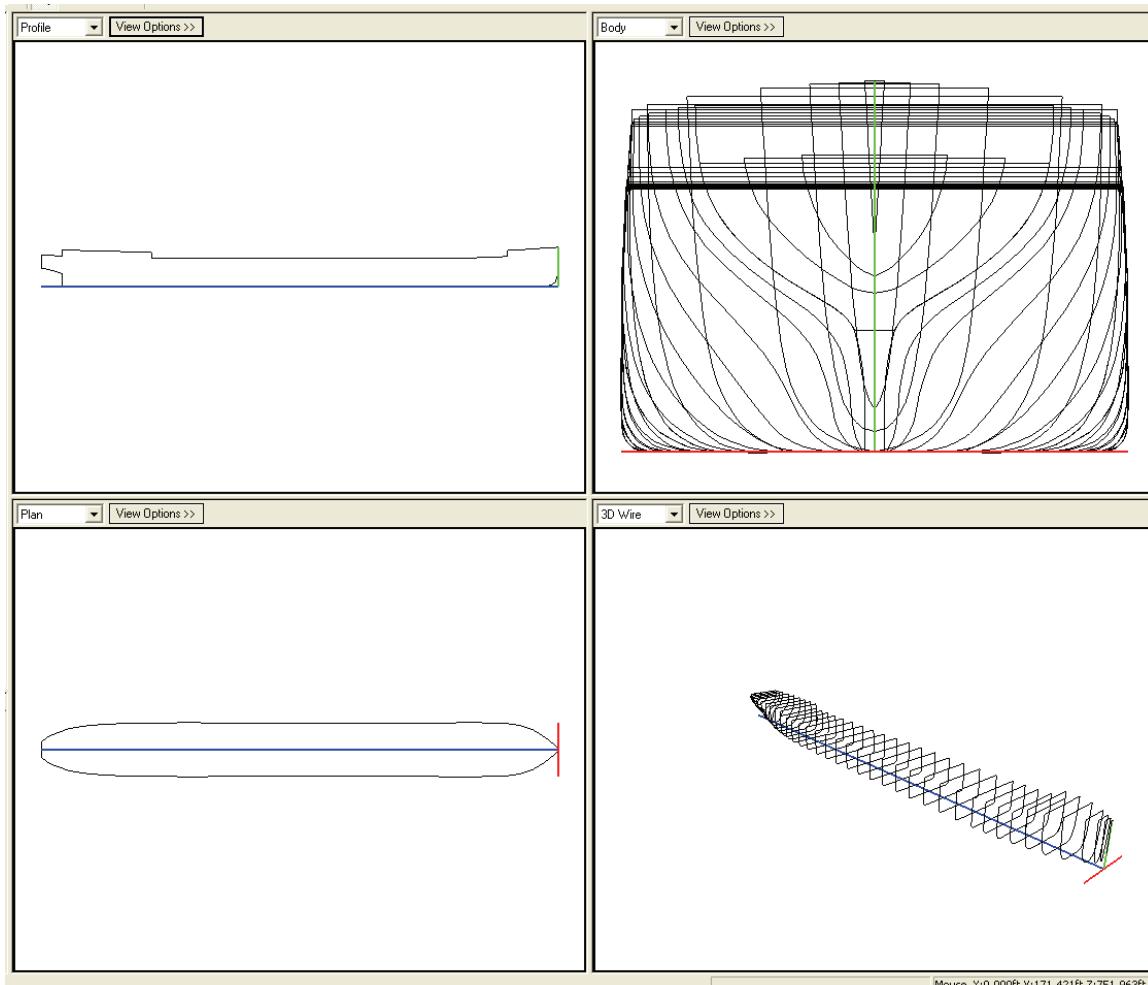


Figure 25: Bulker 12

Bulk 13

Table 27: Bulker 13 Principal Characteristics

Reference ID:	Bulker 13	
Description:		
Special Codes:	P	
Length:	650.0	ft
	198.1	m
Beam:	95.0	ft
	29.0	m
Depth:	56.2	ft
	17.1	m
Draft:	37.0	ft
	11.3	m
Displacement:	52,920	LT
	53,767	mt

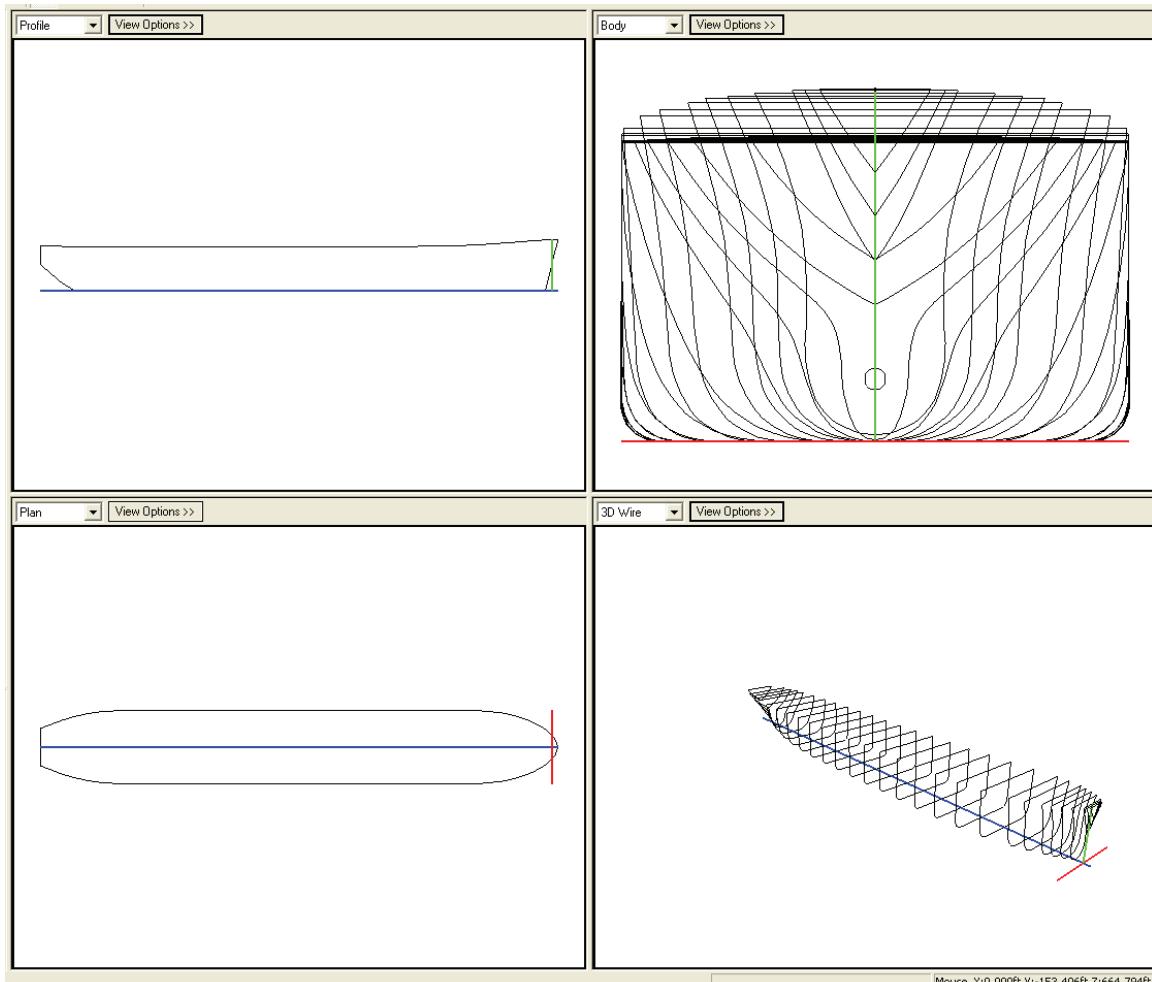


Figure 26: Bulker 13

Bulk 14

Table 28: Bulk 14 Principal Characteristics

Reference ID:	Bulk 14	
Description:	Laker	
Special Codes:	P	
Length:	988.8	ft
	301.4	M
Beam:	105.0	ft
	32.0	M
Depth:	56.7	ft
	17.3	M
Draft:	34.0	ft
	10.4	M
Displacement:	93,975	LT
	95,479	Mt

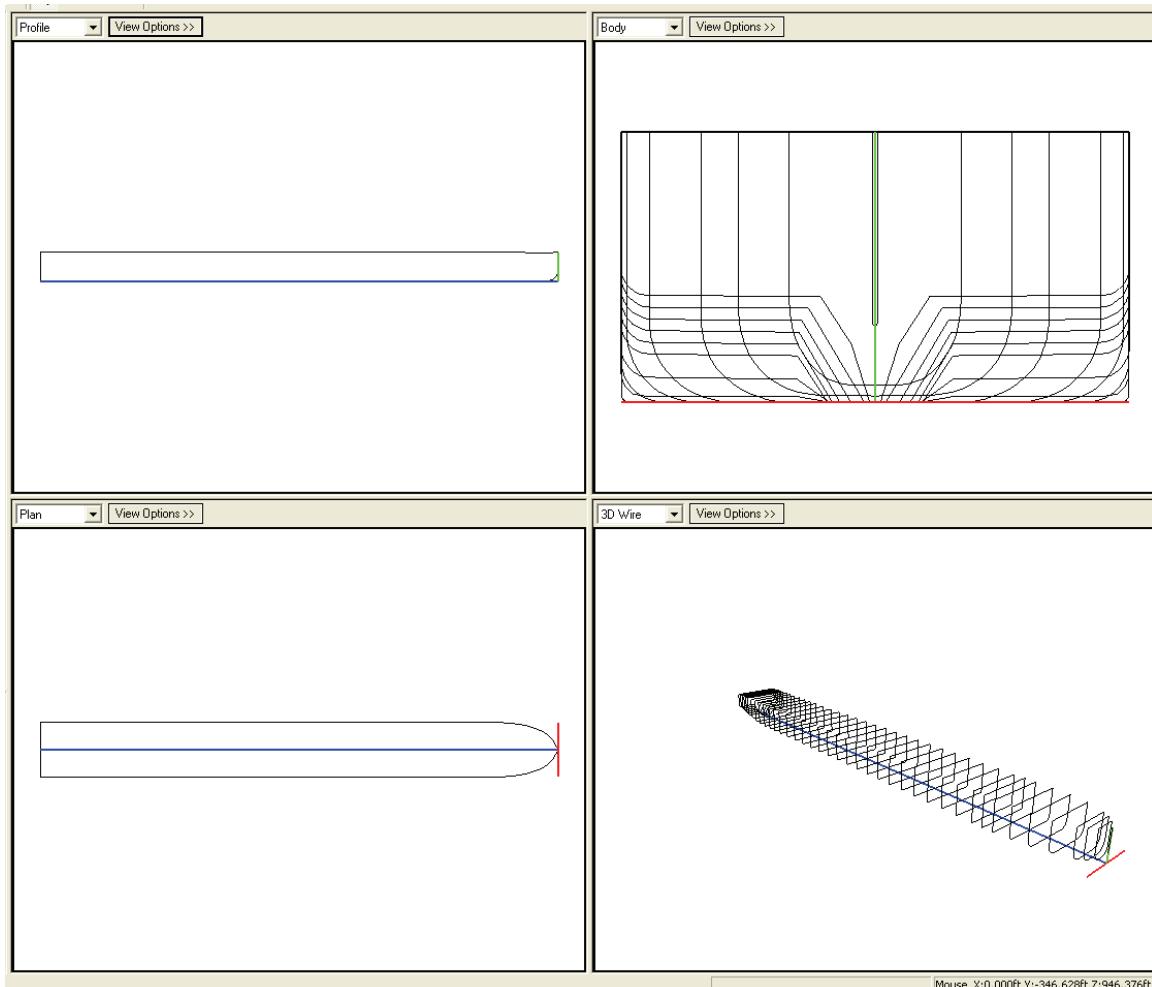


Figure 27: Bulk 14

Bulk 15

Table 29: Bulker 15 Principal Characteristics

Reference ID:	Bulker 15	
Description:		
Special Codes:	P	
Length:	540.0	ft
	164.6	M
Beam:	85.5	ft
	26.1	M
Depth:	43.0	ft
	13.1	M
Draft:	30.0	ft
	9.1	M
Displacement:	26,950	LT
	27,381	Mt

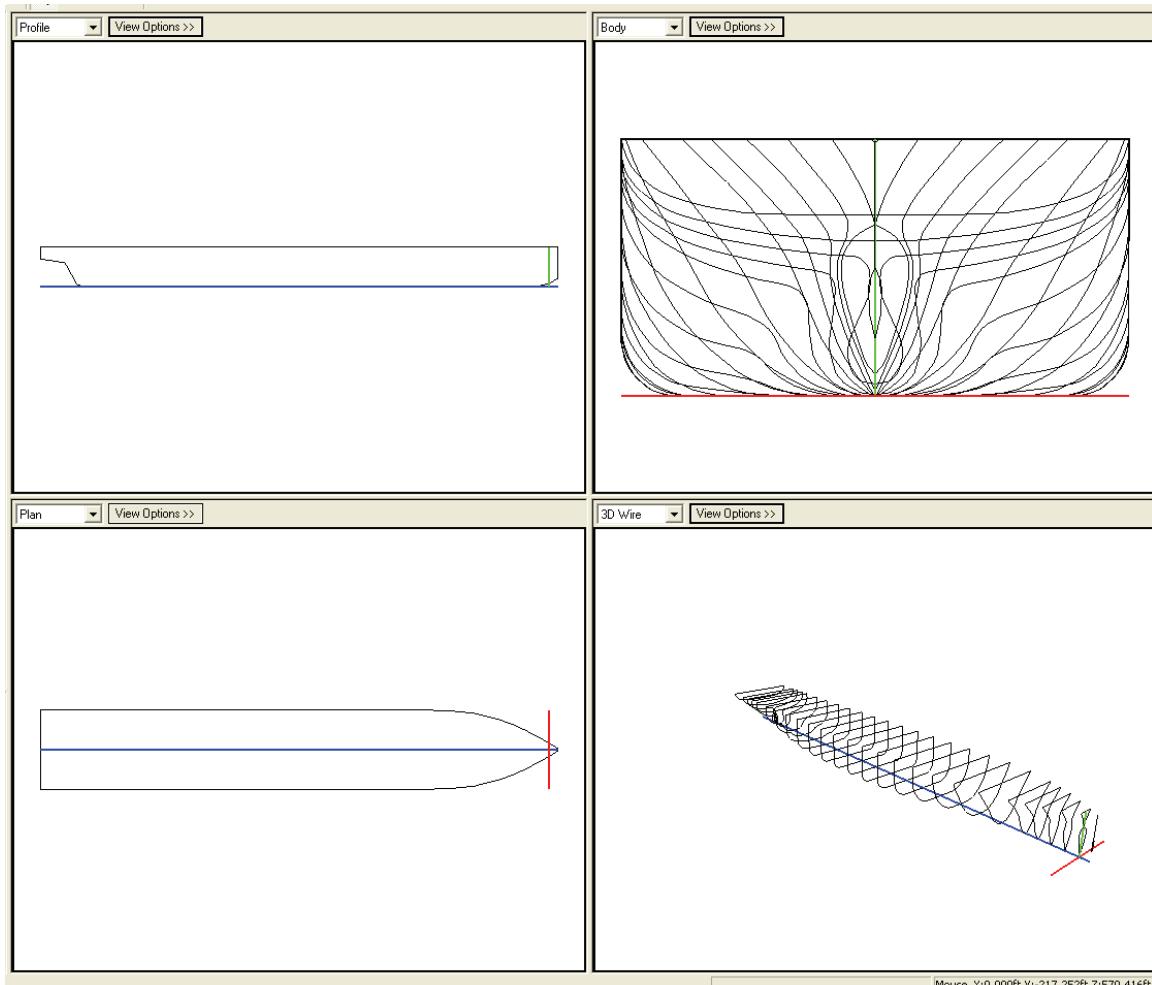


Figure 28: Bulker 15

Bulk 16

Table 30: Bulk 16 Principal Characteristics

Reference ID:	Bulk 16	
Description:		
Special Codes:		
Length:	865.0	ft
	263.7	M
Beam:	105.8	ft
	32.2	M
Depth:	62.5	ft
	19.1	M
Draft:	46.0	ft
	14.0	M
Displacement:	99,400	LT
	100,990	Mt

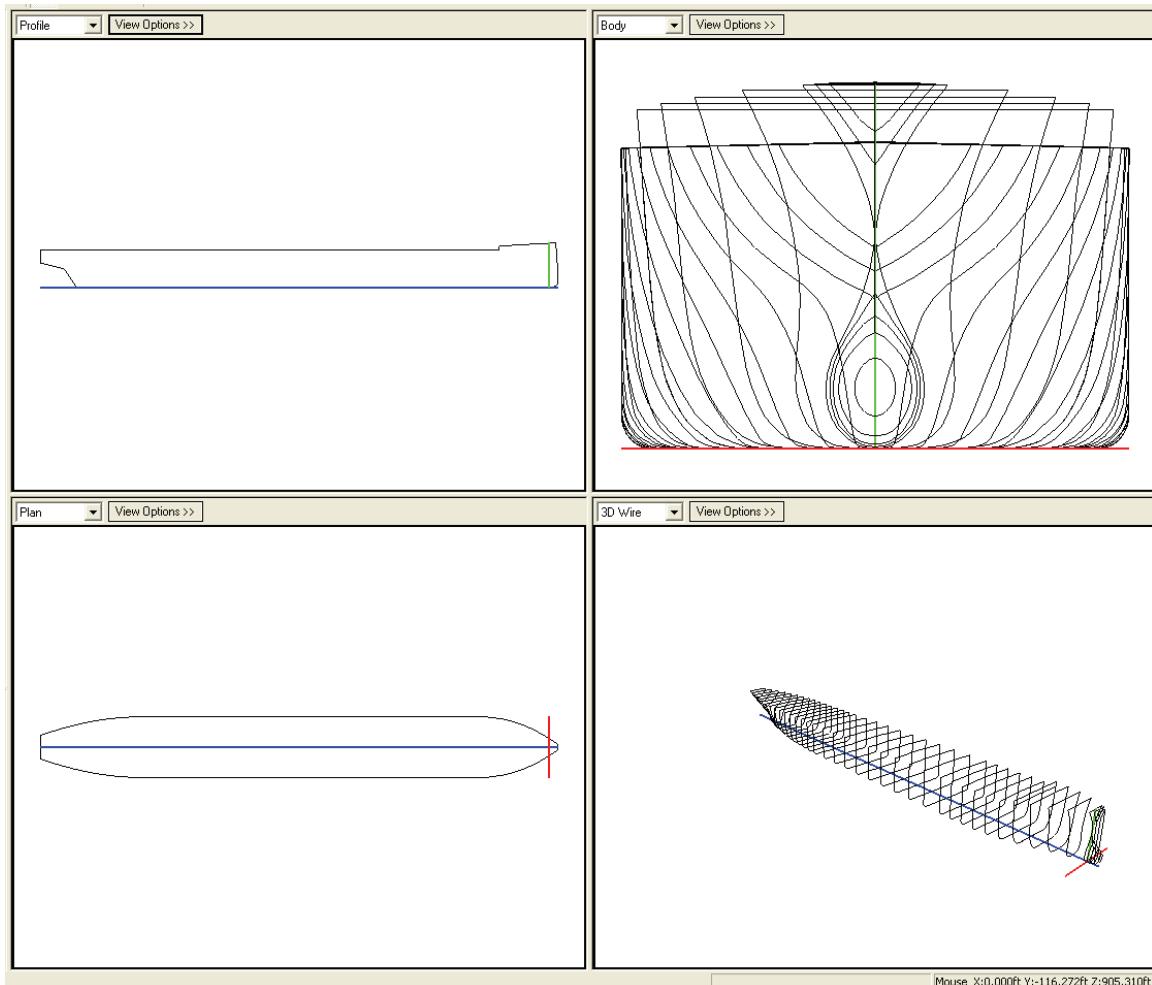


Figure 29: Bulk 16

Casinos and River Boats

Casino / River Boat 01

Table 31: Casino / River Boat 01 Principal Characteristics

Reference ID:	Casino/River Boat 01	
Description:	Gulf Coast Casino Vessel	
Special Codes:	P	
Length:	225.0	ft
	68.6	m
Beam:	72.0	ft
	21.9	m
Depth:	12.5	ft
	3.8	m
Draft:	7.0	ft
	2.1	m
Displacement:	2,350	LT
	2,388	mt

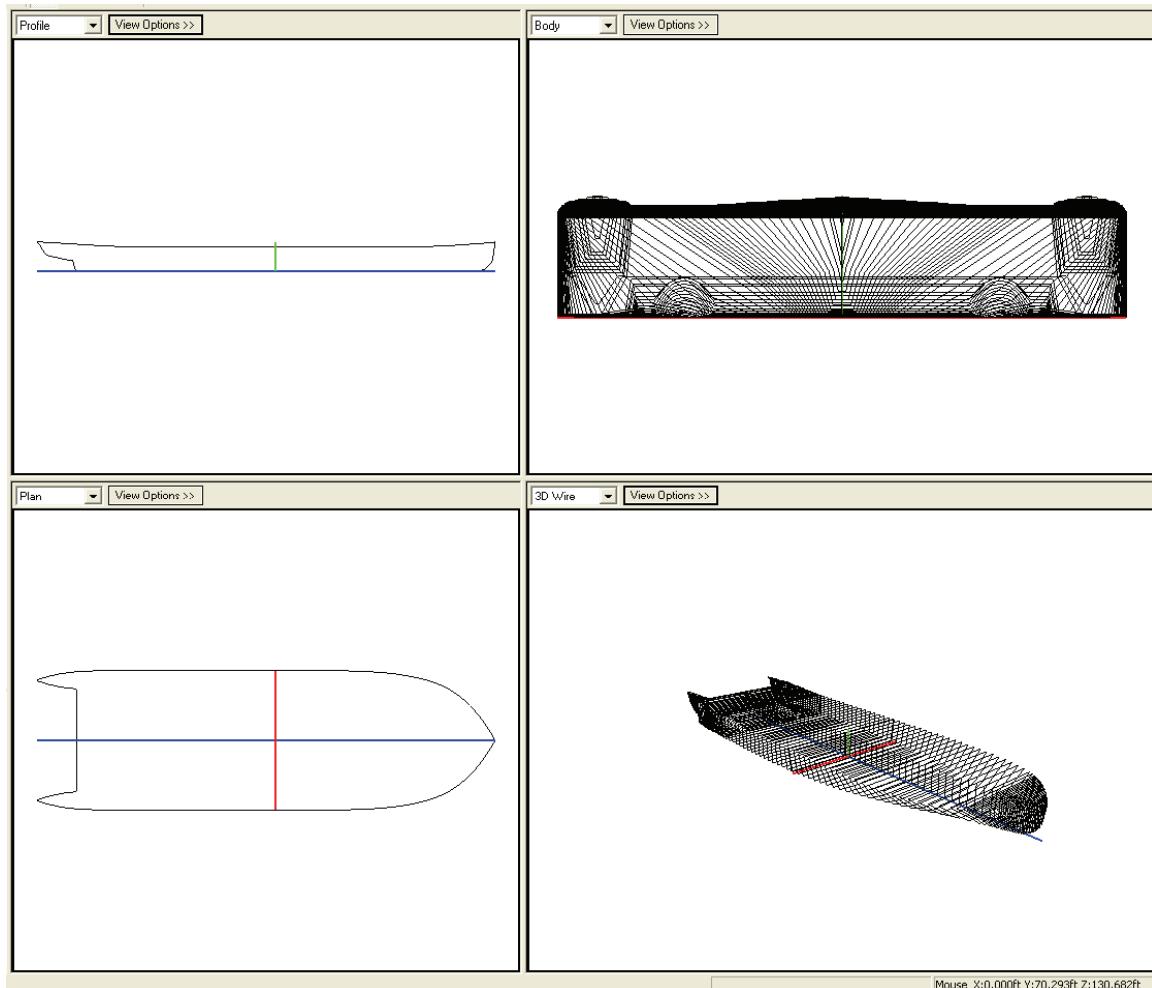


Figure 30: Casino / River Boat 01

Casino / River Boat 02

Table 32: Casino / River Boat 02 Principal Characteristics

Reference ID:	Casino/River Boat 02	
Description:	Classic Mississippi Riverboat	
Special Codes:	P	
Length:	285.0	ft
	86.9	m
Beam:	60.0	ft
	18.3	m
Depth:	13.0	ft
	4.0	m
Draft:	9.5	ft
	2.9	m
Displacement:	2,945	LT
	2,992	mt

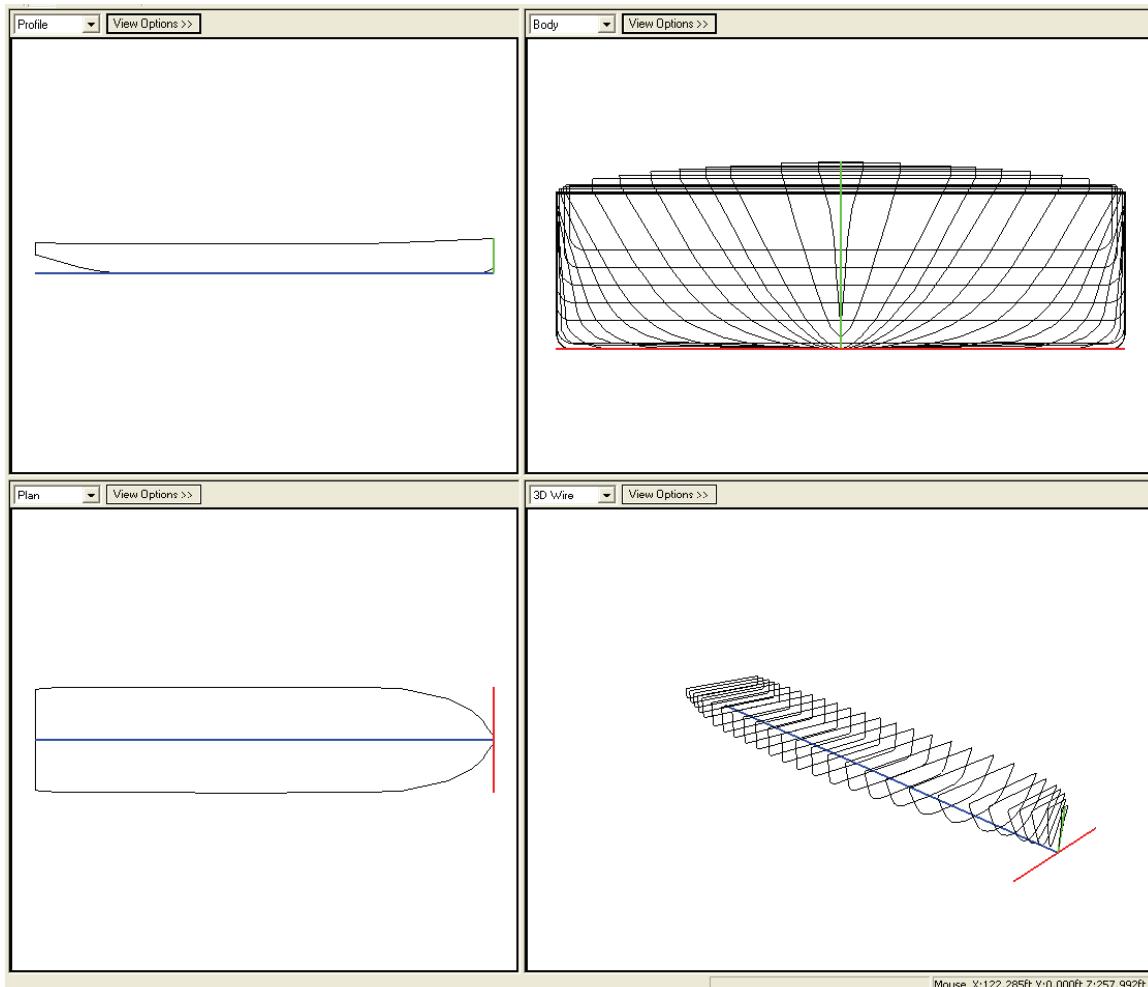


Figure 31: Casino / River Boat 02

Casino / River Boat 03

Table 33: Casino / River Boat 03 Principal Characteristics

Reference ID:	Casino/River Boat 03	
Description:	Upper Miss Casino Vessel	
Special Codes:	P	
Length:	293.0	ft
	89.3	m
Beam:	78.0	ft
	23.8	m
Depth:	14.0	ft
	4.3	m
Draft:	8.5	ft
	2.6	m
Displacement:	3,520	LT
	3,576	mt

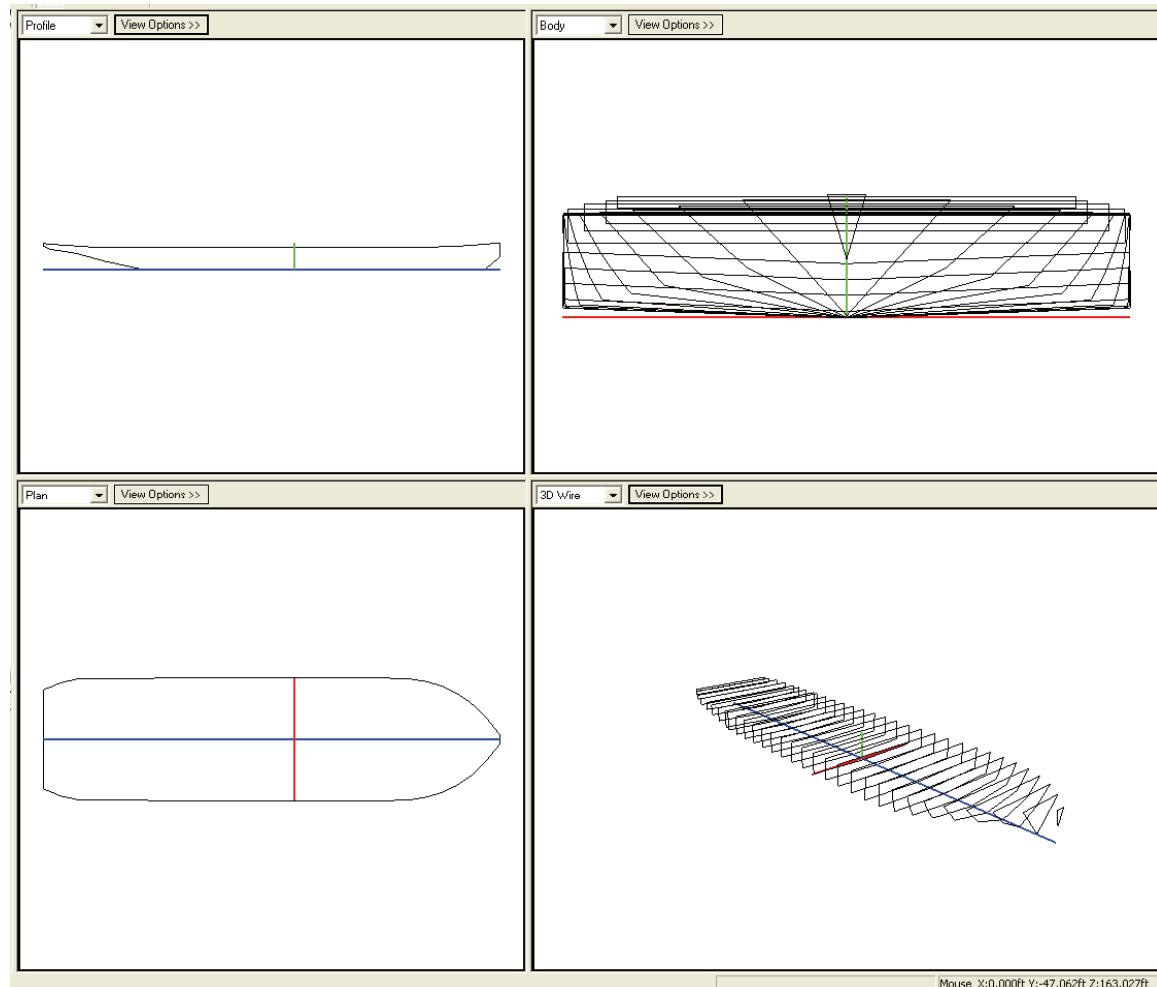


Figure 32: Casino / River Boat 03

Casino / River Boat 04

Table 34: Casino / River Boat 04 Principal Characteristics

Reference ID:	Casino/River Boat 04	
Description:	Gulf Coast Casino Vessel	
Special Codes:	P	
Length:	254.0	ft
	77.4	m
Beam:	78.0	ft
	23.8	m
Depth:	14.0	ft
	4.3	m
Draft:	7.3	ft
	2.2	m
Displacement:	2,510	LT
	2,550	mt

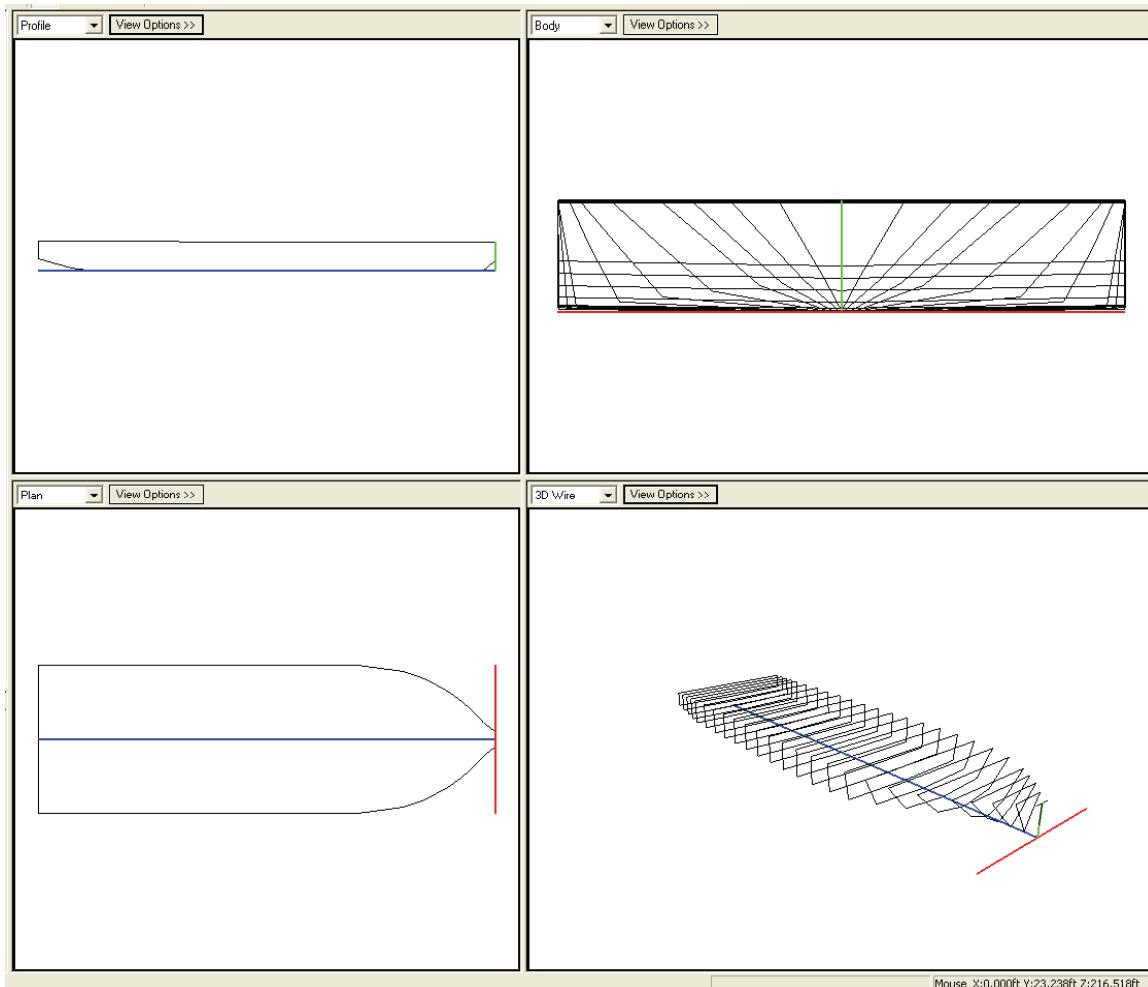


Figure 33: Casino / River Boat 04

Casino / River Boat 05

Table 35: Casino / River Boat 05 Principal Characteristics

Reference ID:	Casino/River Boat 05	
Description:	Casino Vessel	
Special Codes:	P	
Length:	240.0	ft
	73.2	m
Beam:	63.0	ft
	19.2	m
Depth:	10.8	ft
	3.3	m
Draft:	6.0	ft
	1.8	m
Displacement:	1,435	LT
	1,458	mt

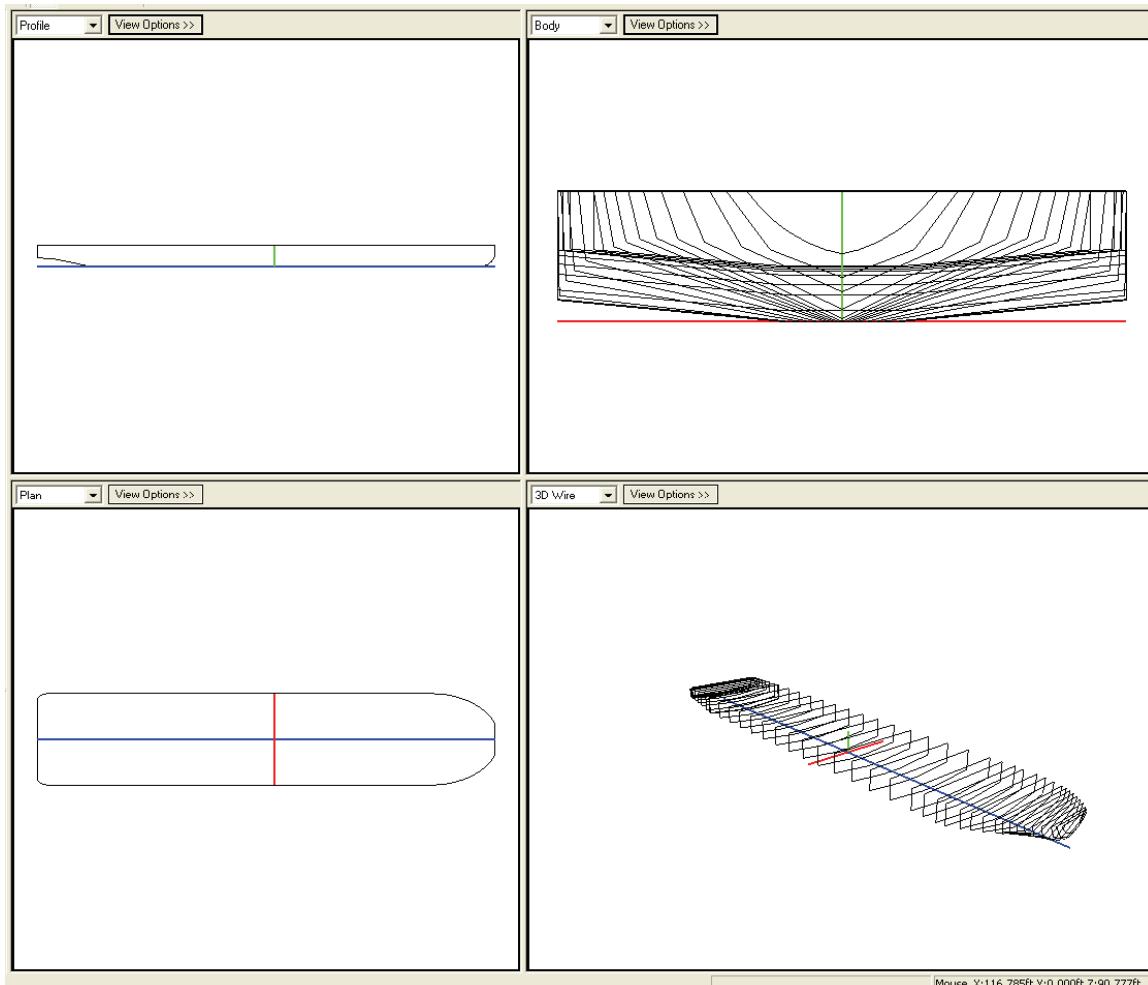


Figure 34: Casino / River Boat 05

Containerships

Containership 01

Table 36: Containership 01 Principal Characteristics

Reference ID:	Containership 01
Description:	2838 TEU Fast Containership
Special Codes:	
Length:	814.3 ft
	248.2 m
Beam:	105.8 ft
	32.2 m
Depth:	62.4 ft
	19.0 m
Draft:	41.0 ft
	12.5 m
Displacement:	63,990 LT
	65,014 mt

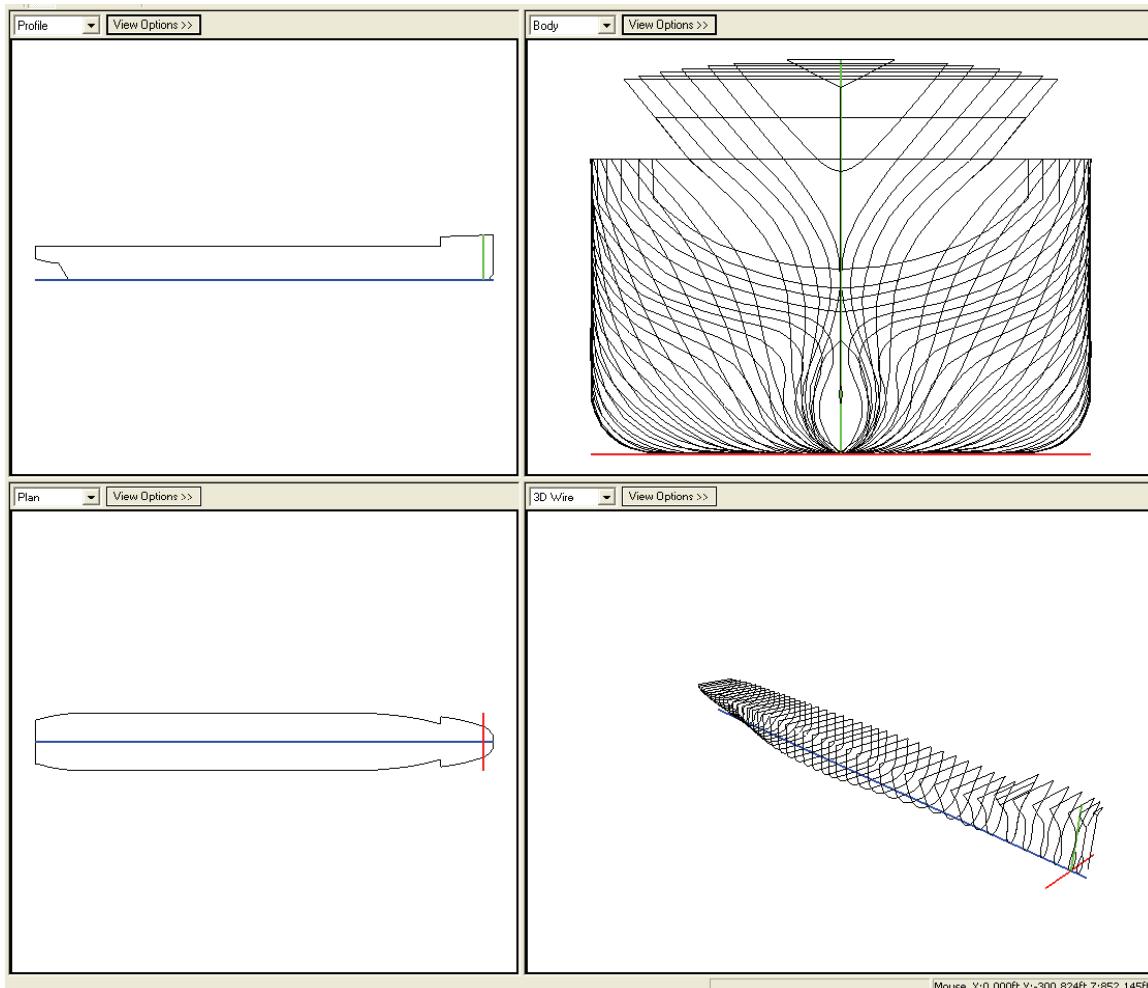


Figure 35: Containership 01

Containership 02

Table 37: Containership 02 Principal Characteristics

Reference ID:	Containership 02	
Description:	Prepositioning Ship	
Special Codes:	P, G	
Length:	652.0	ft
	198.7	m
Beam:	105.8	ft
	32.2	m
Depth:	61.5	ft
	18.7	m
Draft:	36.0	ft
	11.0	m
Displacement:	48,000	LT
	48,768	mt

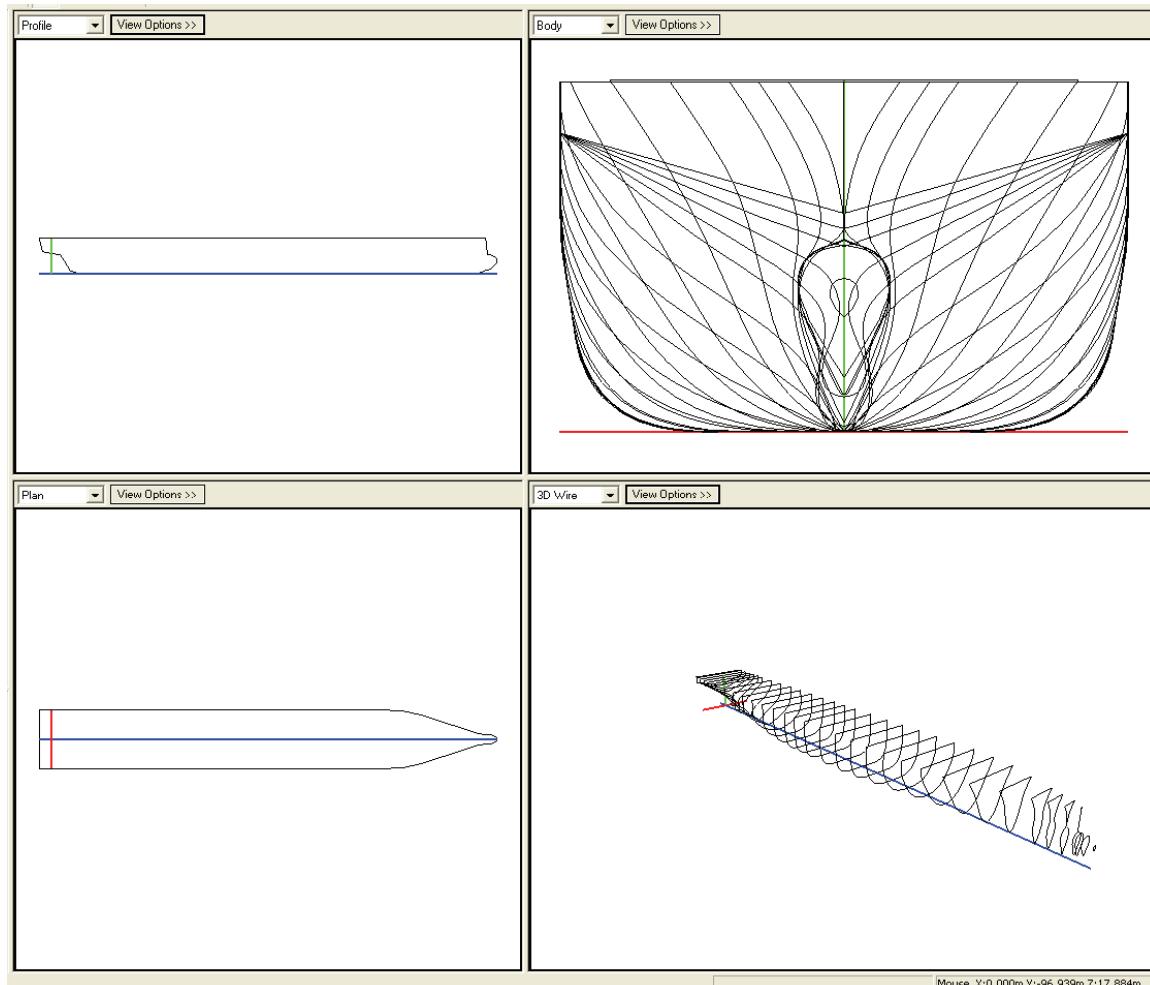


Figure 36: Containership 02

Containership 03

Table 38: Containership 03 Principal Characteristics

Reference ID:	Containership 03	
Description:	1779 TEU Containership	
Special Codes:	P	
Length:	597.0	ft
	182.0	m
Beam:	100.1	ft
	30.5	m
Depth:	53.2	ft
	16.2	m
Draft:	37.0	ft
	11.3	m
Displacement:	39,800	LT
	40,437	mt

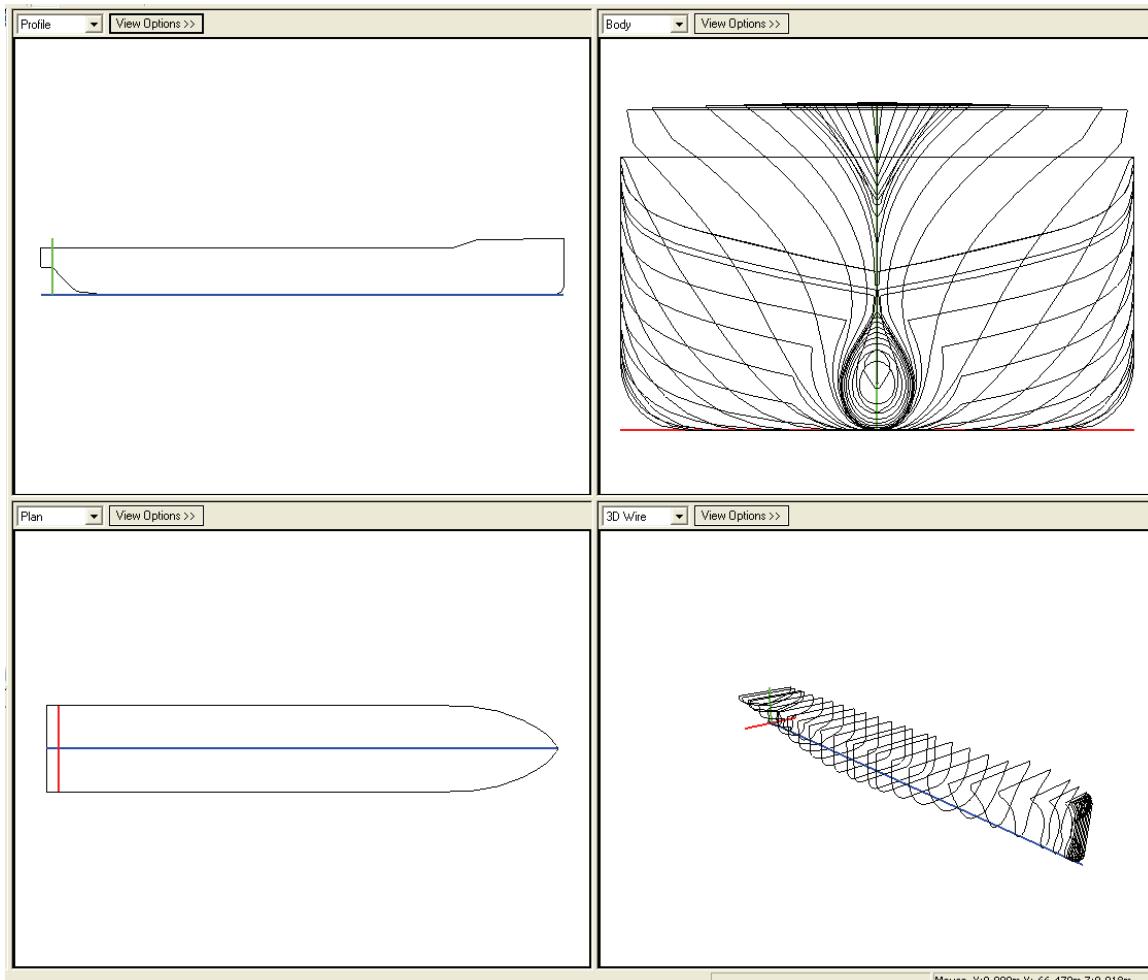


Figure 37: Containership 03

Containership 04

Table 39: Containership 04 Principal Characteristics

Reference ID:	Containership 04	
Description:	Container Chemical Carrier	
Special Codes:	P	
Length:	610.0	ft
	185.9	m
Beam:	78.0	ft
	23.8	m
Depth:	54.5	ft
	16.6	m
Draft:	31.5	ft
	9.6	m
Displacement:	26,670	LT
	27,097	mt

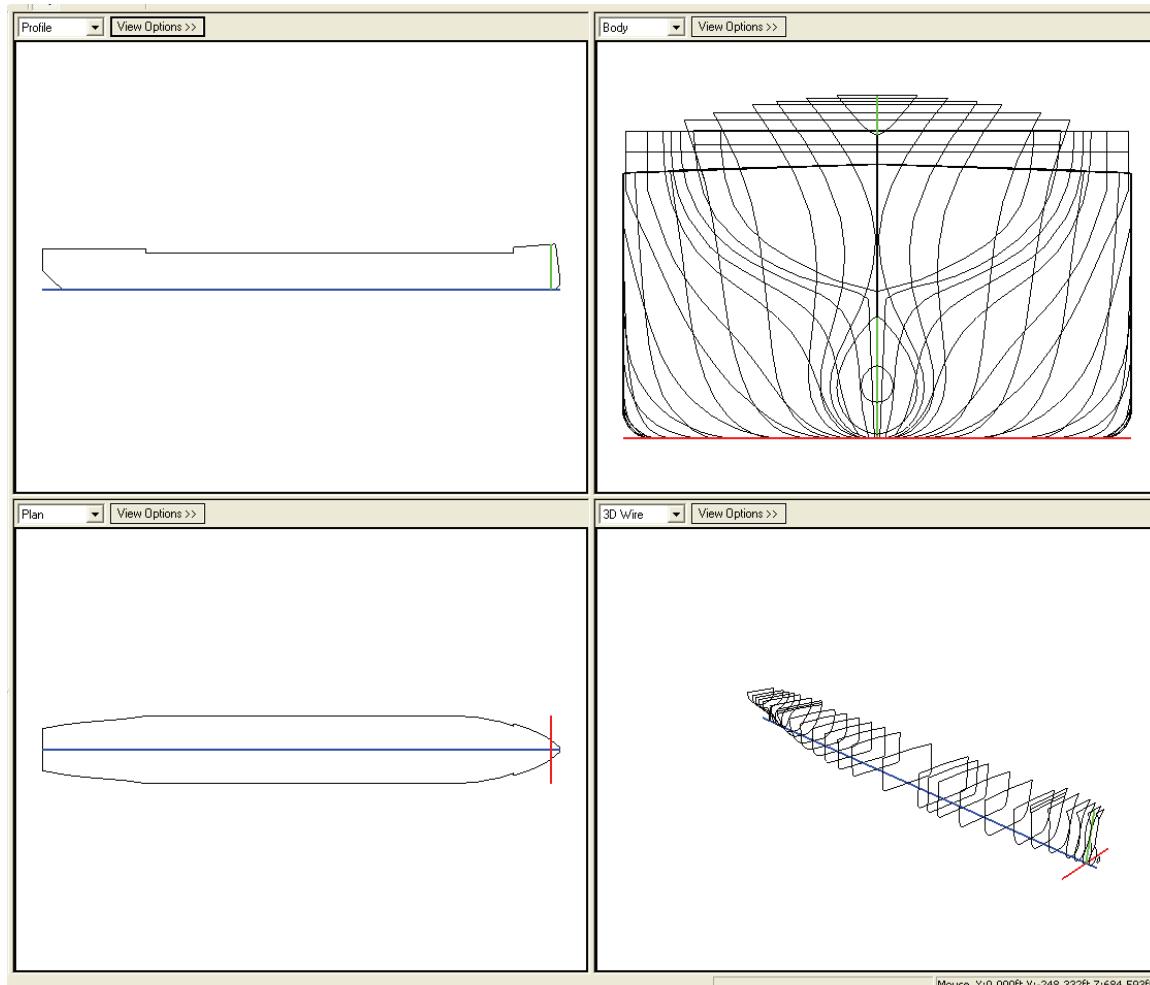


Figure 38: Containership 04

Containership 05

Table 40: Containership 05 Principal Characteristics

Reference ID:	Containership 05	
Description:	Prepositioning Ship	
Special Codes:	G	
Length:	689.0	ft
	210.0	m
Beam:	100.0	ft
	30.5	m
Depth:	51.5	ft
	15.7	m
Draft:	38.1	ft
	11.6	m
Displacement:	52,880	LT
	53,726	mt

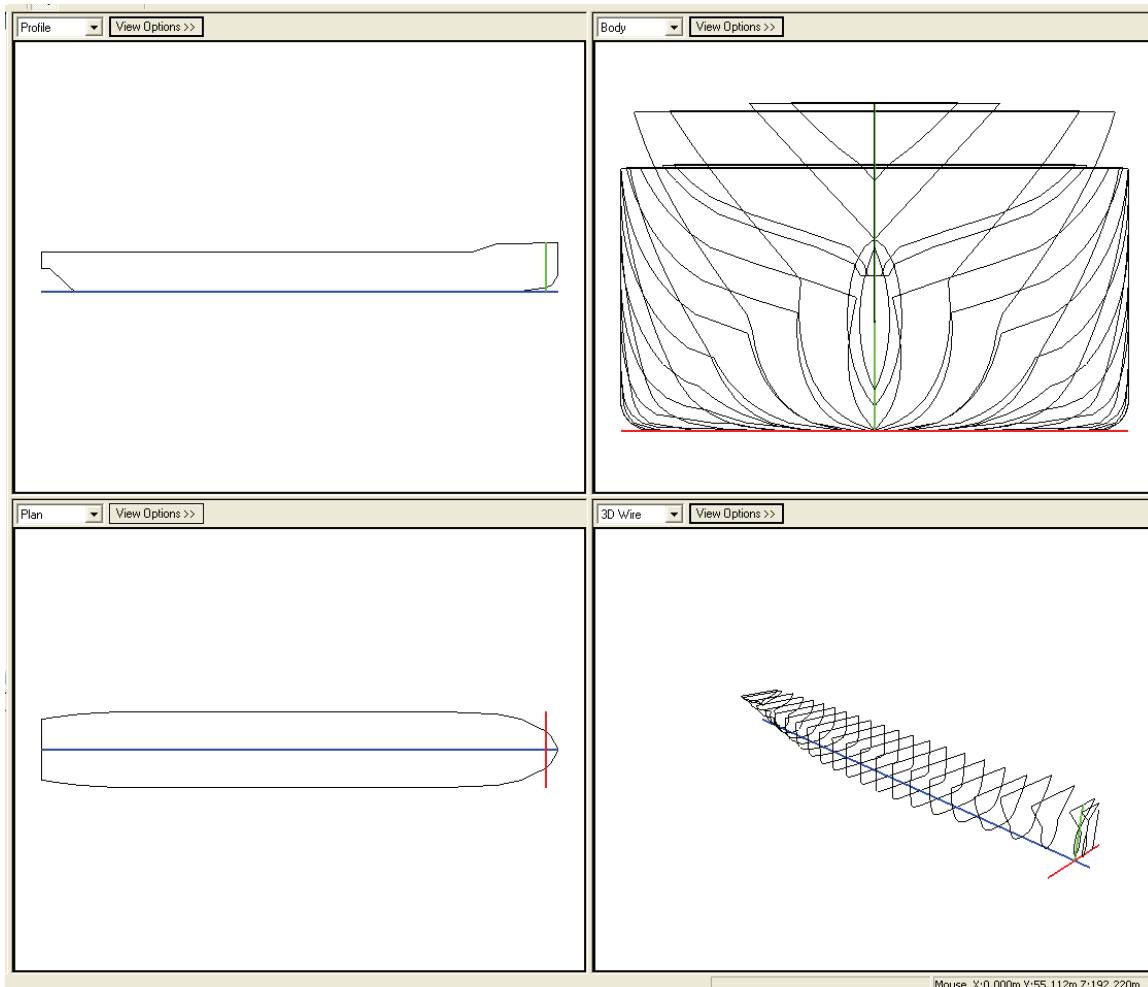


Figure 39: Containership 05

Containership 06

Table 41: Containership 06 Principal Characteristics

Reference ID:	Containership 06	
Description:	2500 TEU Containership	
Special Codes:	P	
Length:	810.0	ft
	246.9	m
Beam:	105.8	ft
	32.2	m
Depth:	66.0	ft
	20.1	m
Draft:	38.7	ft
	11.8	m
Displacement:	54,980	LT
	55,860	mt

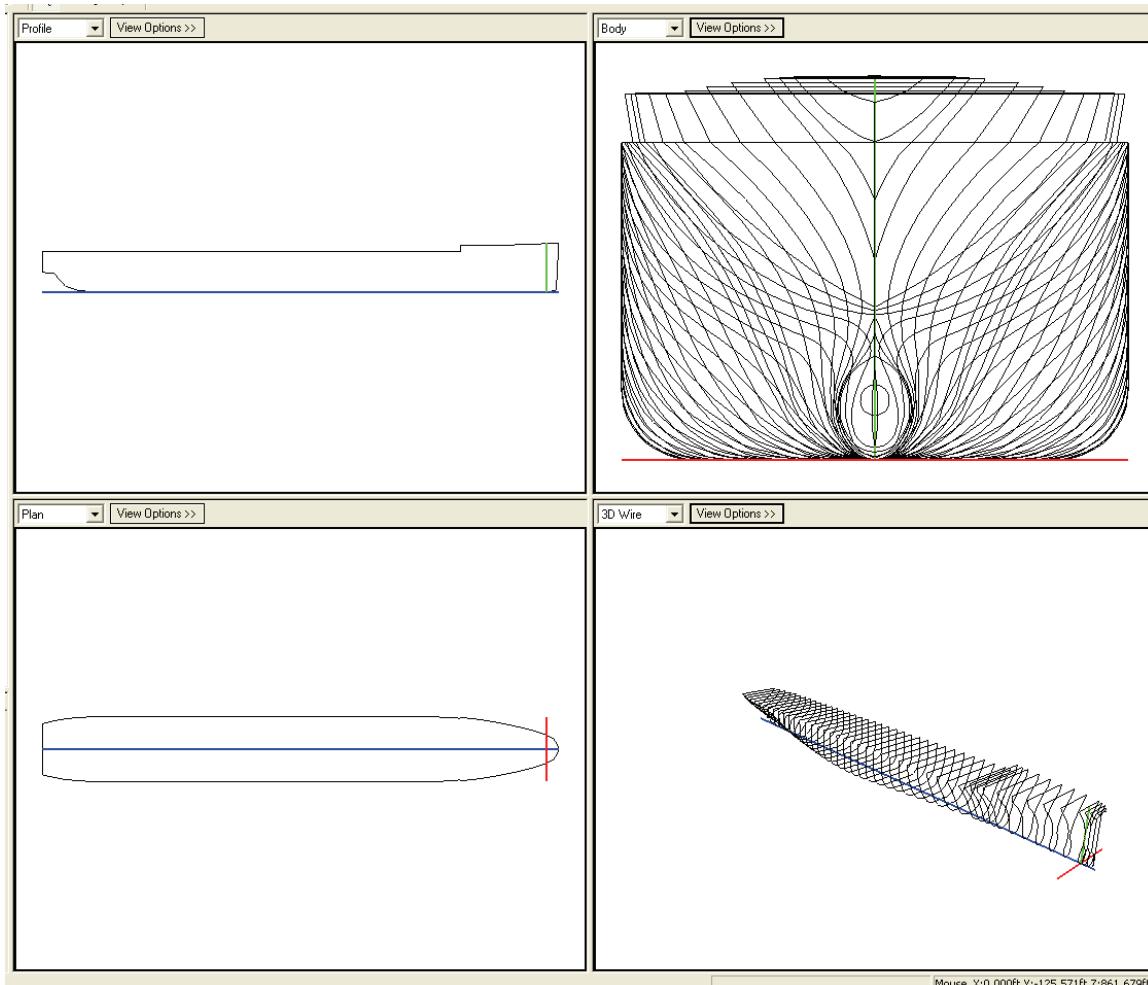


Figure 40: Containership 06

Containership 07

Table 42: Containership 07 Principal Characteristics

Reference ID:	Containership 07	
Description:	Fast Sealift	
Special Codes:	G	
Length:	946.0	ft
	288.3	m
Beam:	105.8	ft
	32.2	m
Depth:	67.0	ft
	20.4	m
Draft:	36.6	ft
	11.2	m
Displacement:	55,350	LT
	56,236	mt

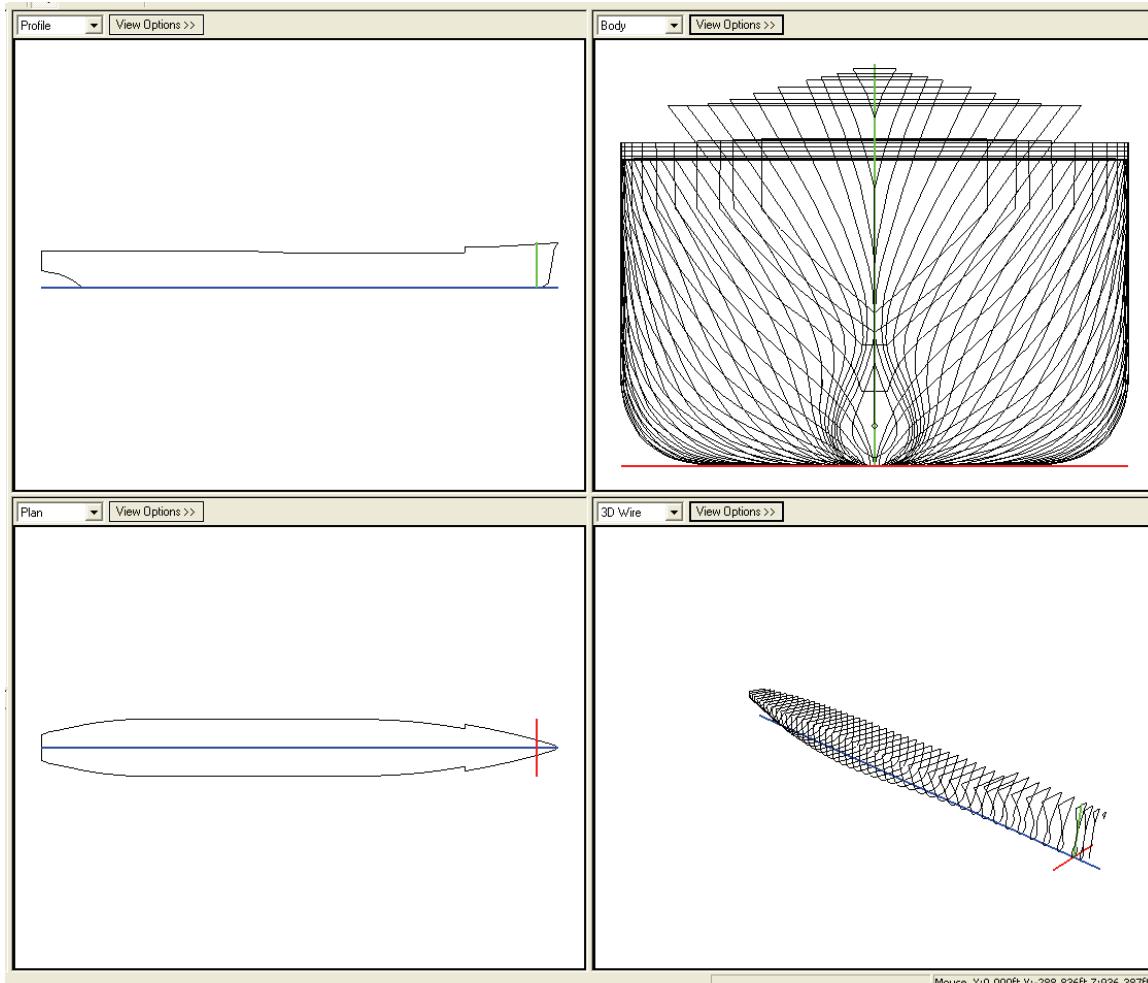


Figure 41: Containership 07

Containership 08

Table 43: Containership 08 Principal Characteristics

Reference ID:	Containership 08	
Description:	Naval Auxiliary Containership Ro/Ro	
Special Codes:	G	
Length:	821.0	ft
	250.2	m
Beam:	105.8	ft
	32.2	m
Depth:	68.0	ft
	20.7	m
Draft:	34.0	ft
	10.4	m
Displacement:	51,612	LT
	52,438	mt

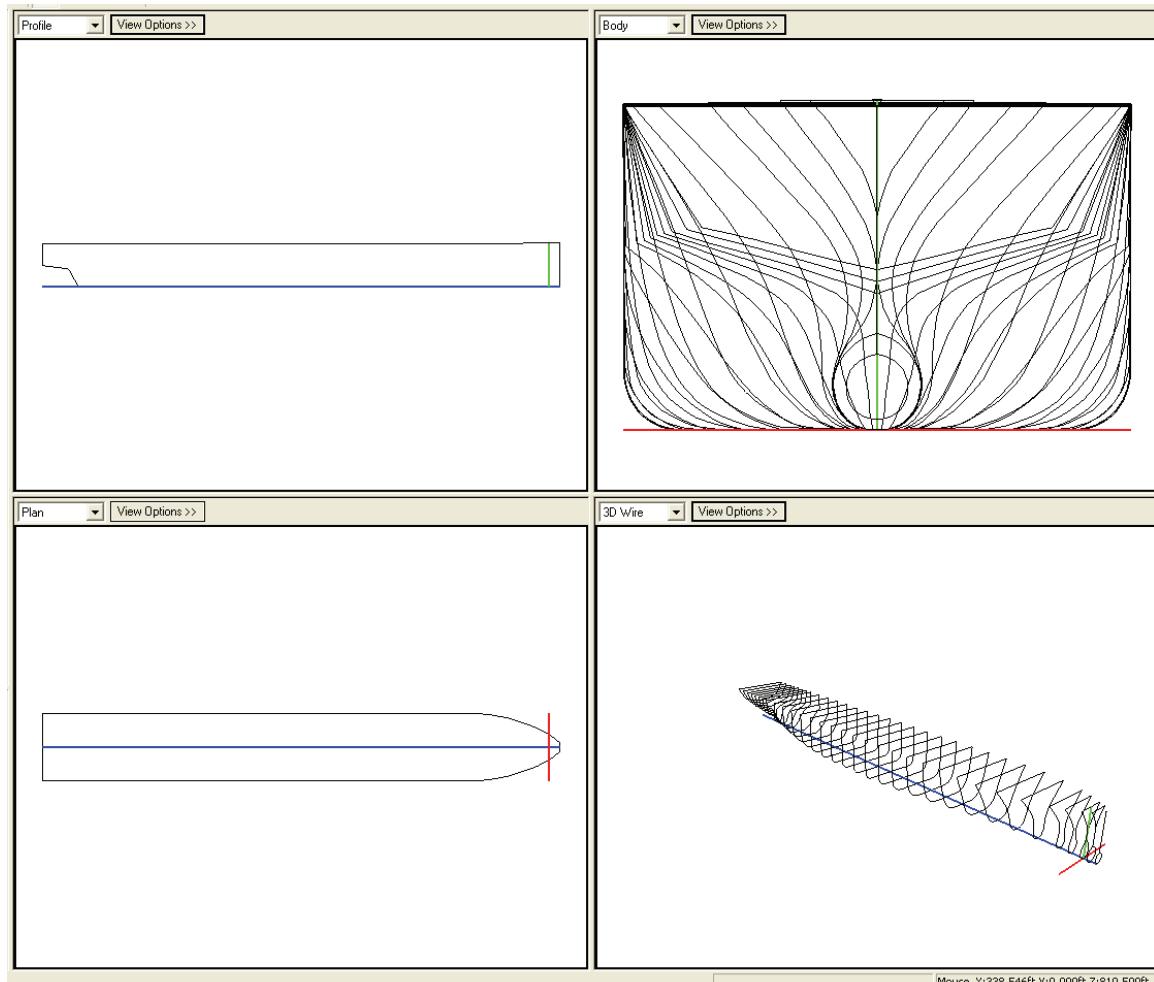


Figure 42: Containership 08

Containership 09

Table 44: Containership 09 Principal Characteristics

Reference ID:	Containership 09	
Description:	Naval Auxiliary Containership	
Special Codes:	G	
Length:	652.0	ft
	198.7	m
Beam:	105.8	ft
	32.2	m
Depth:	67.0	ft
	20.4	m
Draft:	34.0	ft
	10.4	m
Displacement:	48,000	LT
	48,768	mt

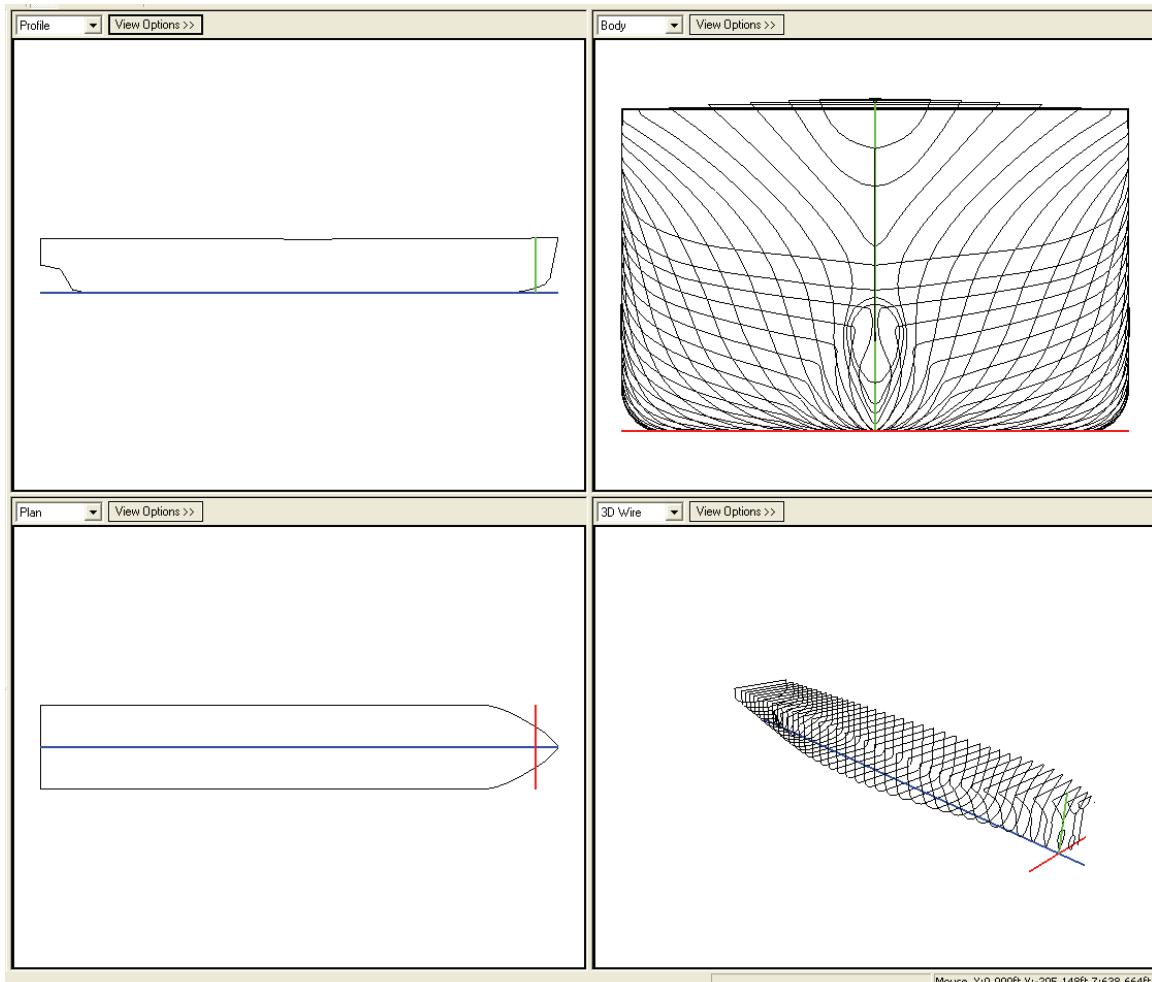


Figure 43: Containership 09

Containership 10

Table 45: Containership 10 Principal Characteristics

Reference ID:	Containership 10	
Description:	3918 TEU	
Special Codes:	P	
Length:	925.0	ft
	281.9	m
Beam:	105.8	ft
	32.2	m
Depth:	70.5	ft
	21.5	m
Draft:	38.0	ft
	11.6	m
Displacement:	67,175	LT
	68,250	mt

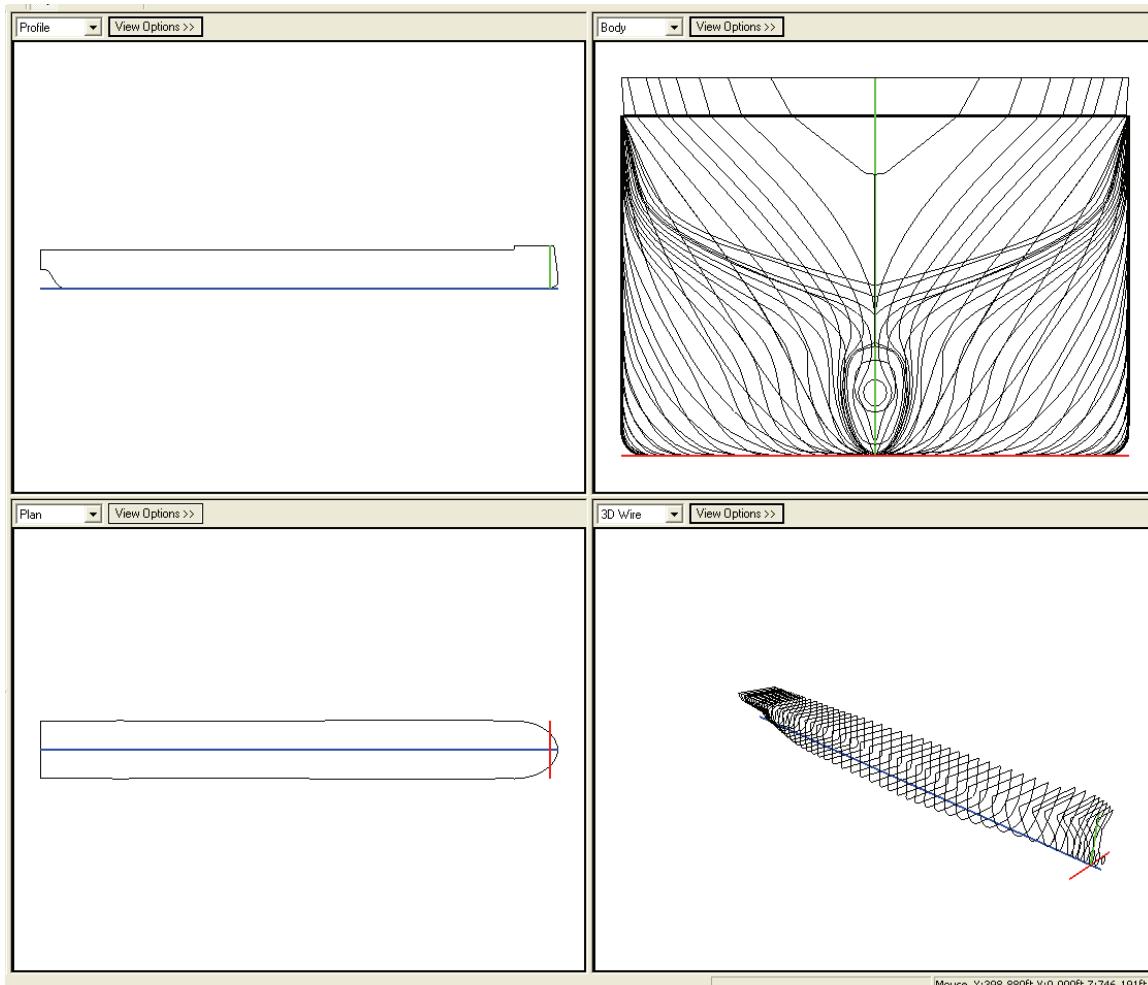


Figure 44: Containership 10

Containership 11

Table 46: Containership 11 Principal Characteristics

Reference ID:	Containership 11	
Description:		
Special Codes:	P	
Length:	594.0	ft
	181.1	m
Beam:	78.2	ft
	23.8	m
Depth:	49.5	ft
	15.1	m
Draft:	31.5	ft
	9.6	m
Displacement:	26,670	LT
	27,097	mt

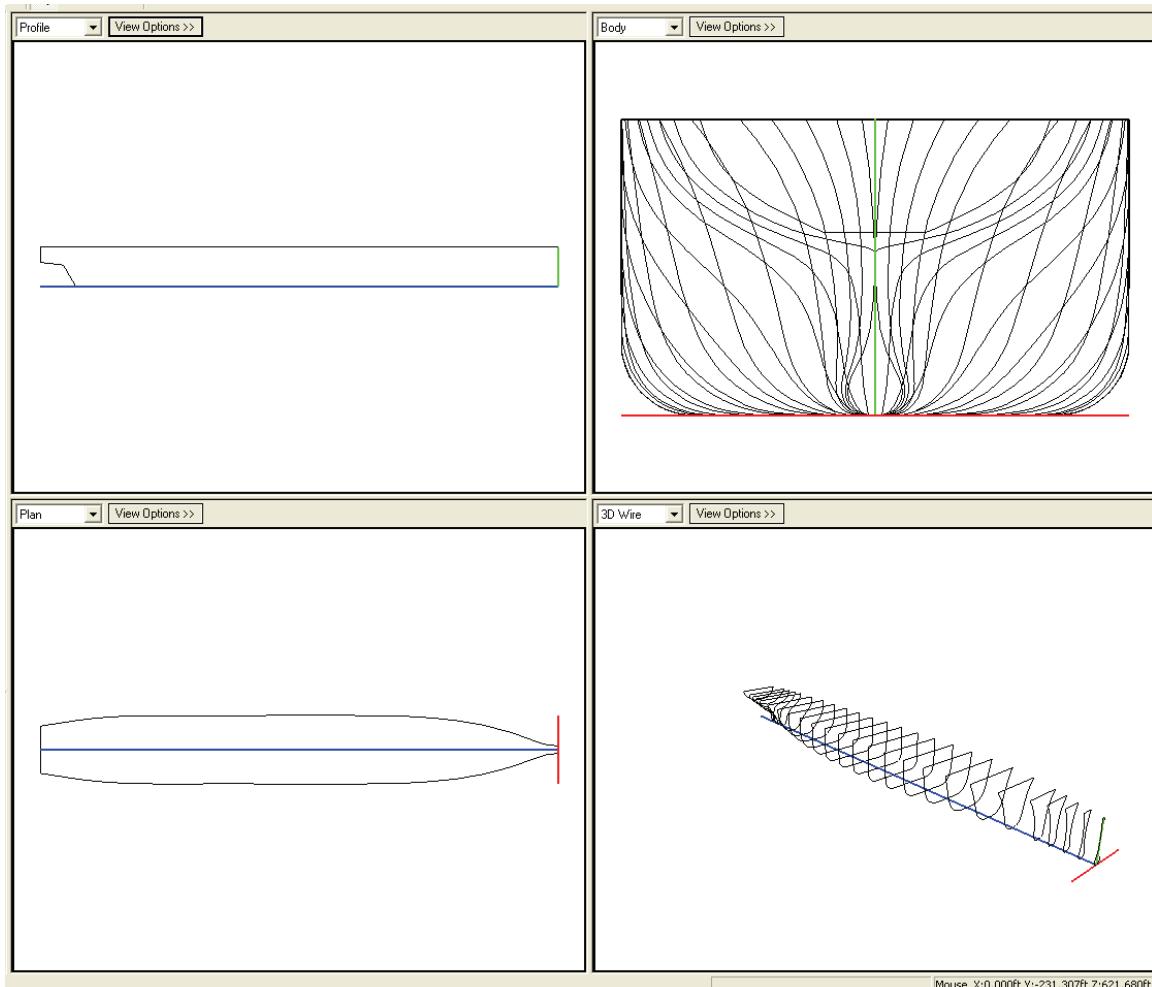


Figure 45: Containership 11

Containership 12

Table 47: Containership 12 Principal Characteristics

Reference ID:	Containership 12	
Description:	2470 TEU	
Special Codes:	P	
Length:	810.0	ft
	246.9	m
Beam:	100.3	ft
	30.6	m
Depth:	54.0	ft
	16.5	m
Draft:	34.0	ft
	10.4	m
Displacement:	48,950	LT
	49,733	mt

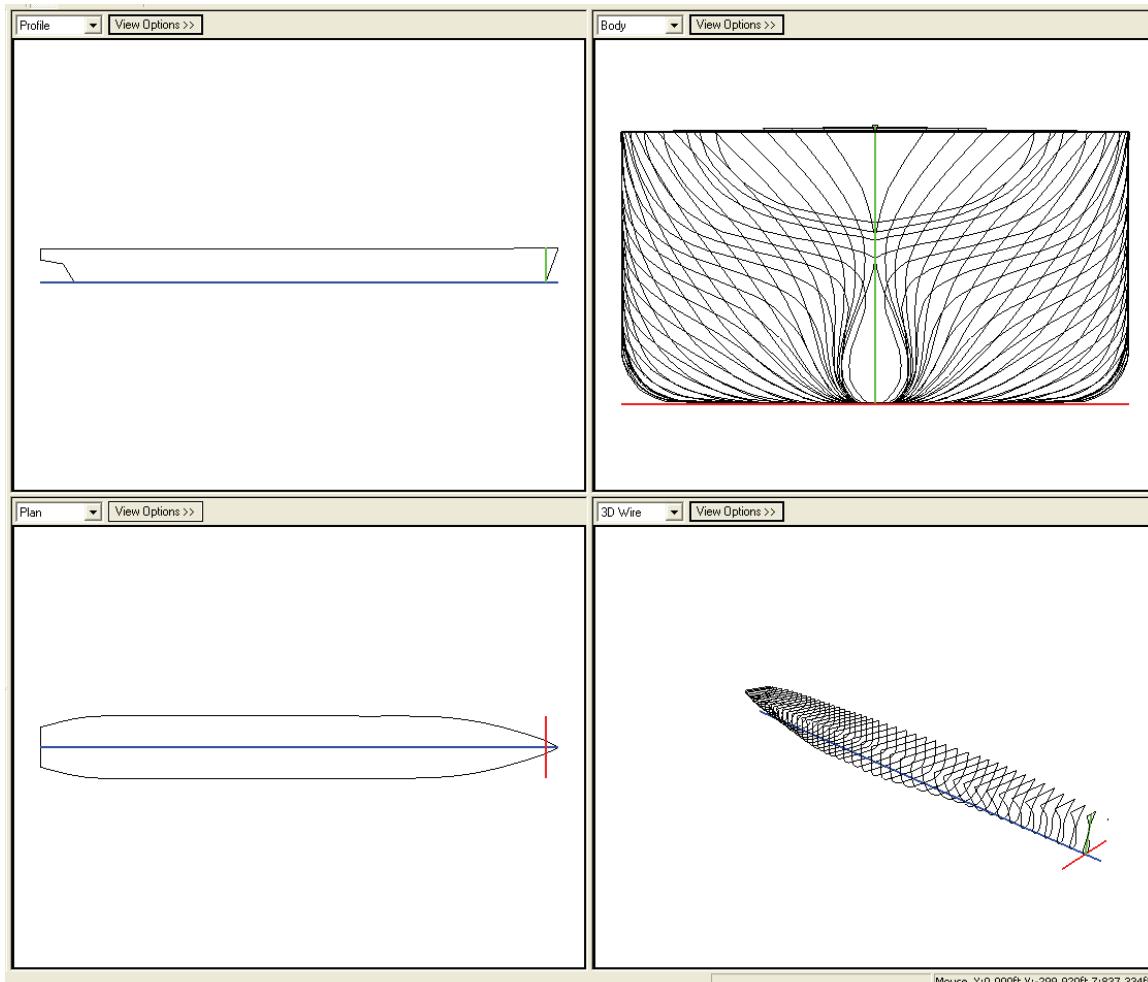


Figure 46: Containership 12

Containership 13

Table 48: Containership 13 Principal Characteristics

Reference ID:	Containership 13	
Description:	1800 TEU	
Special Codes:	P	
Length:	710.0	ft
	216.4	M
Beam:	100.3	ft
	30.6	M
Depth:	54.0	ft
	16.5	M
Draft:	34.0	ft
	10.4	M
Displacement:	39,520	LT
	40,152	Mt

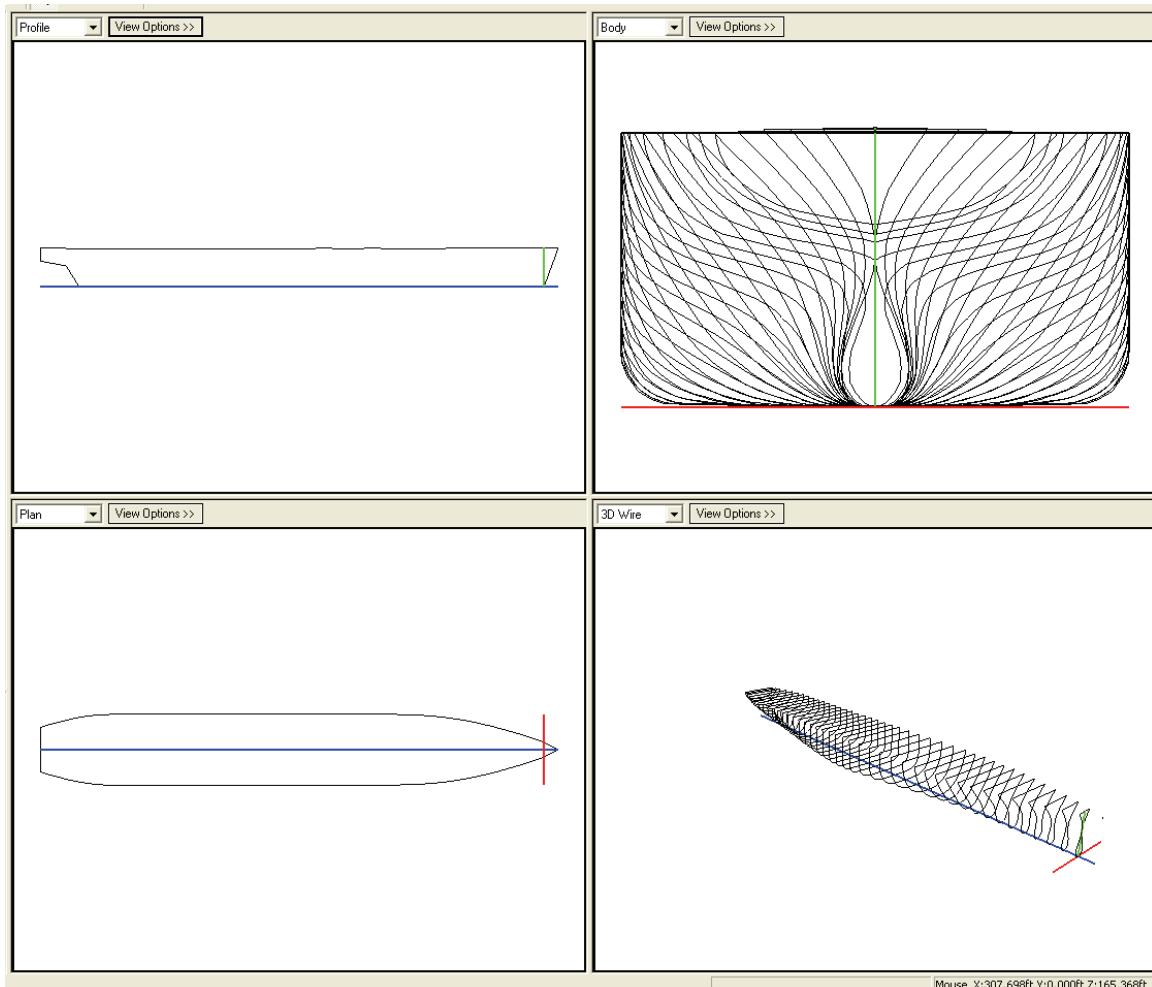


Figure 47: Containership 13

Containership 14

Table 49: Containership 14 Principal Characteristics

Reference ID:	Containership 14	
Description:	1664 TEU	
Special Codes:	P	
Length:	677.0	ft
	206.3	m
Beam:	95.0	ft
	29.0	m
Depth:	54.0	ft
	16.5	m
Draft:	36.0	ft
	11.0	m
Displacement:	41,325	LT
	41,986	mt

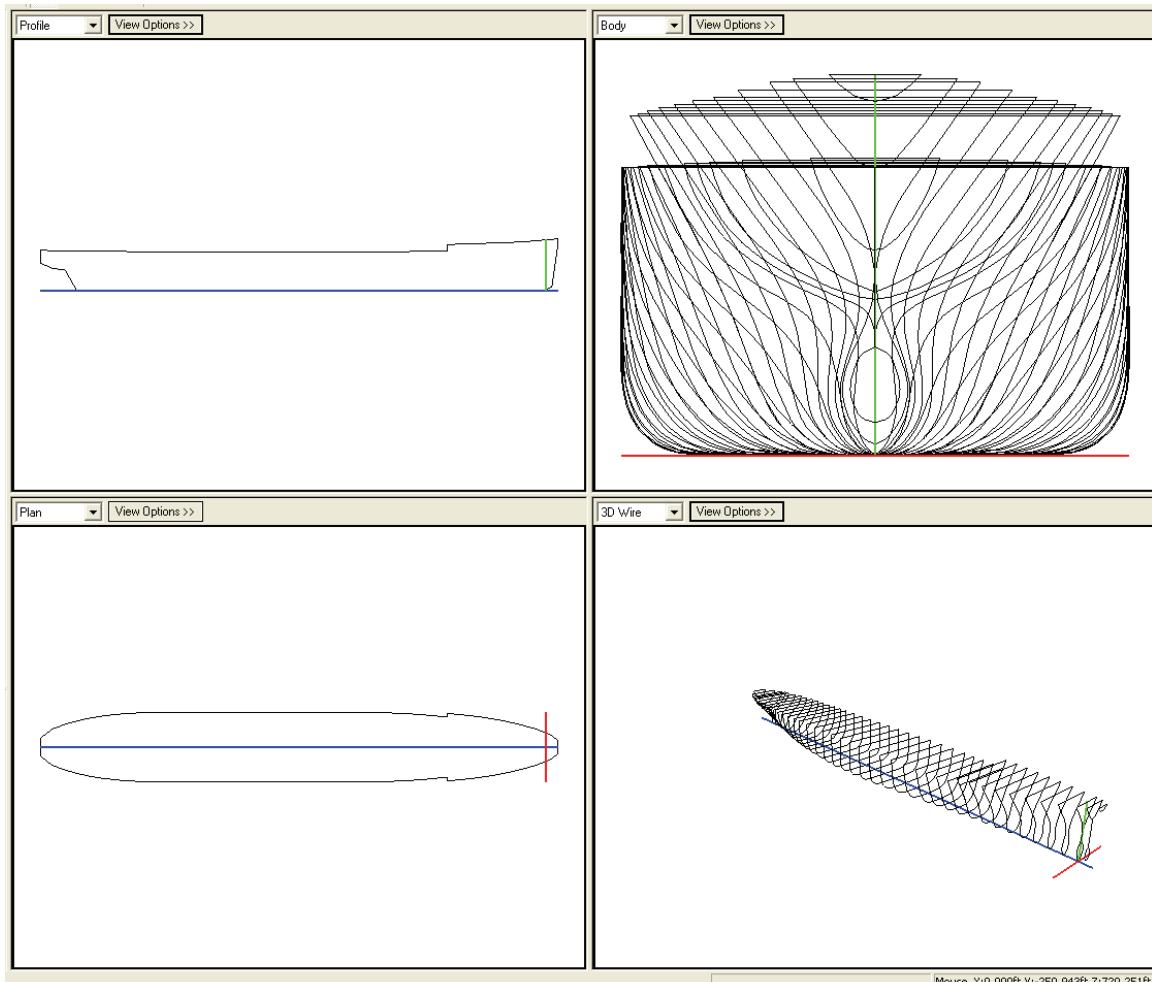


Figure 48: Containership 14

Containership 15

Table 50: Containership 15 Principal Characteristics

Reference ID:	Containership 15	
Description:	2400 TEU	
Special Codes:	P	
Length:	671.5	ft
	204.7	m
Beam:	105.8	ft
	32.2	m
Depth:	54.8	ft
	16.7	m
Draft:	38.0	ft
	11.6	m
Displacement:	42,190	LT
	42,865	mt

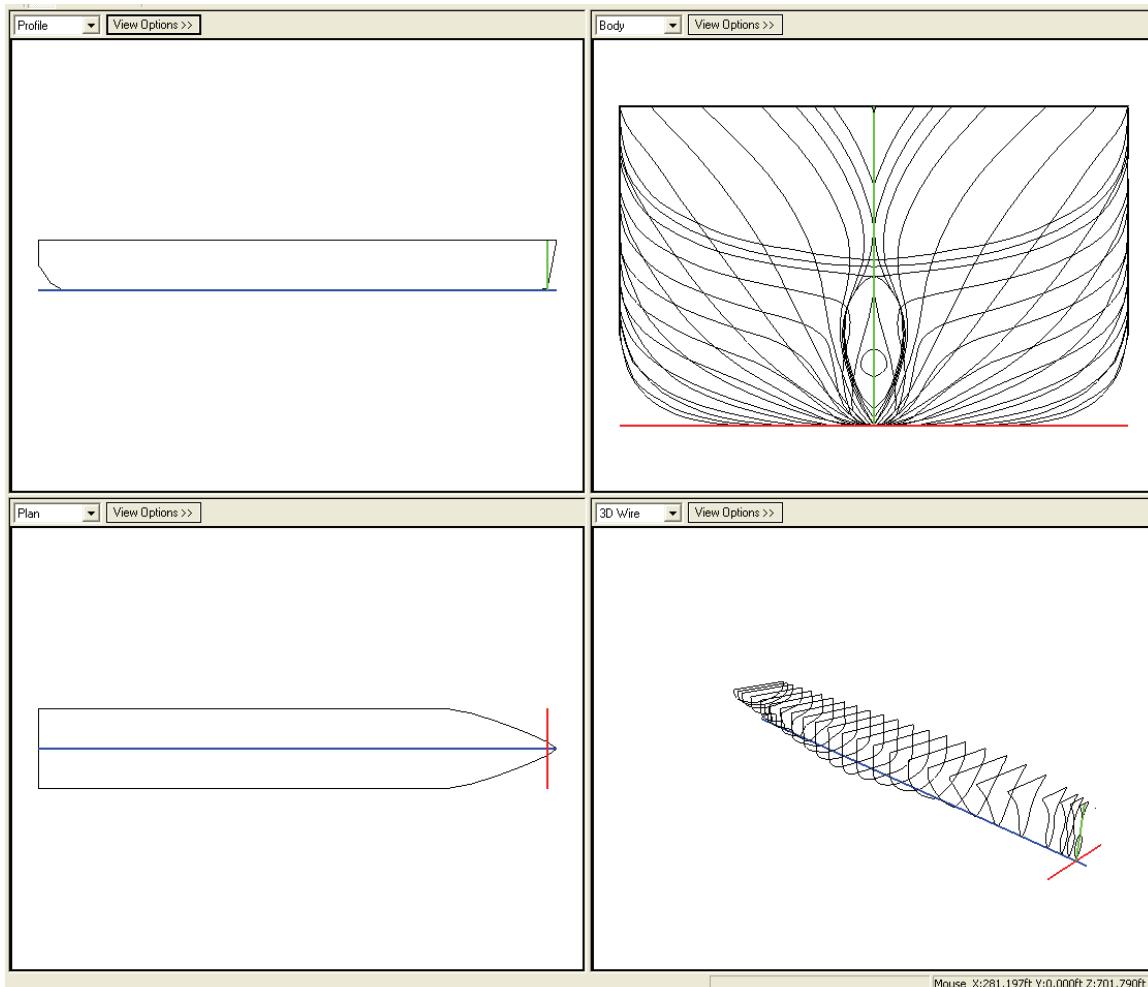


Figure 49: Containership 15

Containership 16

Table 51: Containership 16 Principal Characteristics

Reference ID:	Containership 16	
Description:	2386 TEU	
Special Codes:	P	
Length:	780.0	ft
	237.7	M
Beam:	90.0	ft
	27.4	M
Depth:	53.0	ft
	16.2	M
Draft:	34.0	ft
	10.4	M
Displacement:	43,650	LT
	44,348	Mt

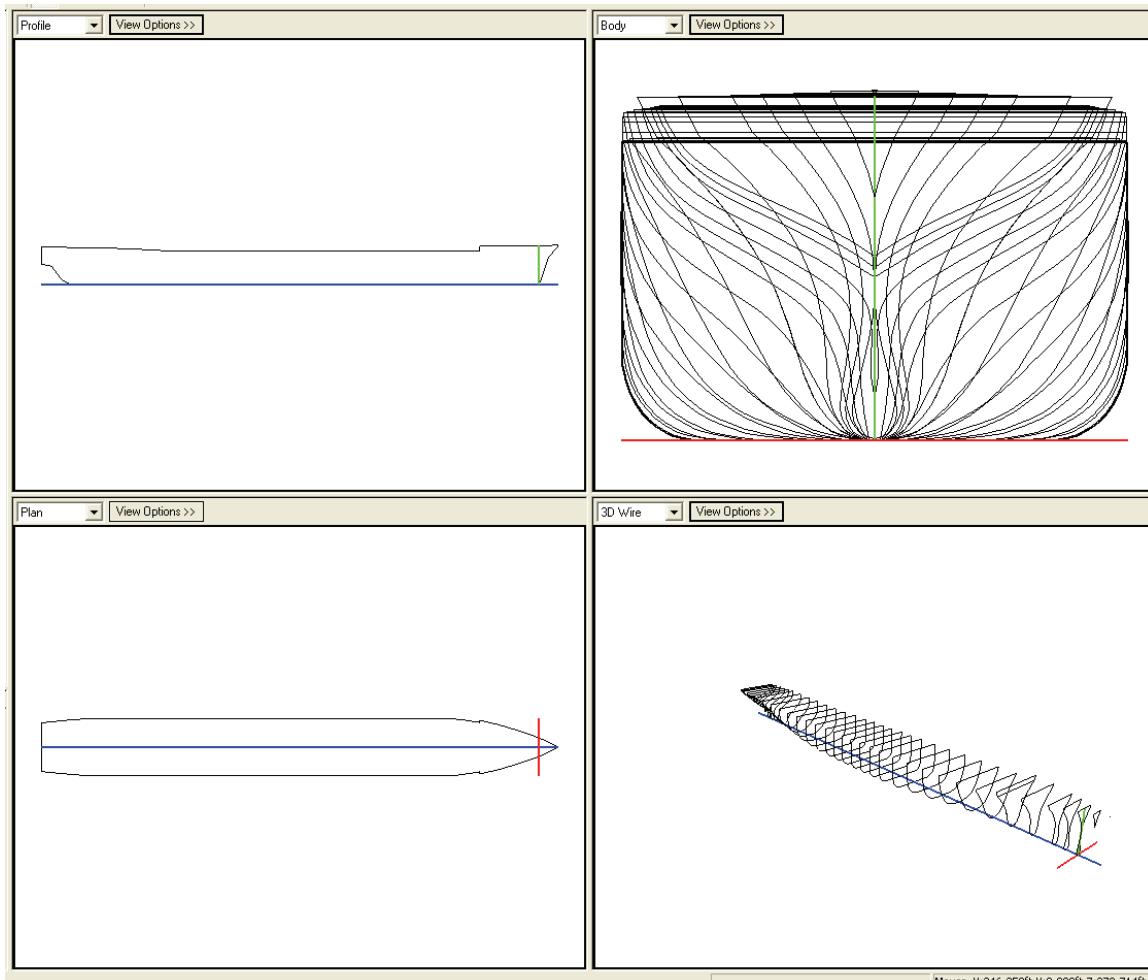


Figure 50: Containership 16

Containership 17

Table 52: Containership 17 Principal Characteristics

Reference ID:	Containership 17	
Description:	2230 TEU	
Special Codes:	P	
Length:	650.5	ft
	198.3	M
Beam:	105.8	ft
	32.2	M
Depth:	62.3	ft
	19.0	M
Draft:	36.5	ft (baseline)
	11.1	M
Displacement:	45,960	LT
	46,695	Mt

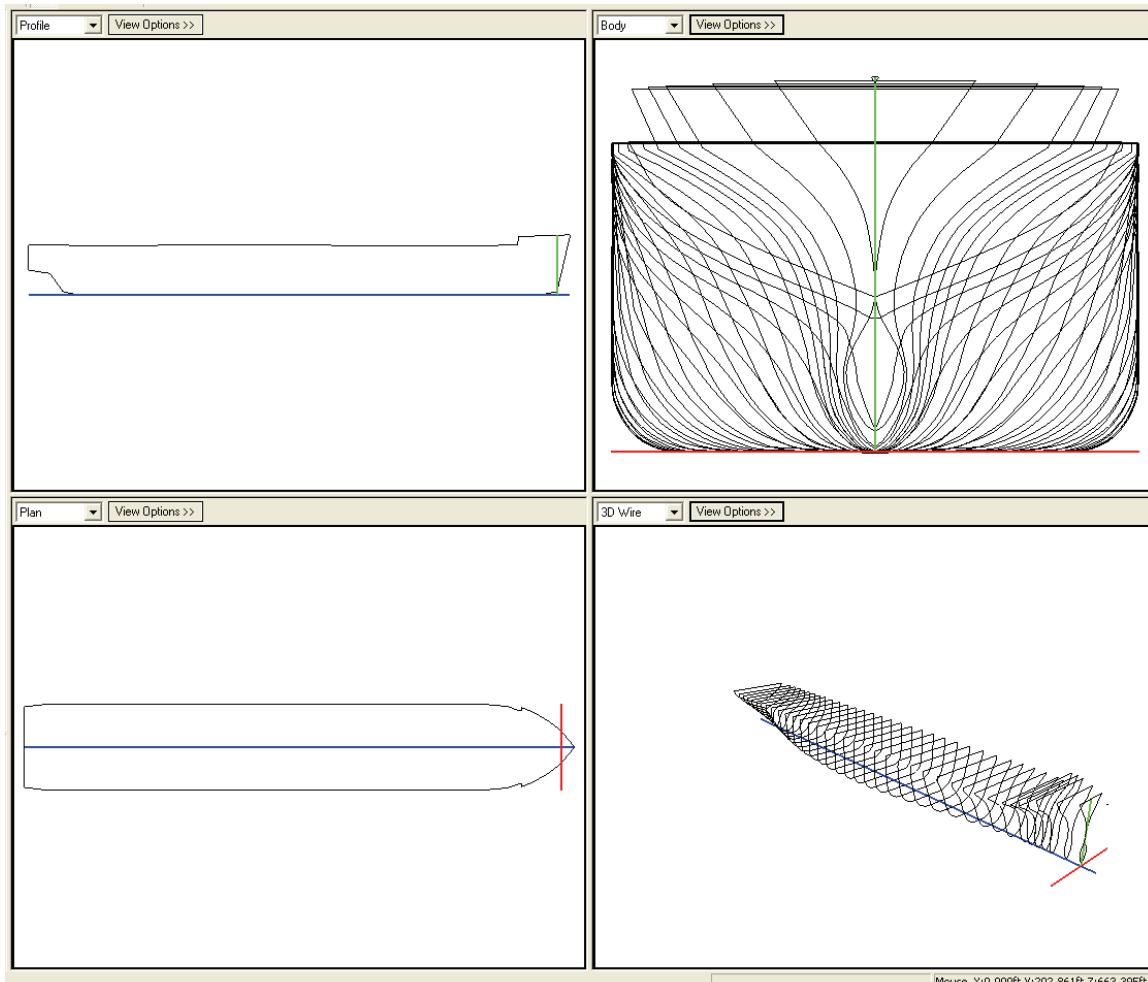


Figure 51: Containership 17

Containership 18

Table 53: Containership 18 Principal Characteristics

Reference ID:	Containership 18	
Description:	1400 TEU	
Special Codes:	P	
Length:	686.3	ft
	209.2	M
Beam:	76.1	ft
	23.2	M
Depth:	43.0	ft
	13.1	M
Draft:	36.0	ft
	11.0	M
Displacement:	40,500	LT
	41,148	Mt

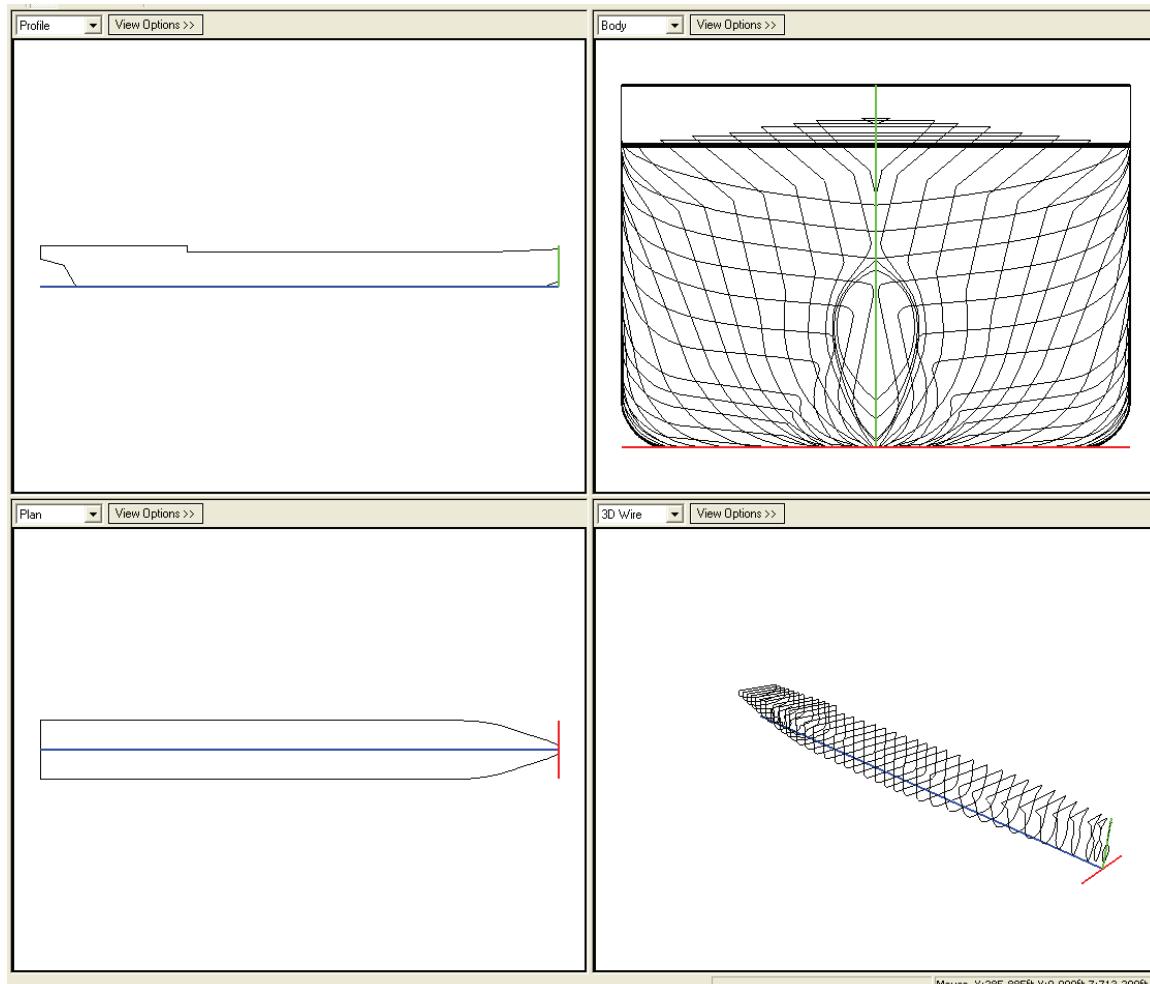


Figure 52: Containership 18

Containership 19

Table 54: Containership 19 Principal Characteristics

Reference ID:	Containership 19	
Description:		
Special Codes:		
Length:	665.0	ft
	202.7	m
Beam:	90.0	ft
	27.4	m
Depth:	50.5	ft (above baseline)
	15.4	m
Draft:	28.0	ft
	8.5	m
Displacement:	27,630	LT
	28,072	mt

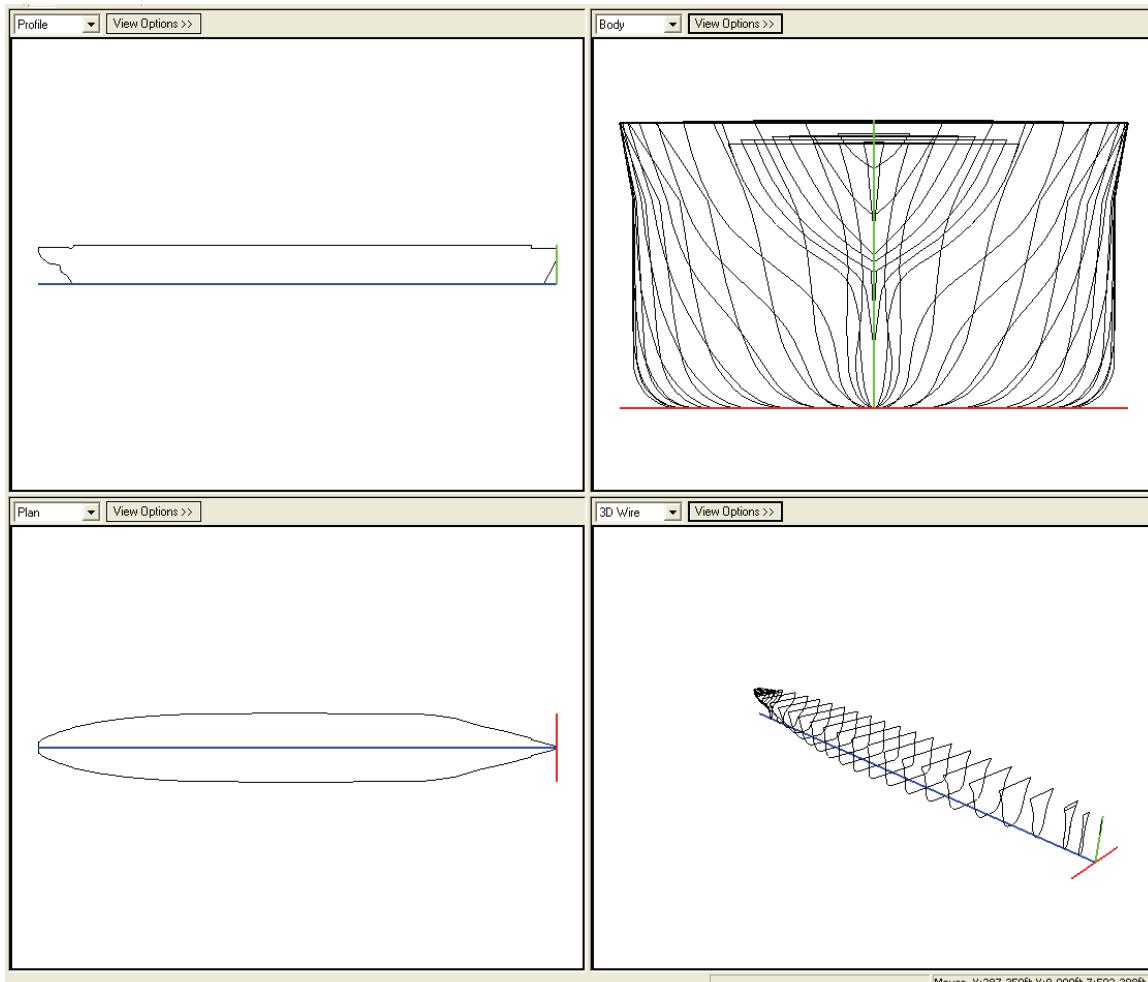


Figure 53: Containership 19

Ferries

Ferry 01

Table 55: Ferry 01 Principal Characteristics

Reference ID:	Ferry 01	
Description:	Great Lakes Railroad Ferry	
Special Codes:	P	
Length:	410.5	ft
	125.1	m
Beam:	59.5	ft
	18.1	m
Depth:	24.0	ft
	7.3	m
Draft:	18.0	ft
	5.5	m
Displacement:	7,500	LT
	7,620	mt

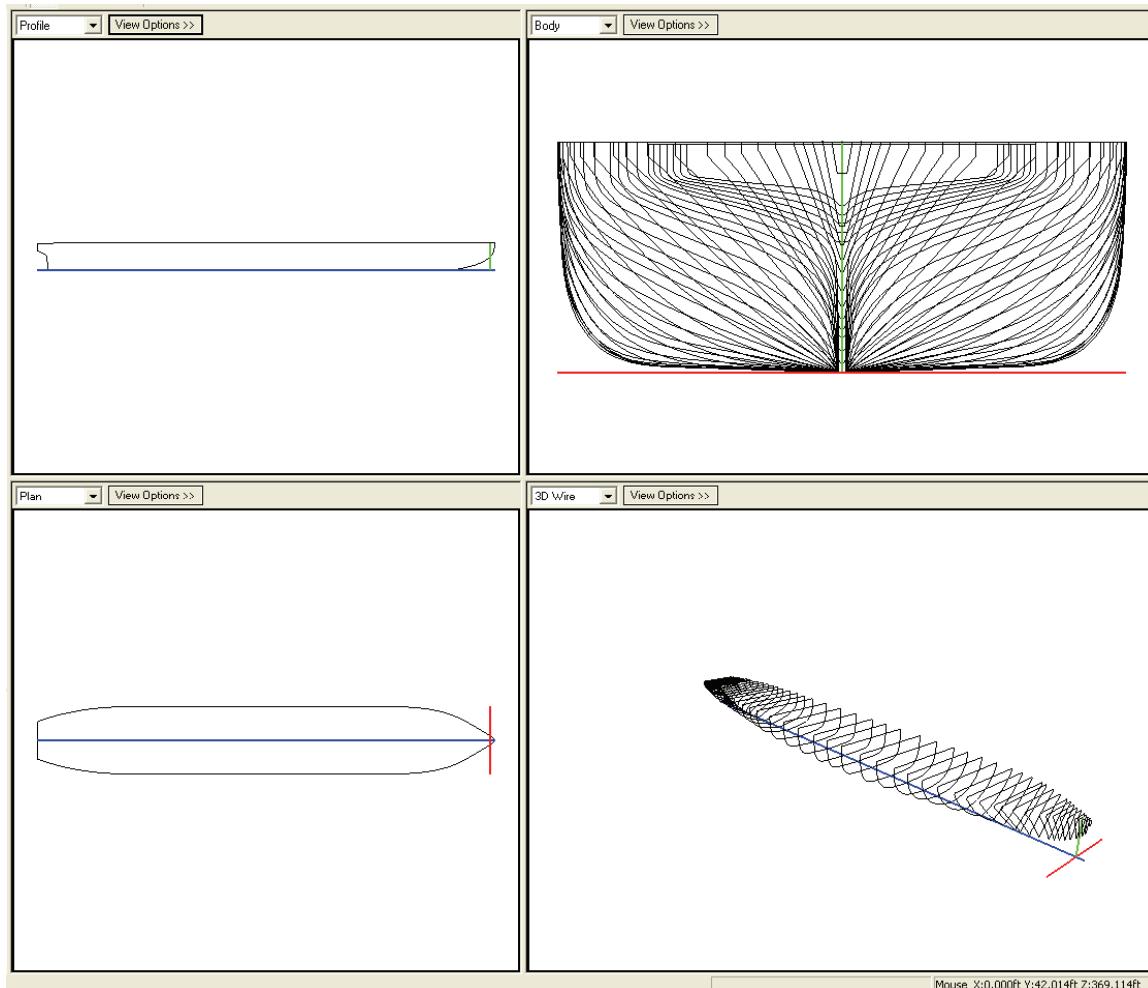


Figure 54: Ferry 01

Ferry 02

Table 56: Ferry 02 Principal Characteristics

Reference ID:	Ferry 02	
Description:	Medium Coastal Ro/Pax Ferry	
Special Codes:	P	
Length:	175.0	ft
	53.3	m
Beam:	40.0	ft
	12.2	m
Depth:	14.0	ft
	4.3	m
Draft:	10.0	ft
	3.0	m
Displacement:	792	LT
	805	mt

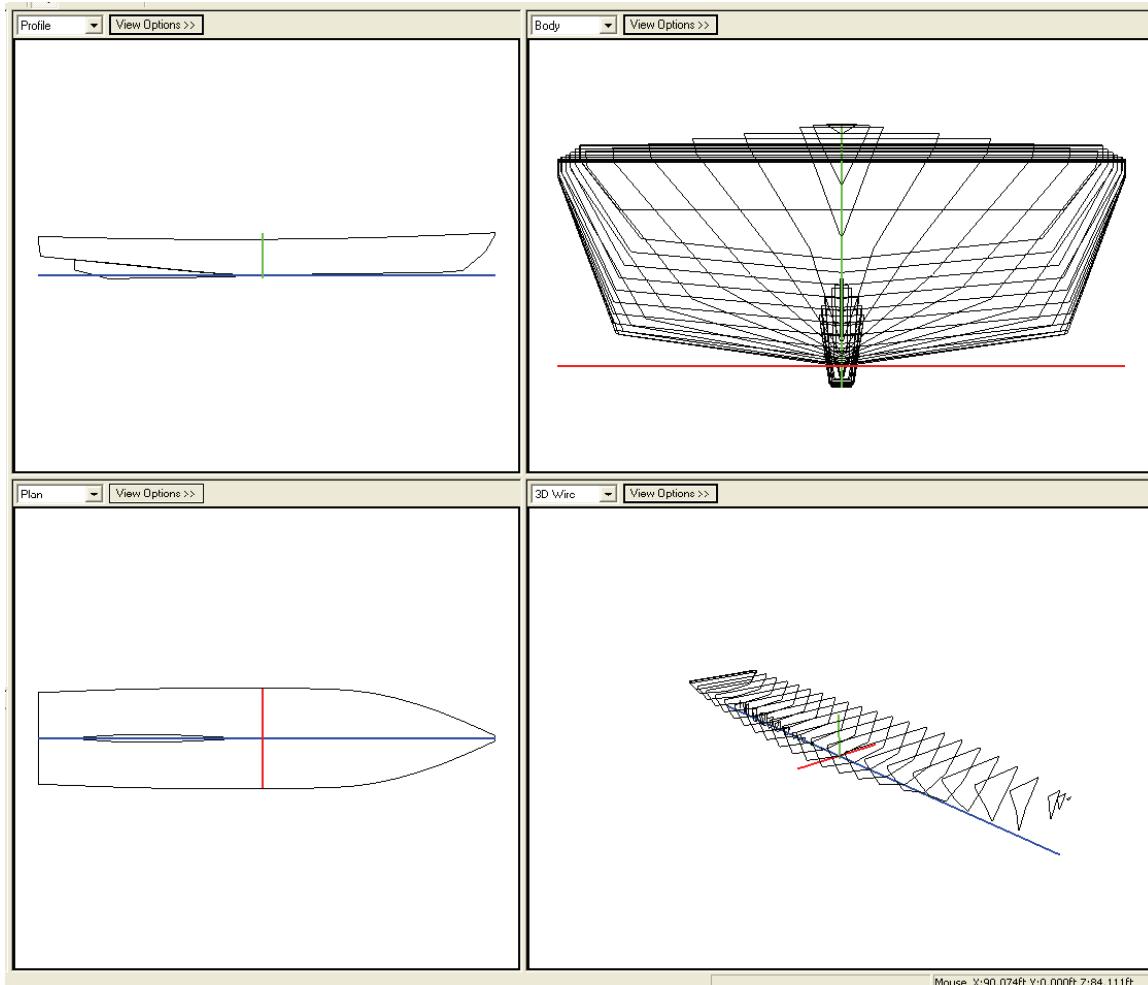


Figure 55: Ferry 02

Ferry 03

Table 57: Ferry 03 Principal Characteristics

Reference ID:	Ferry 03	
Description:	Large Oceangoing Ferry	
Special Codes:	P, G	
Length:	380.0	ft
	115.8	m
Beam:	85.1	ft
	25.9	m
Depth:	24.0	ft
	7.3	m
Draft:	17.5	ft
	5.3	m
Displacement:	7,650	LT
	7,772	mt

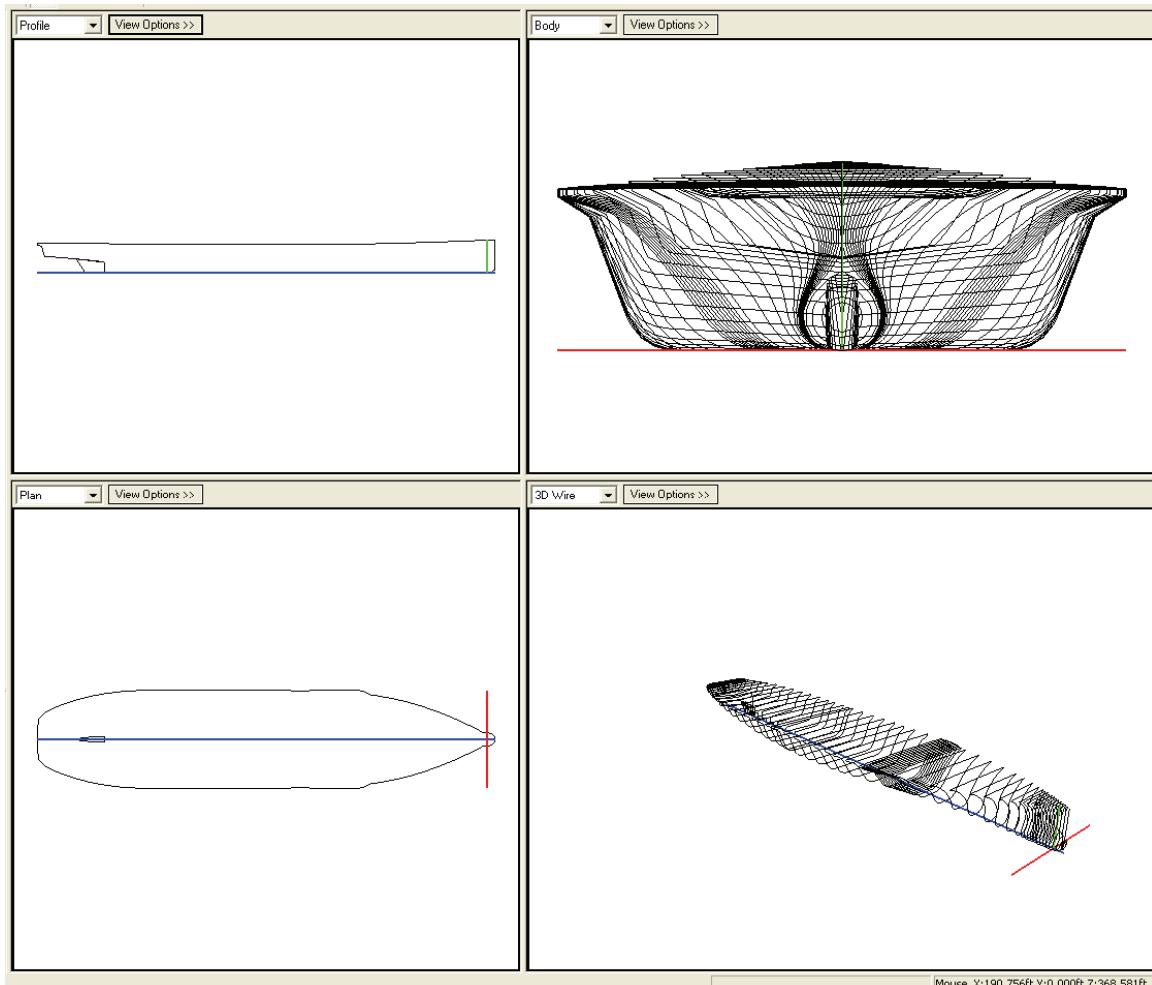


Figure 56: Ferry 03

Ferry 04

Table 58: Ferry 04 Principal Characteristics

Reference ID:	Ferry 04	
Description:	Double Ended Open Deck Ferry	
Special Codes:	P, G	
Length:	263.4	ft
	80.3	m
Beam:	65.4	ft
	19.9	m
Depth:	15.5	ft
	4.7	m
Draft:	11.0	ft
	3.4	m
Displacement:	1,725	LT
	1,753	mt

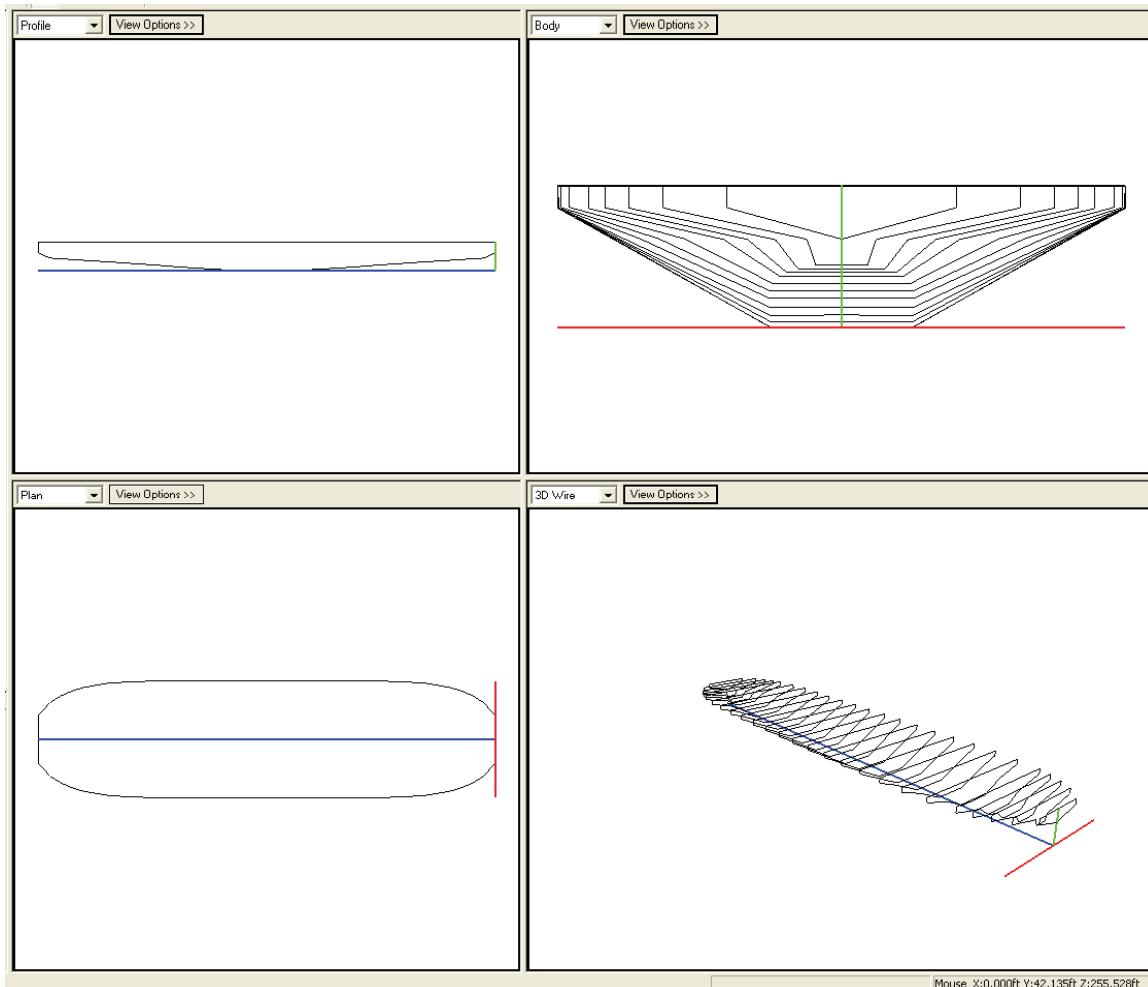


Figure 57: Ferry 04

Ferry 05

Table 59: Ferry 05 Principal Characteristics

Reference ID:	Ferry 05	
Description:	Double Ended Multi Deck RoPax Ferry	
Special Codes:	P, G	
Length:	294.0	ft
	89.6	m
Beam:	69.0	ft
	21.0	m
Depth:	20.5	ft
	6.2	m
Draft:	15.0	ft
	4.6	m
Displacement:	2,496	LT
	2,536	mt

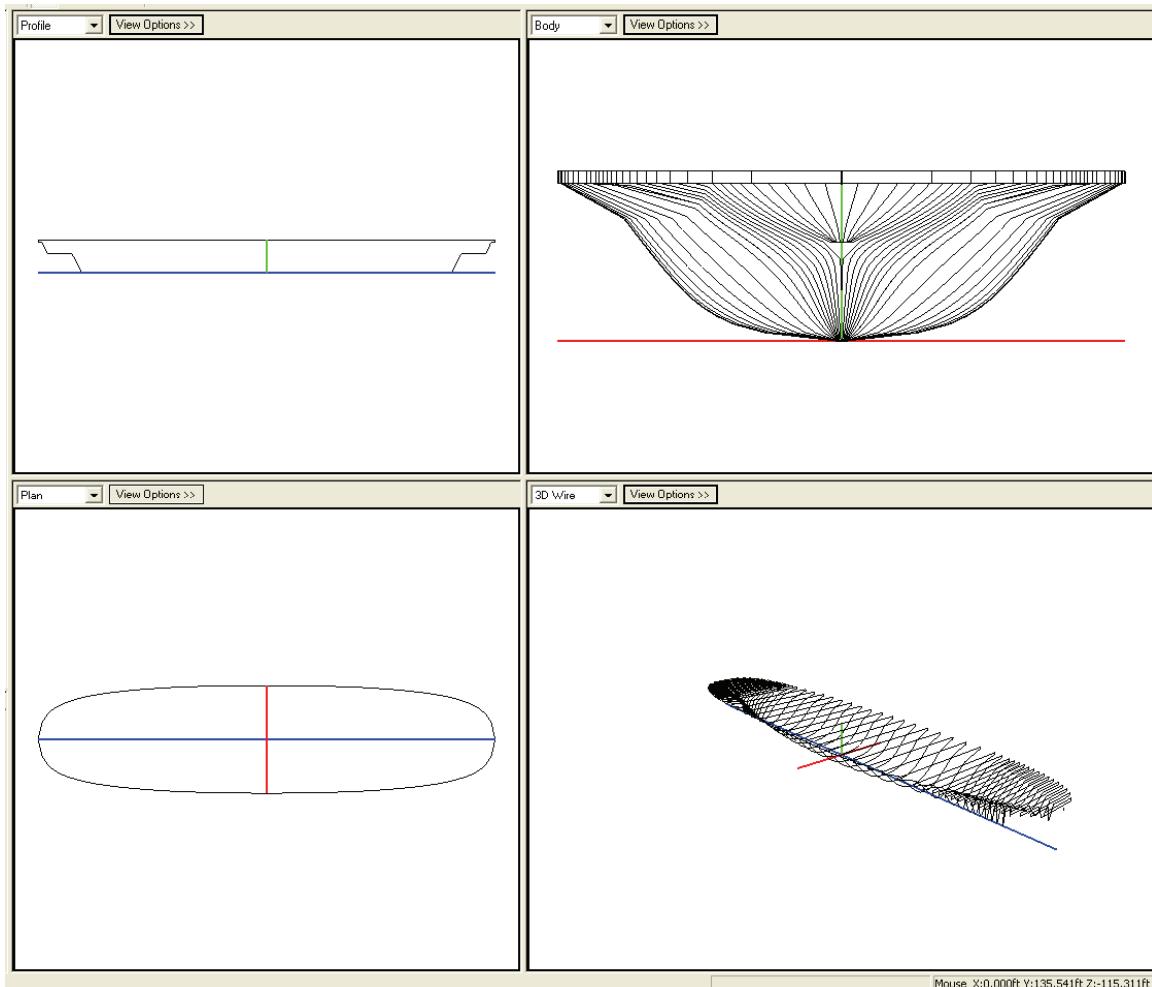


Figure 58: Ferry 05

Ferry 06

Table 60: Ferry 06 Principal Characteristics

Reference ID:	Ferry 06	
Description:	Double Ended Multi Deck RoPax Ferry	
Special Codes:	P, G	
Length:	310.0	ft
	94.5	m
Beam:	70.0	ft
	21.3	m
Depth:	20.0	ft
	6.1	m
Draft:	13.8	ft
	4.2	m
Displacement:	3,340	LT
	3,393	mt

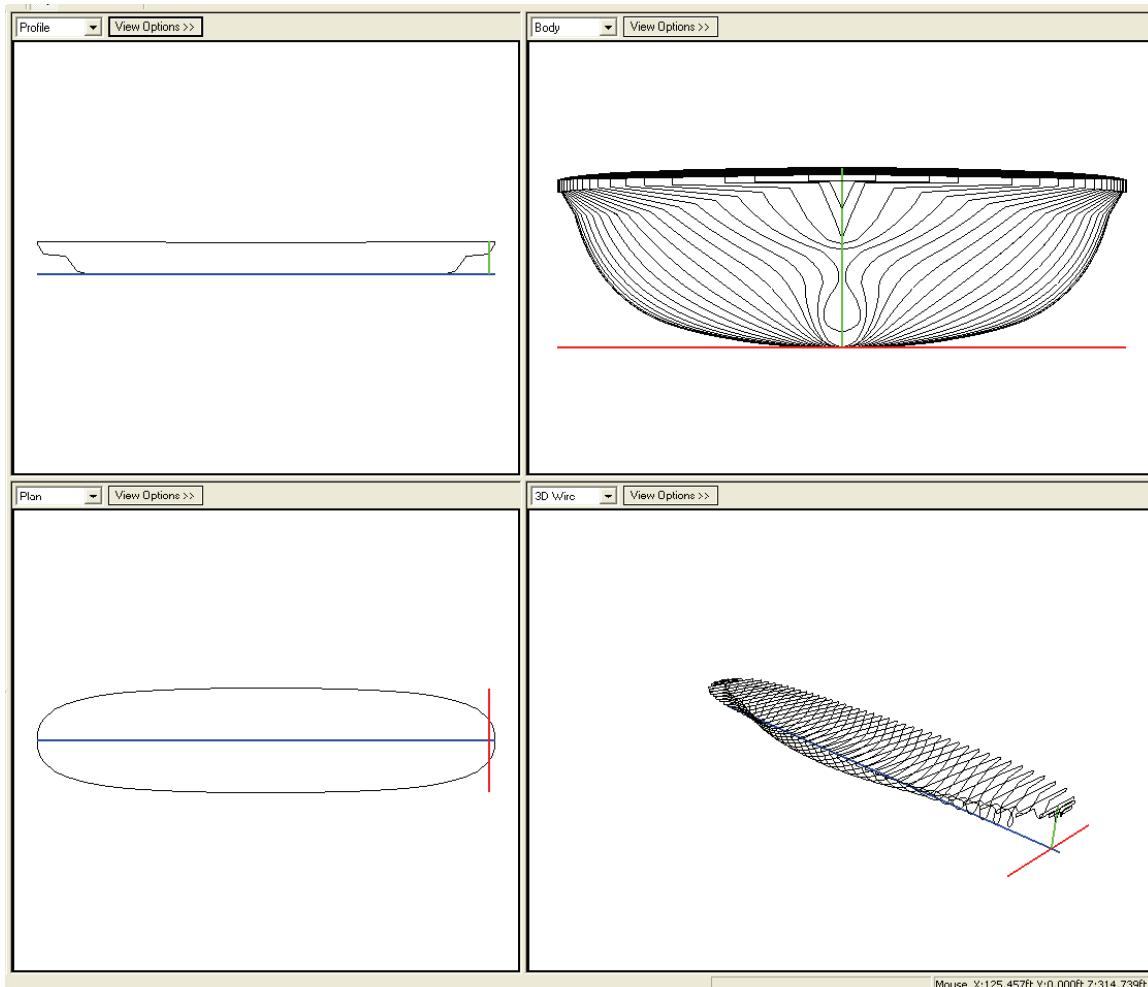


Figure 59: Ferry 06

Ferry 07

Table 61: Ferry 07 Principal Characteristics

Reference ID:	Ferry 07	
Description:	Large Oceangoing Ferry	
Special Codes:	P, G	
Length:	338.0	ft
	103.0	m
Beam:	85.0	ft
	25.9	m
Depth:	25.5	ft
	7.8	m
Draft:	17.5	ft
	5.3	m
Displacement:	7,500	LT
	7,620	mt

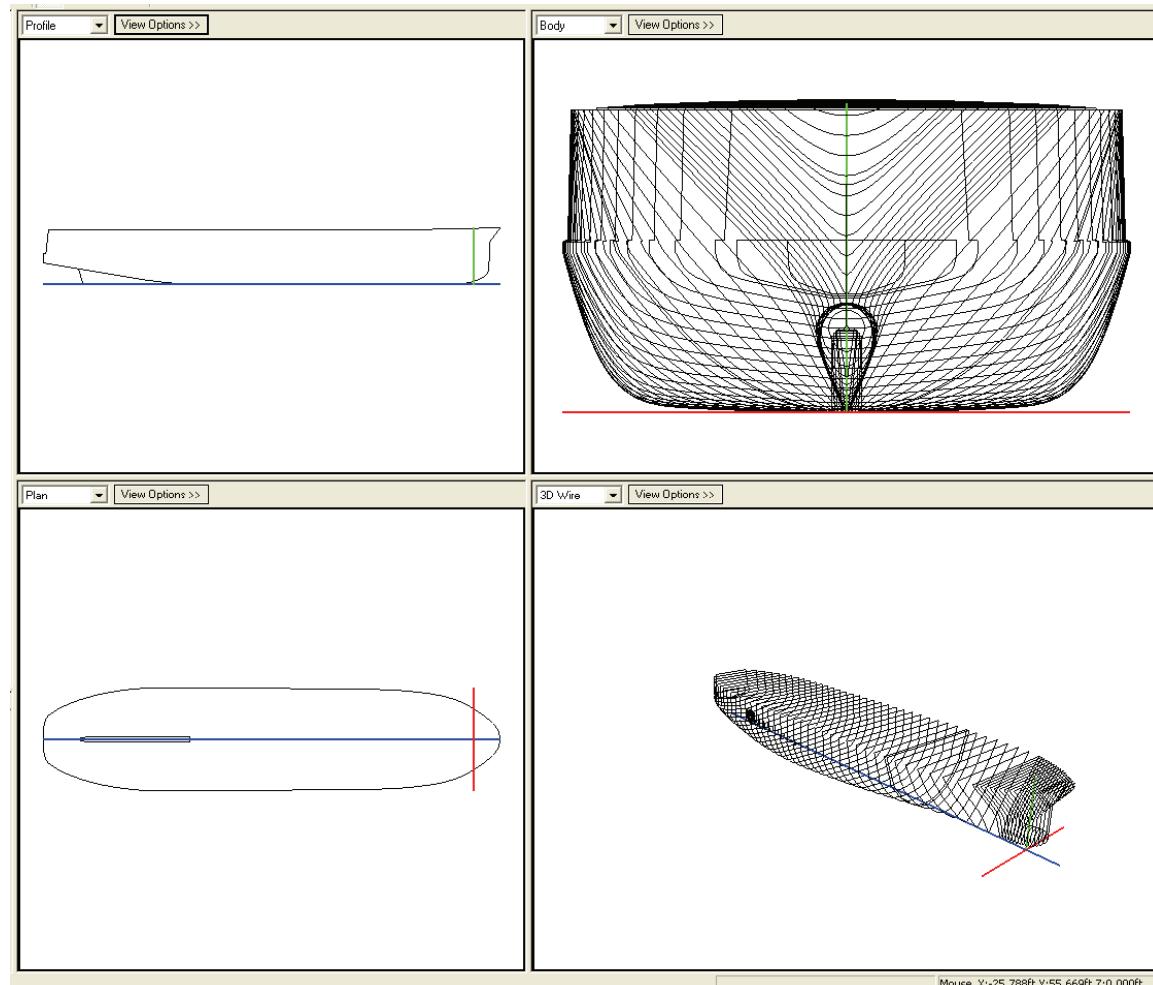


Figure 60: Ferry 07

Ferry 08

Table 62: Ferry 08 Principal Characteristics

Reference ID:	Ferry 08	
Description:	Double Ended Multi Deck Ferry	
Special Codes:	P, G	
Length:	328.0	ft
	100.0	m
Beam:	78.7	ft
	24.0	m
Depth:	23.0	ft
	7.0	m
Draft:	16.5	ft
	5.0	m
Displacement:	3,310	LT
	3,363	mt

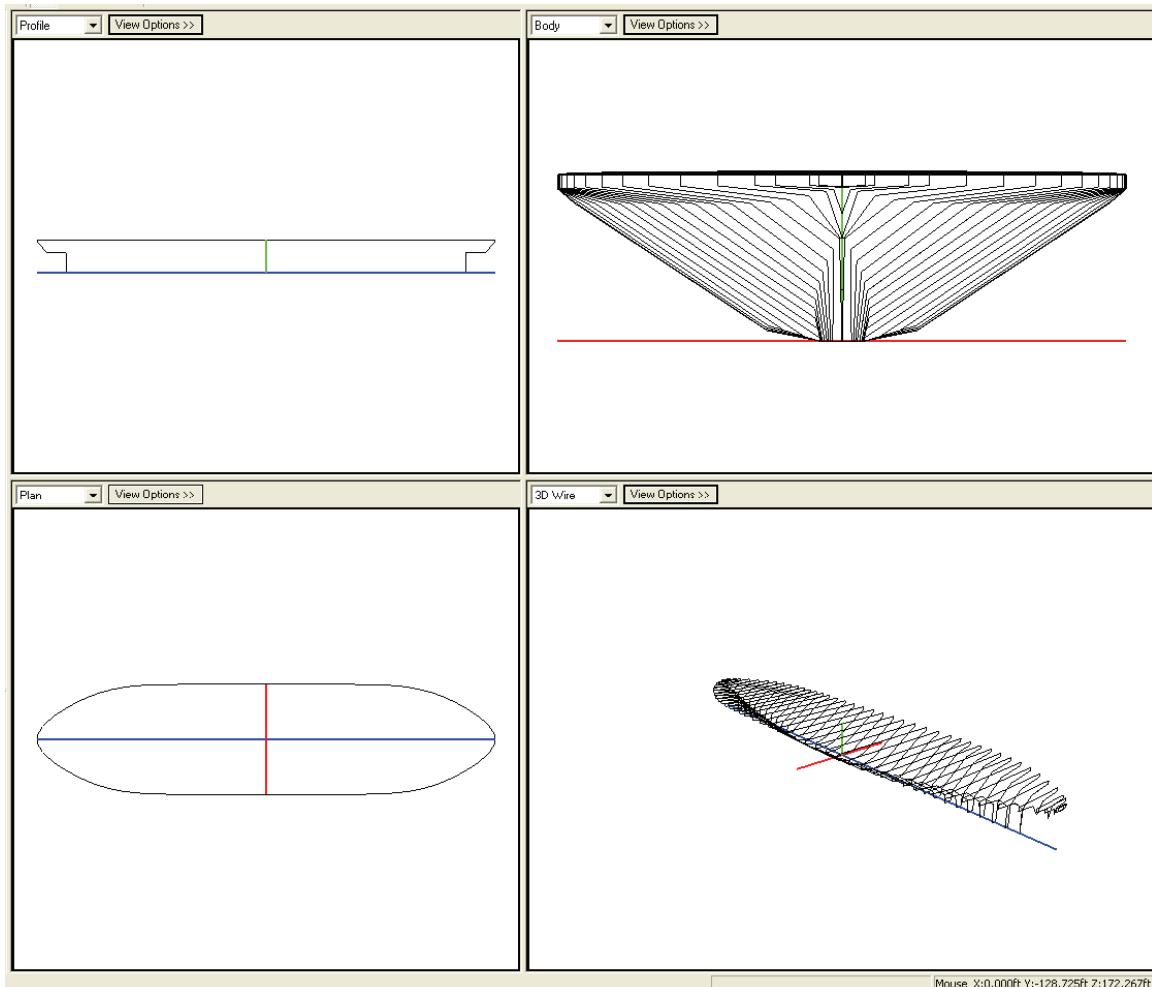


Figure 61: Ferry 08

Ferry 09

Table 63: Ferry 09 Principal Characteristics

Reference ID:	Ferry 09	
Description:	Double Ended Open Deck Ferry	
Special Codes:	P	
Length:	260.0	ft
	79.2	m
Beam:	44.0	ft
	13.4	m
Depth:	16.5	ft
	5.0	m
Draft:	9.8	ft
	3.0	m
Displacement:	1,550	LT
	1,575	mt

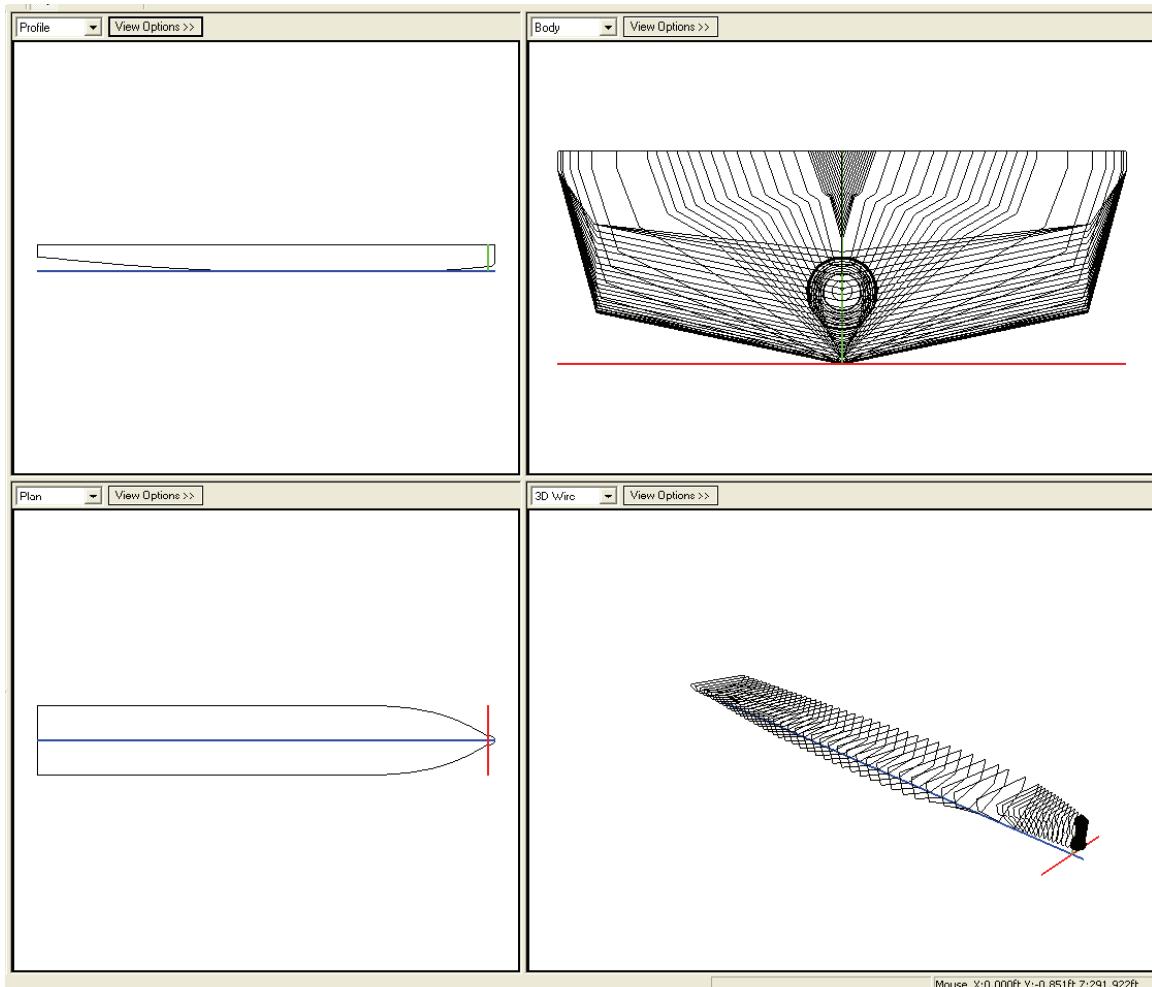


Figure 62: Ferry 09

Ferry 10

Table 64: Ferry 10 Principal Characteristics

Reference ID:	Ferry 10	
Description:	Medium Oceangoing Ferry	
Special Codes:	P, G	
Length:	370.0	ft
	112.8	m
Beam:	73.6	ft
	22.4	m
Depth:	23.5	ft
	7.2	m
Draft:	17.1	ft
	5.2	m
Displacement:	5,520	LT
	5,608	mt

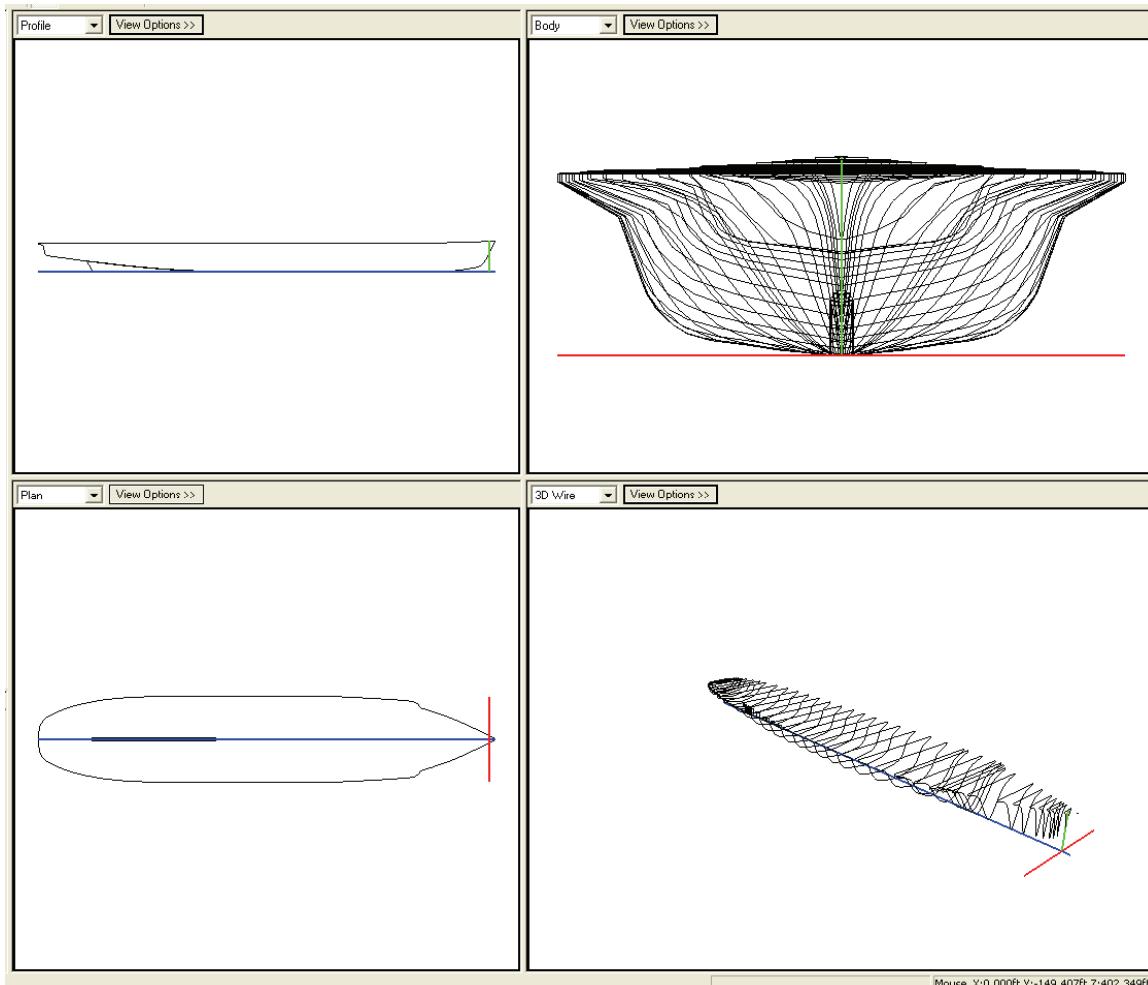


Figure 63: Ferry 10

Ferry 11

Table 65: Ferry 11 Principal Characteristics

Reference ID:	Ferry 11	
Description:	Double Ended Multi Deck RoPax Ferry	
Special Codes:	P	
Length:	300.0	ft
	91.4	m
Beam:	52.0	ft
	15.8	m
Depth:	16.5	ft
	5.0	m
Draft:	9.3	ft
	2.8	m
Displacement:	2,025	LT
	2,057	mt

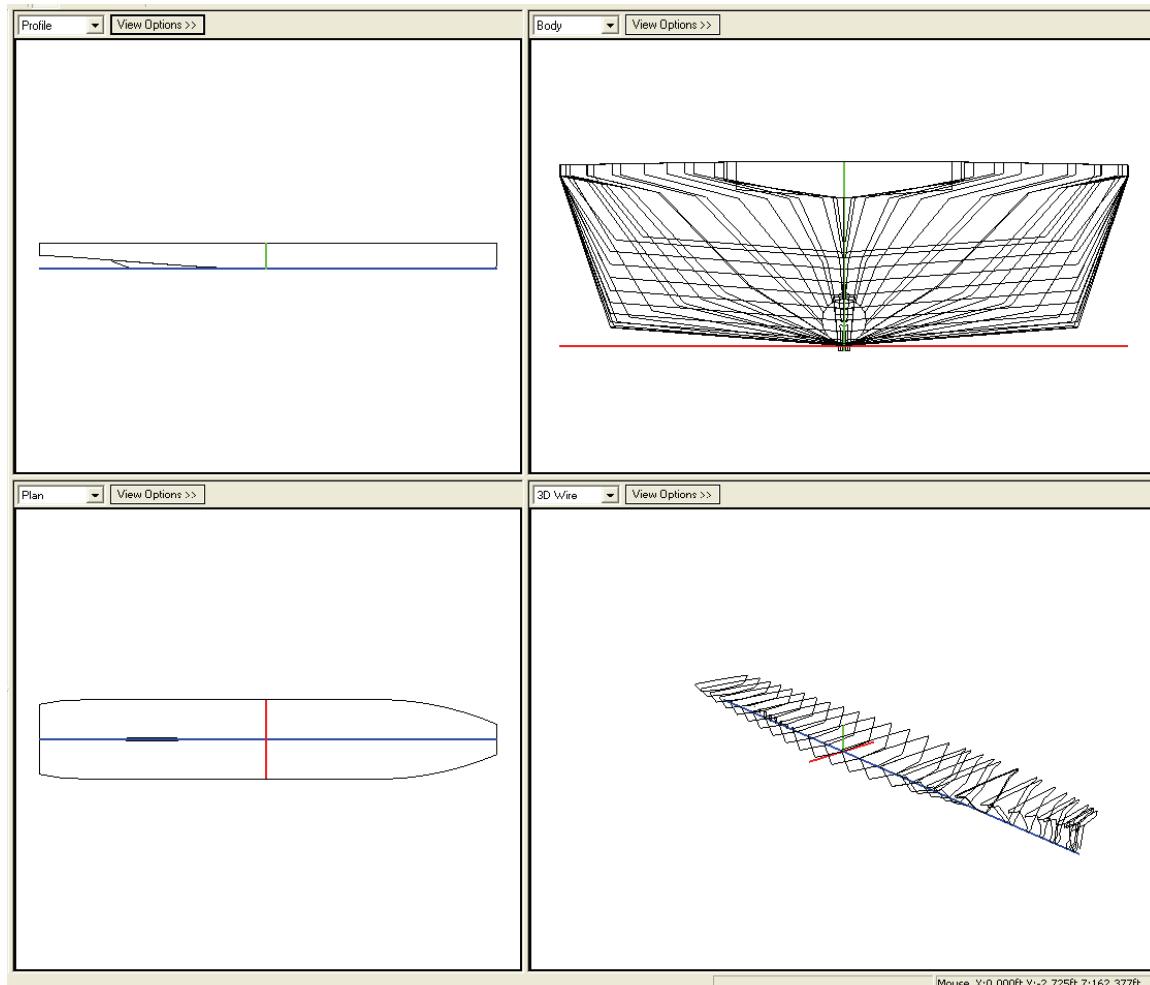


Figure 64: Ferry 11

Ferry 12

Table 66: Ferry 12 Principal Characteristics

Reference ID:	Ferry 12	
Description:	Double Ended Open Deck Ferry	
Special Codes:	P, G	
Length:	263.4	ft
	80.3	m
Beam:	65.4	ft
	19.9	m
Depth:	15.5	ft
	4.7	m
Draft:	11.0	ft
	3.4	m
Displacement:	1,725	LT
	1,753	mt

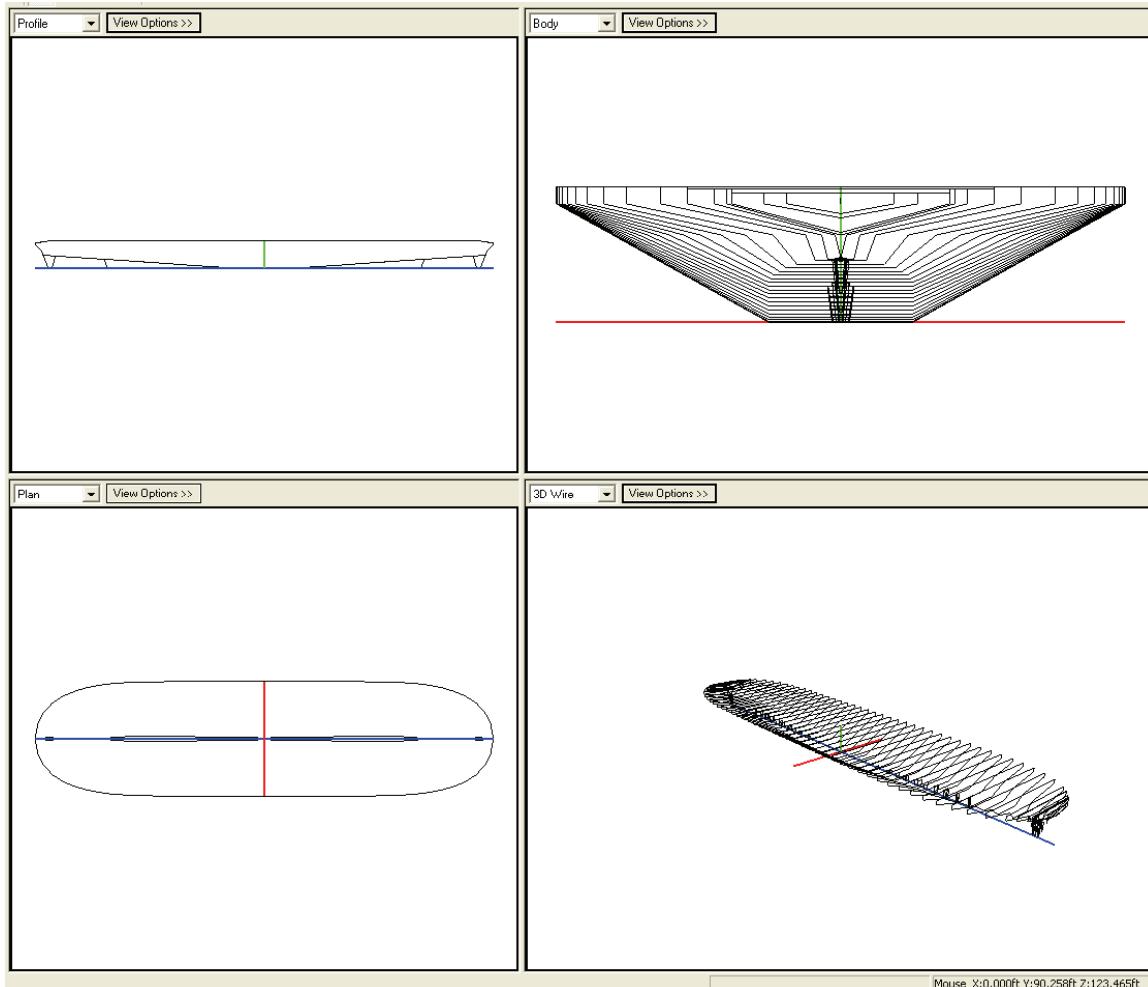


Figure 65: Ferry 12

Ferry 13

Table 67: Ferry 13 Principal Characteristics

Reference ID:	Ferry 13	
Description:	Large Coastal Ro/Pax Ferry	
Special Codes:	P	
Length:	250.0	ft
	76.2	m
Beam:	53.0	ft
	16.2	m
Depth:	18.0	ft
	5.5	m
Draft:	12.0	ft
	3.7	m
Displacement:	2,000	LT
	2,032	mt

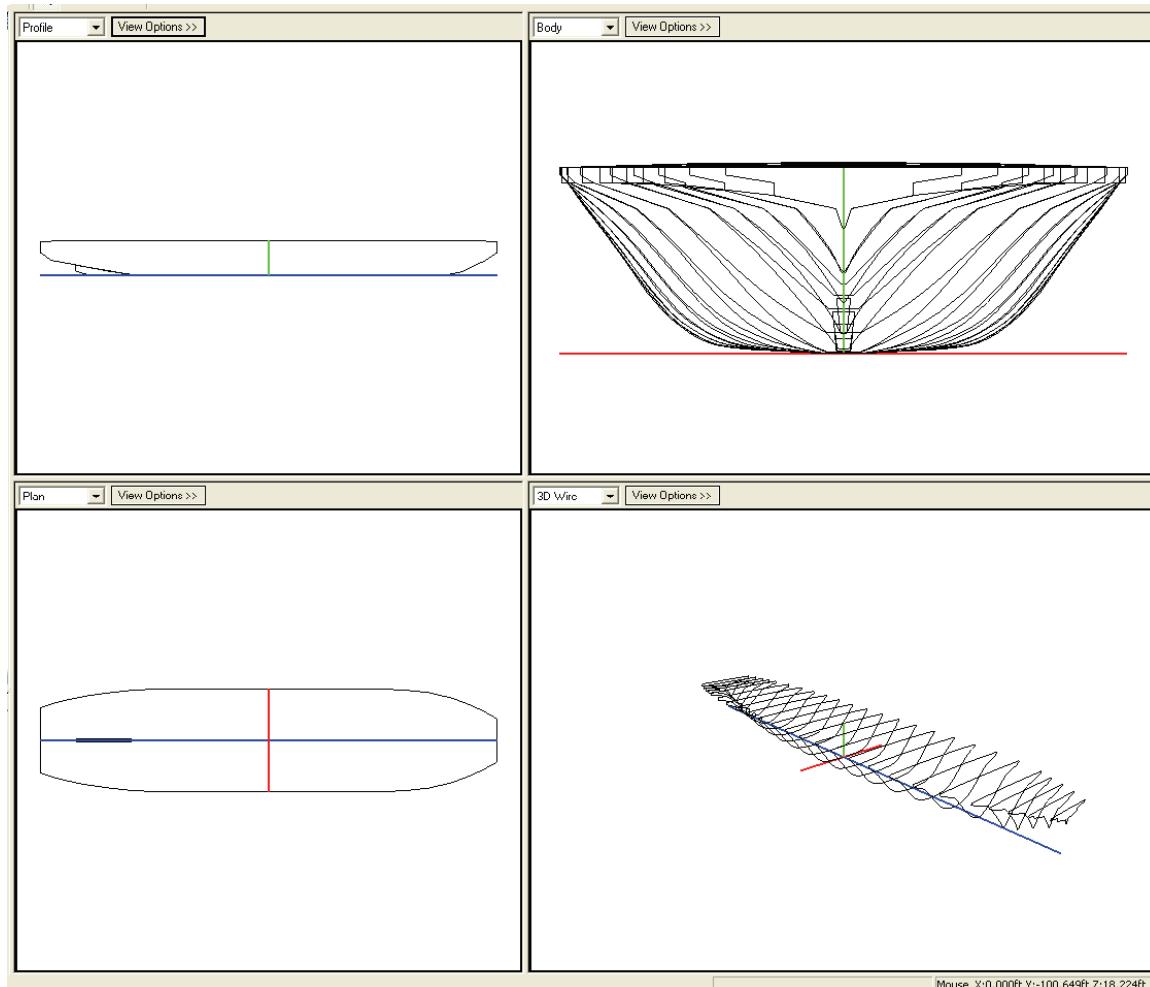


Figure 66: Ferry 13

Ferry 14

Table 68: Ferry 14 Principal Characteristics

Reference ID:	Ferry 14	
Description:	Double Ended Open Deck Ferry	
Special Codes:	P, G	
Length:	319.0	ft
	97.2	m
Beam:	73.5	ft
	22.4	m
Depth:	23.5	ft
	7.2	m
Draft:	17.0	ft
	5.2	m
Displacement:	4,319	LT
	4,388	mt

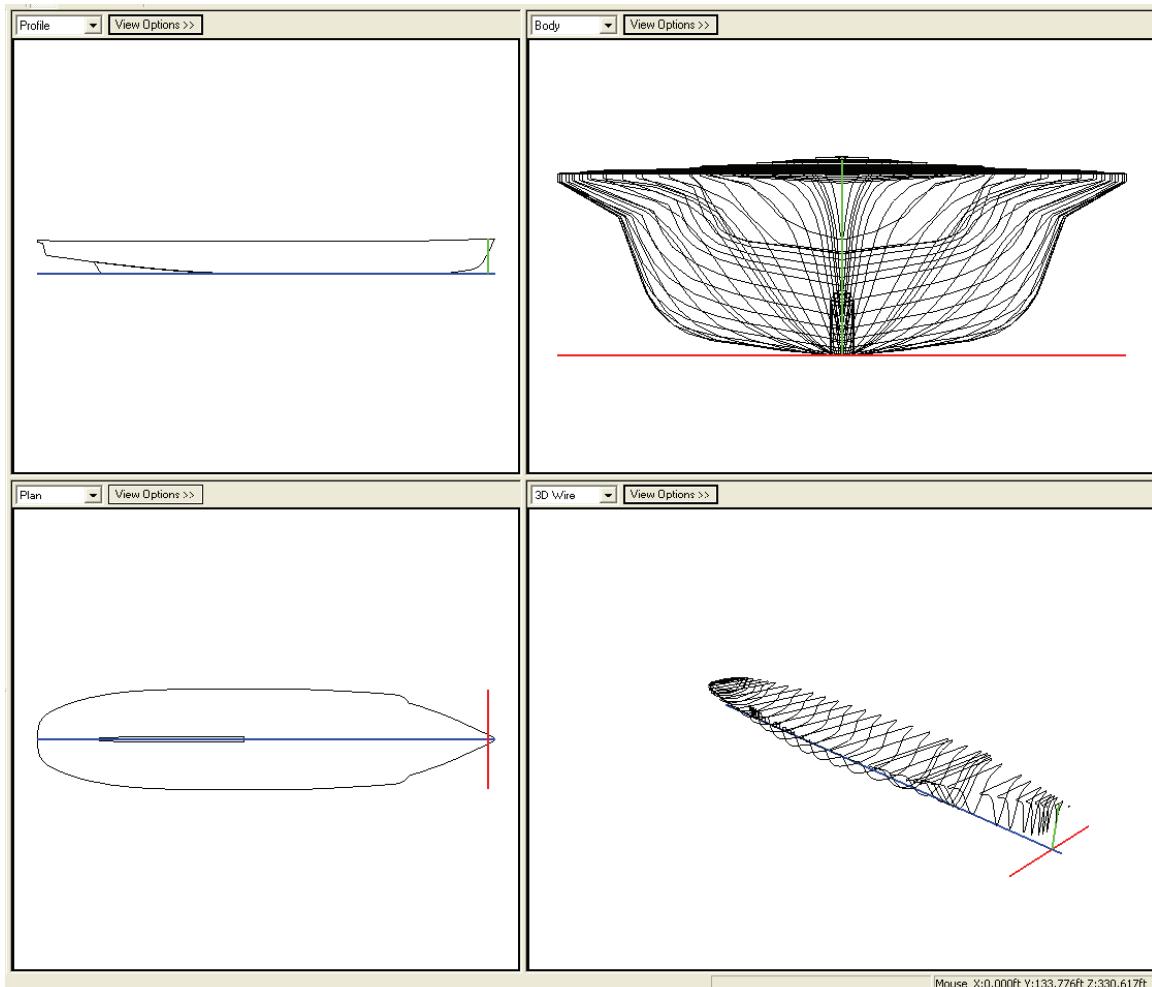


Figure 67: Ferry 14

Ferry 15

Table 69: Ferry 15 Principal Characteristics

Reference ID:	Ferry 15	
Description:	Double Ended Open Deck Ferry	
Special Codes:	P, G	
Length:	200.0	ft
	61.0	m
Beam:	64.6	ft
	19.7	m
Depth:	15.0	ft
	4.6	m
Draft:	9.8	ft
	3.0	m
Displacement:	790	LT
	803	mt

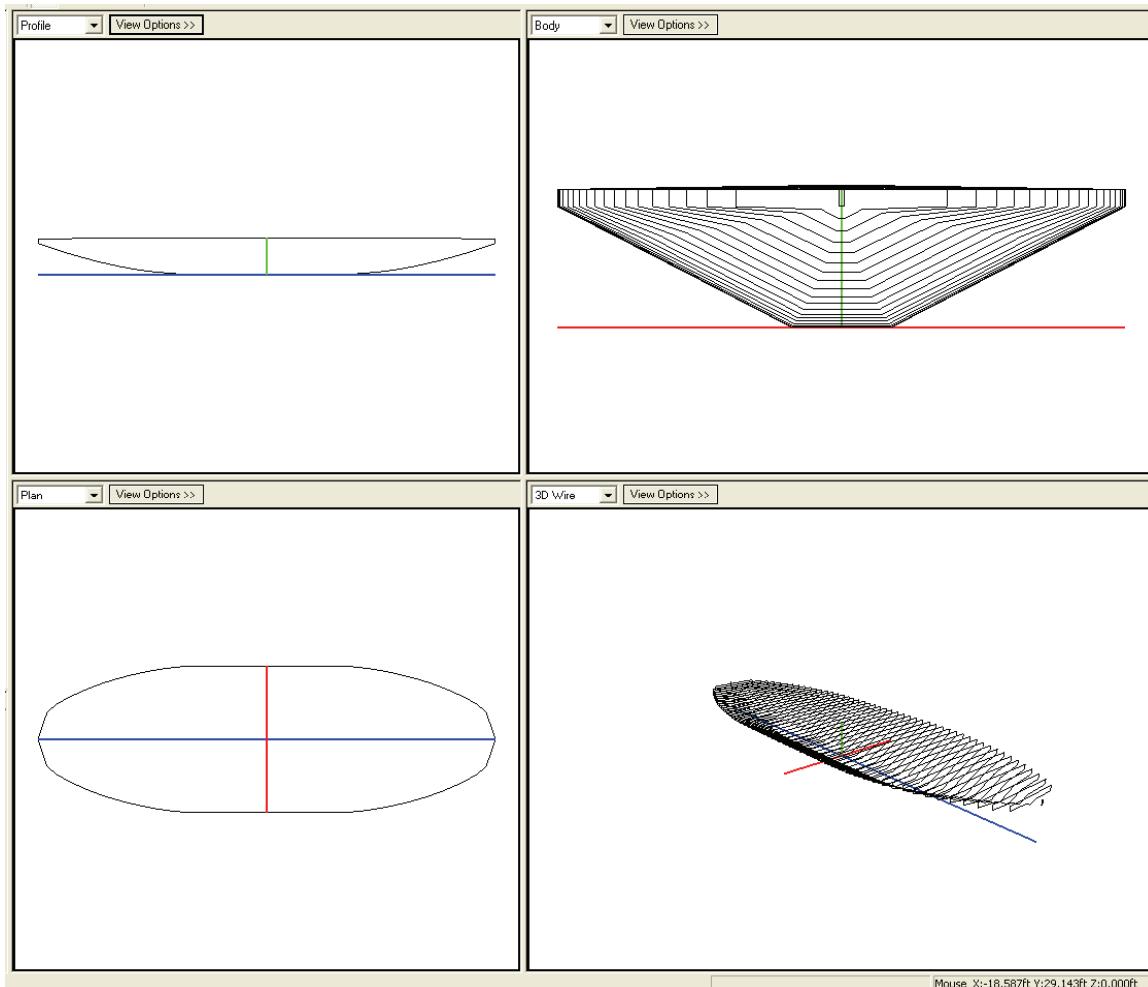


Figure 68: Ferry 15

Ferry 16

Table 70: Ferry 16 Principal Characteristics

Reference ID:	Ferry 16	
Description:	Small Oceangoing Ferry	
Special Codes:	P, G	
Length:	235.0	ft
	71.6	m
Beam:	57.0	ft
	17.4	m
Depth:	19.0	ft
	5.8	m
Draft:	14.0	ft
	4.3	m
Displacement:	2,100	LT
	2,134	mt

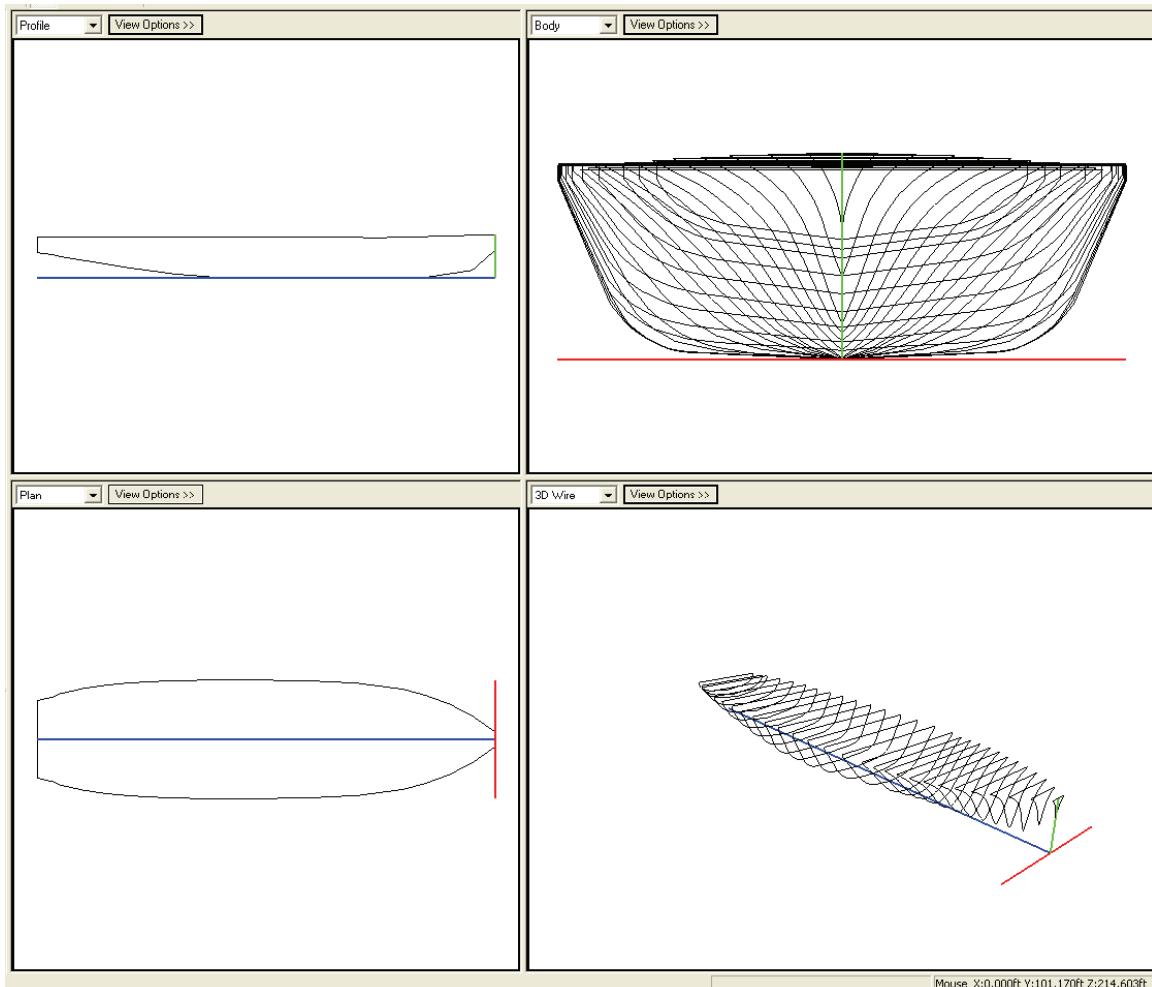


Figure 69: Ferry 16

Ferry 17

Table 71: Ferry 17 Principal Characteristics

Reference ID:	Ferry 17	
Description:	Large Double Ended Multi Deck Ferry	
Special Codes:	P, G	
Length:	418.0	ft
	127.4	m
Beam:	90.0	ft
	27.4	m
Depth:	25.8	ft
	7.8	m
Draft:	16.3	ft
	5.0	m
Displacement:	4,850	LT
	4,928	mt

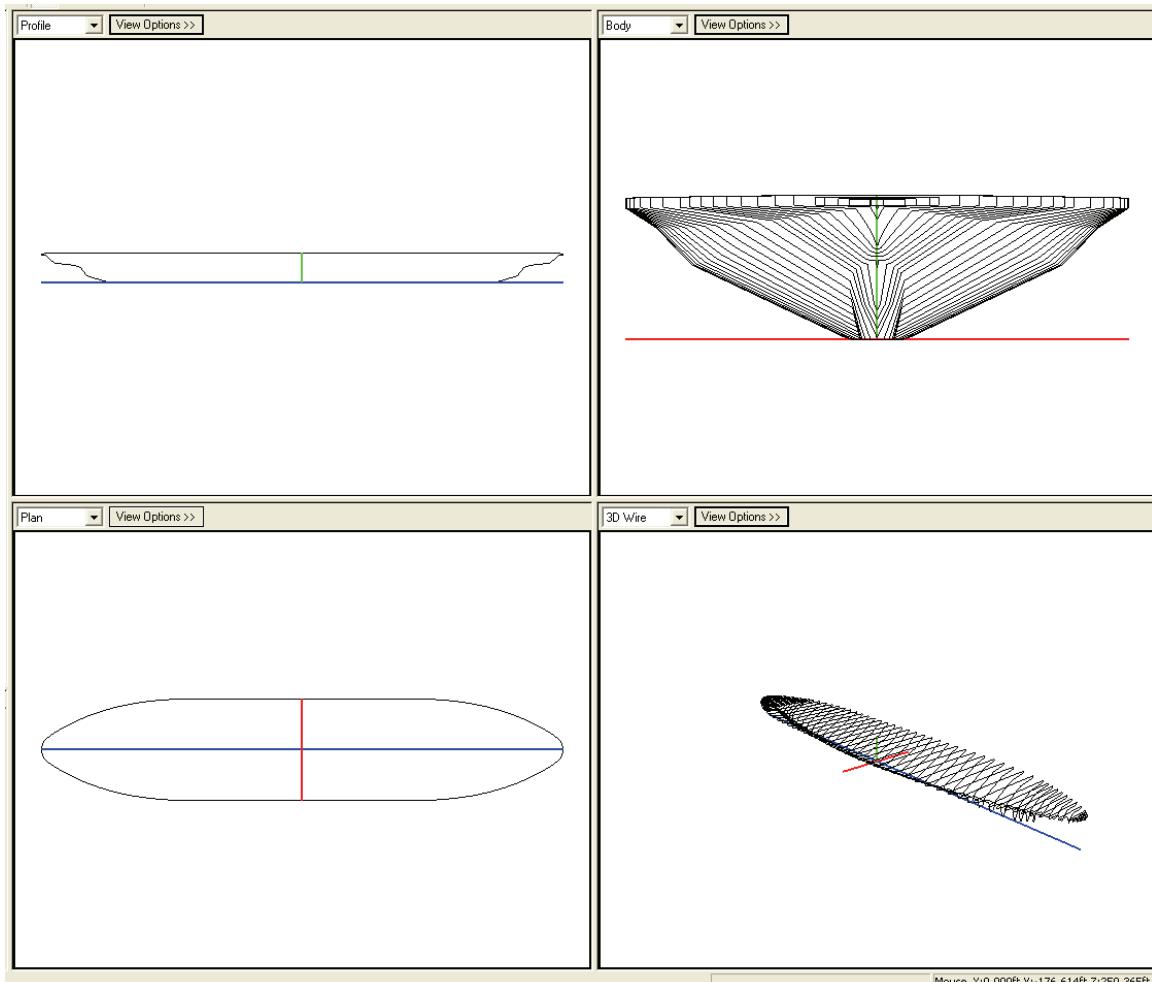


Figure 70: Ferry 17

Fishing Vessels

Fishing Vessel 01

Table 72: Fishing Vessel 01 Principal Characteristics

Reference ID:	Fishing Vessel 01	
Description:	Fishing Vessel	
Special Codes:	P, C	
Length:	142.7	ft
	43.5	m
Beam:	38.0	ft
	11.6	m
Depth:	24.0	ft
	7.3	m
Draft:	11.7	ft
	3.6	m
Displacement:	1,025	LT
	1,041	mt

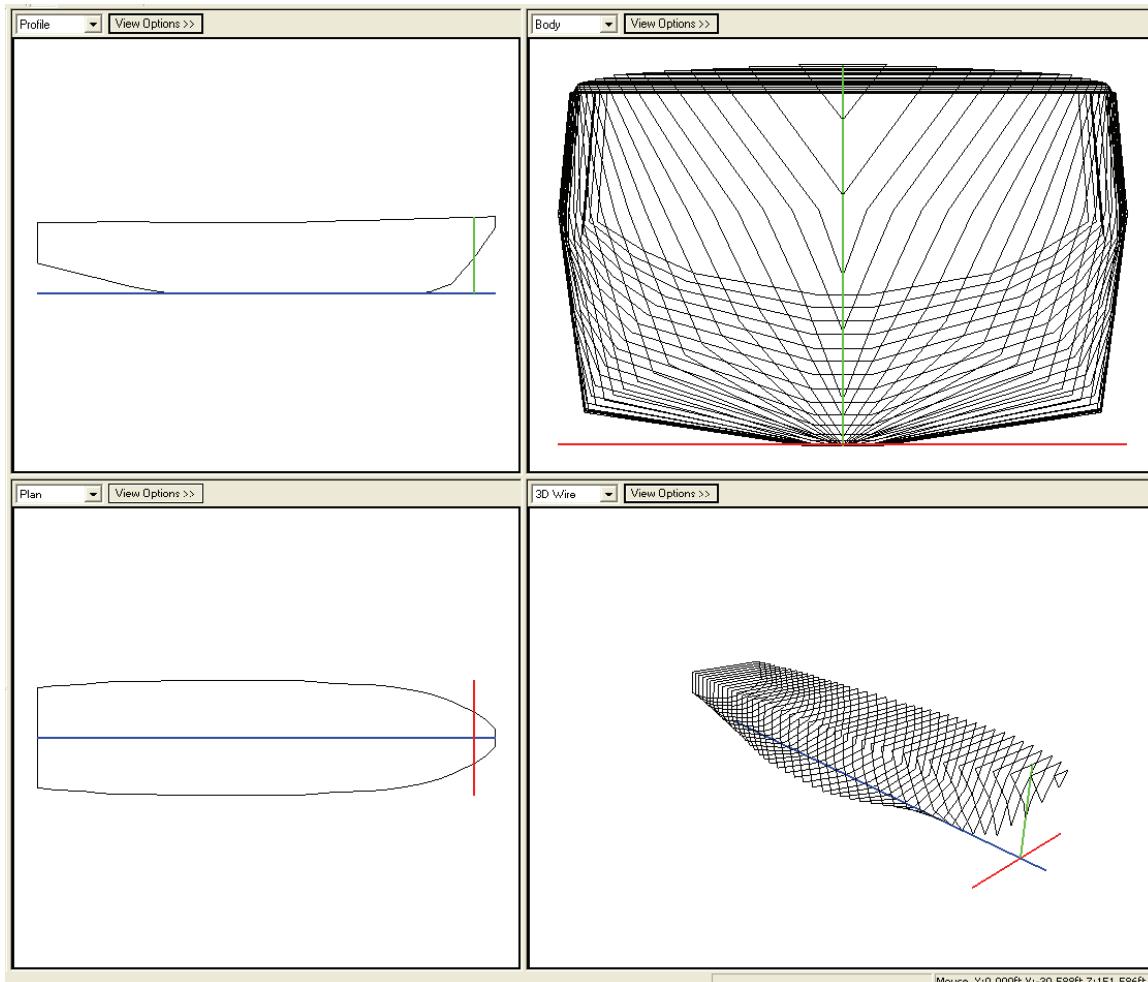


Figure 71: Fishing Vessel 01

Fishing Vessel 02

Table 73: Fishing Vessel 02 Principal Characteristics

Reference ID:	Fishing Vessel 02	
Description:	Fishing Vessel Tender	
Special Codes:	P	
Length:	186.0	ft
	56.7	m
Beam:	41.5	ft
	12.6	m
Depth:	28.0	ft
	8.5	m
Draft:	17.7	ft
	5.4	m
Displacement:	2,680	LT
	2,723	mt

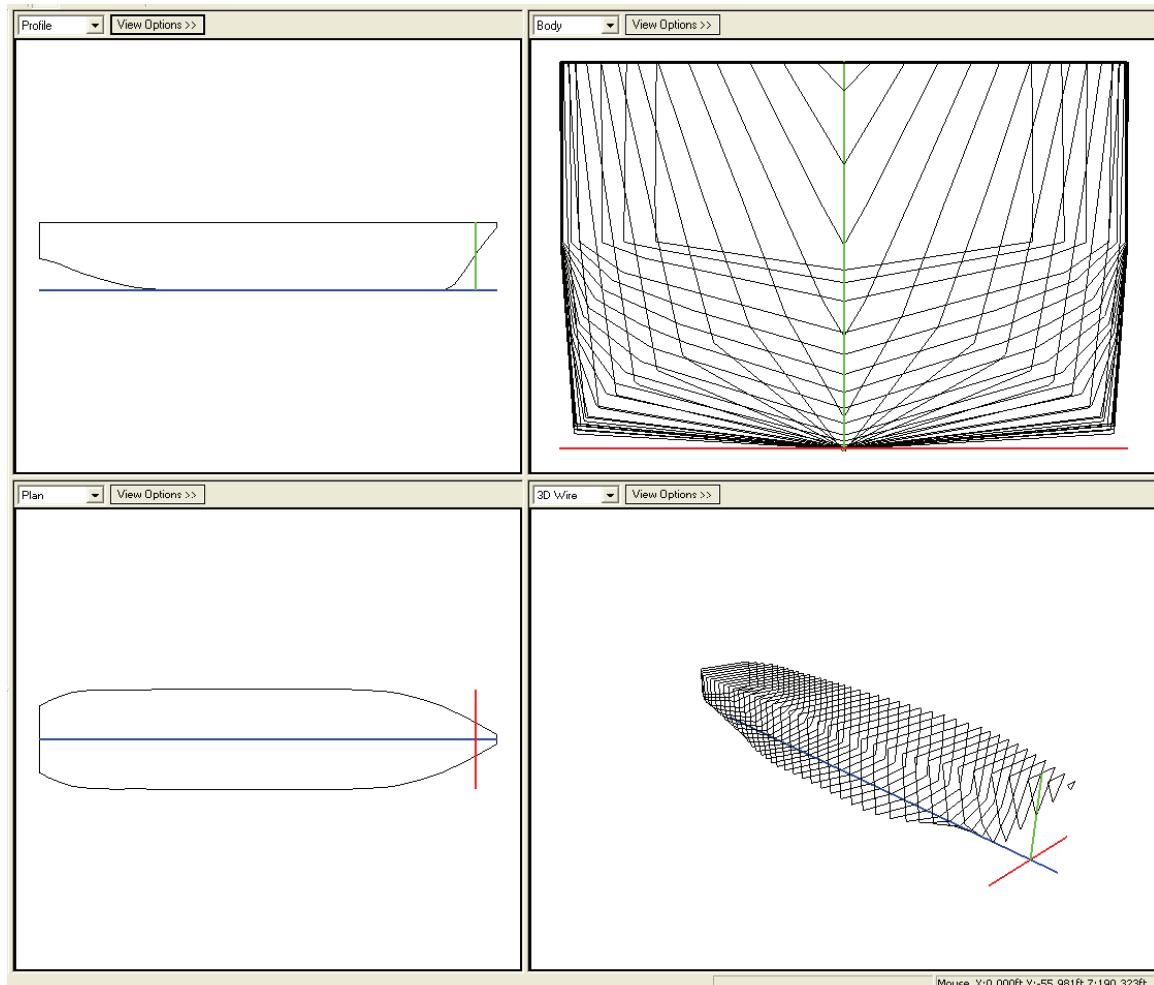


Figure 72: Fishing Vessel 02

Fishing Vessel 03

Table 74: Fishing Vessel 03 Principal Characteristics

Reference ID:	Fishing Vessel 03	
Description:	Factory Stern Trawler	
Special Codes:	P	
Length:	308.0	ft
	93.9	m
Beam:	51.0	ft
	15.5	m
Depth:	36.0	ft
	11.0	m
Draft:	19.0	ft
	5.8	m
Displacement:	6,445	LT
	6,548	mt

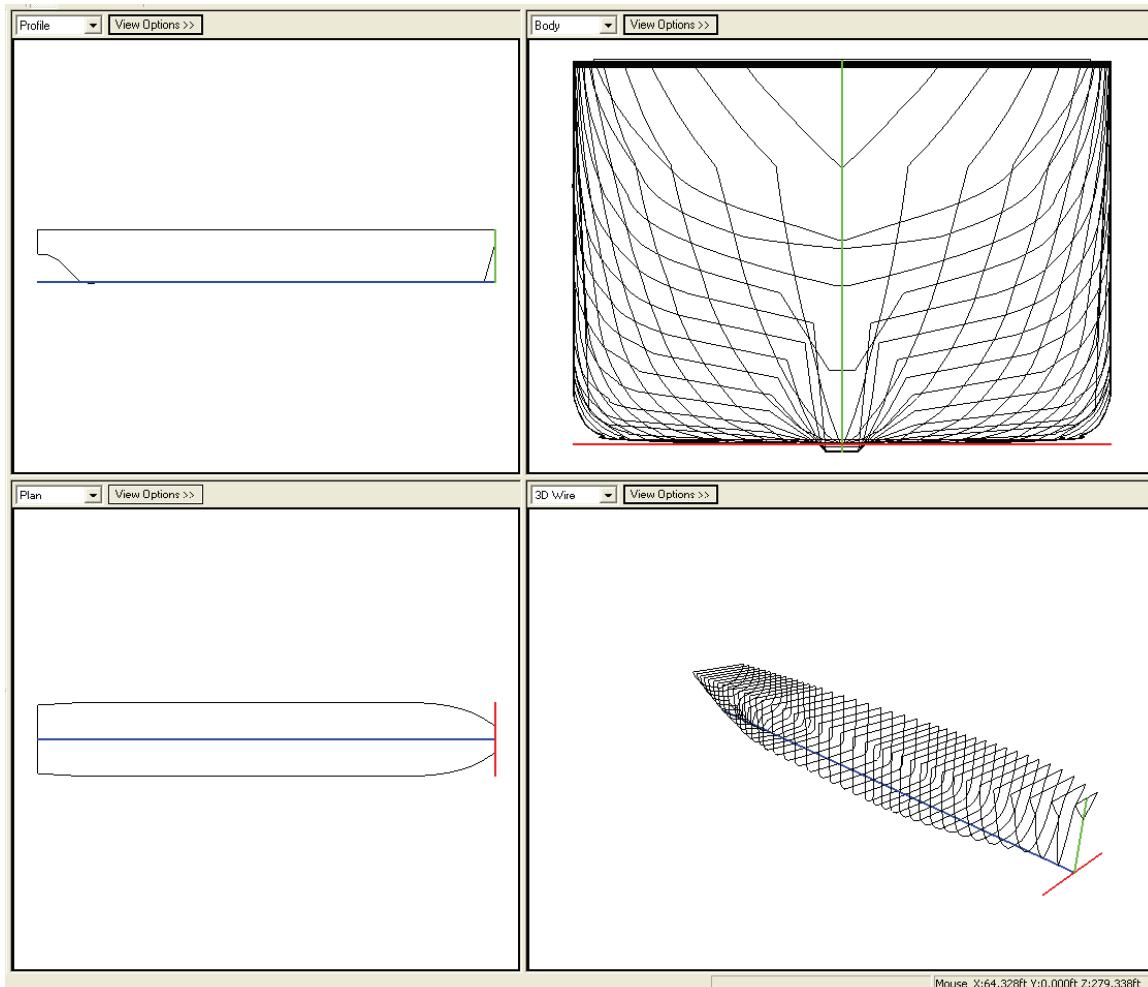


Figure 73: Fishing Vessel 03

Fishing Vessel 04

Table 75: Fishing Vessel 04 Principal Characteristics

Reference ID:	Fishing Vessel 04	
Description:	Fishing Trawler	
Special Codes:	P	
Length:	376.0	ft
	114.6	m
Beam:	60.0	ft
	18.3	m
Depth:	37.5	ft (above baseline)
	11.4	m
Draft:	21.3	ft
	6.5	m
Displacement:	9,725	LT
	9,881	mt

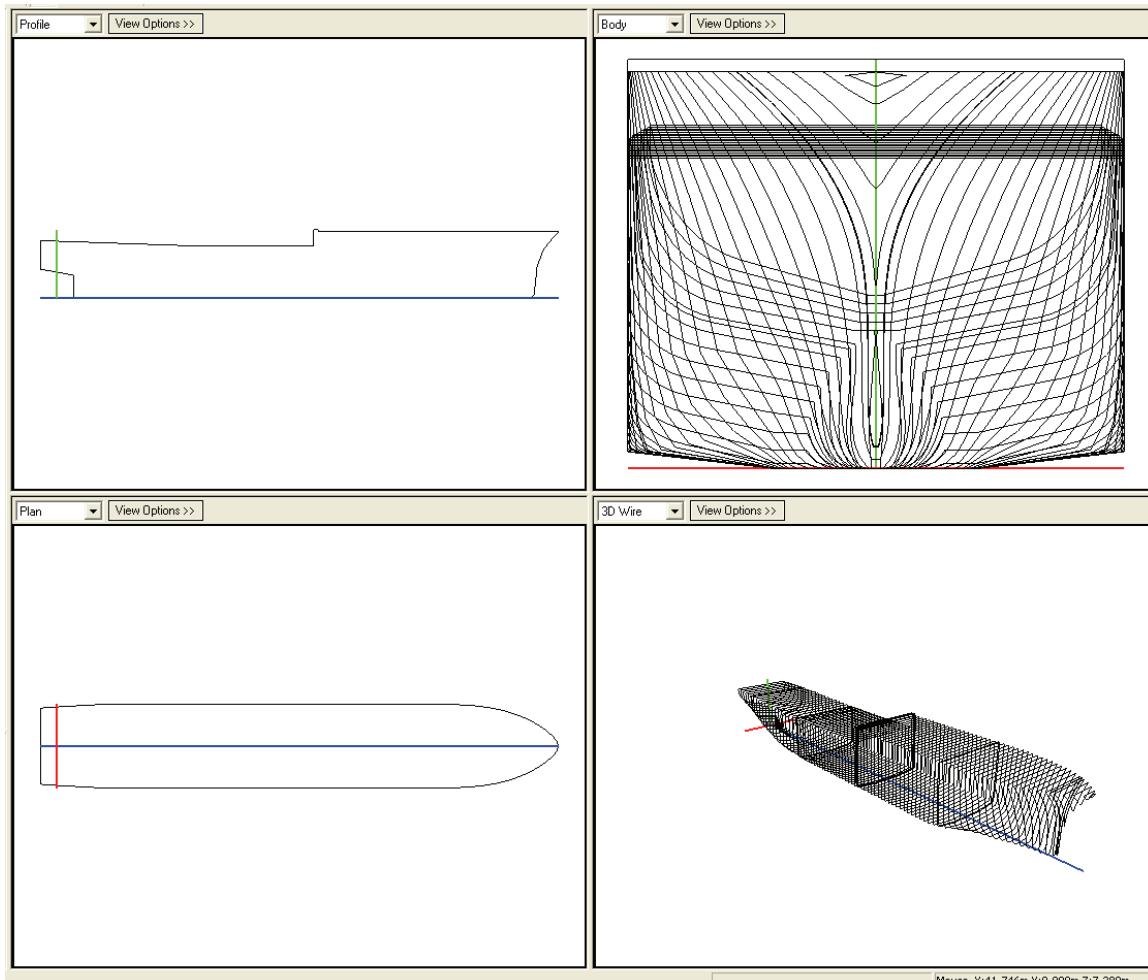


Figure 74: Fishing Vessel 04

General Cargo Vessels

General Cargo 01

Table 76: General Cargo 01 Principal Characteristics

Reference ID:	General Cargo 01
Description:	General Cargo
Special Codes:	P, C
Length:	522.0 ft 159.1 m
Beam:	68.9 ft 21.0 m
Depth:	41.3 ft 12.6 m
Draft:	23.8 ft 7.2 m
Displacement:	16,170 LT 16,429 mt

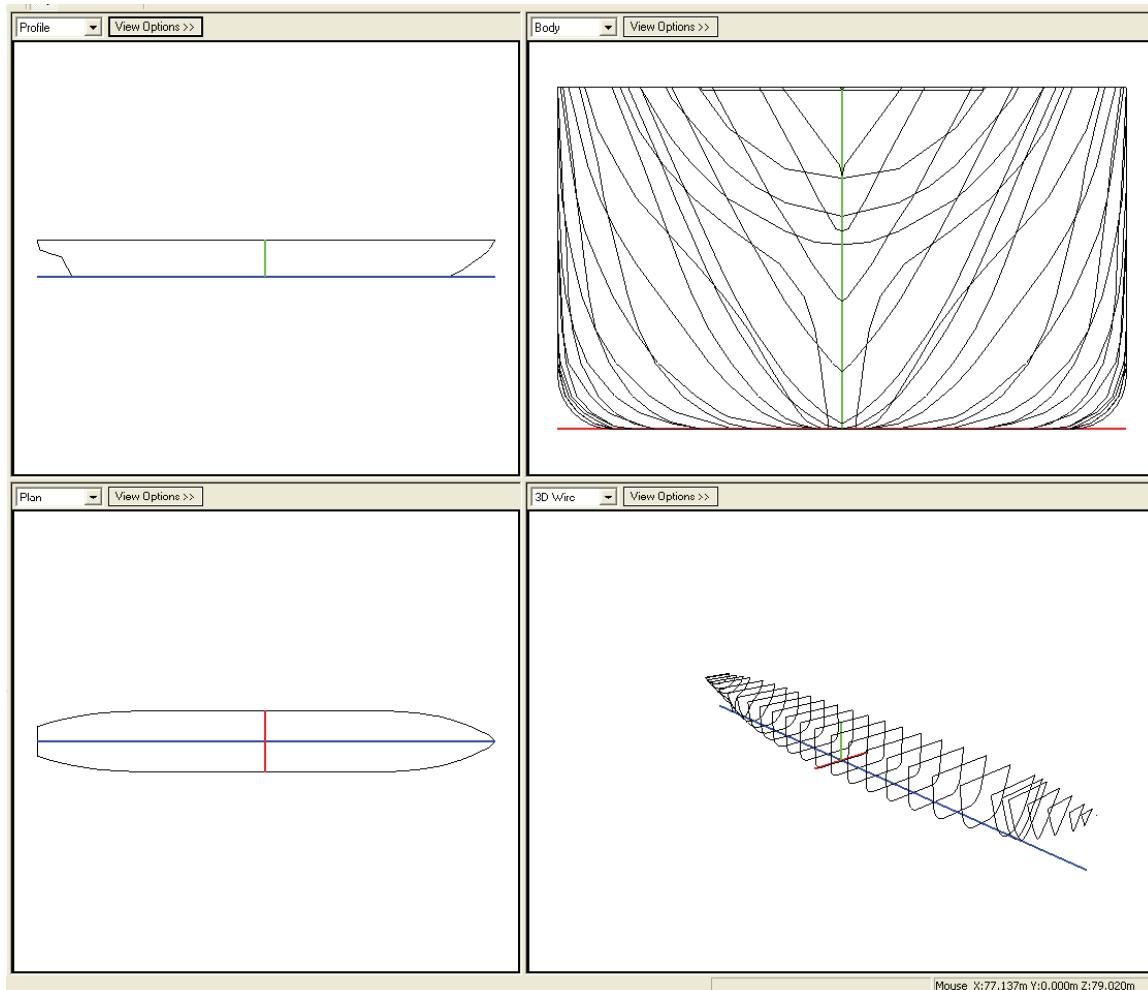


Figure 75: General Cargo 01

General Cargo 02

Table 77: General Cargo 02 Principal Characteristics

Reference ID:	General Cargo 02	
Description:	Small Breakbulk, Heavy Lift	
Special Codes:	P, C	
Length:	289.3	ft
	88.2	m
Beam:	50.9	ft
	15.5	m
Depth:	28.2	ft
	8.6	m
Draft:	15.1	ft
	4.6	m
Displacement:	3,525	LT
	3,581	mt

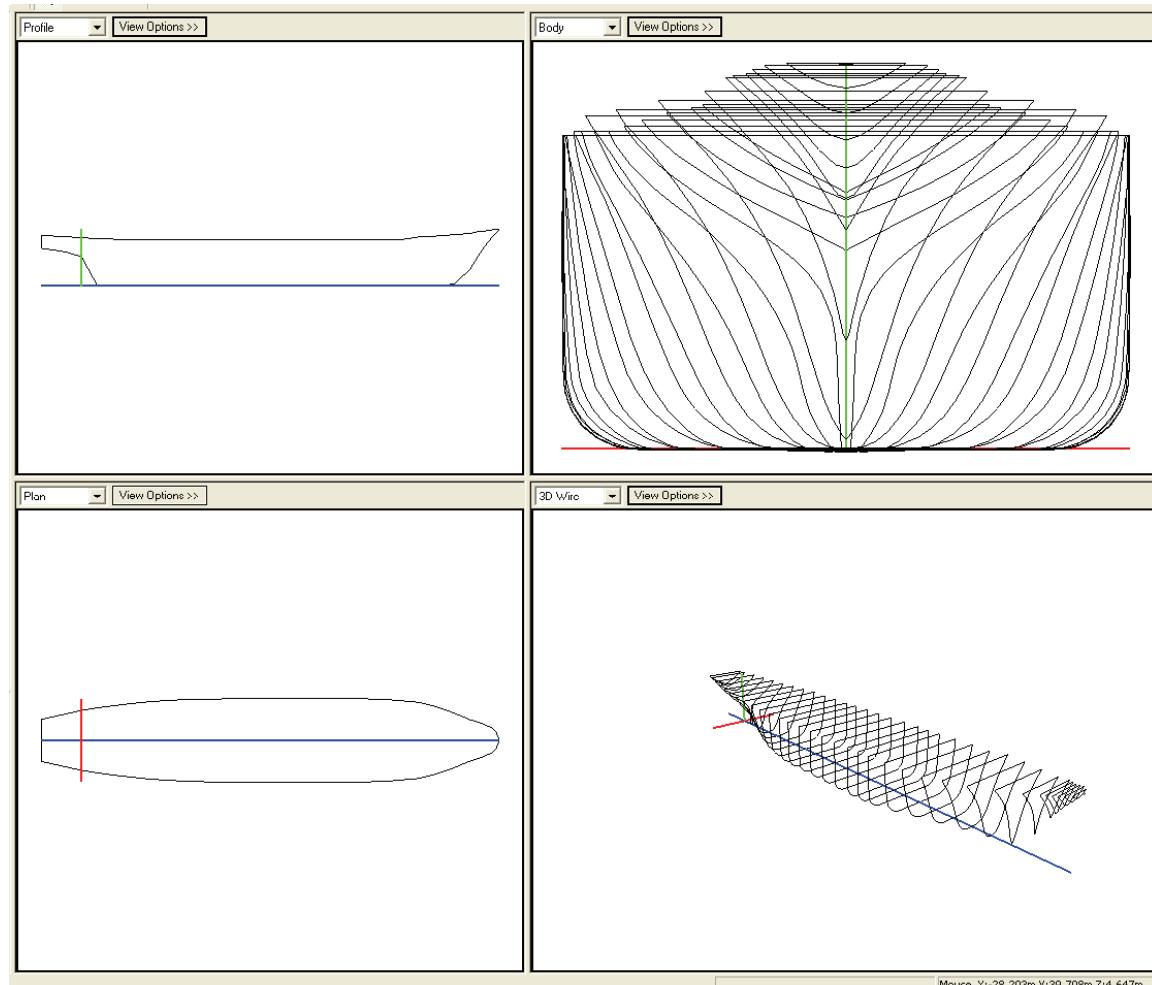


Figure 76: General Cargo 02

General Cargo 03

Table 78: General Cargo 03 Principal Characteristics

Reference ID:	General Cargo 03	
Description:	Ice Strengthened Break Bulk	
Special Codes:		
Length:	507.0	ft
	154.5	m
Beam:	69.0	ft
	21.0	m
Depth:	35.0	ft
	10.7	m
Draft:	26.8	ft
	8.2	m
Displacement:	16,000	LT
	16,256	mt

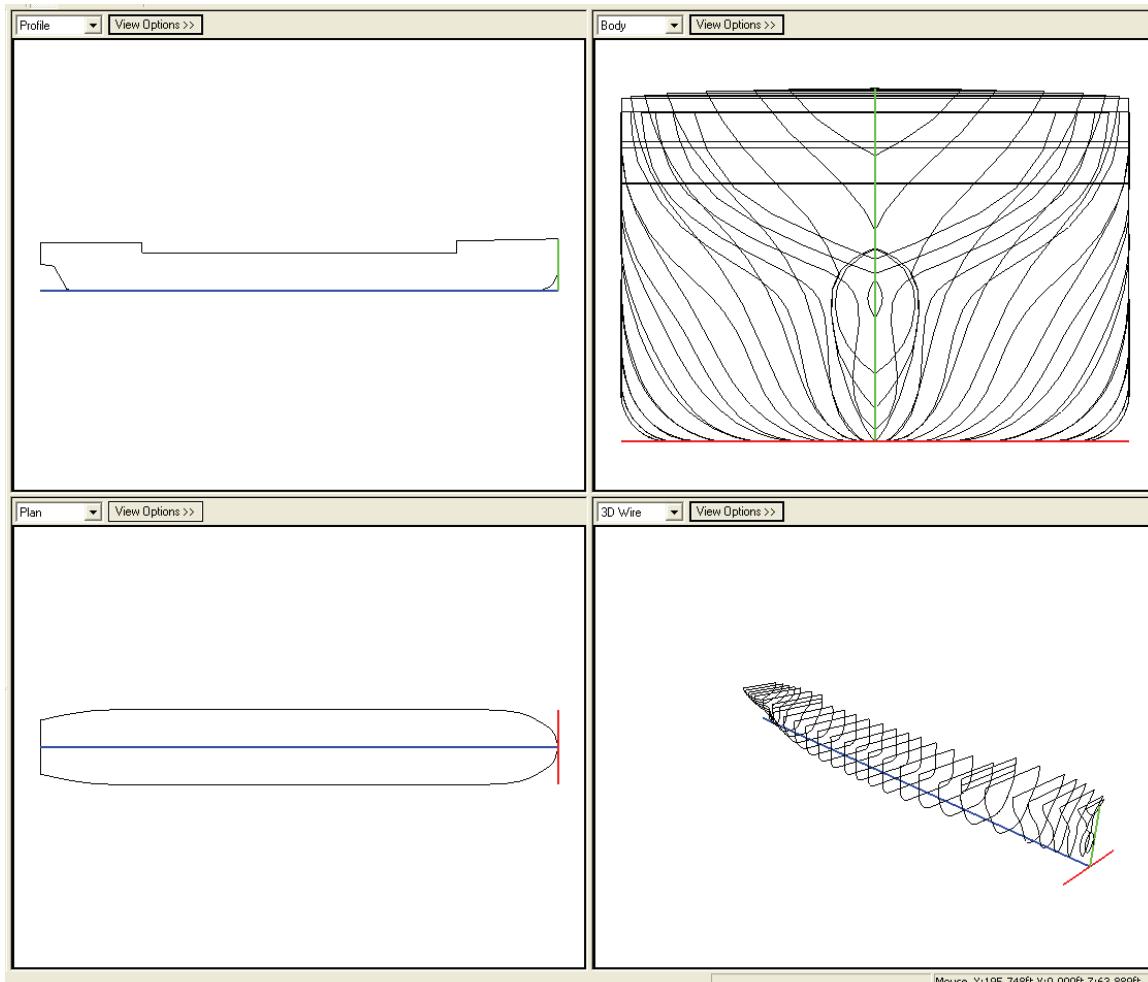


Figure 77: General Cargo 03

Naval Amphibious Vessels

Naval Amphib 01

Table 79: Naval Amphib 01 Principal Characteristics

Reference ID:	Naval Amphib 01
Description:	Dock Landing Ship
Special Codes:	G
Length:	553.0 ft 168.6 m
Beam:	85.0 ft 25.9 m
Depth:	52.6 ft 16.0 m
Draft:	19.2 ft 5.8 m
Displacement:	14,000 LT 14,224 mt

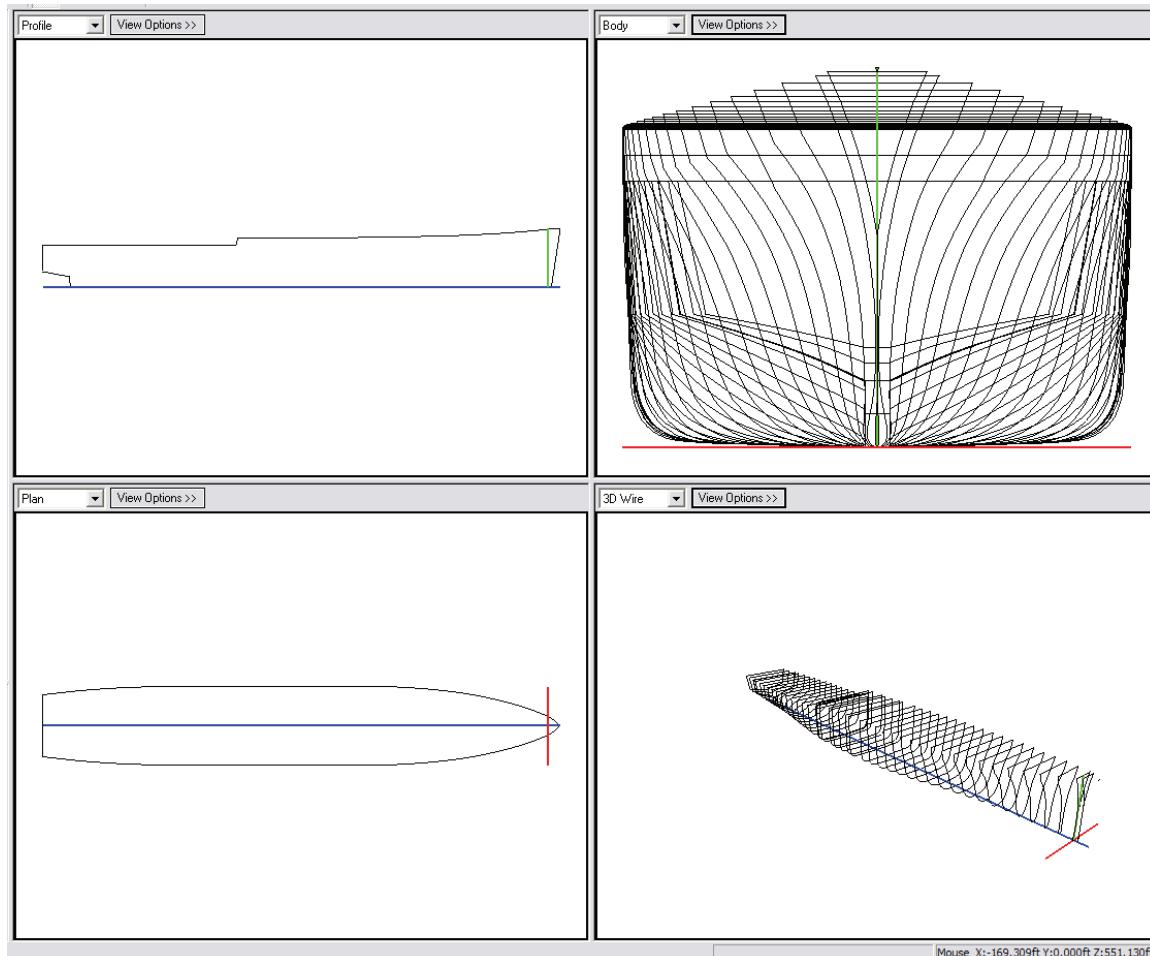


Figure 78: Naval Amphib 01

Naval Amphib 02

Table 80: Naval Amphib 02 Principal Characteristics

Reference ID:	Naval Amphib 02	
Description:	Dock Landing Ship	
Special Codes:	G	
Length:	580.0	ft
	176.8	m
Beam:	84.0	ft
	25.6	m
Depth:	53.0	ft
	16.2	m
Draft:	21.0	ft
	6.4	m
Displacement:	16,360	LT
	16,622	mt

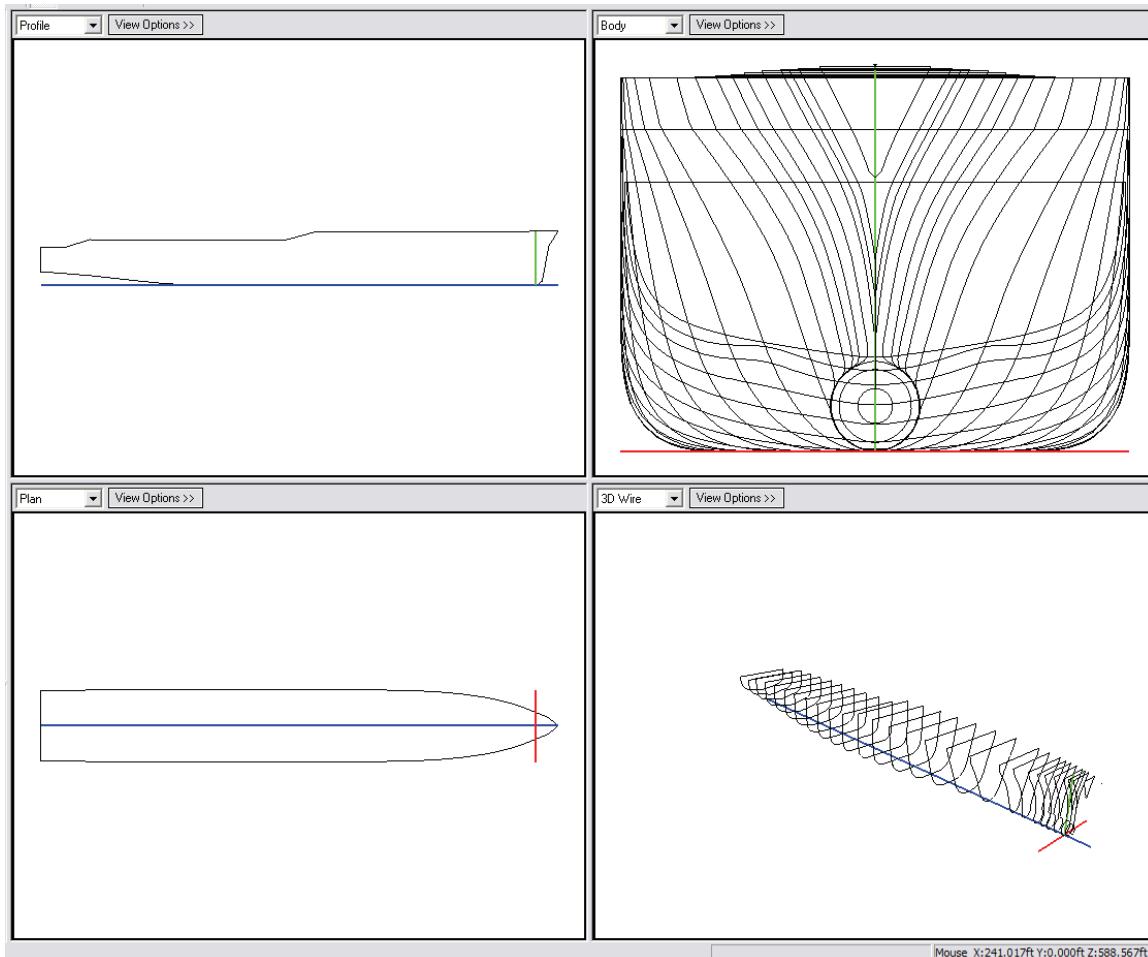


Figure 79: Naval Amphib 02

Naval Amphib 03

Table 81: Naval Amphib 03 Principal Characteristics

Reference ID:	Naval Amphib 03
Description:	Amphibious Assault Ship
Special Codes:	G
Length:	568.0 ft 173.1 m
Beam:	84.0 ft 25.6 m
Depth:	76.5 ft 123.3 m
Draft:	29.0 ft 8.8 m
Displacement:	20,285 LT 20,616 mt

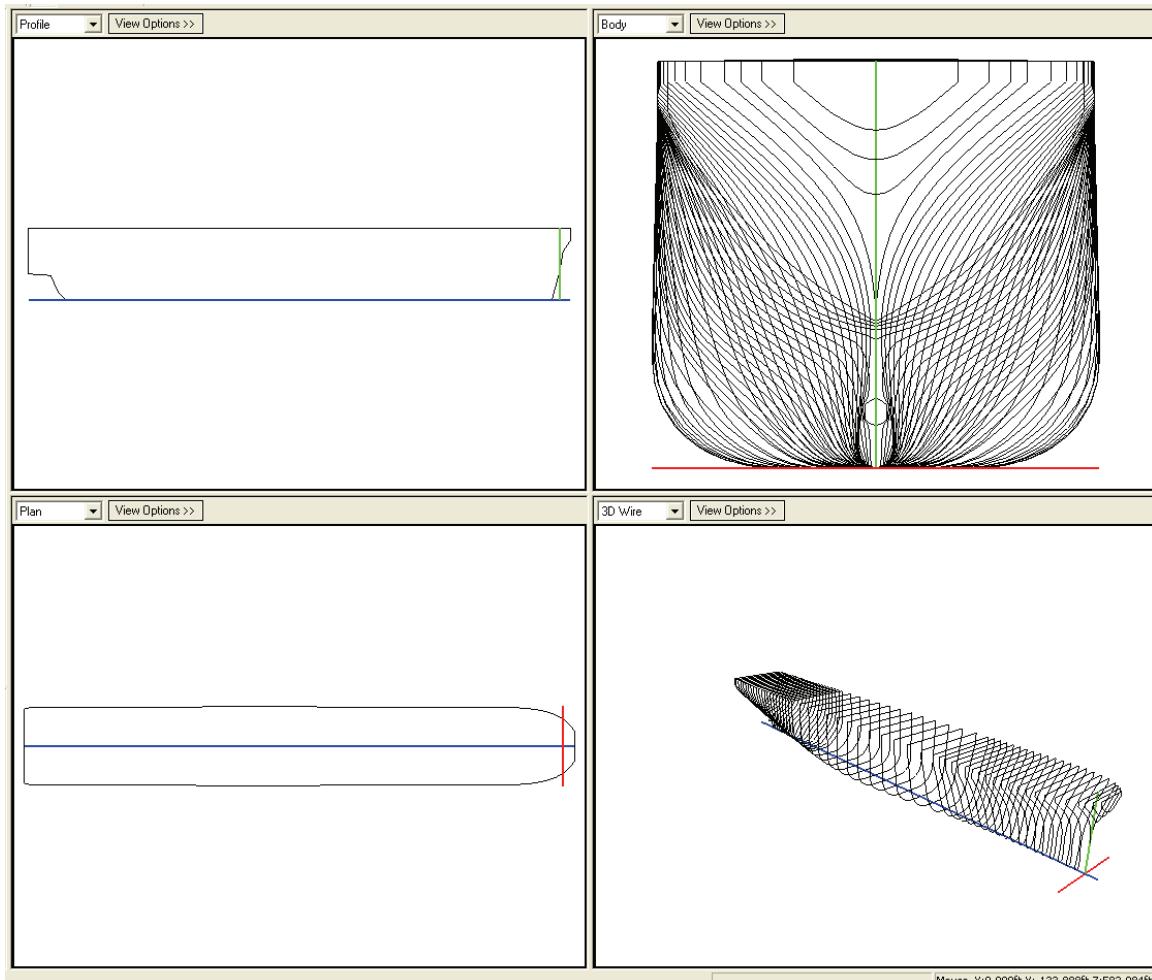


Figure 80: Naval Amphib 03

Naval Amphib 04

Table 82: Naval Amphib 04 Principal Characteristics

Reference ID:	Naval Amphib 04	
Description:	Amphibious Dock Transport	
Special Codes:	G	
Length:	661.0	ft
	201.5	m
Beam:	105.0	ft
	32.0	m
Depth:	62.3	ft
	19.0	m
Draft:	23.0	ft
	7.0	m
Displacement:	25,000	LT
	25,400	mt

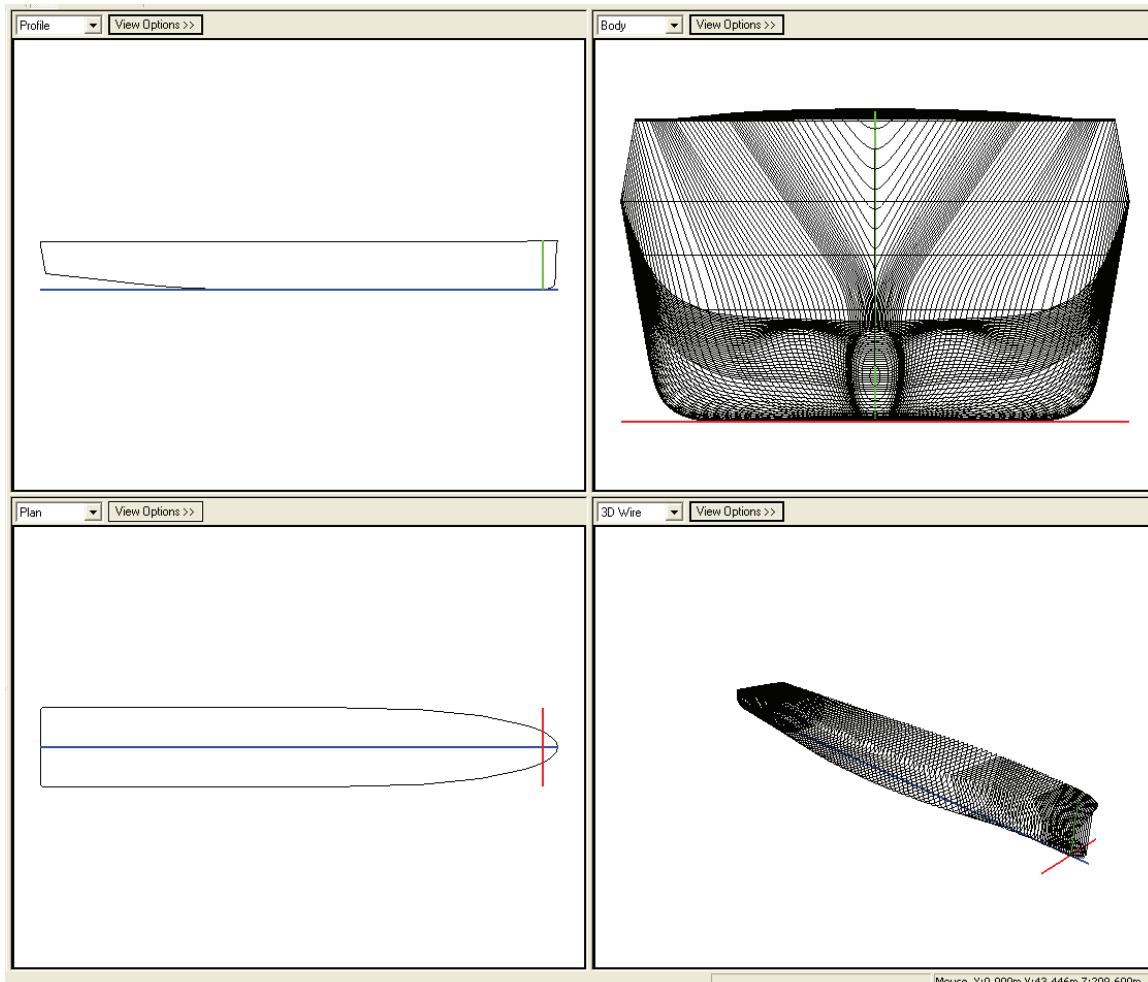


Figure 81: Naval Amphib 04

Naval Auxiliary Vessels

Naval Auxiliary 01

Table 83: Naval Auxiliary 01 Principal Characteristics

Reference ID:	Naval Auxiliary 01	
Description:	Fast Combat Support Ship	
Special Codes:	G	
Length:	754.0	Ft
	229.8	m
Beam:	107.0	ft
	32.6	m
Depth:	66.2	ft
	20.2	m
Draft:	38.3	ft
	11.7	m
Displacement:	48,800	LT
	49,581	mt

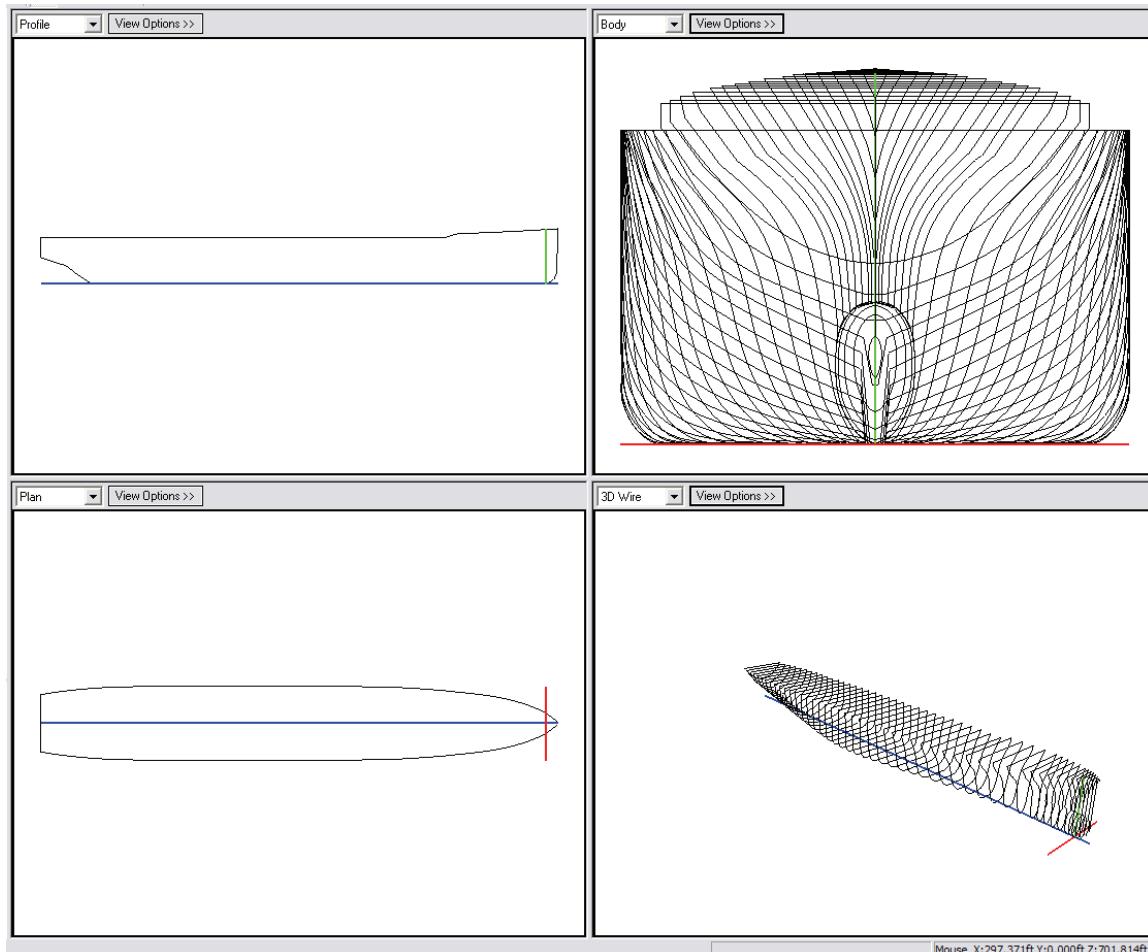


Figure 82: Naval Auxiliary 01

Naval Auxiliary 02

Table 84: Naval Auxiliary 02 Principal Characteristics

Reference ID:	Naval Auxiliary 02	
Description:	Fast Combat Support	
Special Codes:	G	
Length:	795.0	ft
	242.3	m
Beam:	107.0	ft
	32.6	m
Depth:	55.9	ft
	17.0	m
Draft:	39.0	ft
	11.9	m
Displacement:	53,000	LT
	53,848	mt

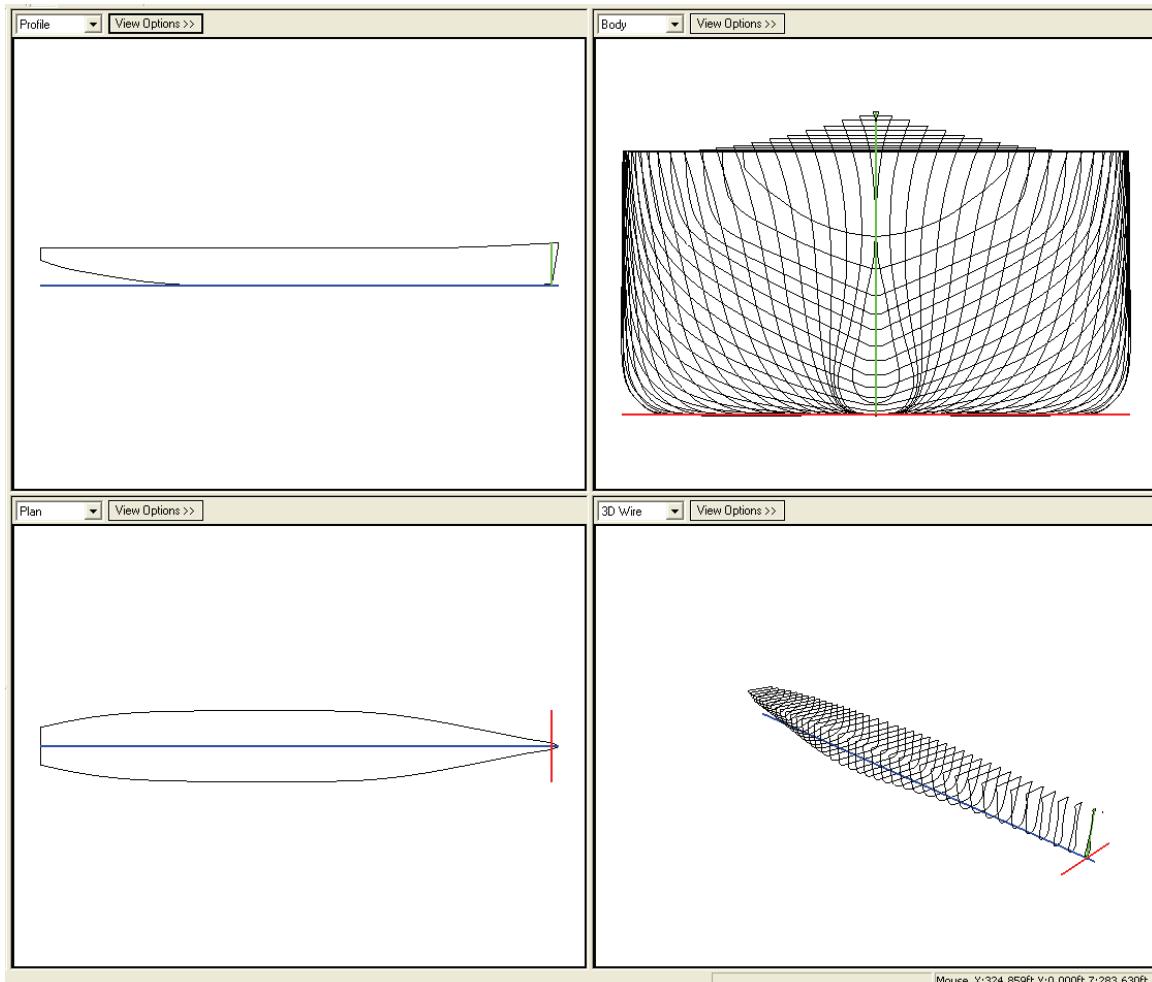


Figure 83: Naval Auxiliary 02

Naval Auxiliary 03

Table 85: Naval Auxiliary 03 Principal Characteristics

Reference ID:	Naval Auxiliary 03	
Description:	Destroyer Tender	
Special Codes:	G	
Length:	642.0	ft
	195.7	m
Beam:	85.0	ft
	25.9	m
Depth:	66.5	ft
	20.3	m
Draft:	25.0	ft (baseline)
	7.6	m
Displacement:	20,265	LT
	20,589	mt

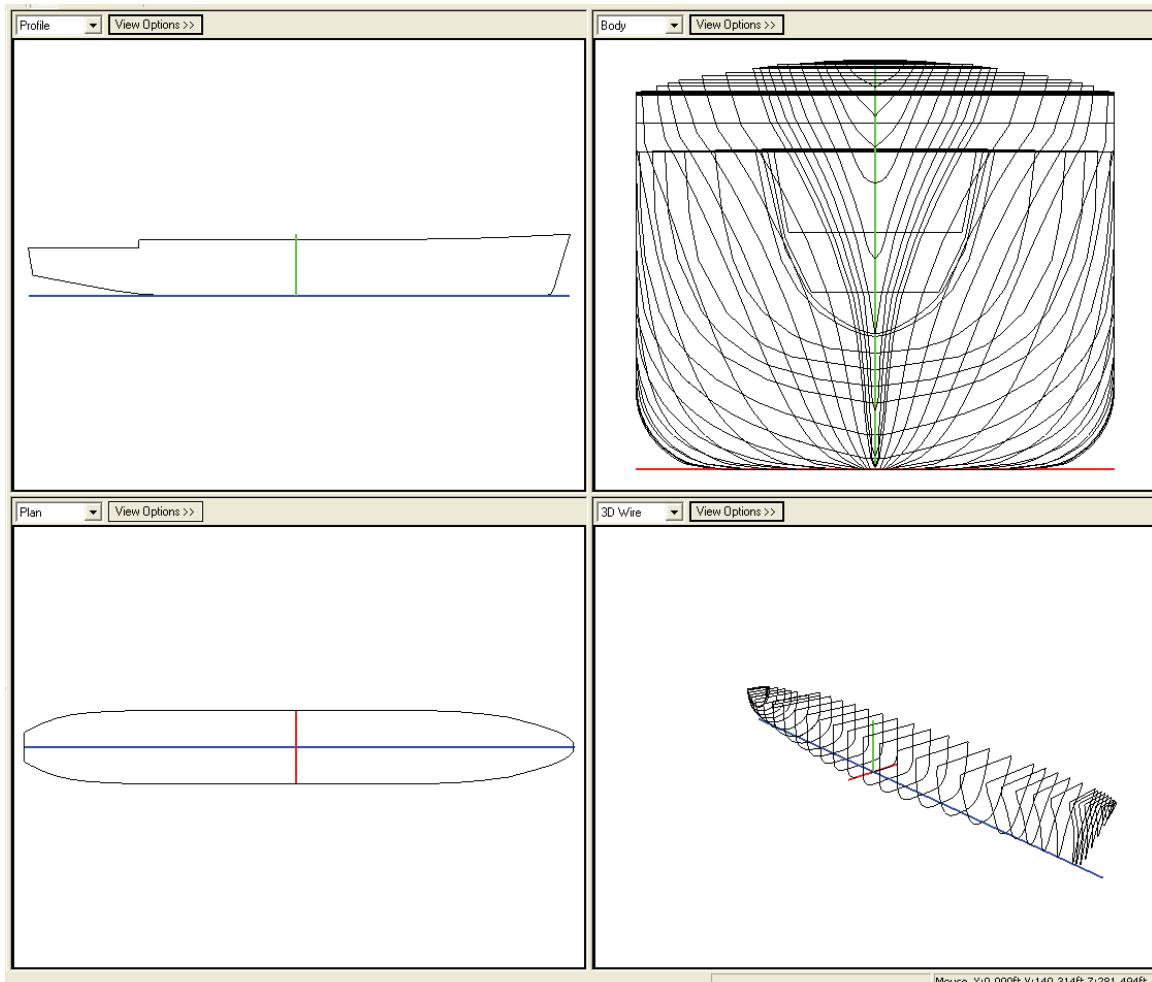


Figure 84: Naval Auxiliary 03

Naval Auxiliary 04

Table 86: Naval Auxiliary 04 Principal Characteristics

Reference ID:	Naval Auxiliary 04	
Description:	Submarine Tender	
Special Codes:	G	
Length:	643.0	ft
	196.0	m
Beam:	85.0	ft
	25.9	m
Depth:	56.5	ft (above baseline)
	17.2	m
Draft:	29.0	ft
	8.8	m
Displacement:	23,400	LT
	23,774	mt

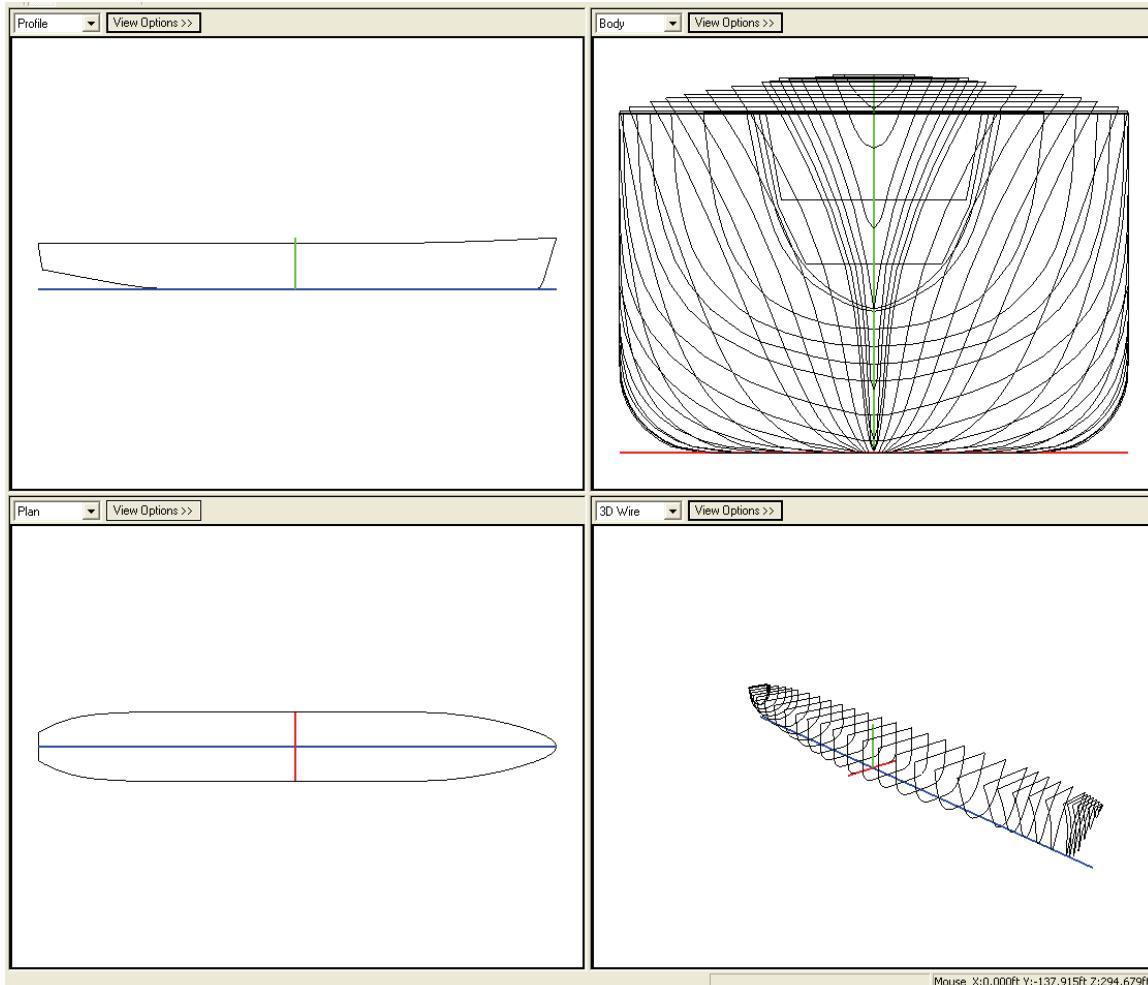


Figure 85: Naval Auxiliary 04

Naval Auxiliary 05

Table 87: Naval Auxiliary 05 Principal Characteristics

Reference ID:	Naval Auxiliary 05	
Description:	Yard Patrol Craft	
Special Codes:	G	
Length:	108.0	ft
	32.9	m
Beam:	24.0	ft
	7.3	m
Depth:	15.3	ft
	4.6	m
Draft:	8.0	ft
	2.4	m
Displacement:	260	LT
	264	mt

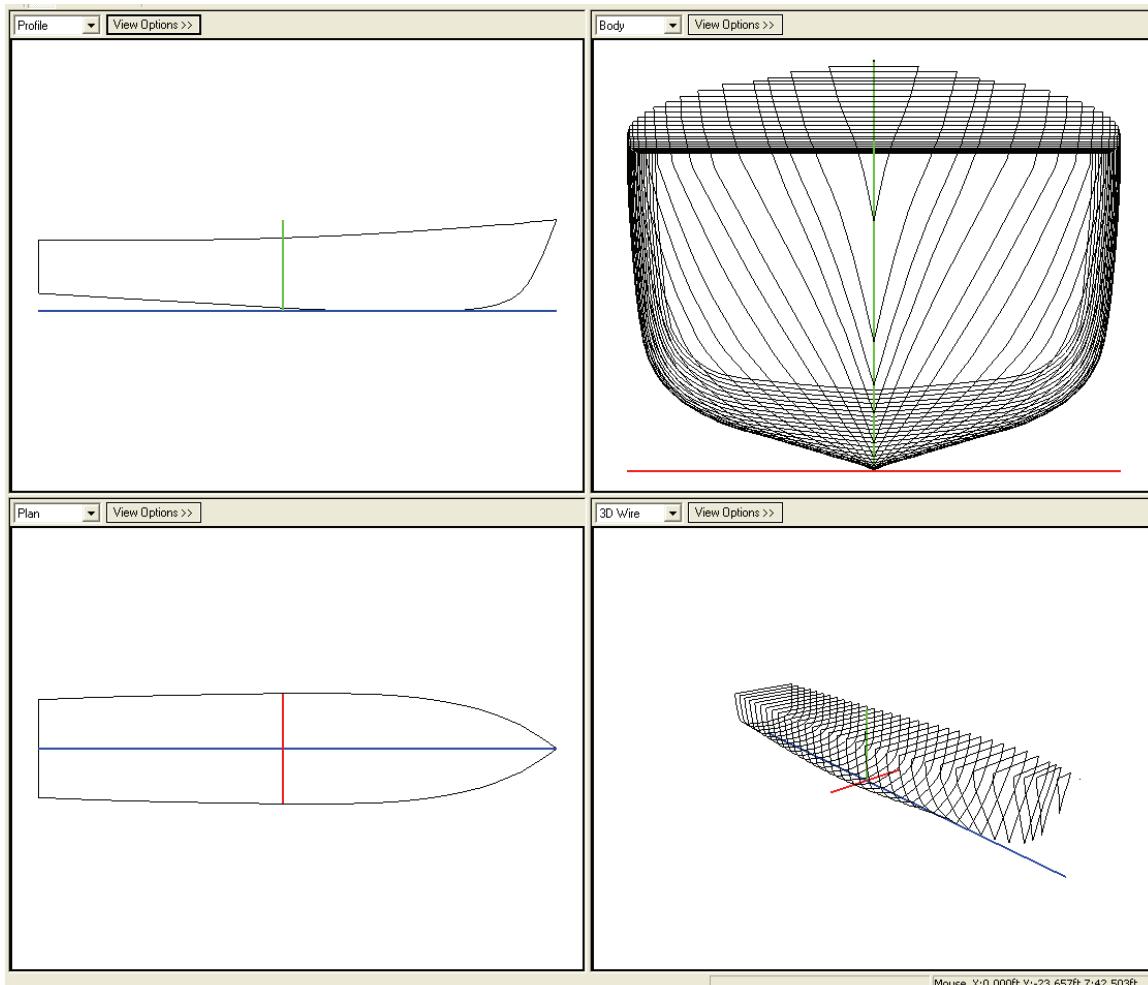


Figure 86: Naval Auxiliary 05

Naval Auxiliary 06

Table 88: Naval Auxiliary 06 Principal Characteristics

Reference ID:	Naval Auxiliary 06	
Description:	LASH	
Special Codes:	G	
Length:	811.7	ft
	247.4	m
Beam:	100.2	ft
	30.5	m
Depth:	55.4	ft
	16.9	m
Draft:	38.0	ft
	11.6	m
Displacement:	44,600	LT
	45,314	mt

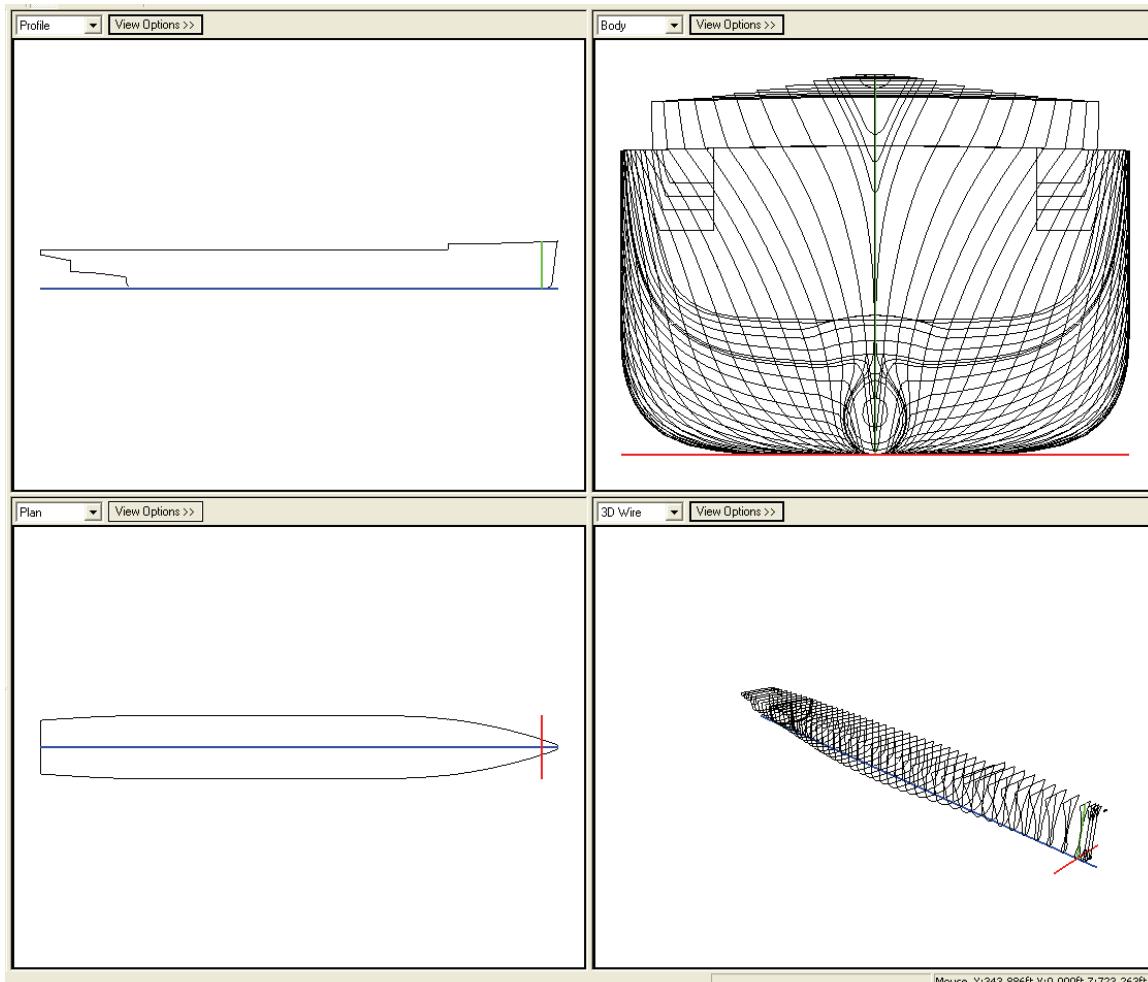


Figure 87: Naval Auxiliary 06

Naval Auxiliary 07

Table 89: Naval Auxiliary 07 Principal Characteristics

Reference ID:	Naval Auxiliary 07	
Description:	Hospital Ship	
Special Codes:	G	
Length:	894.0	ft
	272.5	M
Beam:	105.8	ft
	32.2	M
Depth:	64.5	ft
	19.7	M
Draft:	32.8	ft
	10.0	M
Displacement:	69,360	LT
	70,470	Mt

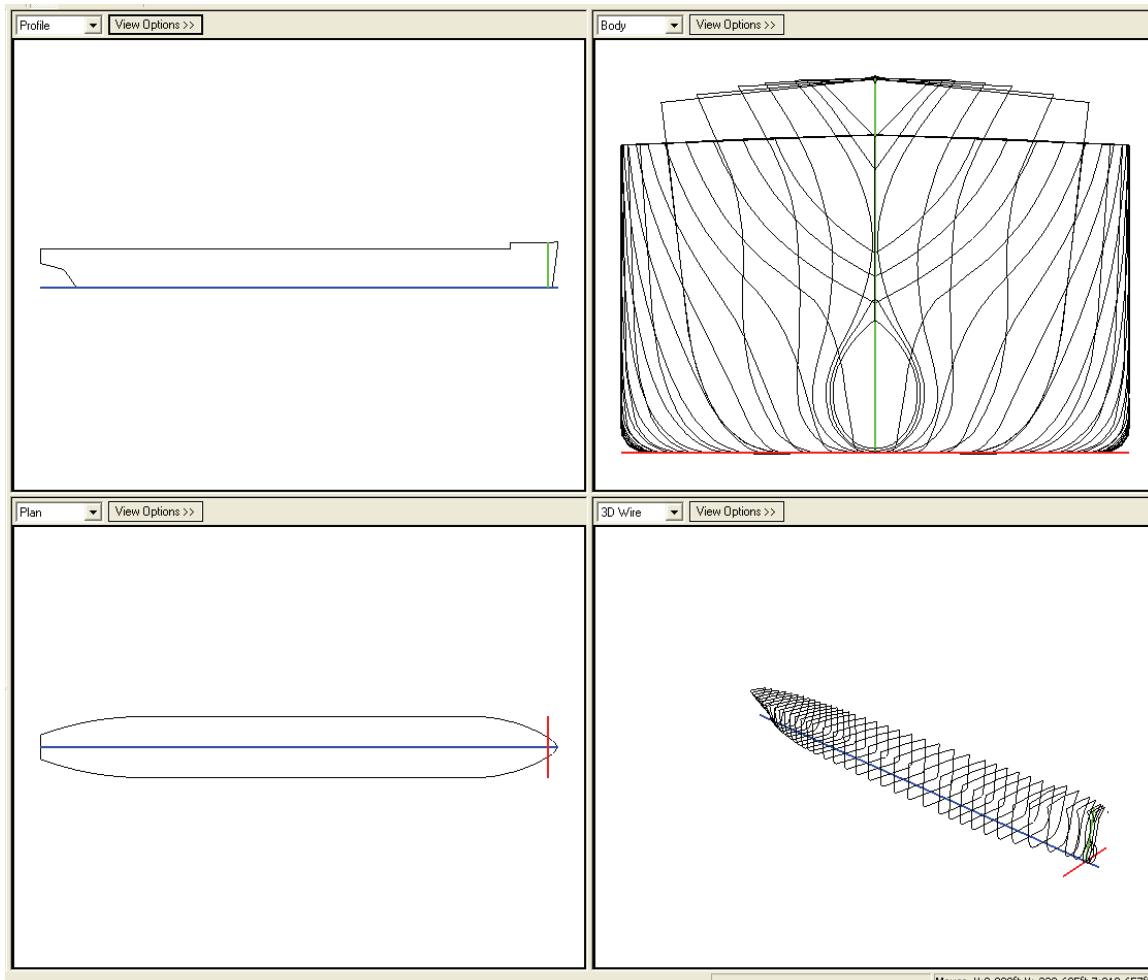


Figure 88: Naval Auxiliary 07

Naval Combatants

Naval Combatant 01

Table 90: Naval Combatant 01 Principal Characteristics

Reference ID:	Naval Combatant 01
Description:	Frigate
Special Codes:	G
Length:	453.0 ft 138.1 m
Beam:	45.0 ft 13.7 m
Depth:	30.0 ft 9.1 m
Draft:	16.3 ft (baseline) 5.0 m
Displacement:	4,100 LT 4,166 mt

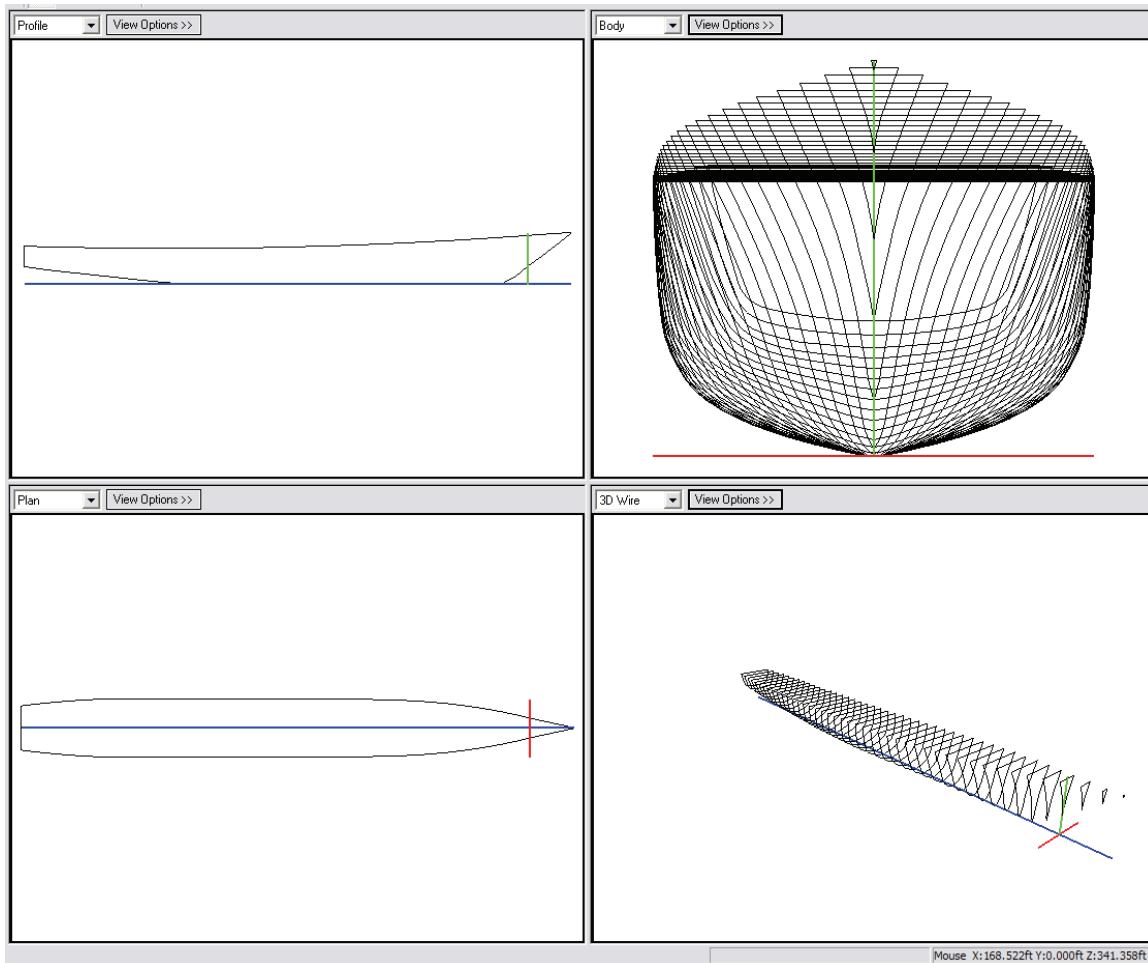


Figure 89: Naval combatant 01

Naval Combatant 02

Table 91: Naval Combatant 02 Principal Characteristics

Reference ID:	Naval Combatant 02	
Description:	Destroyer (older)	
Special Codes:	G	
Length:	490.0	Ft
	149.4	M
Beam:	47.5	Ft
	14.5	M
Depth:	28.2	Ft
	8.6	M
Draft:	14.7	Ft
	4.5	M
Displacement:	4,855	LT
	4,933	Mt

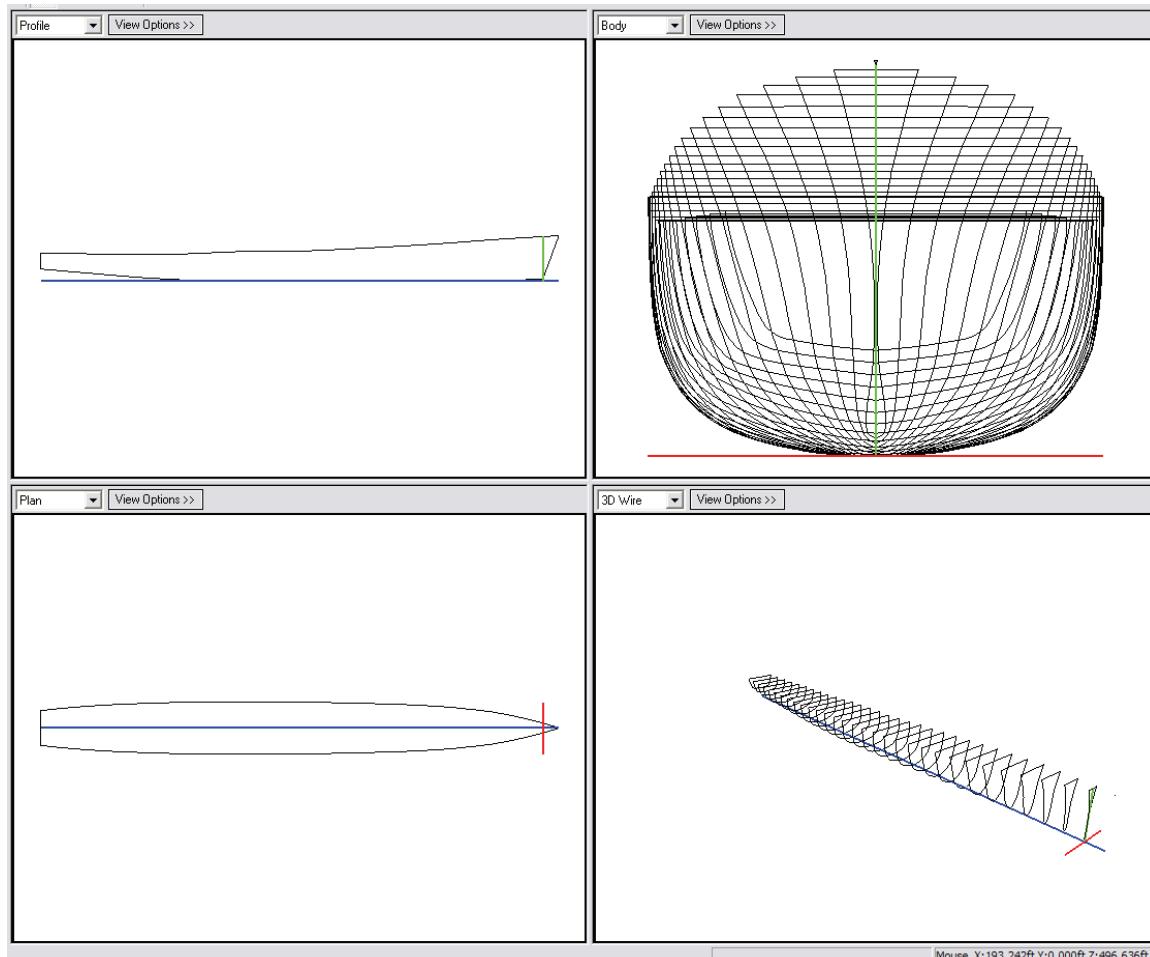


Figure 90: Naval Combatant 02

Naval Combatant 03

Table 92: Naval Combatant 03 Principal Characteristics

Reference ID:	Naval Combatant 03	
Description:	Destroyer (modern)	
Special Codes:	G	
Length:	505.0	ft
	153.9	m
Beam:	66.0	ft
	20.1	m
Depth:	41.33	ft (above baseline)
	12.6	m
Draft:	31.3	ft
	9.5	m
Displacement:	9,935	LT
	9,078	mt

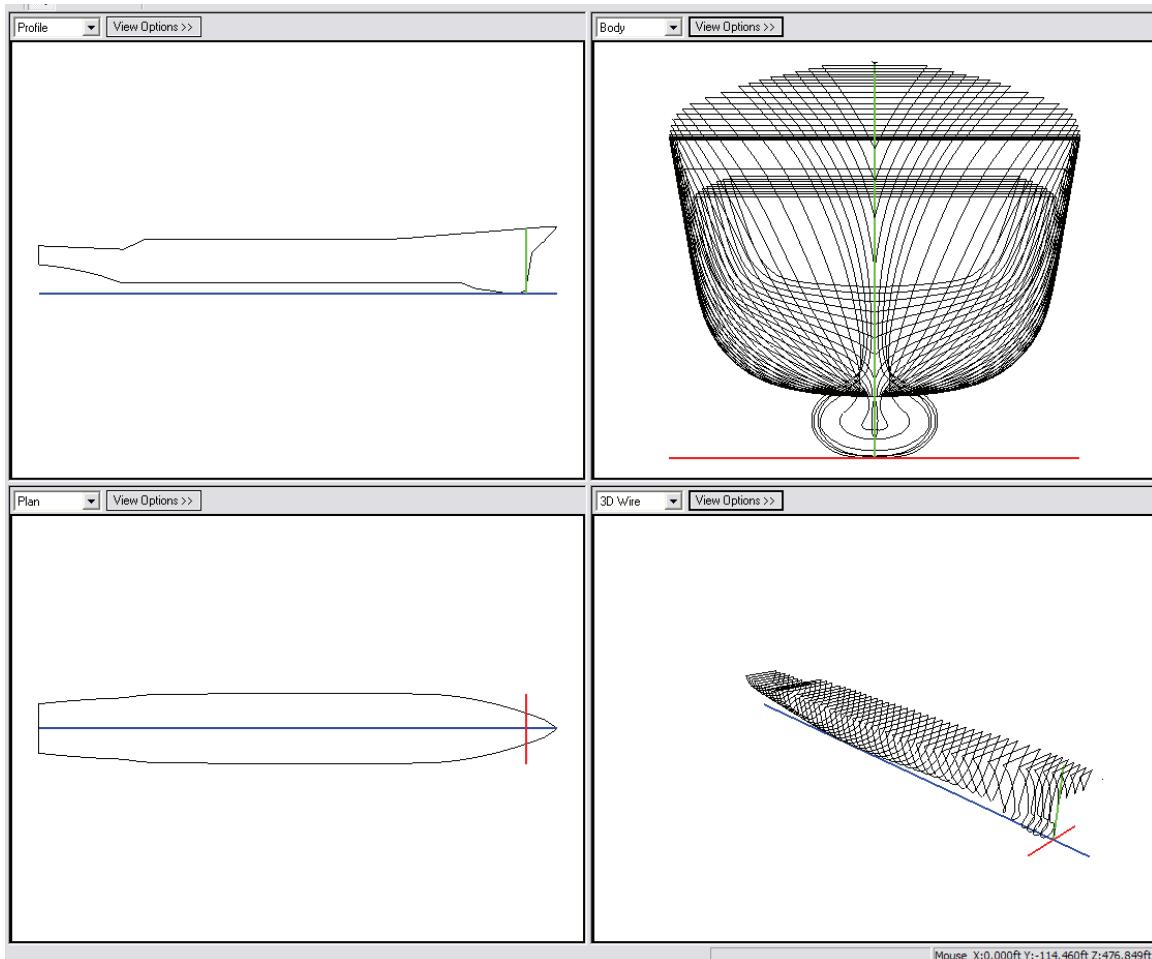


Figure 91: Naval Combatant 03

Naval Combatant 04

Table 93: Naval Combatant 04 Principal Characteristics

Reference ID:	Naval Combatant 04	
Description:	Cruiser	
Special Codes:	G	
Length:	567.0	ft
	172.8	m
Beam:	55.0	ft
	16.8	m
Depth:	42.0	ft (above baseline)
	12.8	m
Draft:	33.0	ft
	10.1	m
Displacement:	10,000	LT
	10,160	mt

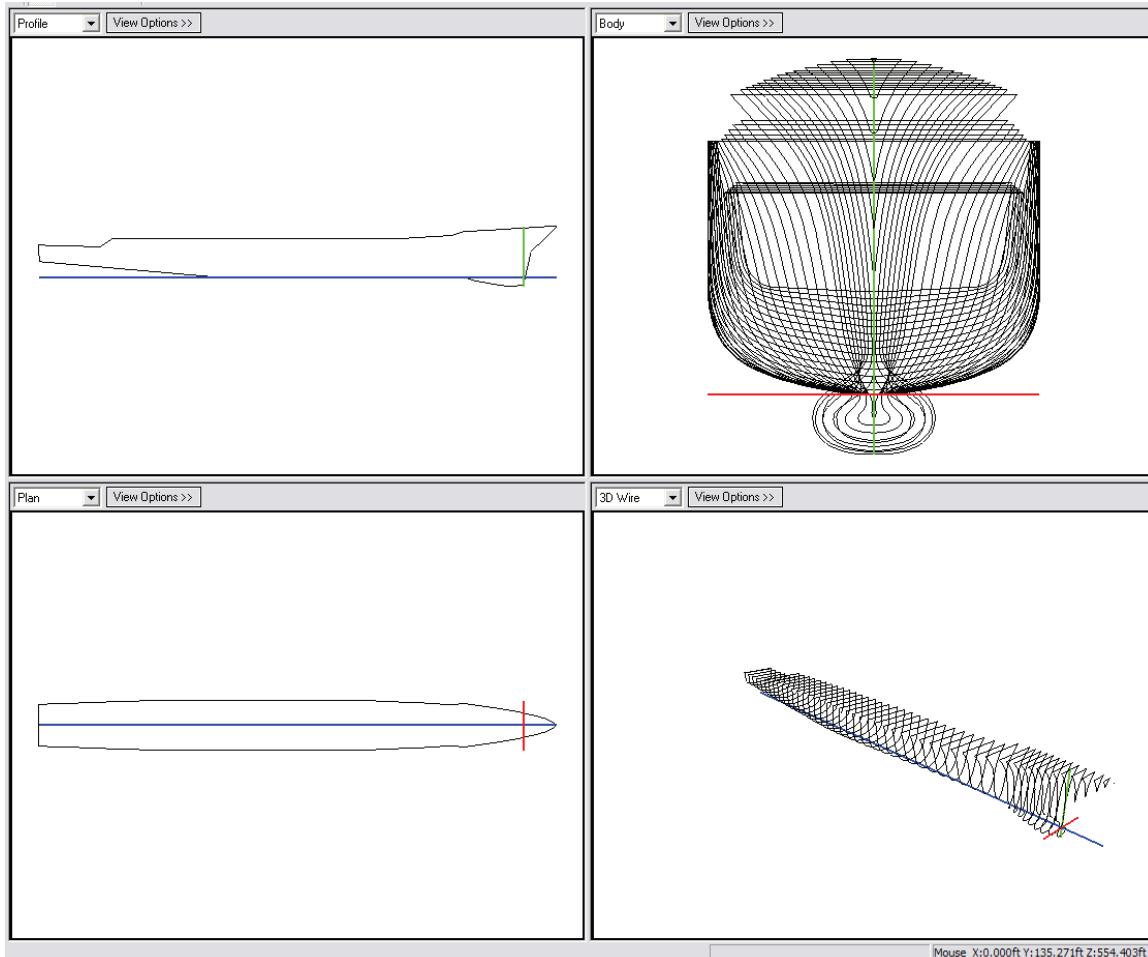


Figure 92: Naval Combatant 04

Naval Combatant 05

Table 94: Naval Combatant 05 Principal Characteristics

Reference ID:	Naval Combatant 05	
Description:	Battleship	
Special Codes:	G	
Length:	880.0	ft
	270.7	m
Beam:	109.0	ft
	33.2	m
Depth:	53.0	ft
	16.2	m
Draft:	36.1	ft
	11.0	m
Displacement:	57,270	LT
	58,186	mt

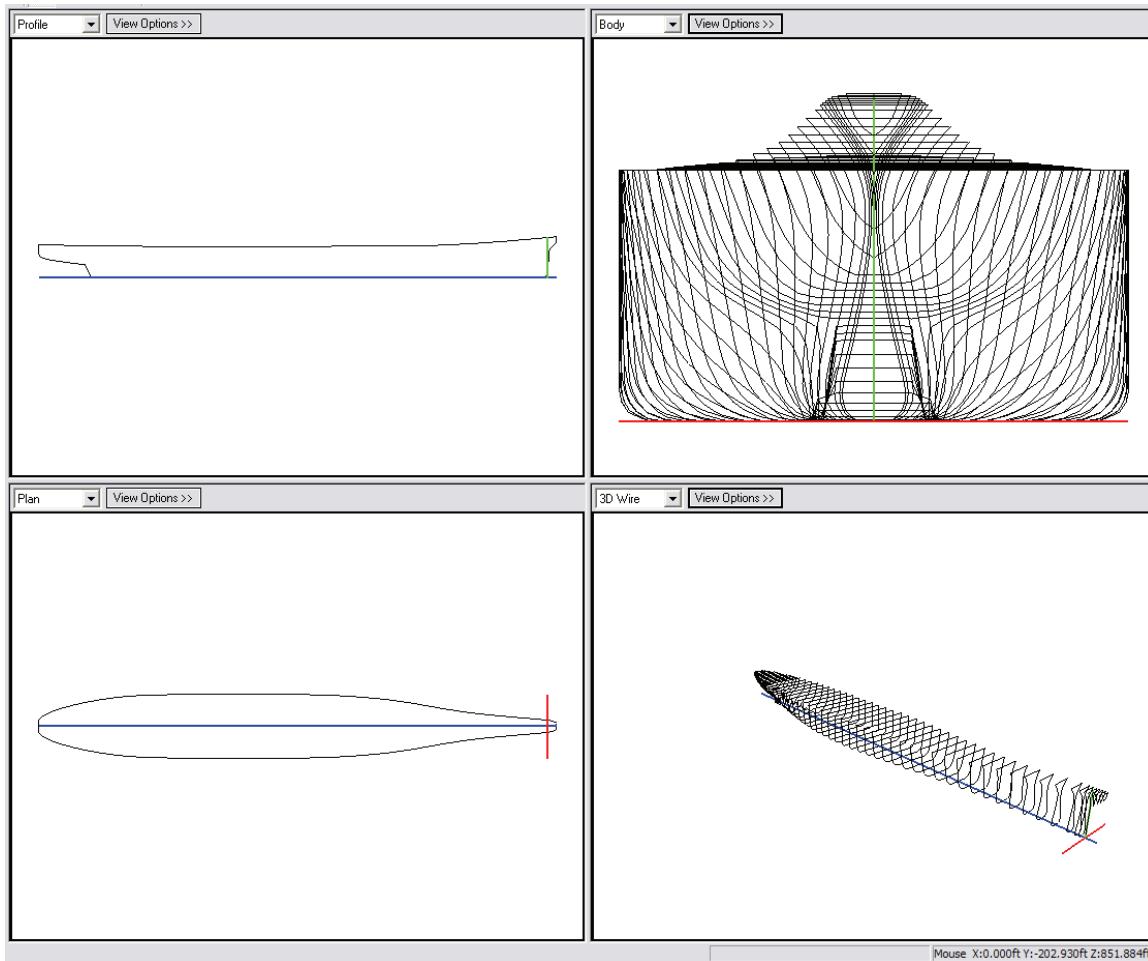


Figure 93: Naval Combatant 05

Naval Combatant 06

Table 95: Naval Combatant 06 Principal Characteristics

Reference ID:	Naval Combatant 06	
Description:	Aircraft Carrier	
Special Codes:	G	
Length:	1,100.0	Ft
	335.3	M
Beam:	133.0	Ft
	40.5	M
Depth:	99.2	Ft
	30.2	M
Draft:	37.3	Ft
	11.4	M
Displacement:	89,600	LT
	91,034	Mt

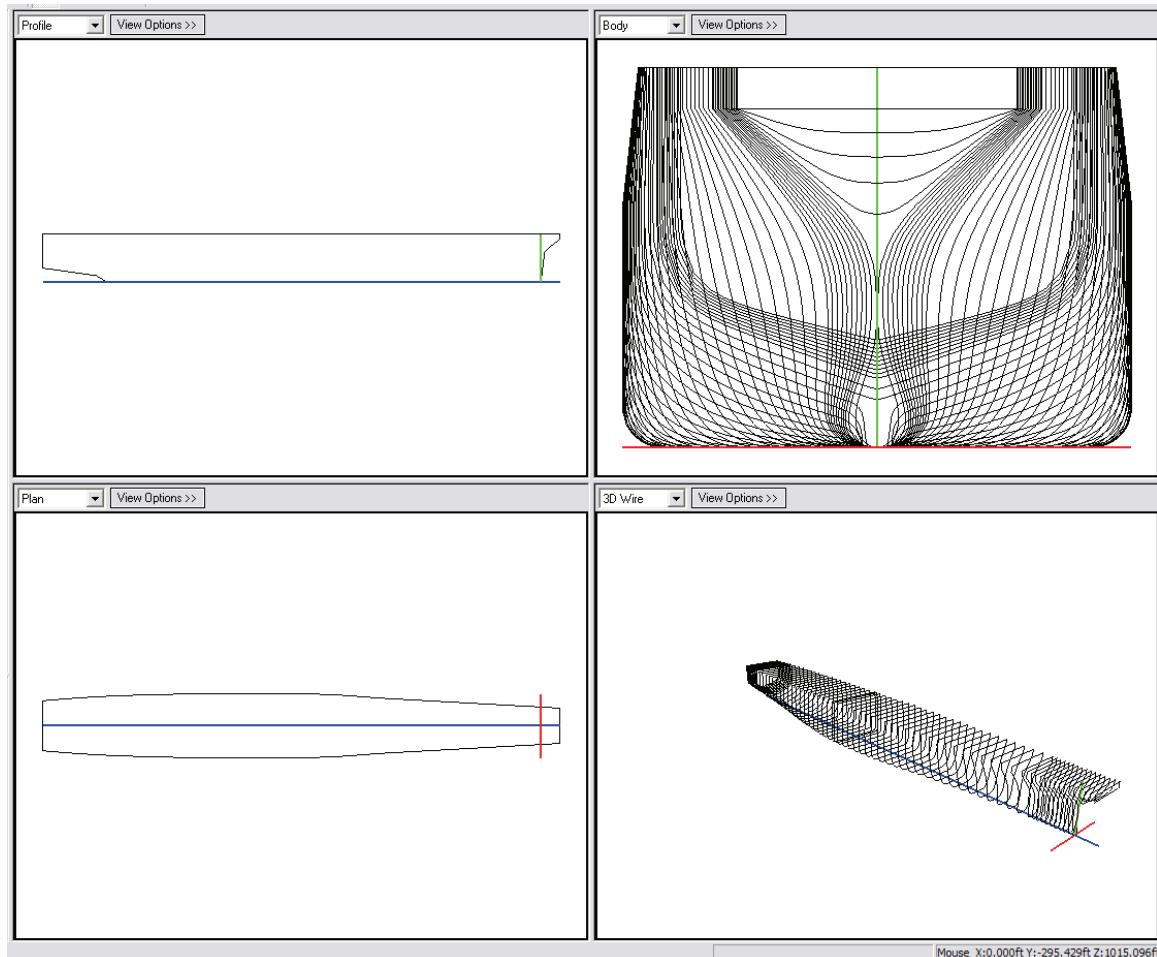


Figure 94: Naval Combatant 06

Naval Combatant 07

Table 96: Naval Combatant 07 Principal Characteristics

Reference ID:	Naval Combatant 07	
Description:	Aircraft Carrier	
Special Codes:	G	
Length:	1,100.0	Ft
	335.3	M
Beam:	134.0	Ft
	40.8	M
Depth:	100.2	Ft
	30.5	M
Draft:	39.8	Ft
	12.1	M
Displacement:	100,000	LT
	101,635	Mt

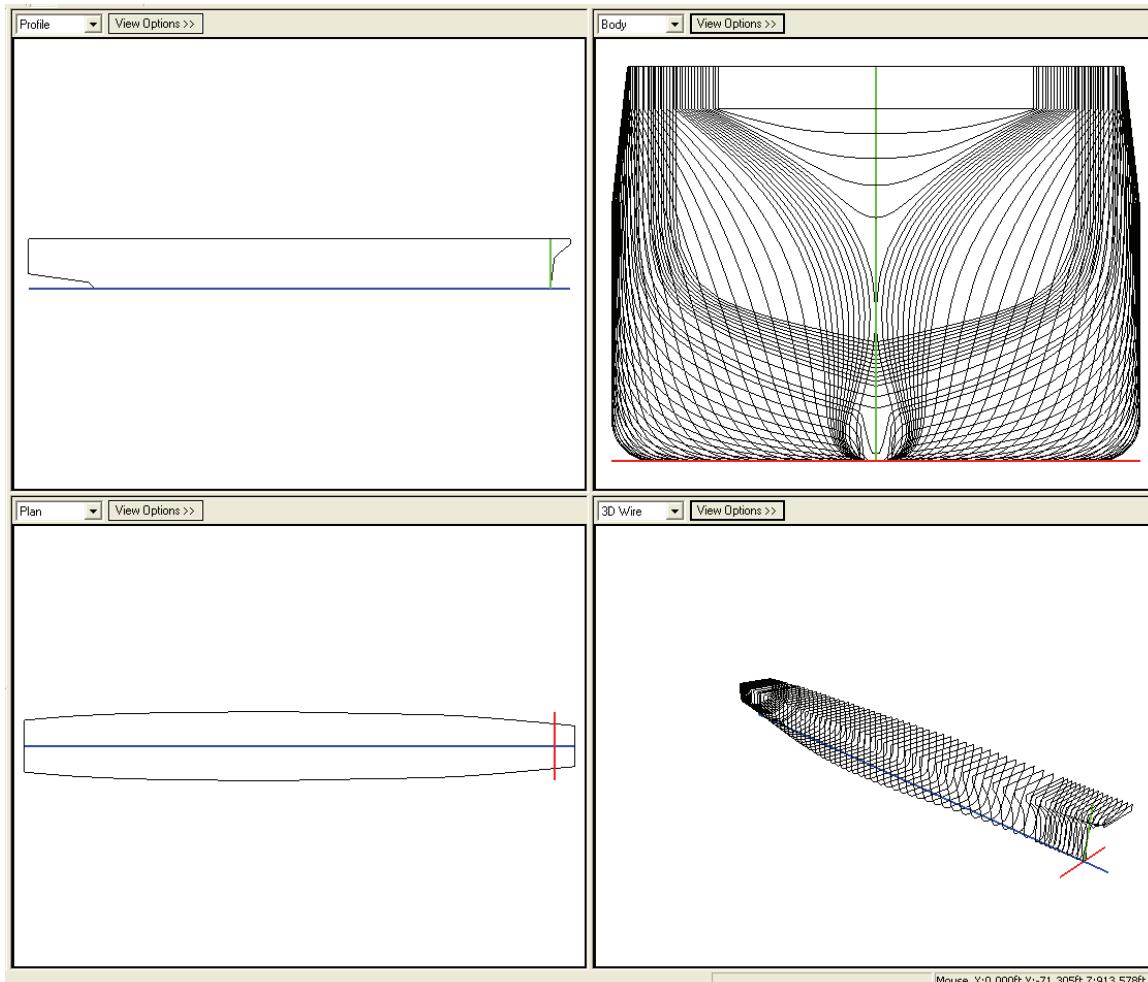


Figure 95: Naval Combatant 07

Naval Combatant 08

Table 97: Naval Combatant 08 Principal Characteristics

Reference ID:	Naval Combatant 08	
Description:	Cruiser	
Special Codes:	G	
Length:	721.0	ft
	219.8	m
Beam:	73.0	ft
	22.3	m
Depth:	45.0	ft (above baseline)
	13.7	m
Draft:	24.9	ft
	7.6	m
Displacement:	17,525	LT
	17,805	mt

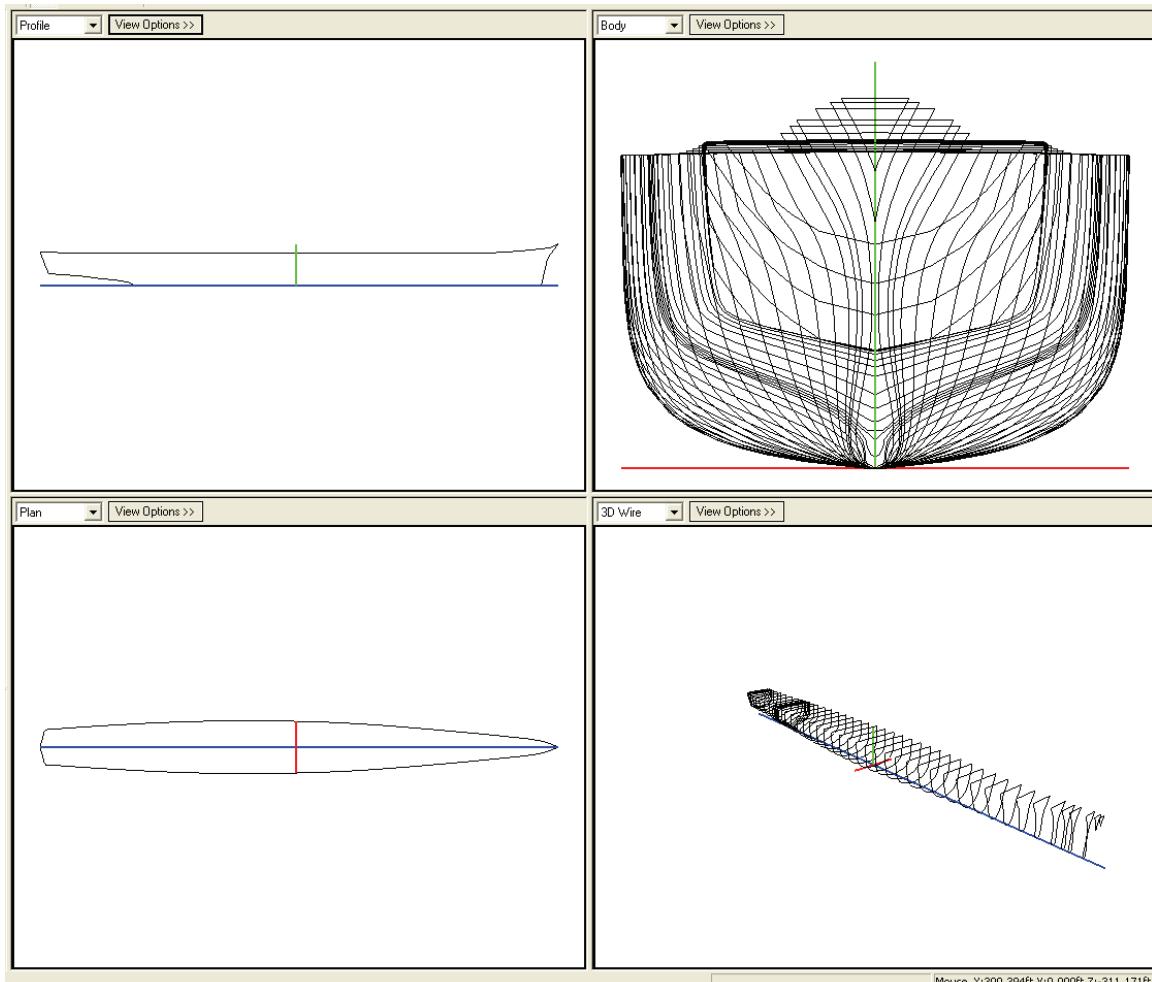


Figure 96: Naval Combatant 08

Naval Combatant 09

Table 98: Naval Combatant 09 Principal Characteristics

Reference ID:	Naval Combatant 09	
Description:	High Endurance Cutter	
Special Codes:	G	
Length:	378.0	ft
	115.2	m
Beam:	43.0	ft
	13.1	m
Depth:	27.0	ft
	8.2	m
Draft:	15.2	ft
	4.6	m
Displacement:	3,250	LT
	3,302	mt

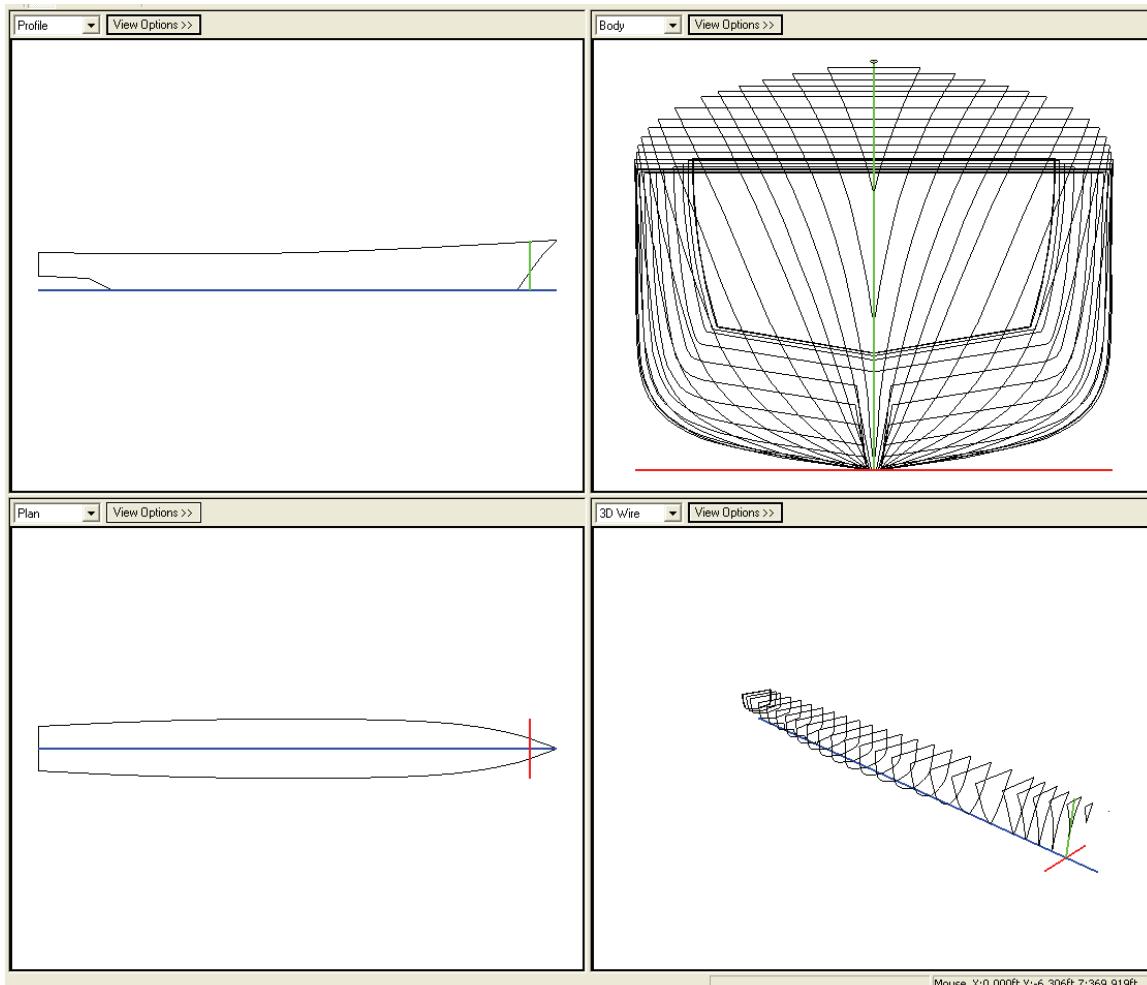


Figure 97: Naval Combatant 09

Naval Combatant 10

Table 99: Naval Combatant 10 Principal Characteristics

Reference ID:	Naval Combatant 10	
Description:	Coastal Patrol Craft	
Special Codes:	G	
Length:	179.0	ft
	54.6	m
Beam:	25.0	ft
	7.6	m
Depth:	14.7	ft
	4.5	m
Draft:	8.5	ft
	2.6	m
Displacement:	392	LT
	398	mt

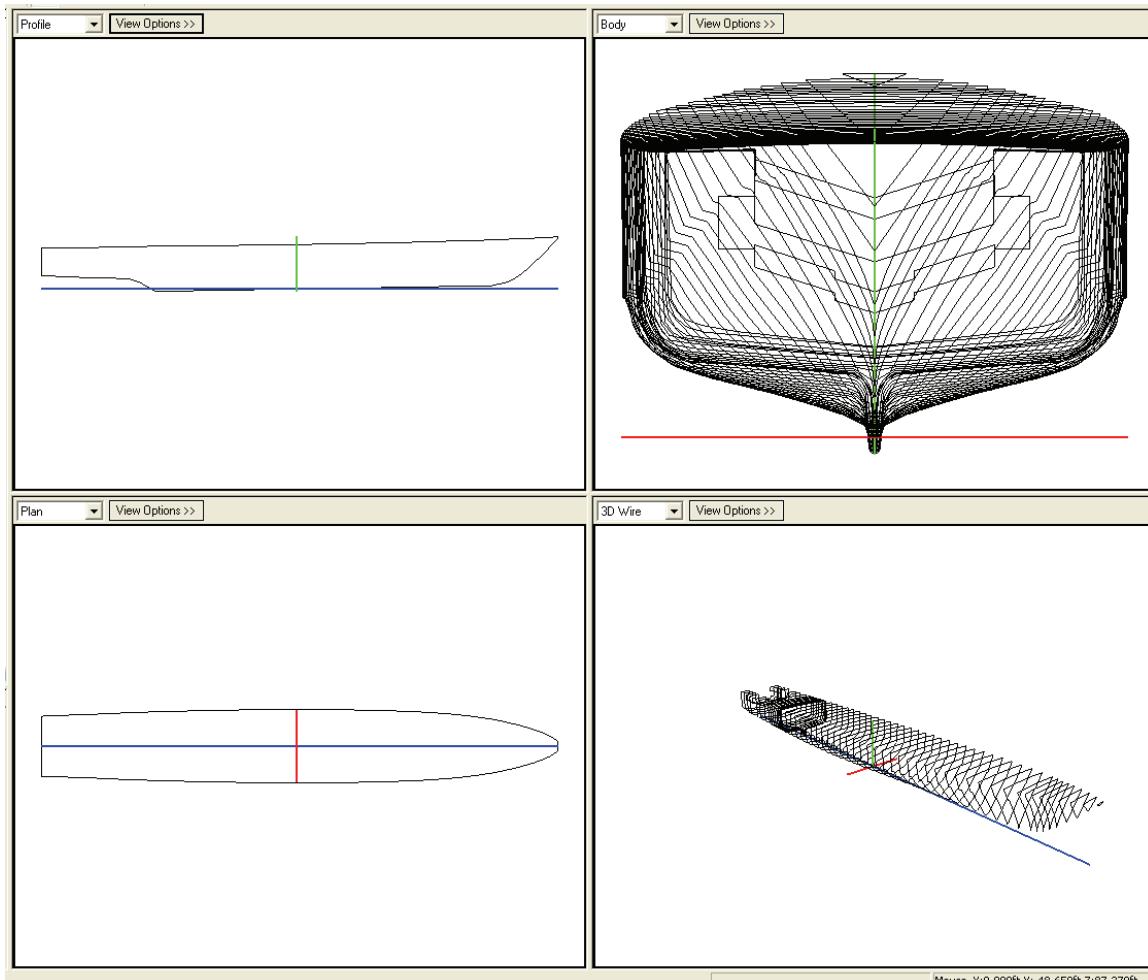


Figure 98: Naval Combatant 10

Offshore Supply Vessels (OSVs)

OSV 01

Table 100: OSV 01 Principal Characteristics

Reference ID:	OSV 01
Description:	Small OSV
Special Codes:	P
Length:	170.0 ft 51.8 m
Beam:	40.0 ft 12.2 m
Depth:	14.0 ft 4.3 m
Draft:	9.0 ft 2.7 m
Displacement:	1,090 LT 1,107 mt

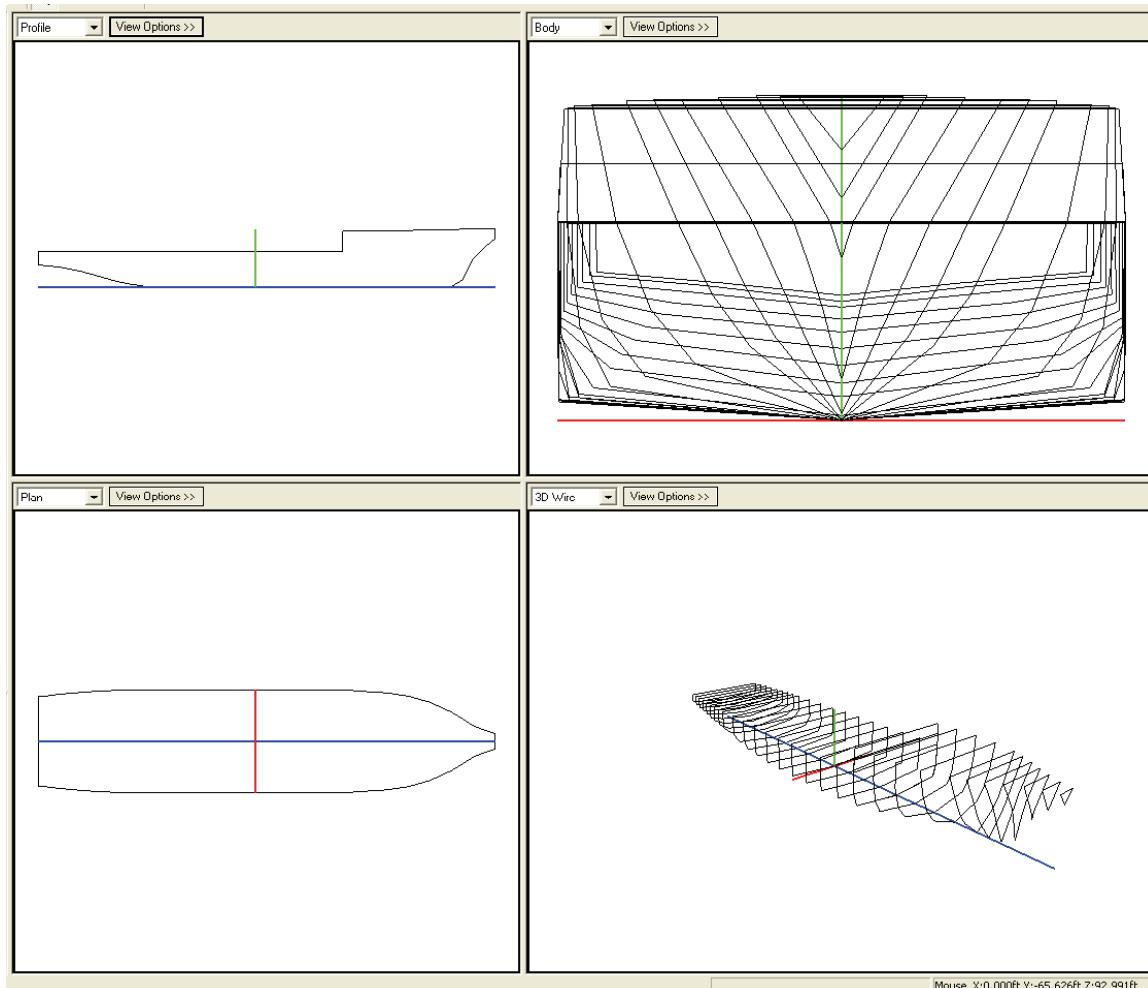


Figure 99: OSV 01

OSV 02

Table 101: OSV 02 Principal Characteristics

Reference ID:	OSV 02
Description:	Large OSV
Special Codes:	P
Length:	310.0 ft 94.5 m
Beam:	52.0 ft 15.8 m
Depth:	21.8 ft 6.6 m
Draft:	14.5 ft 4.4 m
Displacement:	3,790 LT 3,851 mt

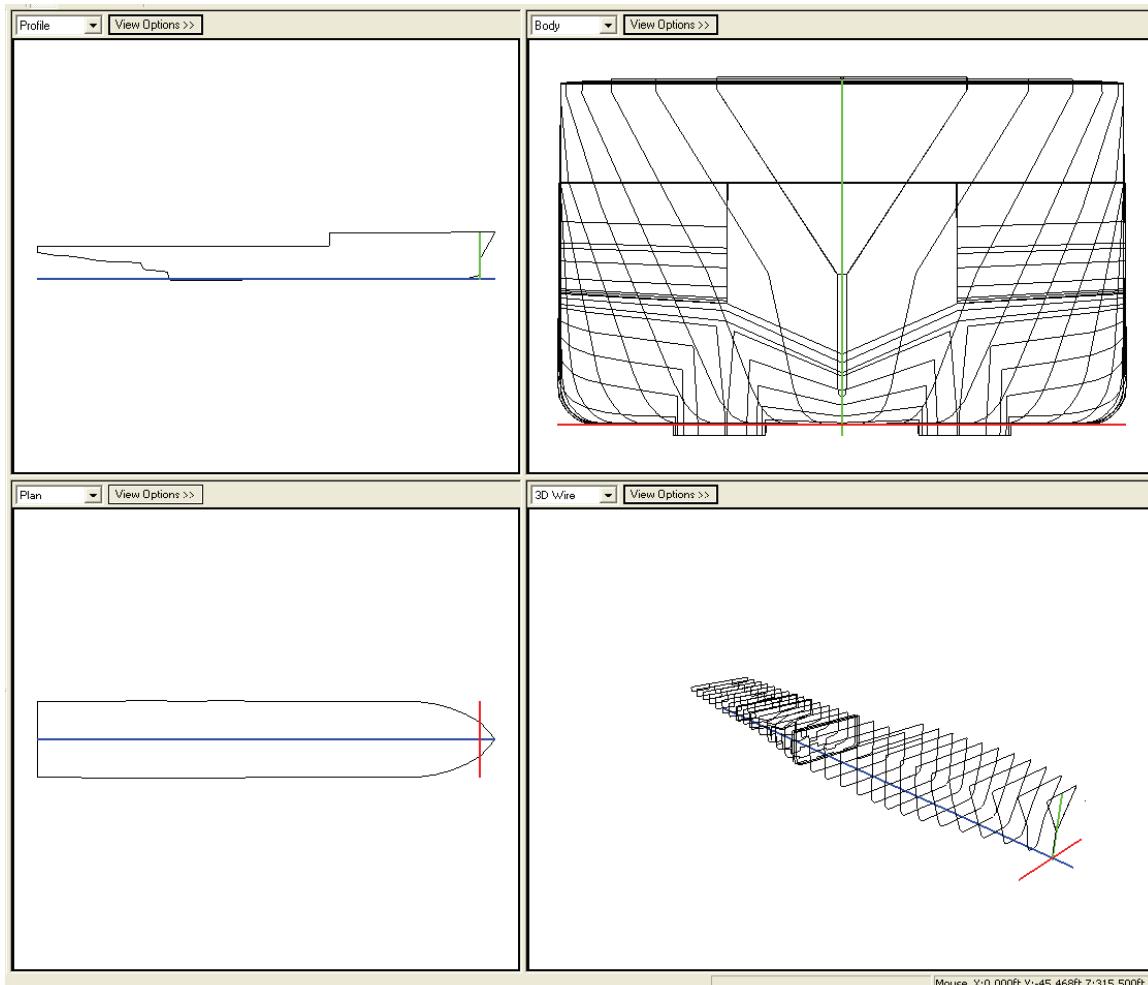


Figure 100: OSV 02

Other Vessels

Other 01

Table 102: Other 01 Principal Characteristics

Reference ID:	Other 01
Description:	Maritime Academy Training Ship
Special Codes:	P, G
Length:	476.0 ft 145.1 m
Beam:	72.0 ft 21.9 m
Depth:	42.0 ft 12.8 m
Draft:	30.5 ft 9.3 m
Displacement:	16,260 LT 16,520 mt

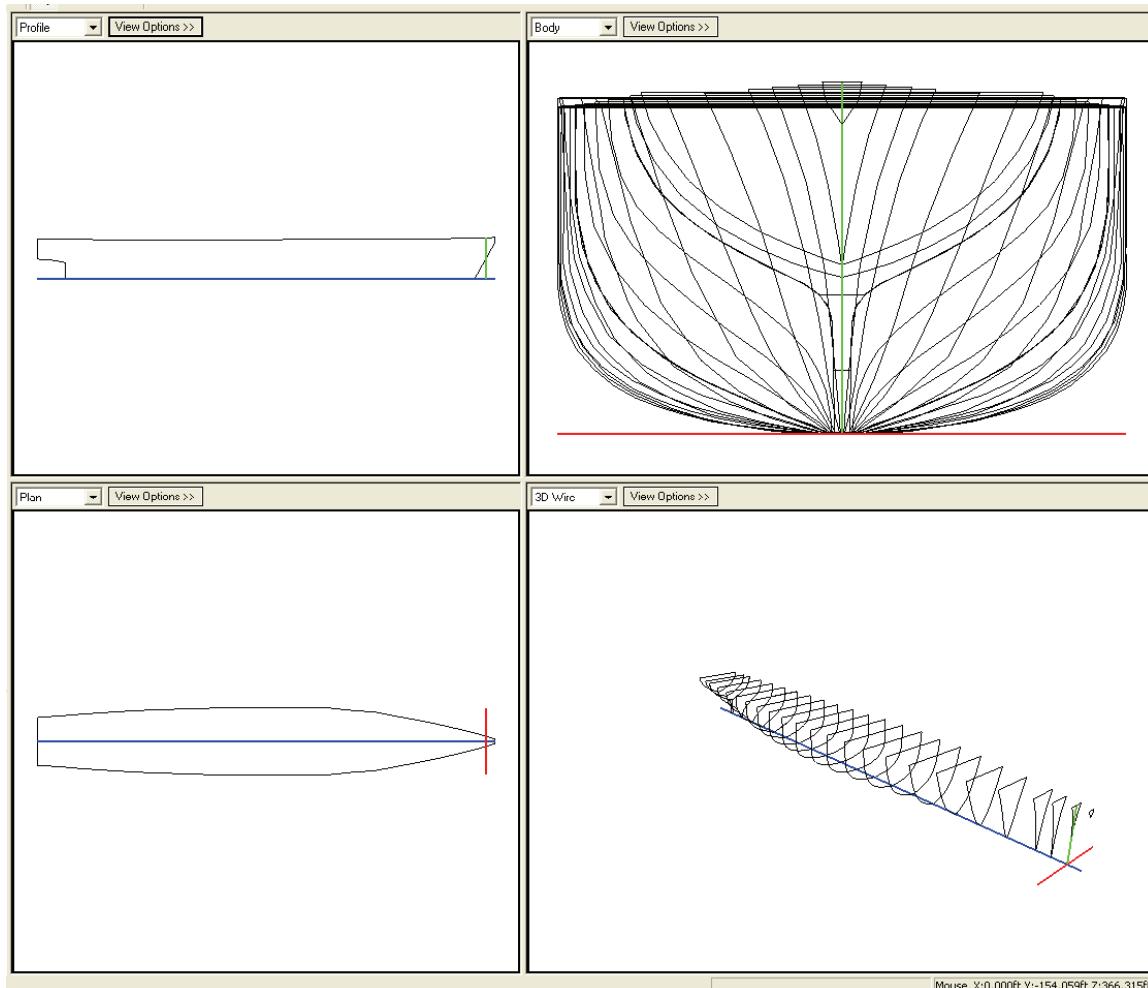


Figure 101: Other 01

Other 02

Table 103: Other 02 Principal Characteristics

Reference ID:	Other 02
Description:	TLP
Special Codes:	P
Length:	355.0 ft 108.2 m
Beam:	221.0 ft 67.4 m
Depth:	120.0 ft 36.6 m
Draft:	70.0 ft 21.3 m
Displacement:	19,327 LT 19,636 mt

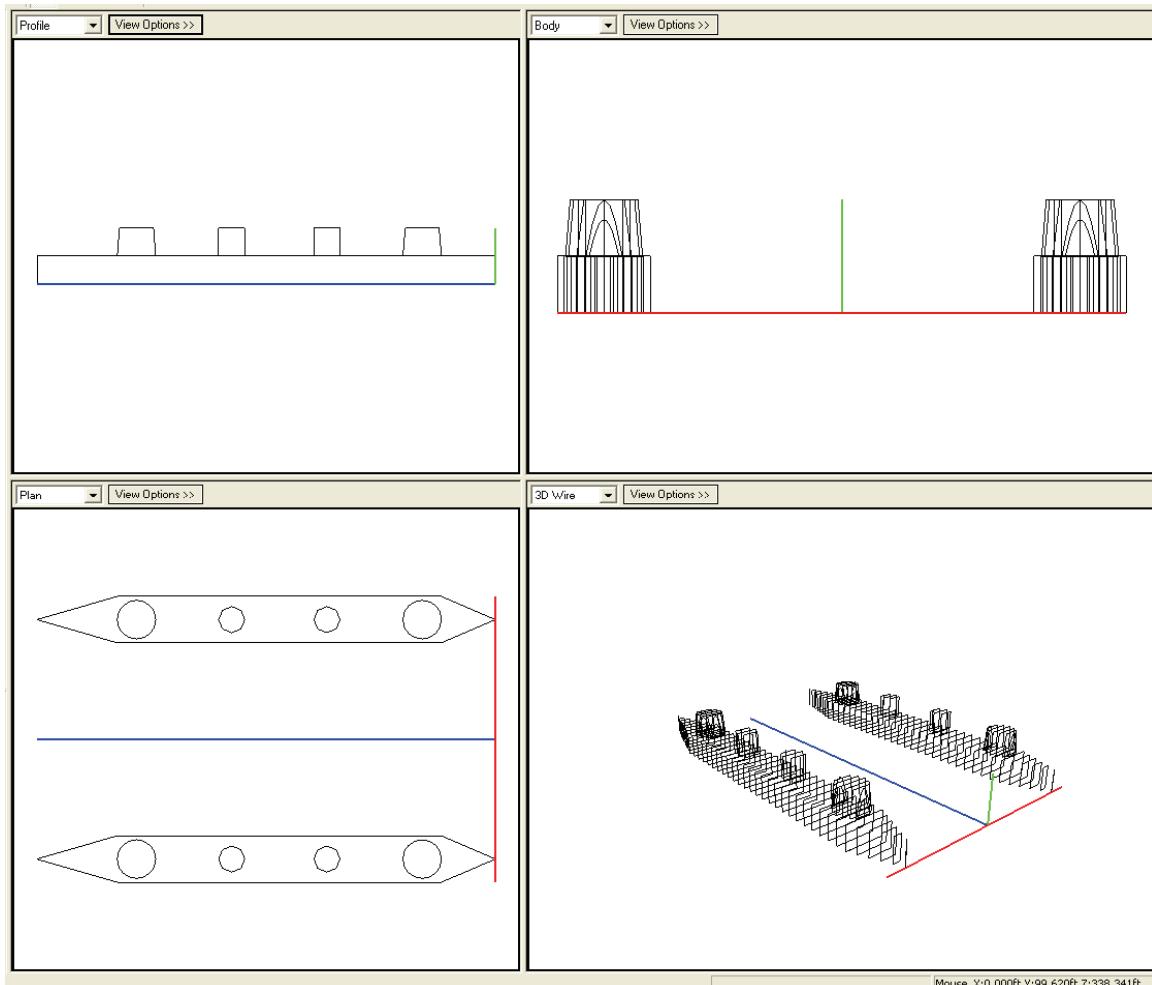


Figure 102: Other 02

Other 03

Table 104: Other 03 Principal Characteristics

Reference ID:	Other 03
Description:	TLP
Special Codes:	P
Length:	266.5 ft 81.2 m
Beam:	266.5 ft 81.2 m
Depth:	157.5 ft 48.0 m
Draft:	60.0 ft 18.3 m
Displacement:	36,500 LT 37,084 mt

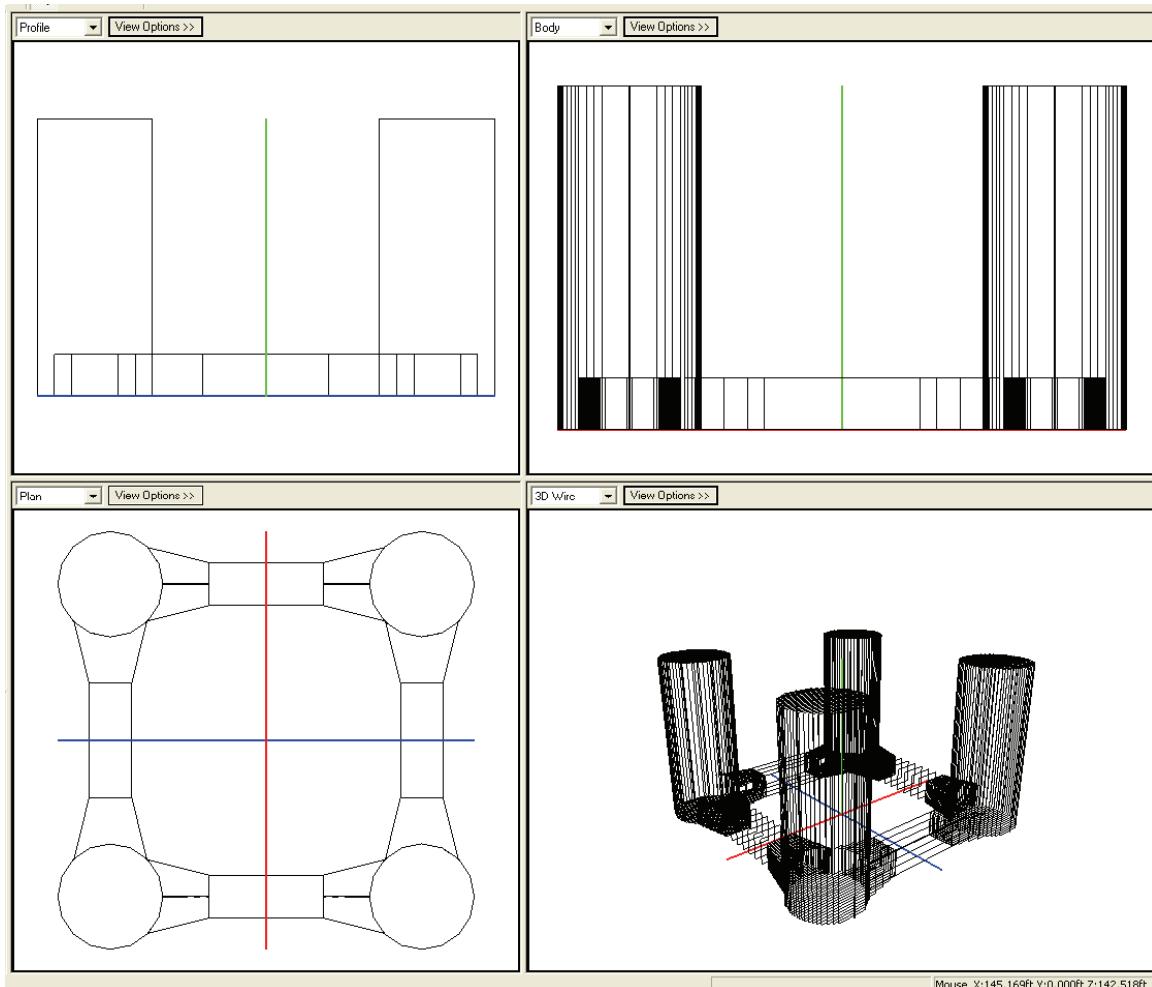


Figure 103: Other 03

Other 04

Table 105: Other 04 Principal Characteristics

Reference ID:	Other 04	
Description:	Maritime Academy Training Ship	
Special Codes:	G	
Length:	224.0	ft
	68.3	m
Beam:	43.0	ft
	13.1	m
Depth:	20.0	ft
	6.1	m
Draft:	14.9	ft
	4.5	m
Displacement:	2,120	LT
	2,154	mt

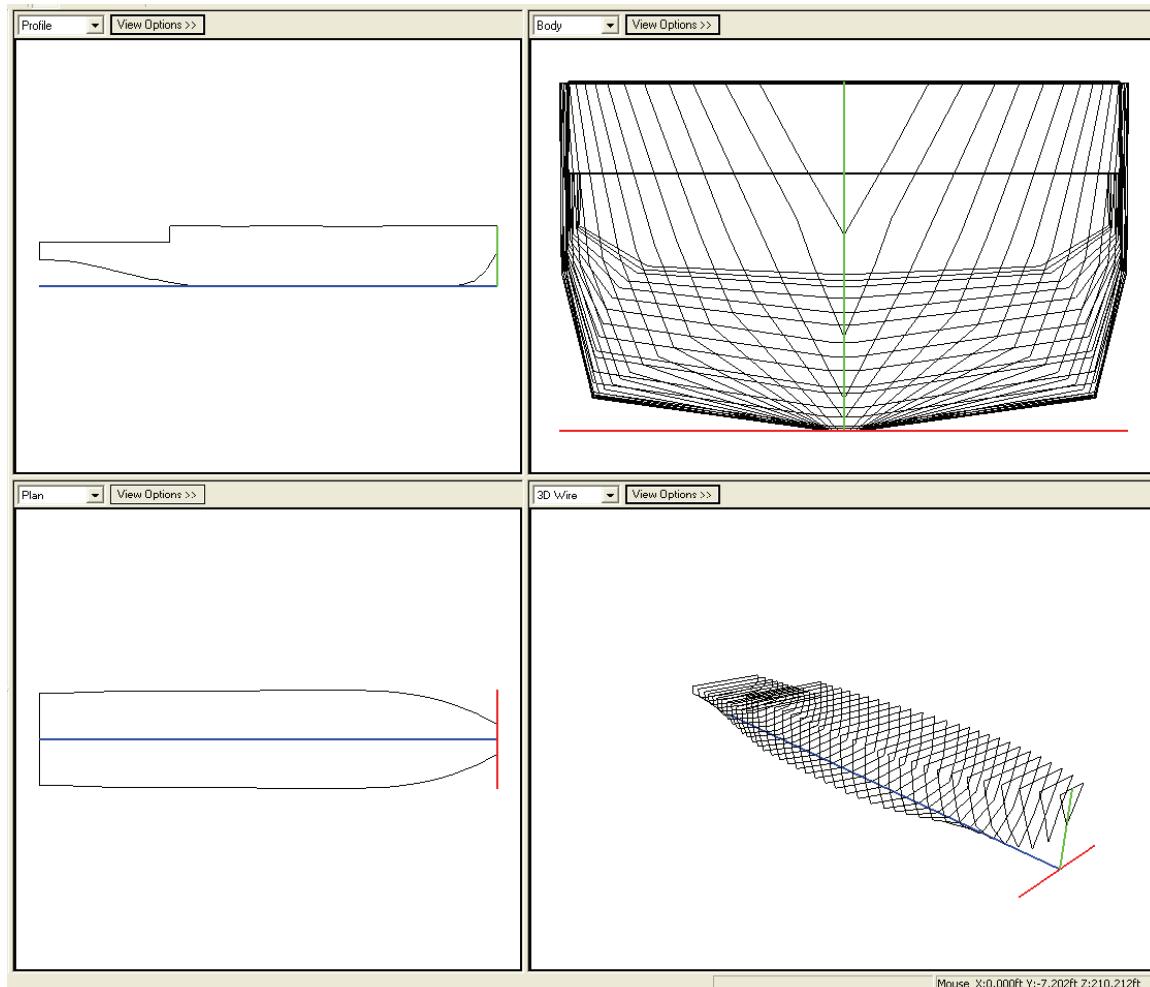


Figure 104: Other 04

Other 05

Table 106: Other 05 Principal Characteristics

Reference ID:	Other 05	
Description:	Cable Repair Ship	
Special Codes:	G	
Length:	513.0	ft
	156.4	m
Beam:	73.0	ft
	22.3	m
Depth:	53.6	ft
	16.3	m
Draft:	26.0	ft
	7.9	m
Displacement:	14,935	LT
	15,174	mt

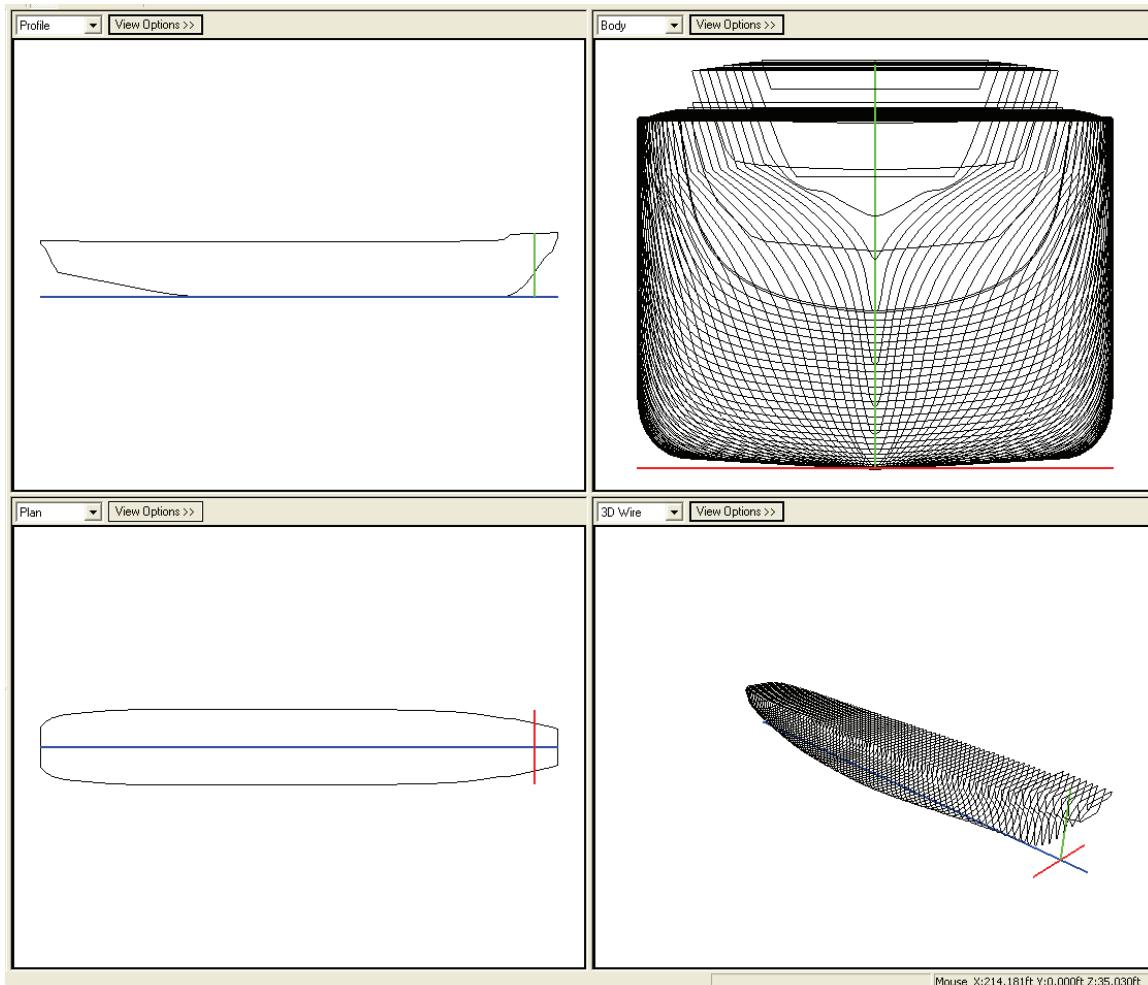


Figure 105: Other 05

Other 06

Table 107: Other 06 Principal Characteristics

Reference ID:	Other 06	
Description:	LNG - 134,500	
Special Codes:	P	
Length:	920.0	ft
	280.4	m
Beam:	135.1	ft
	41.2	m
Depth:	70.6	ft
	21.5	m
Draft:	36.0	ft
	11.0	m
Displacement:	96,650	LT
	98,196	mt

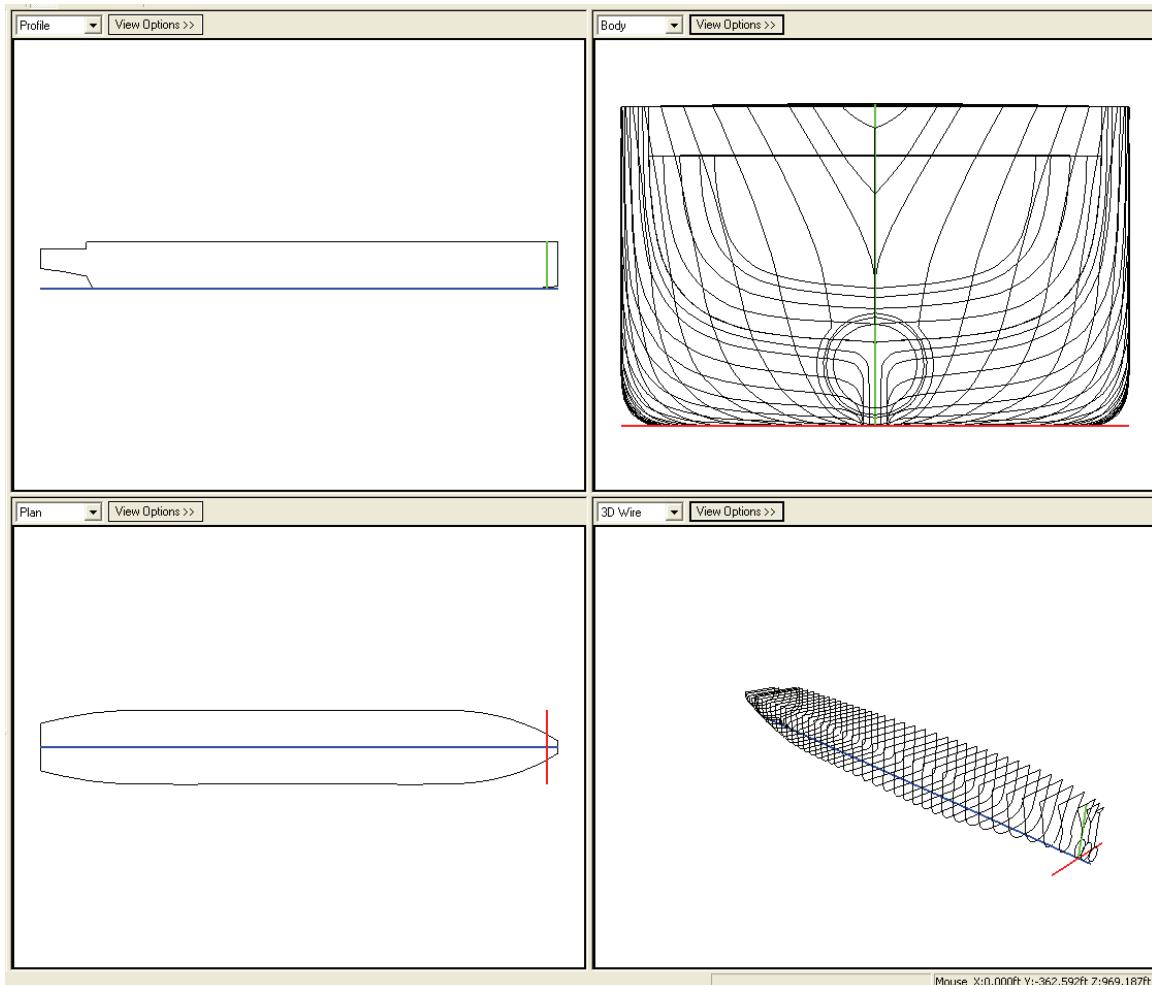


Figure 106: Other 06

Other 07

Table 108: Other 07 Principal Characteristics

Reference ID:	Other 07
Description:	LNG - 125,000
Special Codes:	P
Length:	913.2 ft 278.3 M
Beam:	145.0 ft 44.2 M
Depth:	89.0 ft 27.1 M
Draft:	36.0 ft 11.0 M
Displacement:	96,000 LT 97,536 Mt

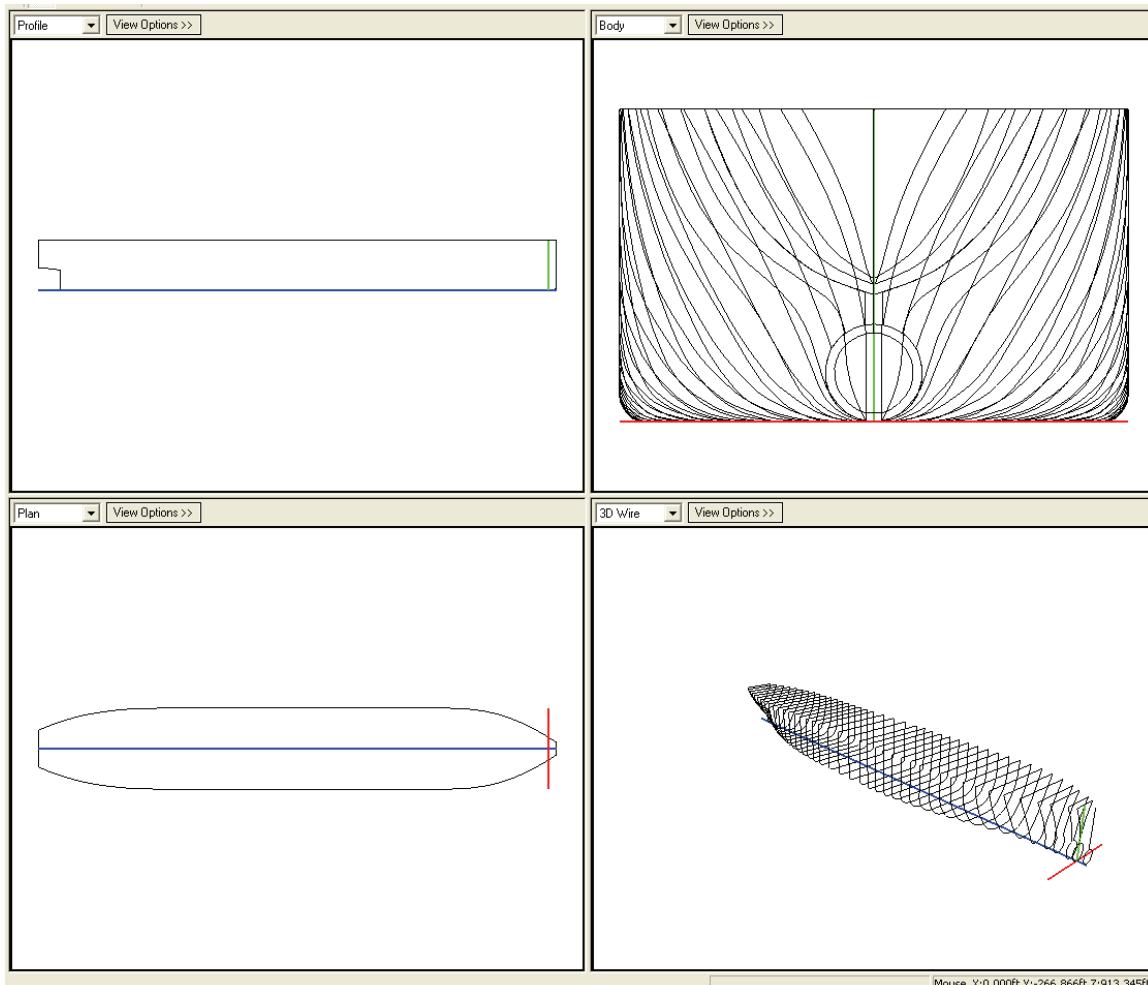


Figure 107: Other 07

Other 08

Table 109: Other 08 Principal Characteristics

Reference ID:	Other 08	
Description:	LNG - 114,000	
Special Codes:	P	
Length:	910.0	ft
	277.4	M
Beam:	125.0	ft
	38.1	M
Depth:	91.0	ft
	27.7	M
Draft:	38.0	ft
	11.6	M
Displacement:	92,100	LT
	93,574	Mt

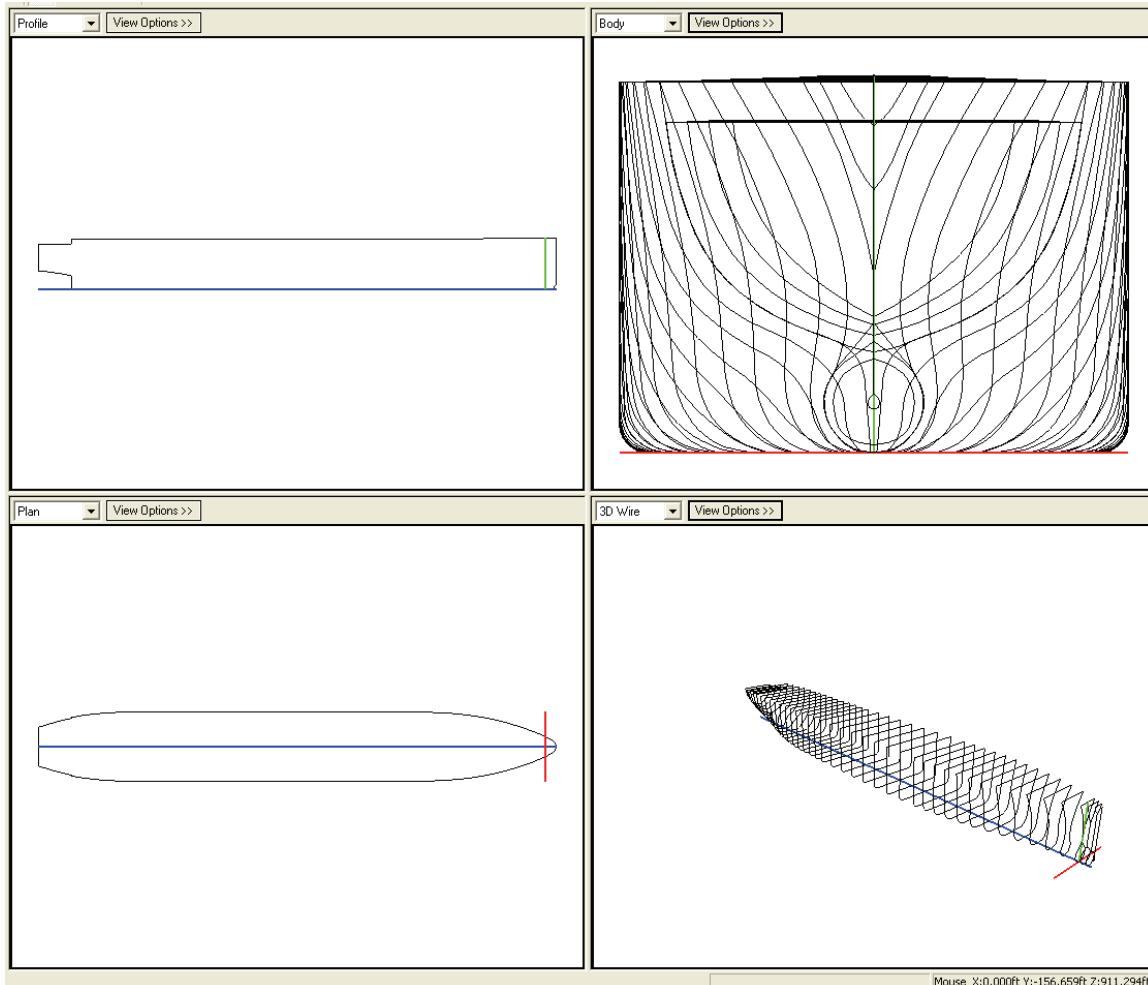


Figure 108: Other 08

Other 09

Table 110: Other 09 Principal Characteristics

Reference ID:	Other 09	
Description:	LASH	
Special Codes:	P	
Length:	835.0	ft
	254.5	M
Beam:	107.0	ft
	32.6	M
Depth:	60.5	ft
	18.4	M
Draft:	35.0	ft
	10.7	M
Displacement:	56,875	LT
	57,785	Mt

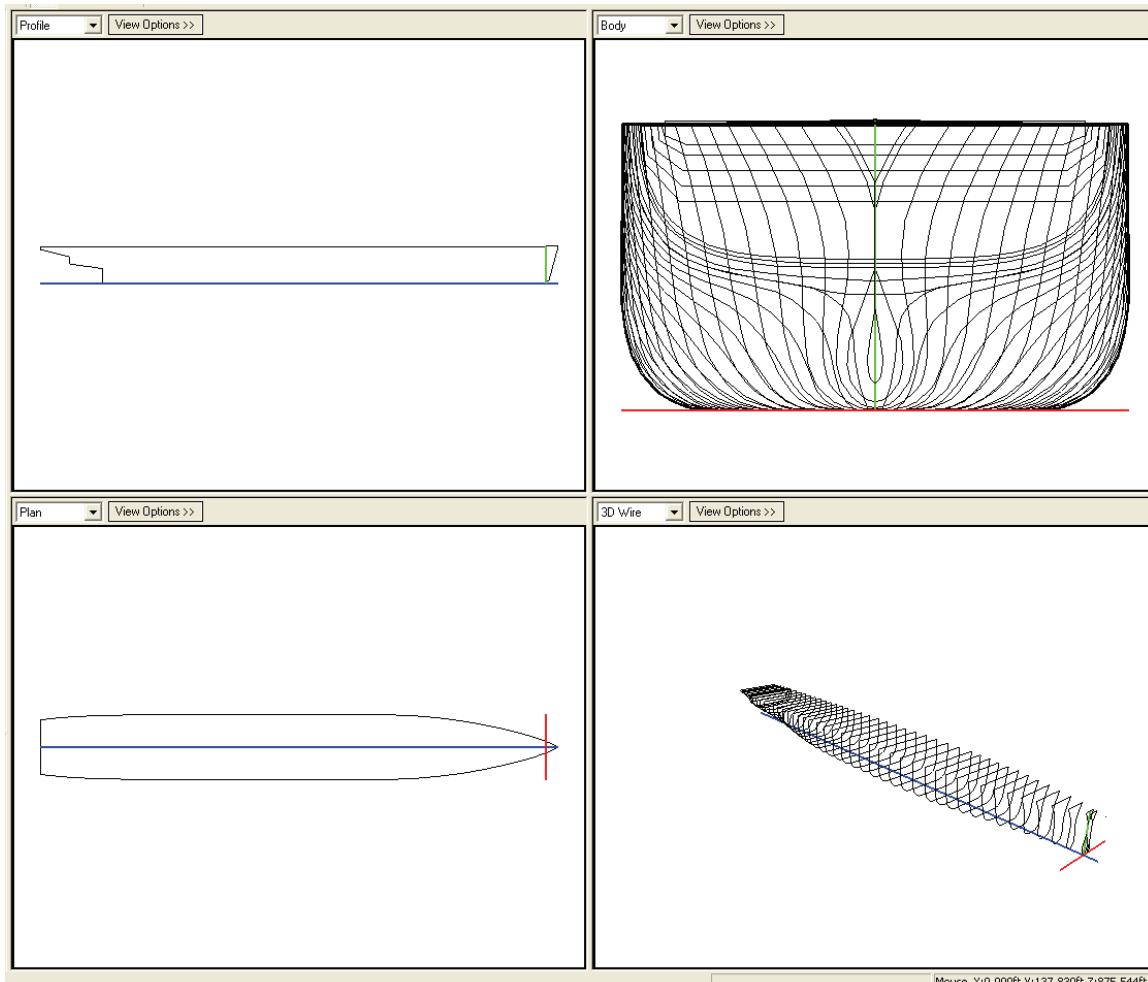


Figure 109: Other 09

Other 10

Table 111: Other 10 Principal Characteristics

Reference ID:	Other 10
Description:	LNG
Special Codes:	
Length:	720.0 ft 219.5 m
Beam:	114.0 ft 34.7 m
Depth:	73.5 ft 22.4 m
Draft:	42.0 ft 12.8 m
Displacement:	67,520 LT 68,600 mt

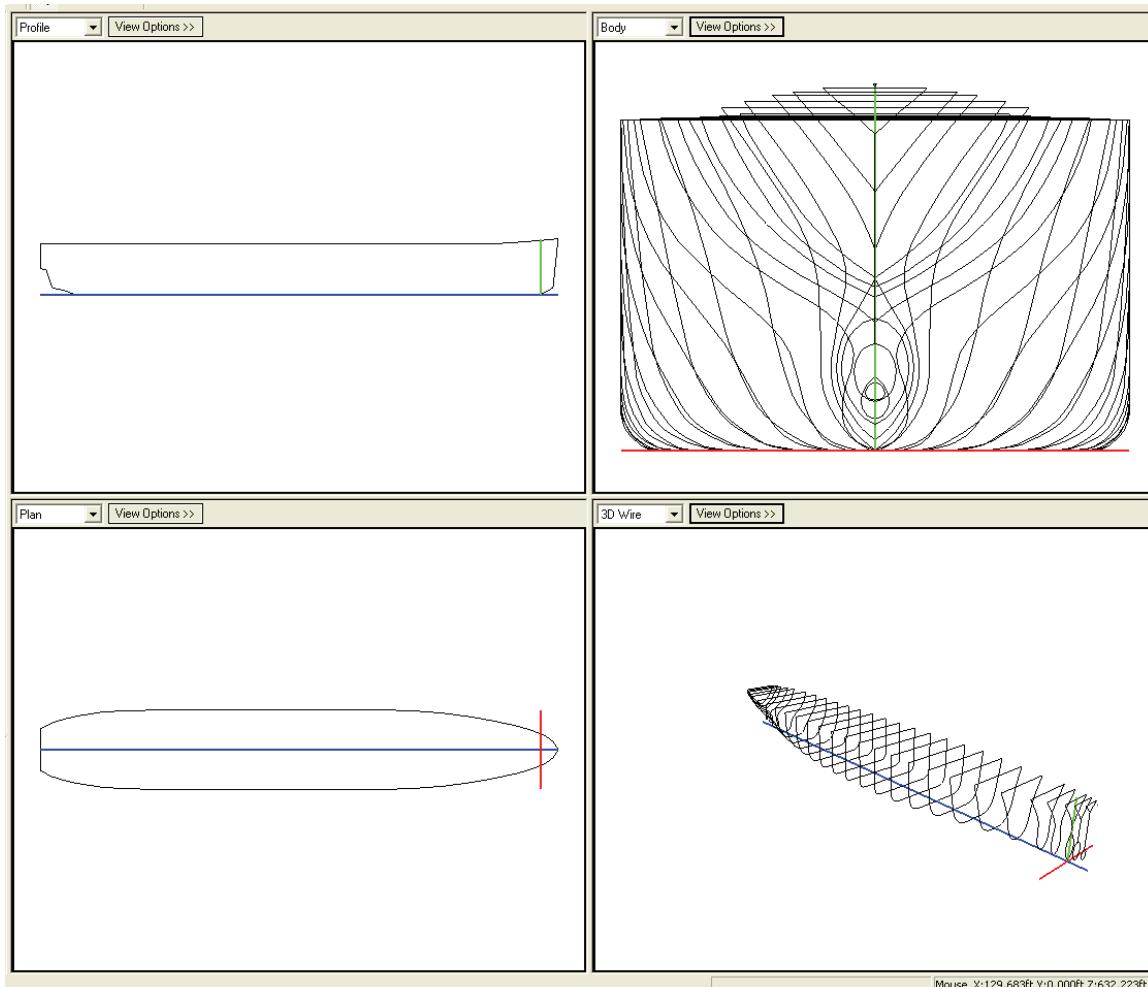


Figure 110: Other 10

Passenger Vessels

Passenger 01

Table 112: Passenger 01 Principal Characteristics

Reference ID:	Passenger 01
Description:	Small Passenger Vessel
Special Codes:	P
Length:	136.0 ft 41.5 m
Beam:	34.5 ft 10.5 m
Depth:	10.0 ft 3.0 m
Draft:	5.3 ft 1.6 m
Displacement:	235 LT 239 mt

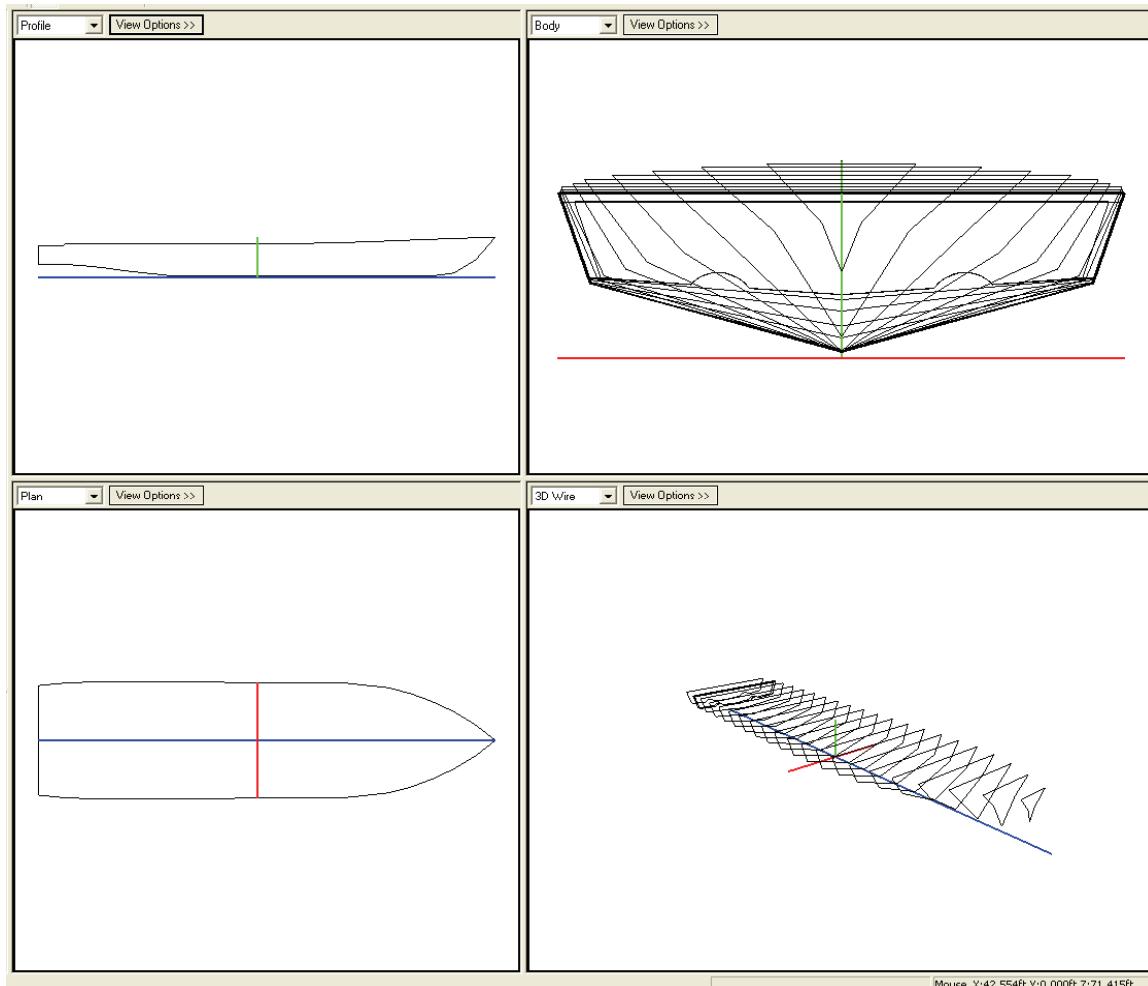


Figure 111: Passenger 01

Passenger 02

Table 113: Passenger 02 Principal Characteristics

Reference ID:	Passenger 02	
Description:	Medium Ocean Liner	
Special Codes:		
Length:	632.0	ft
	192.6	m
Beam:	89.0	ft
	27.1	m
Depth:	52.8	ft
	16.1	m
Draft:	30.0	ft
	9.1	m
Displacement:	29,900	LT
	30,378	mt

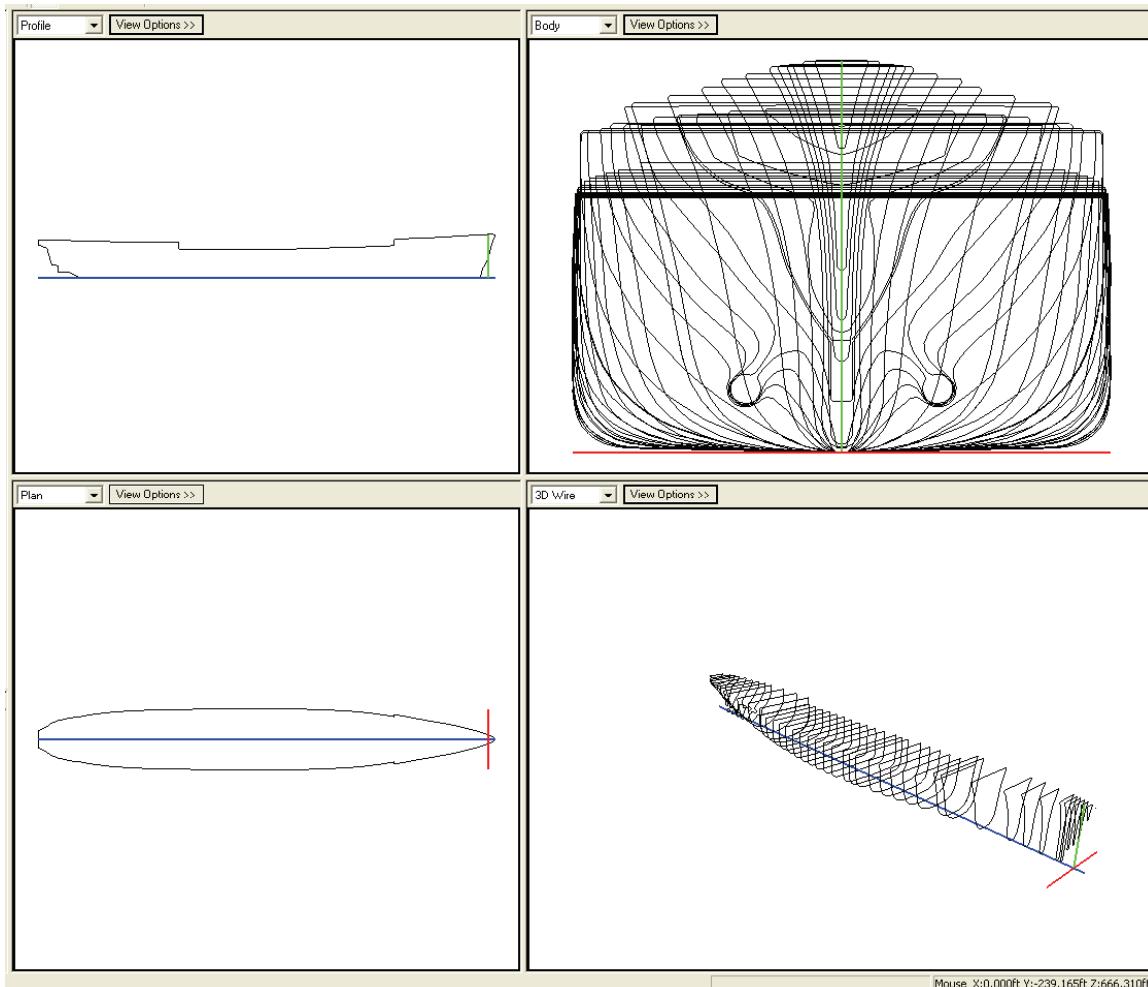


Figure 112: Passenger 02

Passenger 03

Table 114: Passenger 03 Principal Characteristics

Reference ID:	Passenger 03	
Description:	Large Modern Cruise Ship	
Special Codes:	P	
Length:	840.0	ft
	256.0	m
Beam:	105.8	ft
	32.2	m
Depth:	26.3	ft
	8.0	m
Draft:	22.1	ft
	6.7	m
Displacement:	36,670	LT
	37,257	mt

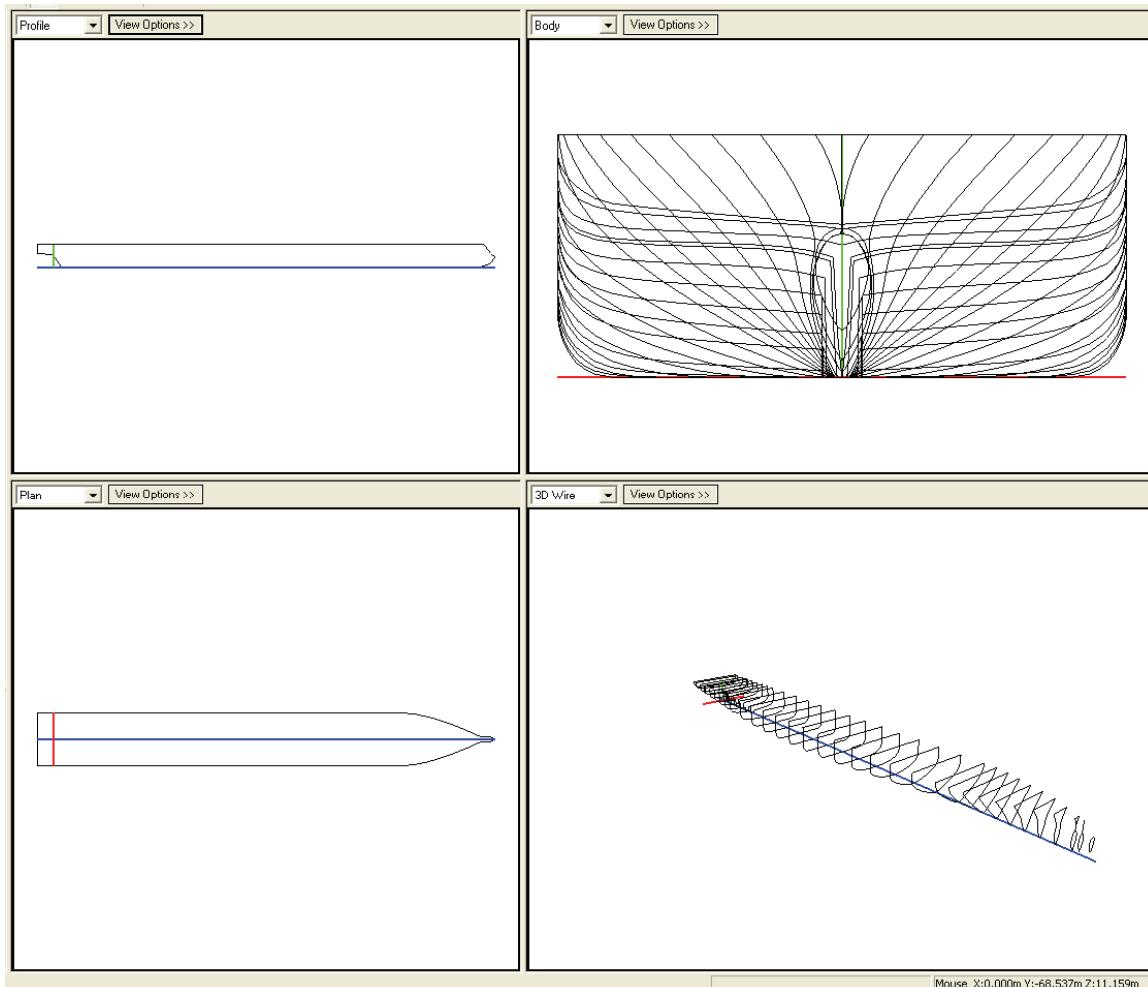


Figure 113: Passenger 03

Passenger 04

Table 115: Passenger 04 Principal Characteristics

Reference ID:	Passenger 04	
Description:	Medium Modern Cruise Ship	
Special Codes:	P	
Length:	775.0	ft
	236.2	m
Beam:	105.8	ft
	32.2	m
Depth:	67.3	ft
	20.5	m
Draft:	24.0	ft
	7.3	m
Displacement:	32,800	LT
	33,325	mt

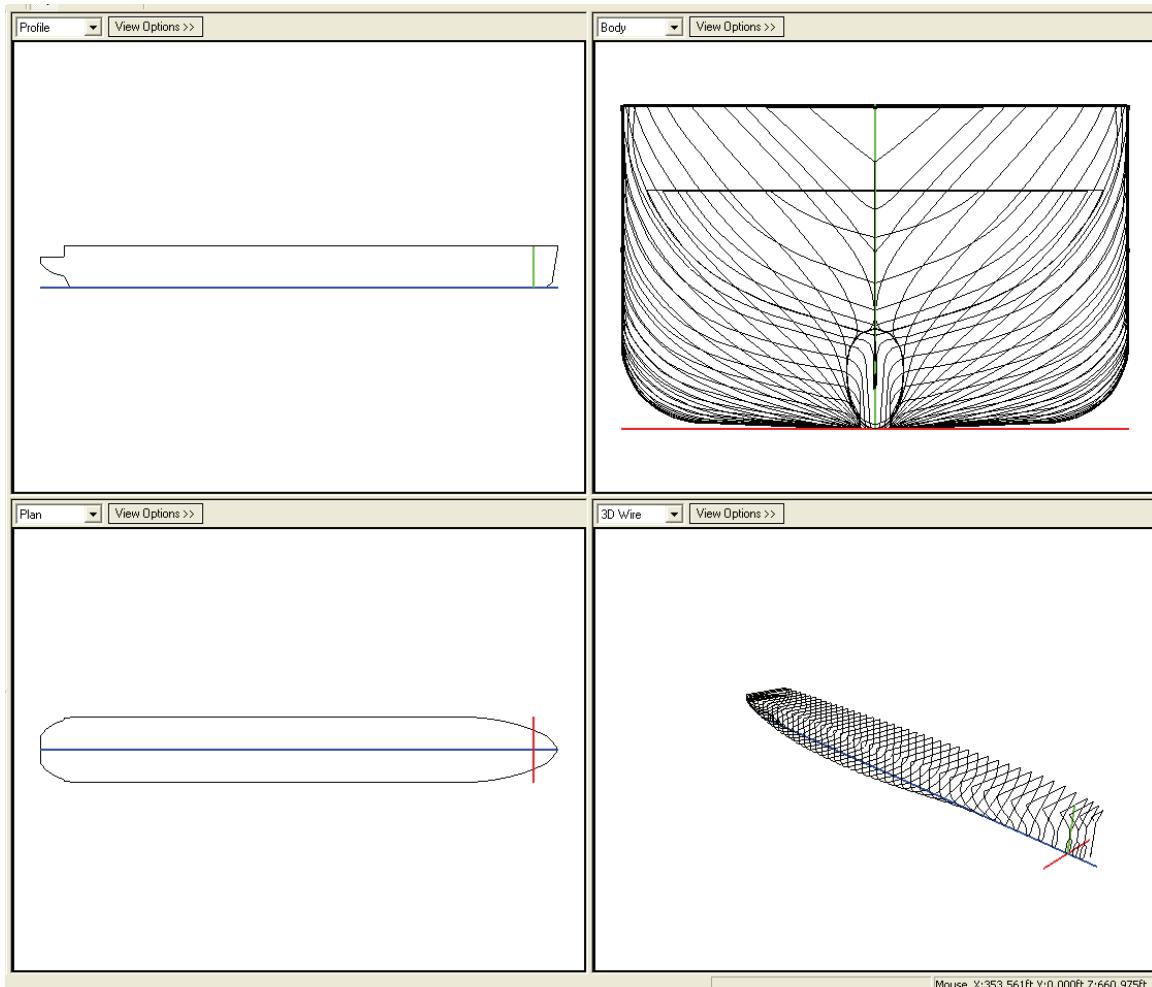


Figure 114: Passenger 04

Passenger 05

Table 116: Passenger 05 Principal Characteristics

Reference ID:	Passenger 05	
Description:	Large Ocean Liner	
Special Codes:		
Length:	921.0	ft
	280.7	m
Beam:	101.5	ft
	30.9	m
Depth:	70.5	ft
	21.5	m
Draft:	31.0	ft
	9.4	m
Displacement:	43,500	LT
	44,196	mt

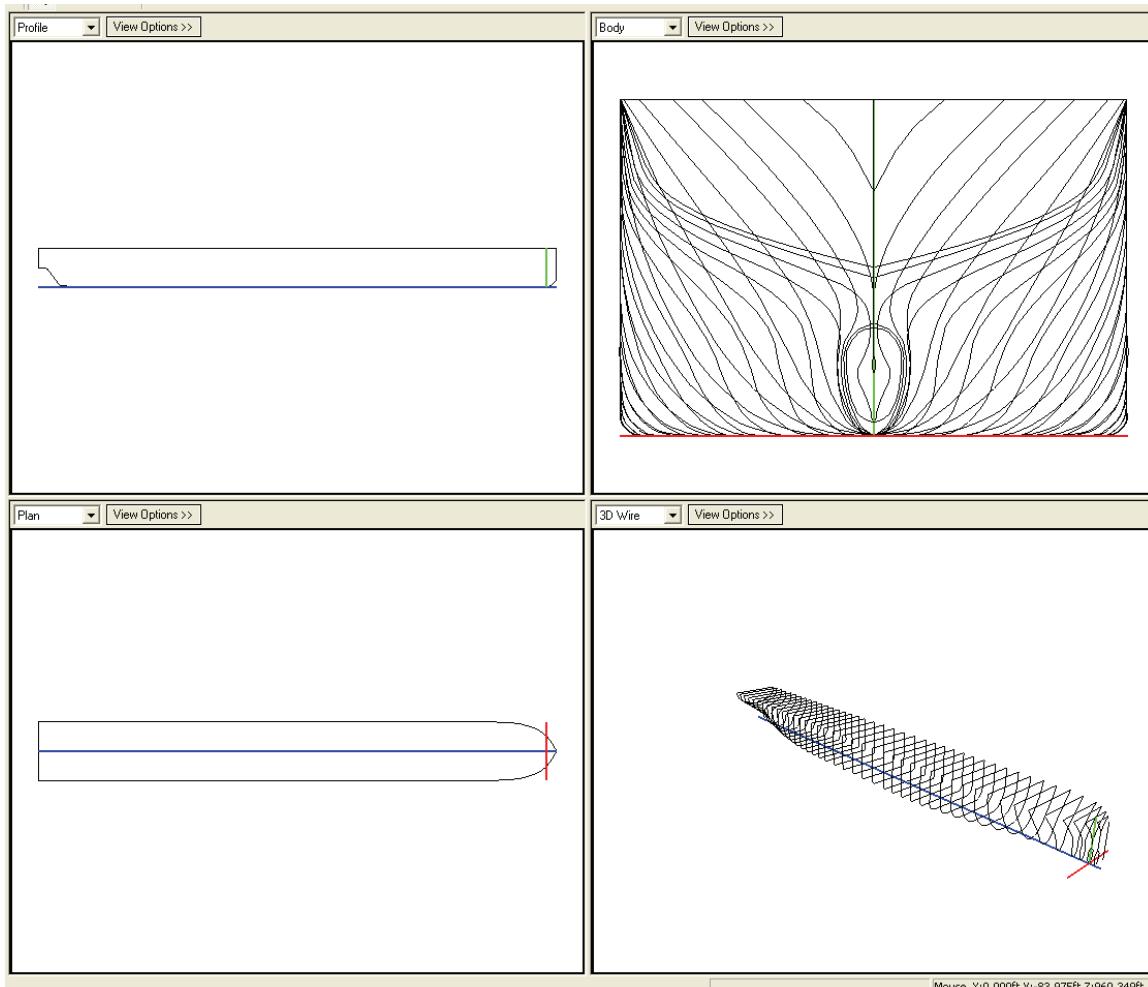


Figure 115: Passenger 05

Passenger 06

Table 117: Passenger 06 Principal Characteristics

Reference ID:	Passenge 06	
Description:	Large Ocean Liner	
Special Codes:		
Length:	980.0	ft
	298.7	m
Beam:	110.5	ft
	33.7	m
Depth:	51.9	ft
	15.8	m
Draft:	28.0	ft
	8.5	m
Displacement:	42,880	LT
	43,566	mt

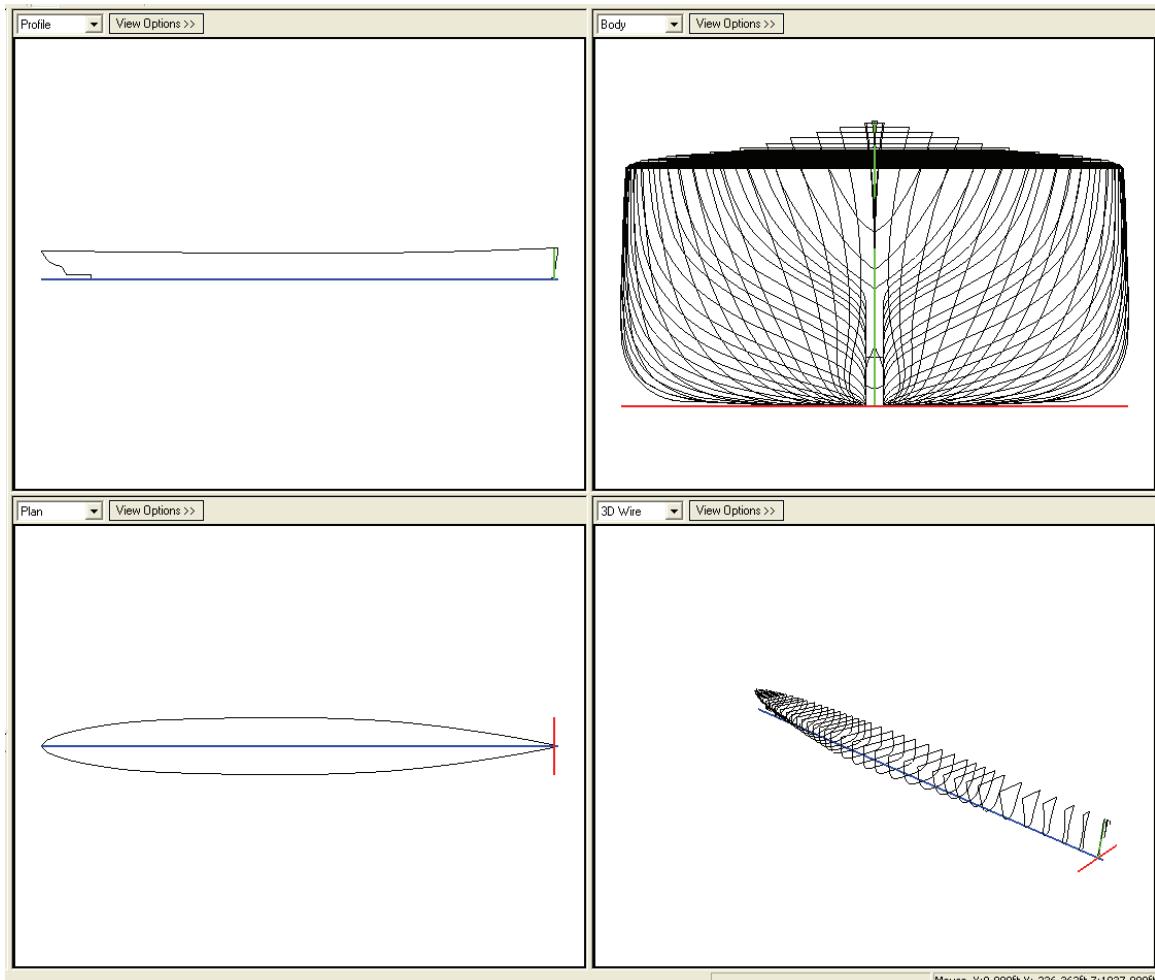


Figure 116: Passenger 06

Research Vessels

Research Vessel 01

Table 118: Research Vessel 01 Principal Characteristics

Reference ID:	Research Vessel 01
Description:	Academic/Scientific Research Vessel
Special Codes:	P, G
Length:	187.0 ft 57.0 m
Beam:	33.0 ft 10.1 m
Depth:	19.0 ft 5.8 m
Draft:	11.5 ft 3.5 m
Displacement:	765 LT 777 mt

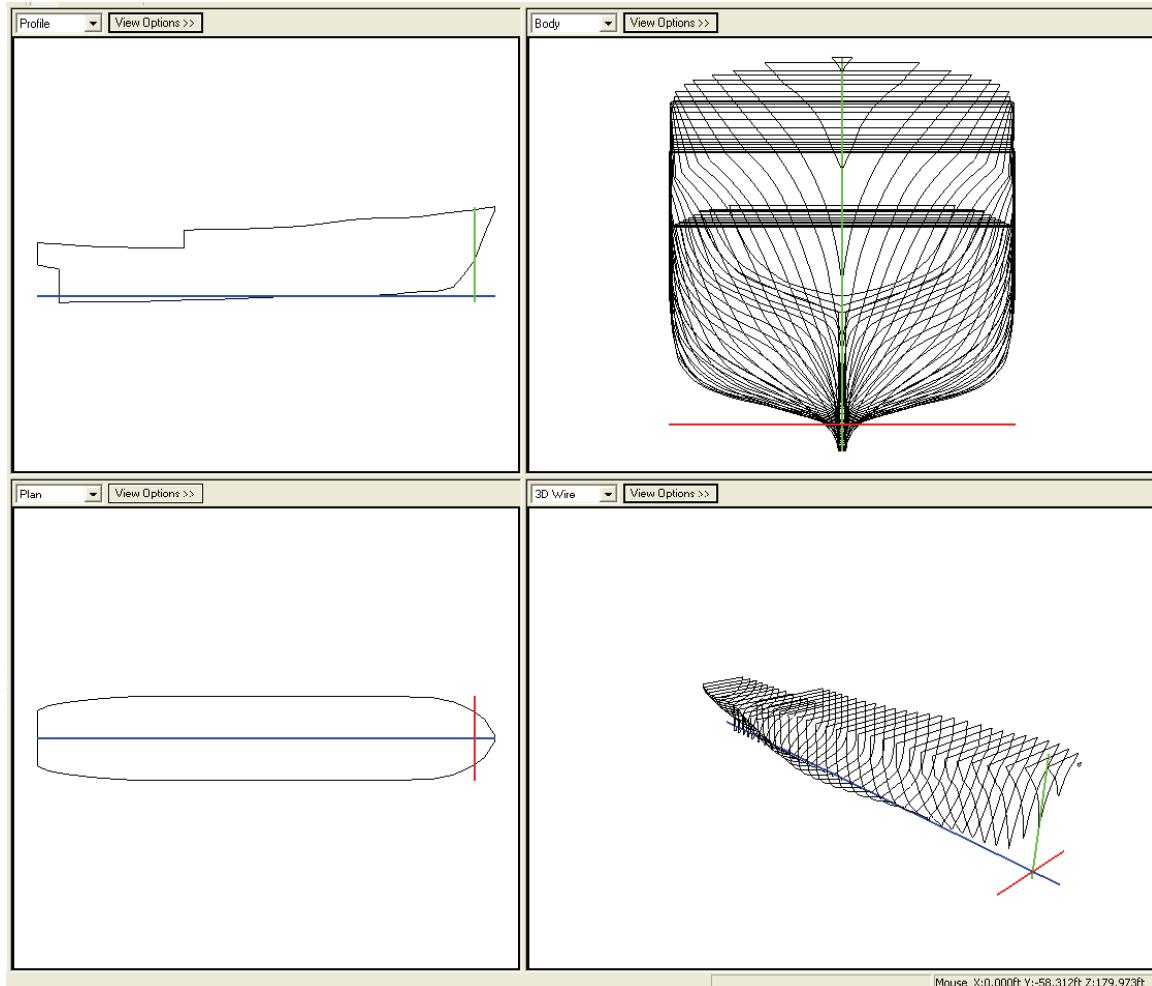


Figure 117: Research Vessel 01

Research Vessel 02

Table 119: Research Vessel 02 Principal Characteristics

Reference ID:	Research Vessel 02	
Description:	Academic/Scientific Research Vessel	
Special Codes:	P, G	
Length:	184.5	ft
	56.2	m
Beam:	33.0	ft
	10.1	m
Depth:	18.5	ft
	5.6	m
Draft:	10.7	ft
	3.3	m
Displacement:	1,150	LT
	1,168	mt

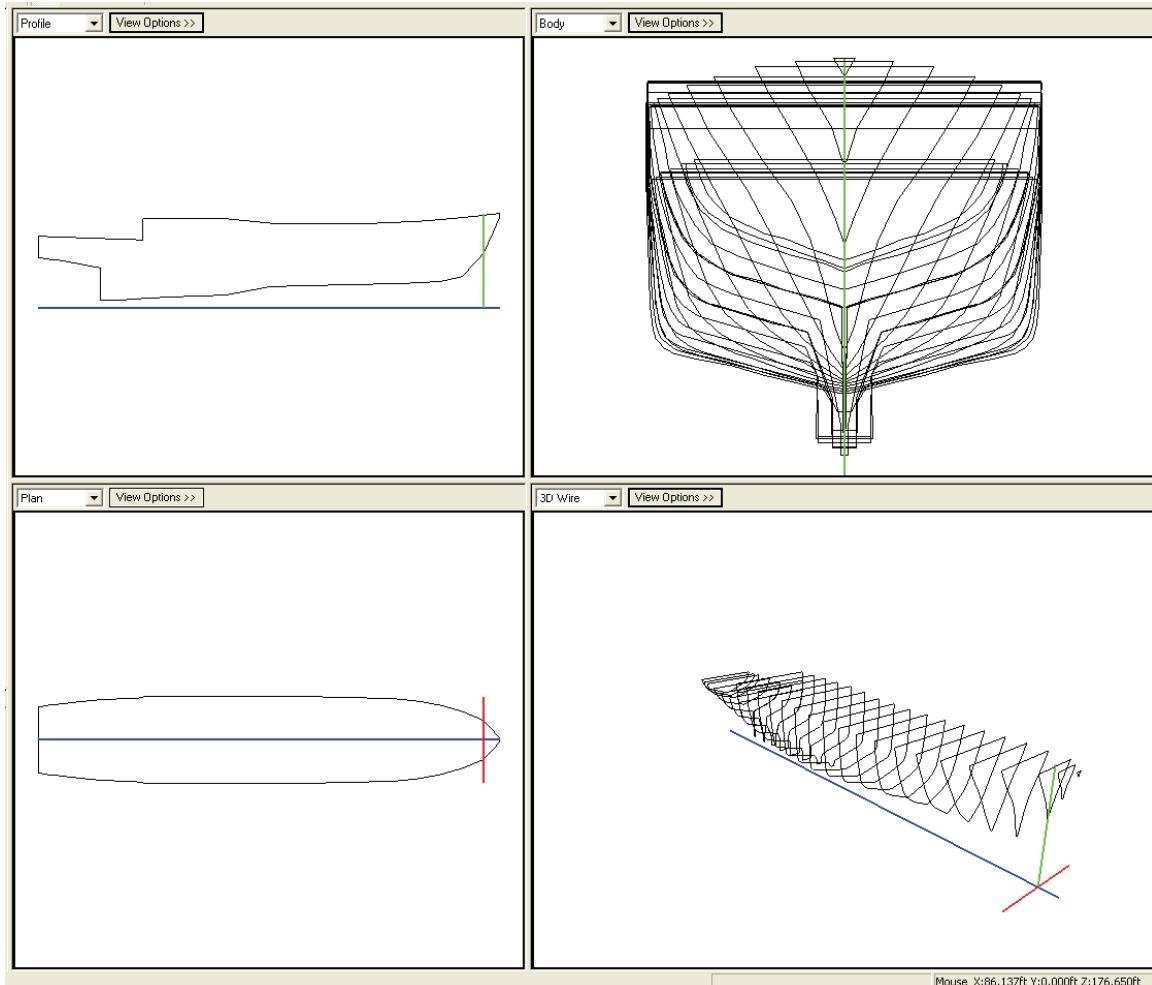


Figure 118: Research Vessel 02

Research Vessel 03

Table 120: Research Vessel 03 Principal Characteristics

Reference ID:	Research Vessel 03	
Description:	Academic/Scientific Research Vessel	
Special Codes:	P	
Length:	273.2	ft
	83.3	m
Beam:	52.5	ft
	16.0	m
Depth:	26.5	ft
	8.1	m
Draft:	17.0	ft
	5.2	m
Displacement:	3,510	LT
	3,566	mt

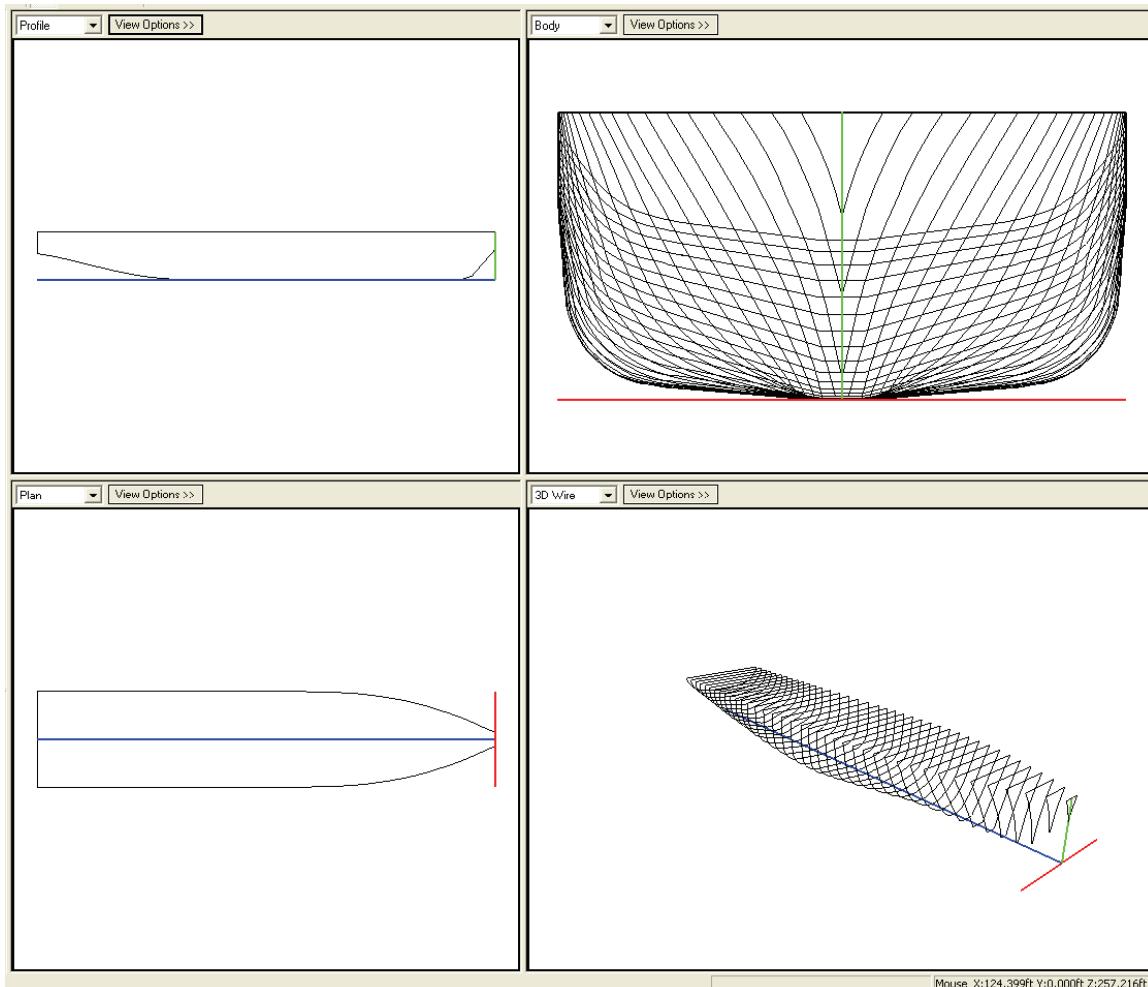


Figure 119: Research Vessel 03

Research Vessel 04

Table 121: Research Vessel 04 Principal Characteristics

Reference ID:	Research Vessel 04	
Description:	Ice Capable Research Vessel	
Special Codes:	G	
Length:	300.0	ft
	91.4	m
Beam:	60.0	ft
	18.3	m
Depth:	31.0	ft
	9.4	m
Draft:	17.3	ft
	5.3	m
Displacement:	4,585	LT
	4,658	mt

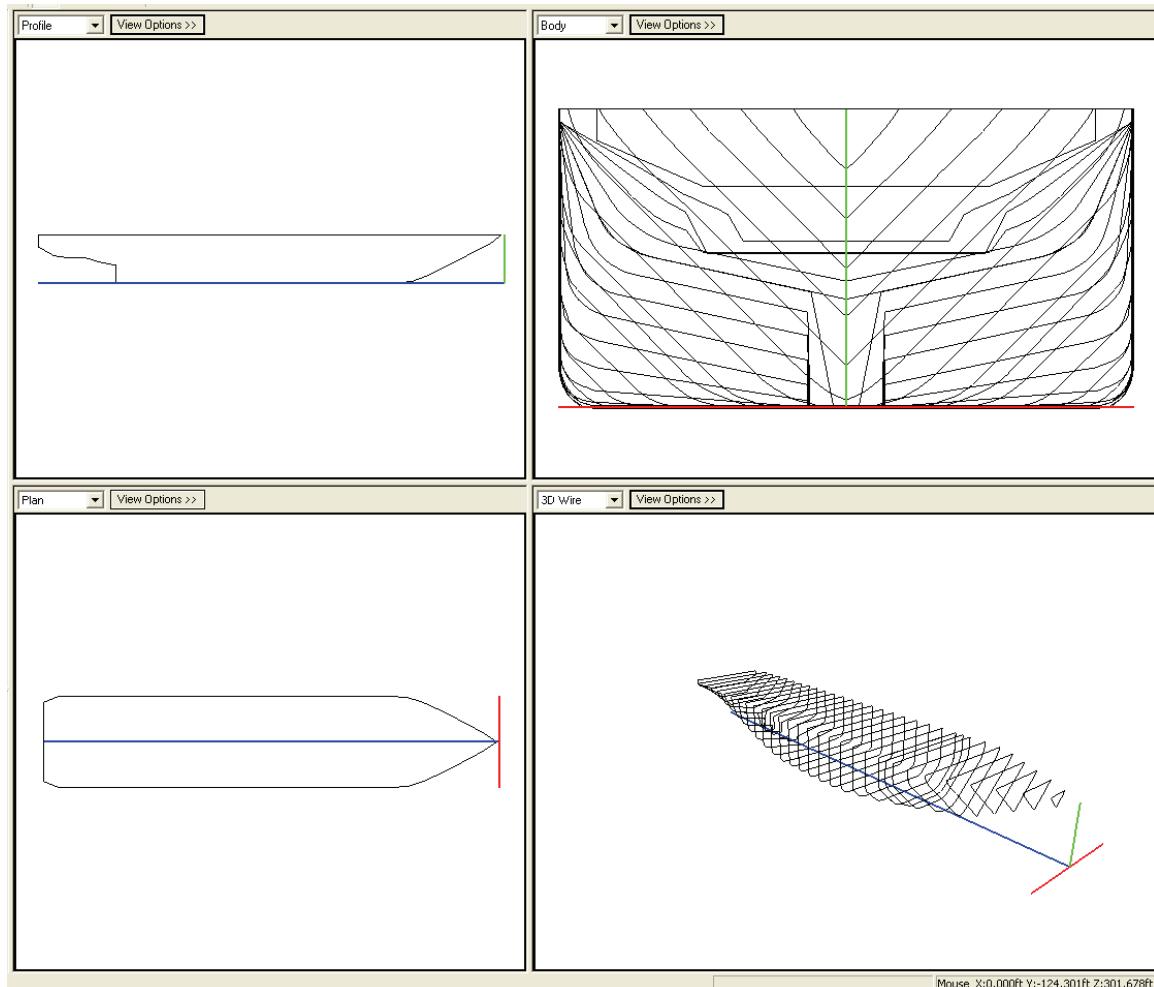


Figure 120: Research Vessel 04

Research Vessel 05

Table 122: Research Vessel 05 Principal Characteristics

Reference ID:	Research Vessel 05	
Description:	Academic/Scientific Research Vessel	
Special Codes:	G	
Length:	273.0	ft
	83.2	m
Beam:	52.5	ft
	16.0	m
Depth:	26.5	ft
	8.1	m
Draft:	17.0	ft
	5.2	m
Displacement:	3,510	LT
	3,566	mt

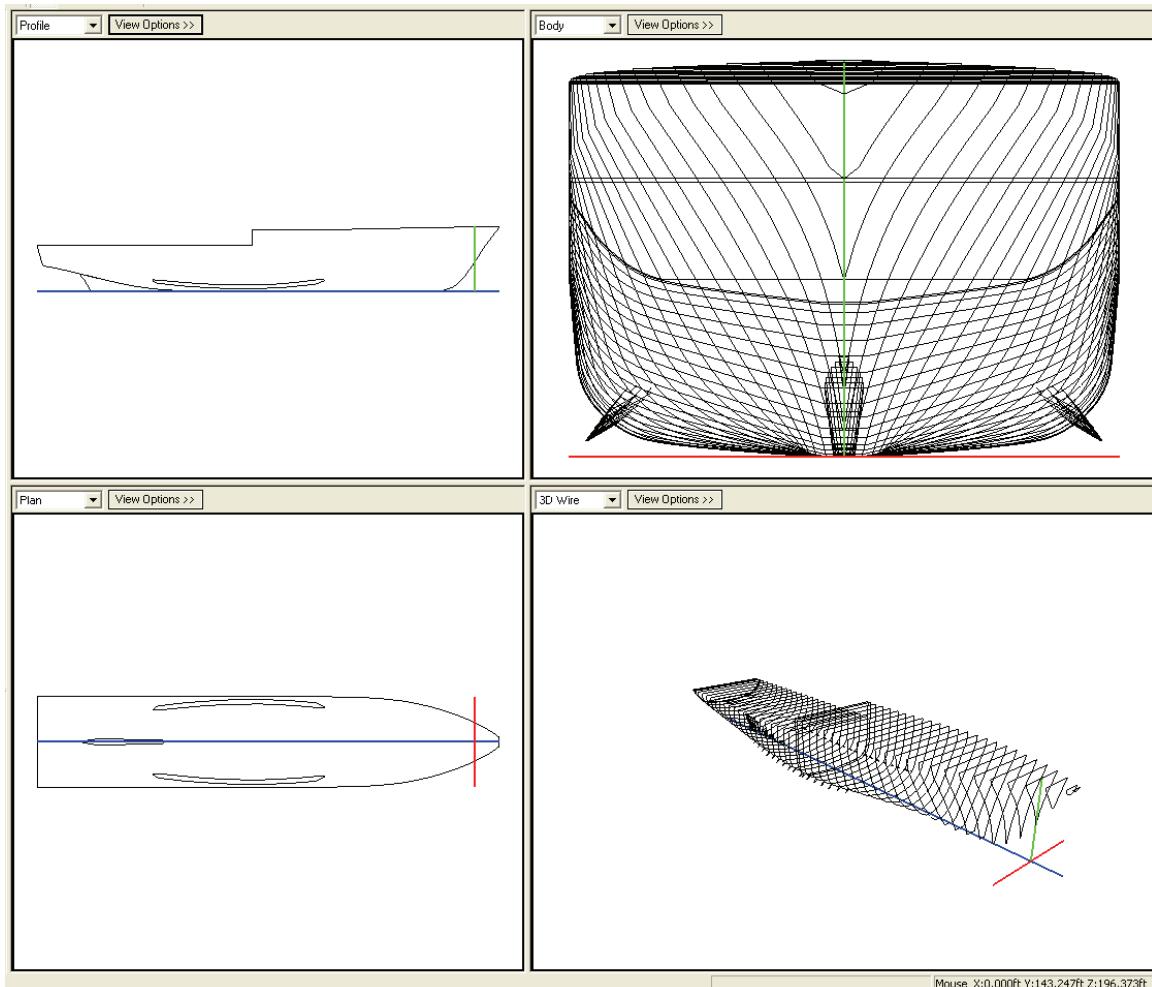


Figure 121: Research Vessel 05

Research Vessel 06

Table 123: Research Vessel 06 Principal Characteristics

Reference ID:	Research Vessel 06	
Description:	Oceanographic Survey	
Special Codes:	G	
Length:	328.5	ft
	100.1	m
Beam:	58.0	ft
	17.7	m
Depth:	28.0	ft
	8.5	m
Draft:	19.0	ft
	5.8	m
Displacement:	5,070	LT
	5,151	mt

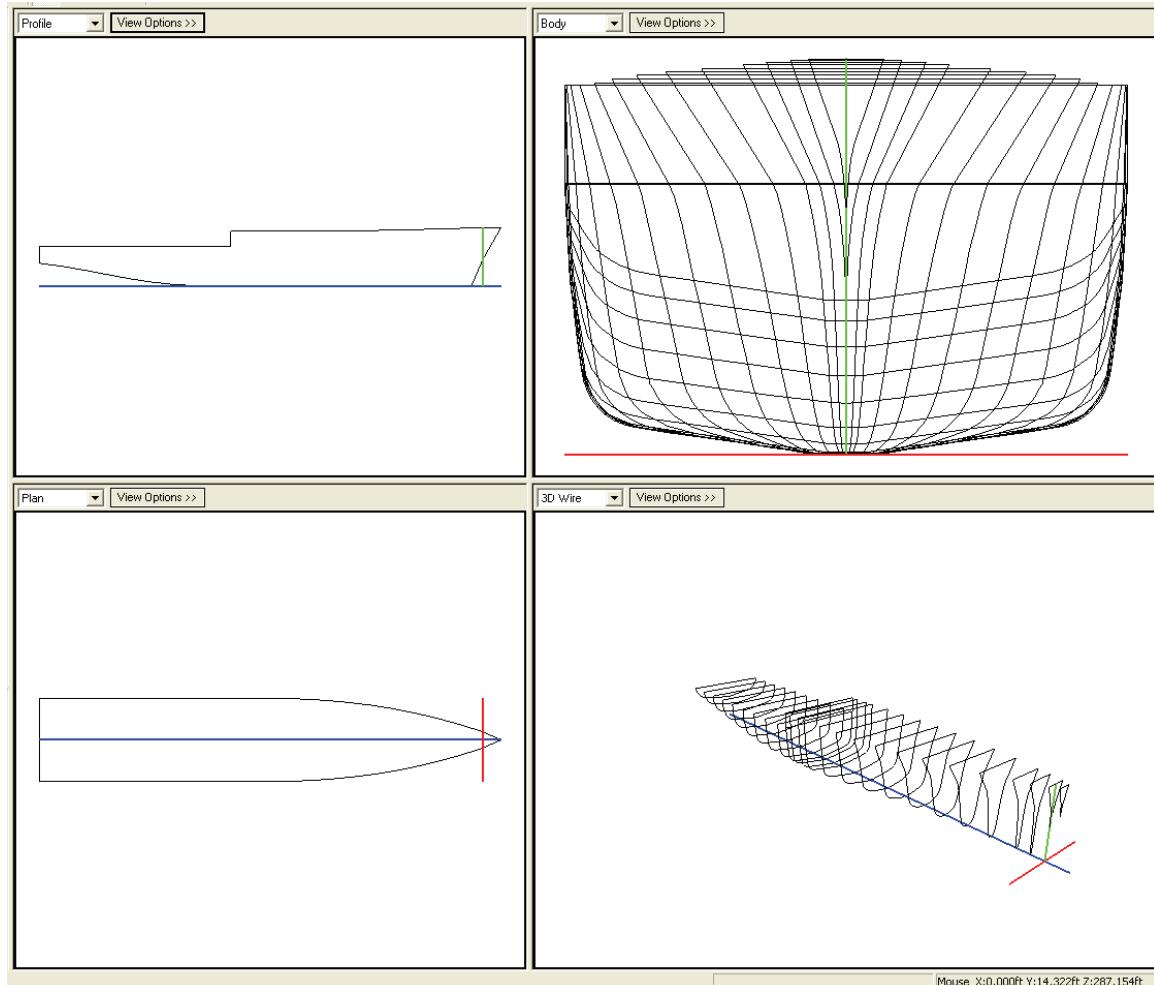


Figure 122: Research Vessel 06

Research Vessel 07

Table 124: Research Vessel 07 Principal Characteristics

Reference ID:	Research Vessel 07	
Description:	Academic/Scientific Research Vessel	
Special Codes:	G	
Length:	163.0	ft
	49.7	m
Beam:	33.0	ft
	10.1	m
Depth:	14.2	ft
	4.3	m
Draft:	12.7	ft
	3.9	m
Displacement:	650	LT
	660	mt

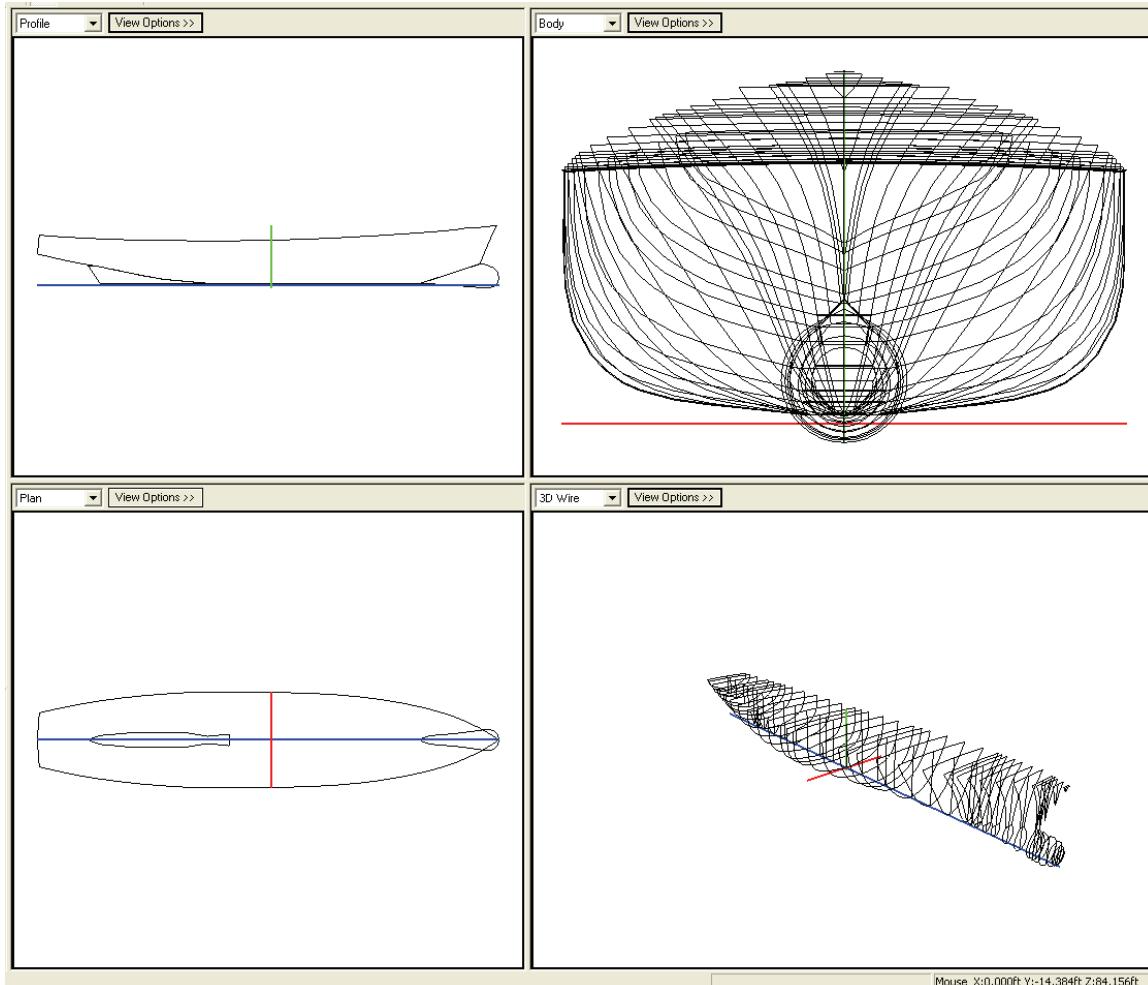


Figure 123: Research Vessel 07

Roll-On/Roll-Off Vessels (RO/ROs)

Ro/Ro 01

Table 125: Ro/Ro 01 Principal Characteristics

Reference ID:	RO/RO 01
Description:	RRF Ro/Ro
Special Codes:	G
Length:	627.4 ft 191.2 m
Beam:	88.6 ft 27.0 m
Depth:	57.8 ft 17.6 m
Draft:	28.3 ft 8.6 m
Displacement:	24,550 LT 24,943 mt

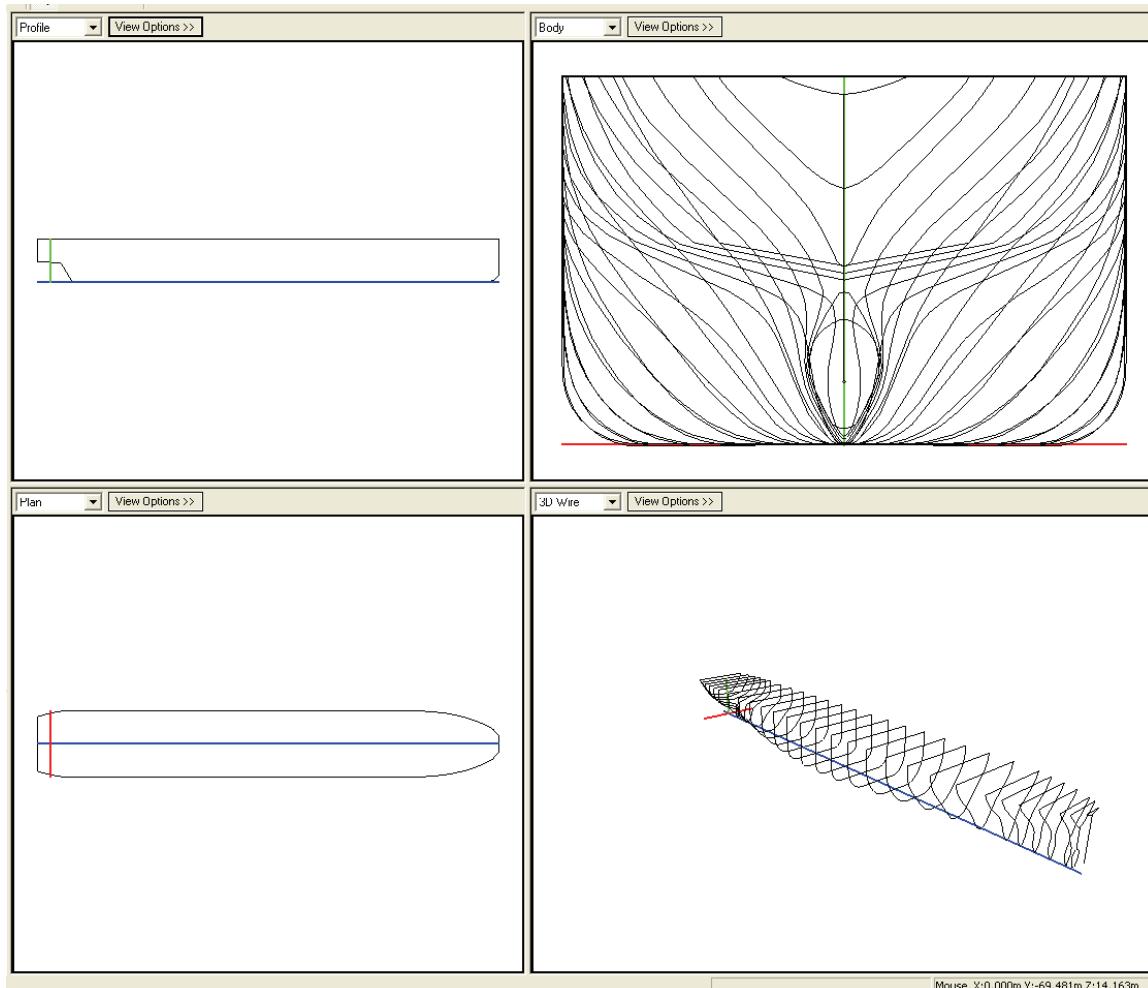


Figure 124: Ro/Ro 01

Ro/Ro 02

Table 126: Ro/Ro 02 Principal Characteristics

Reference ID:	RO/RO 02
Description:	RRF Ro/Ro
Special Codes:	G
Length:	697.0 ft 212.4 m
Beam:	105.8 ft 32.2 m
Depth:	45.0 ft 13.7 m
Draft:	38.1 ft 11.6 m
Displacement:	53,650 LT 54,508 mt

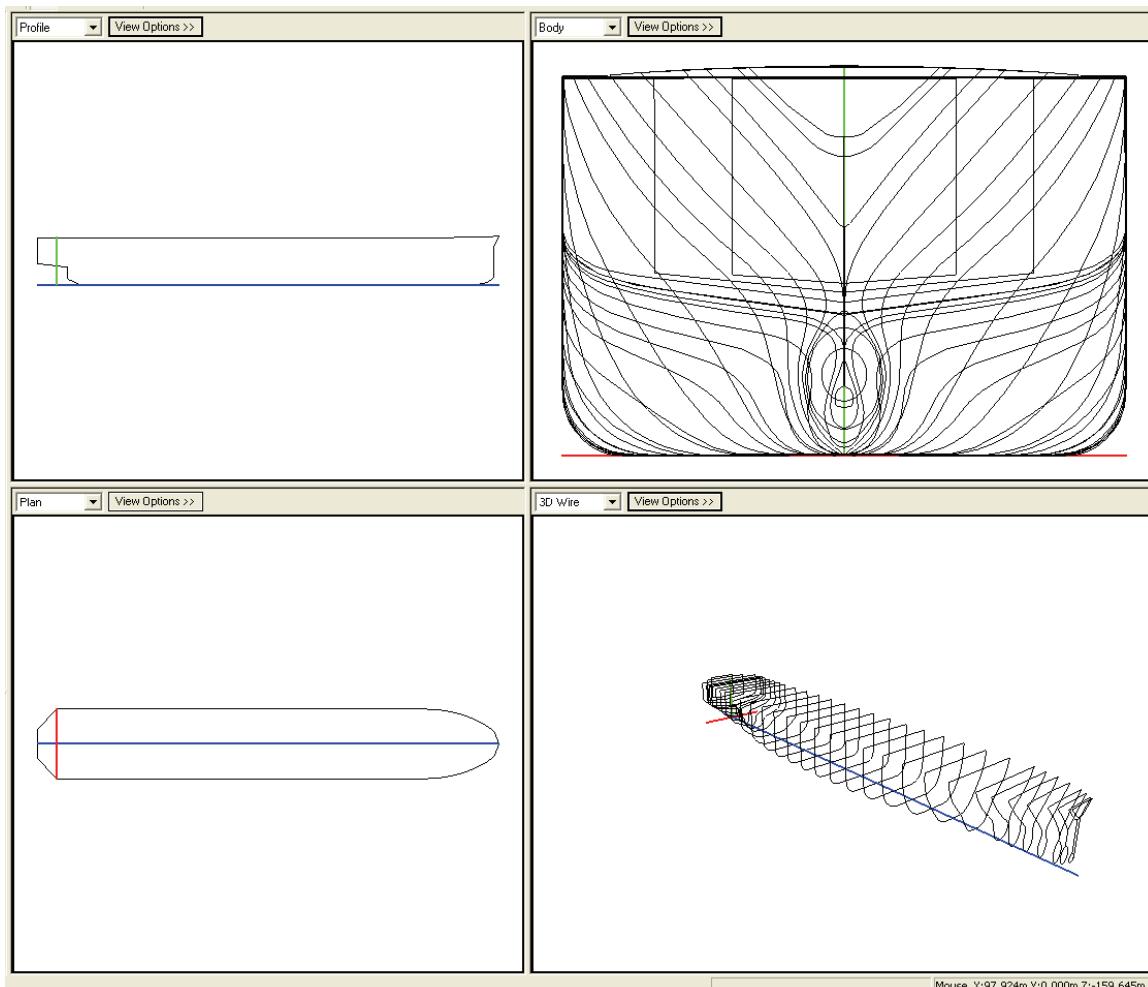


Figure 125: Ro/Ro 02

Ro/Ro 03

Table 127: Ro/Ro 03 Principal Characteristics

Reference ID:	RO/RO 03
Description:	Strategic Sealift
Special Codes:	G
Length:	950.0 ft 289.6 m
Beam:	150.0 ft 45.7 m
Depth:	89.0 ft 27.1 m
Draft:	37.5 ft 11.4 m
Displacement:	69,950 LT 71,069 mt

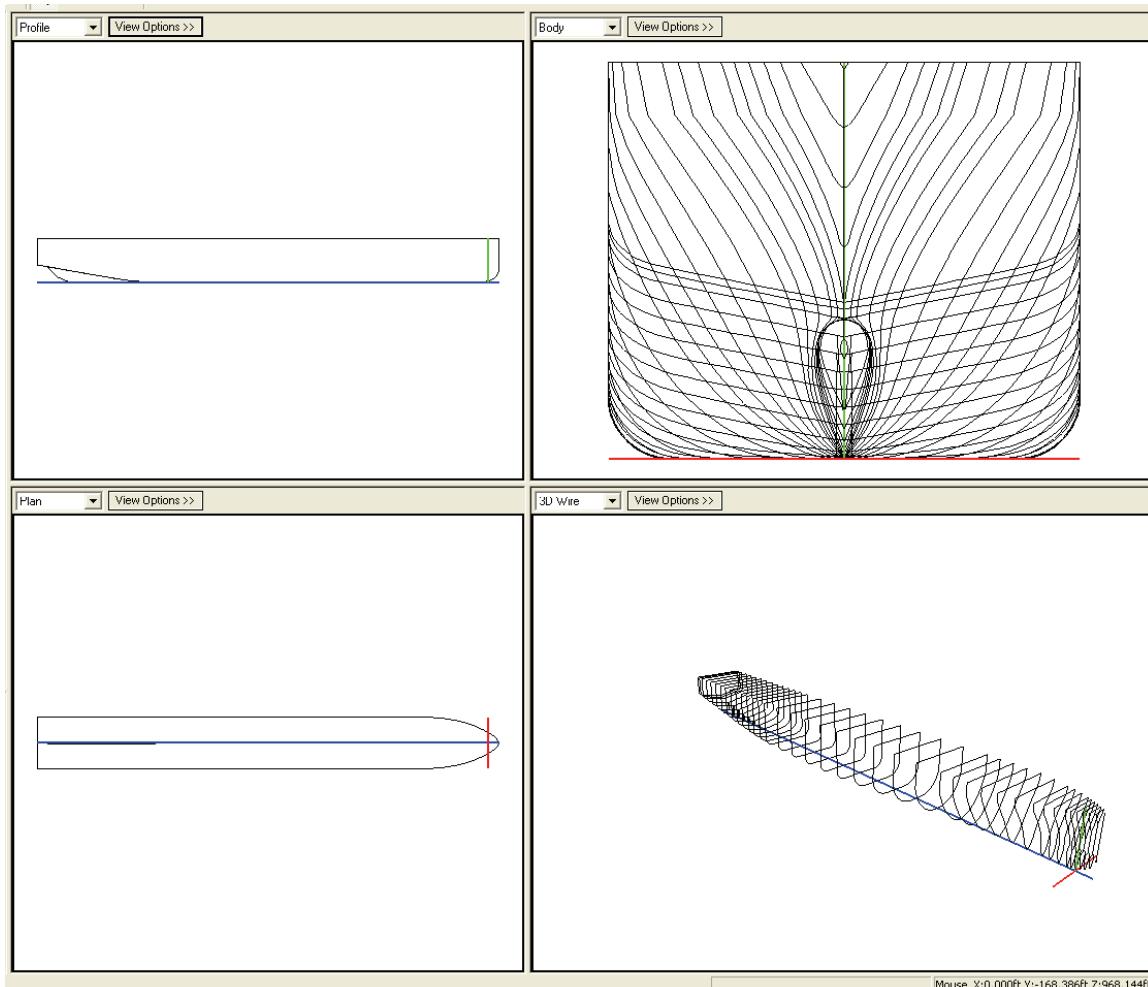


Figure 126: Ro/Ro 03

Ro/Ro 04

Table 128: Ro/Ro 04 Principal Characteristics

Reference ID:	RO/RO 04
Description:	Large Medium Speed Ro/Ro
Special Codes:	G
Length:	895.0 ft 272.8 m
Beam:	105.8 ft 32.2 m
Depth:	89.3 ft 27.2 m
Draft:	35.8 ft 10.9 m
Displacement:	65,000 LT 66,040 mt

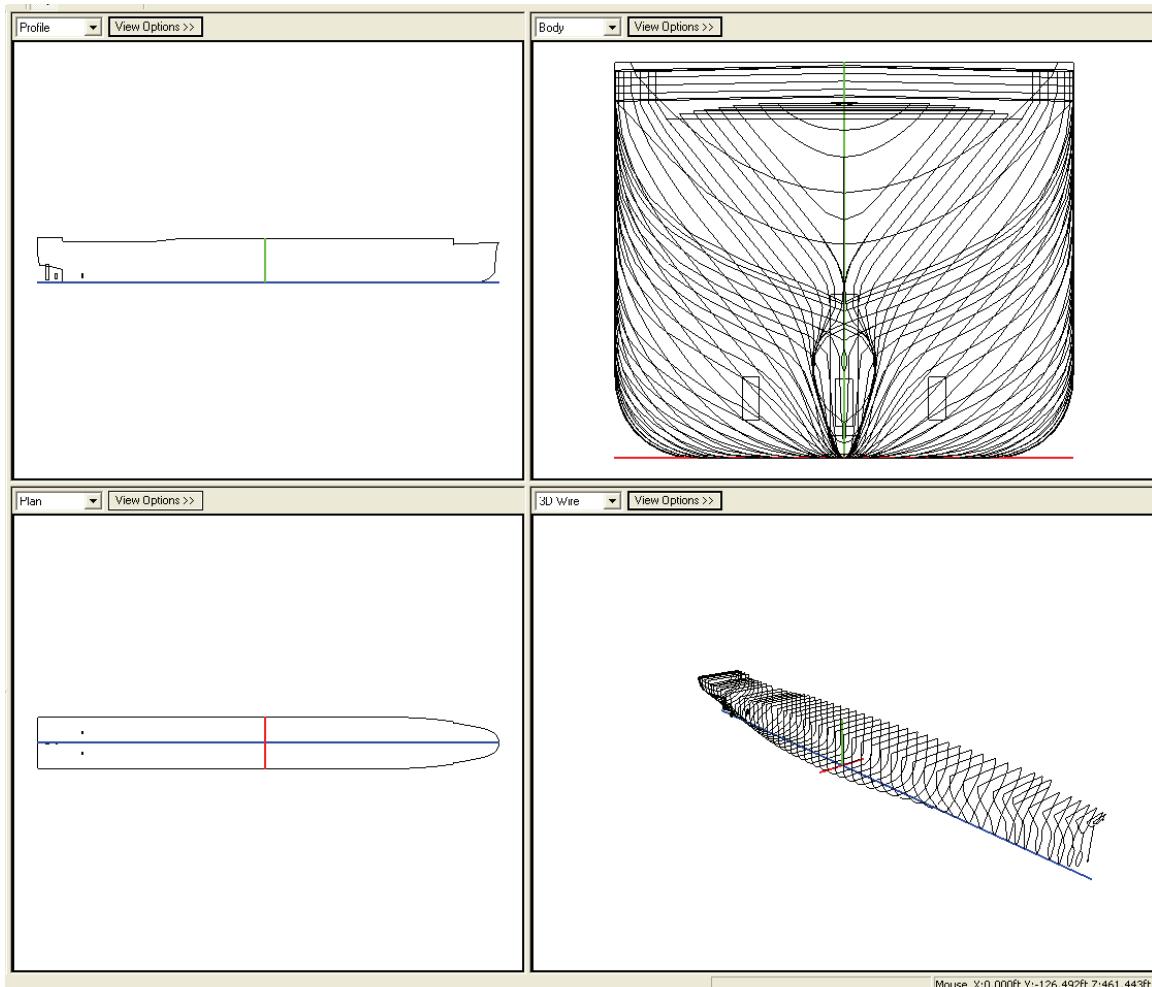


Figure 127: Ro/Ro 04

Ro/Ro 05

Table 129: Ro/Ro 05 Principal Characteristics

Reference ID:	RO/RO 05
Description:	Pure Car Carrier
Special Codes:	P
Length:	623.4 ft 190.0 m
Beam:	105.8 ft 32.2 m
Depth:	45.0 ft 13.7 m
Draft:	31.4 ft 9.6 m
Displacement:	31,380 LT 31,882 mt

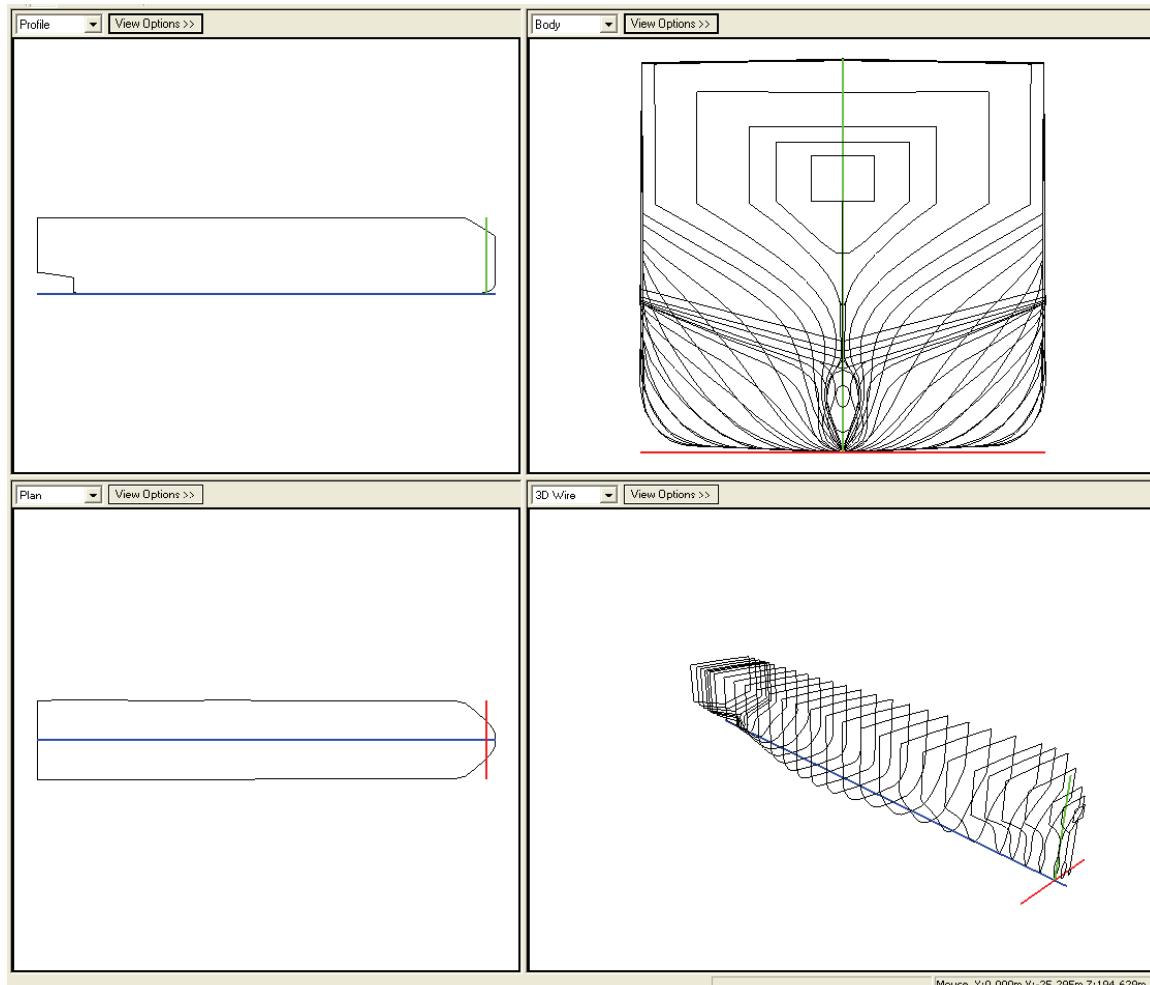


Figure 128: Ro/Ro 05

RO/RO 06

Table 130: RO/RO 06 Principal Characteristics

Reference ID:	RO/RO 06
Description:	Naval Auxiliary RO/RO
Special Codes:	G
Length:	749.0 ft 228.3 m
Beam:	105.8 ft 32.2 m
Depth:	66.5 ft 20.3 m
Draft:	35.0 ft 10.7 m
Displacement:	51,010 LT 51,826 mt

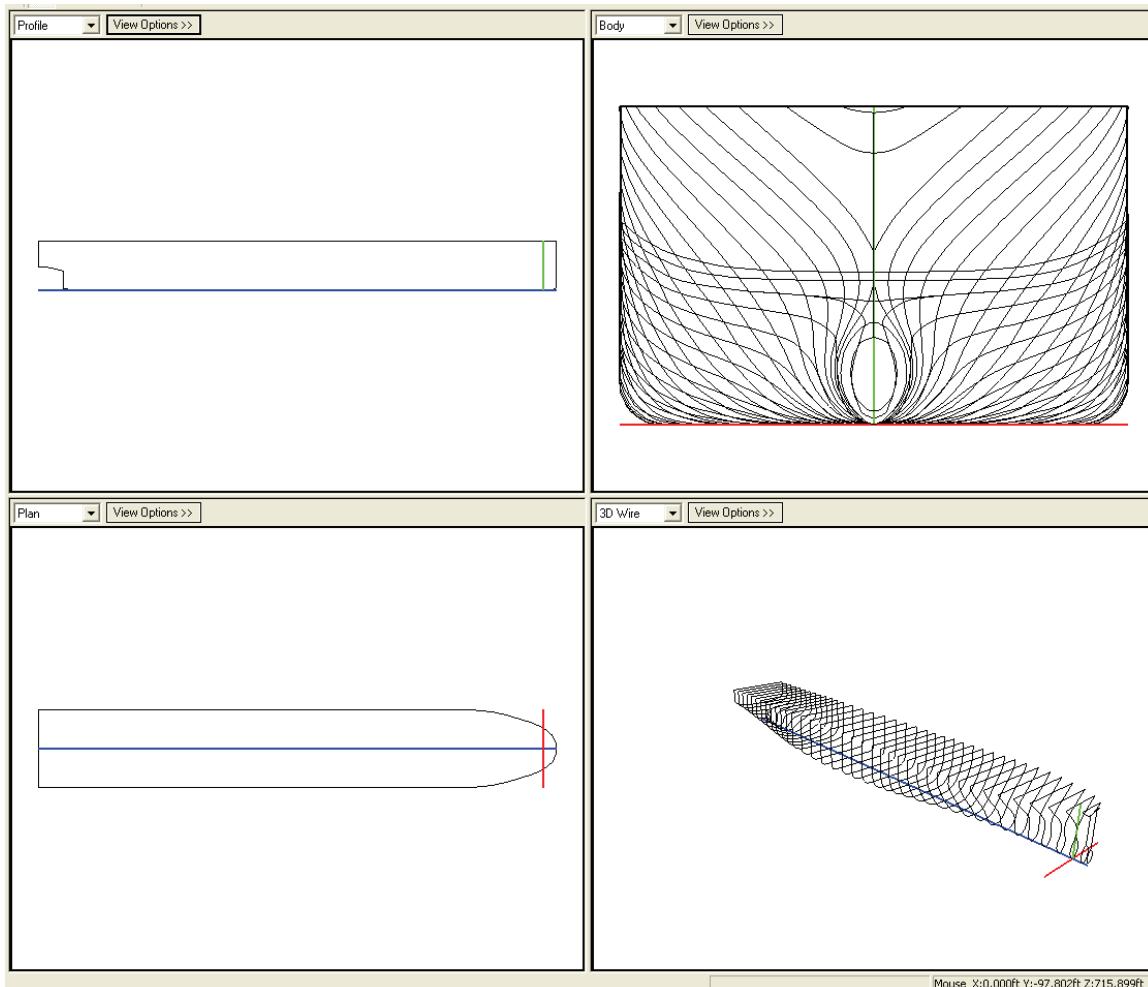


Figure 129: RO/RO 06

RO/RO 07

Table 131: RO/RO 07 Principal Characteristics

Reference ID:	RO/RO 07
Description:	Naval Auxiliary RO/RO
Special Codes:	G
Length:	647.0 ft 197.2 m
Beam:	105.0 ft 32.0 m
Depth:	66.7 ft 20.3 m
Draft:	32.0 ft 9.8 m
Displacement:	32,055 LT 32,568 mt

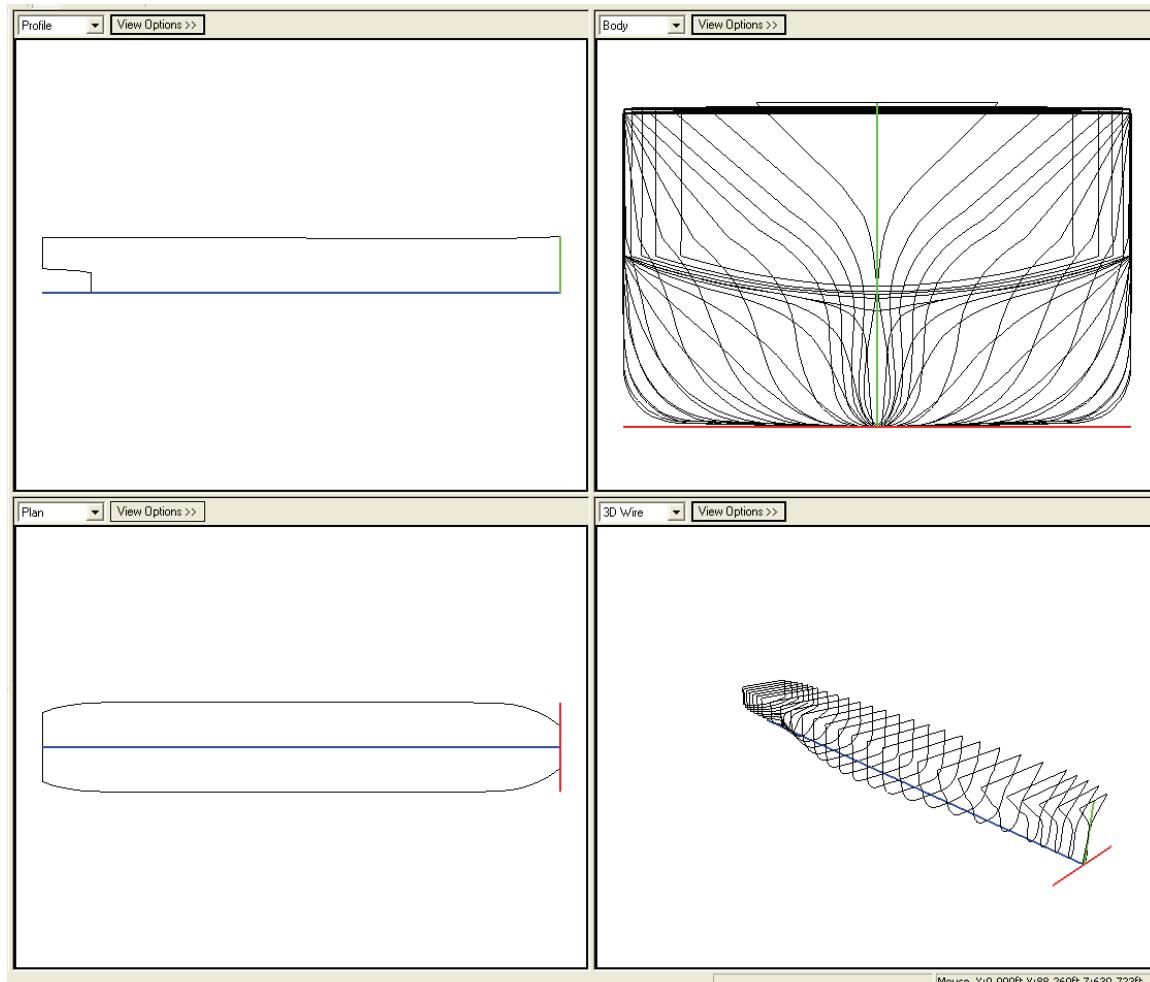


Figure 130: RO/RO 07

RO/RO 08

Table 132: RO/RO 08 Principal Characteristics

Reference ID:	RO/RO 08	
Description:		
Special Codes:	P	
Length:	744.2	ft
	226.8	m
Beam:	92.8	ft
	28.3	m
Depth:	34.9	ft
	10.6	m
Draft:	31.0	ft
	9.4	m
Displacement:	38,475	LT
	39,091	mt

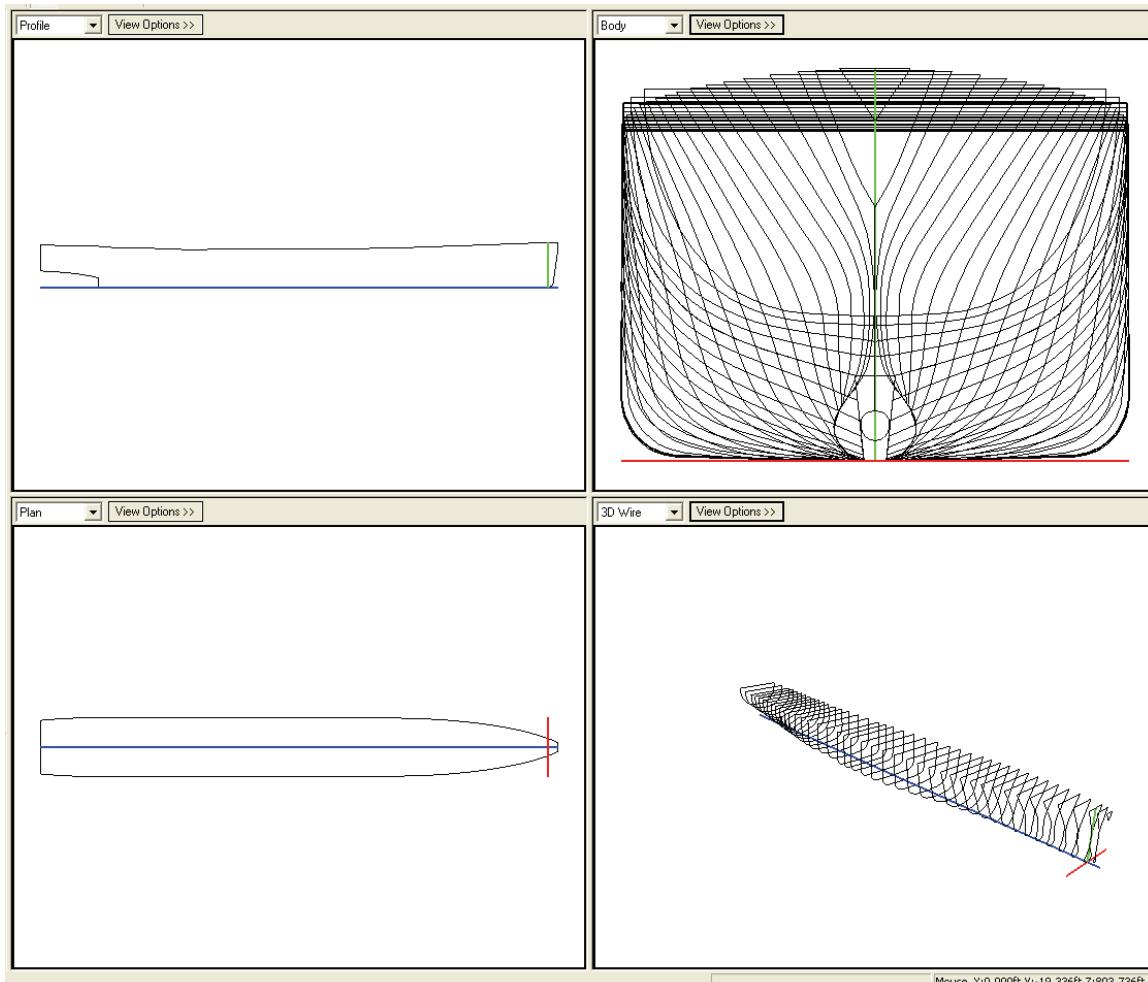


Figure 131: RO/RO 08

RO/RO 09

Table 133: RO/RO 09 Principal Characteristics

Reference ID:	RO/RO 09
Description:	Containership Ro/Ro
Special Codes:	P
Length:	713.0 ft 217.3 M
Beam:	105.5 ft 32.2 M
Depth:	43.4 ft 13.2 M
Draft:	29.0 ft 8.8 M
Displacement:	32,275 LT 32,791 Mt

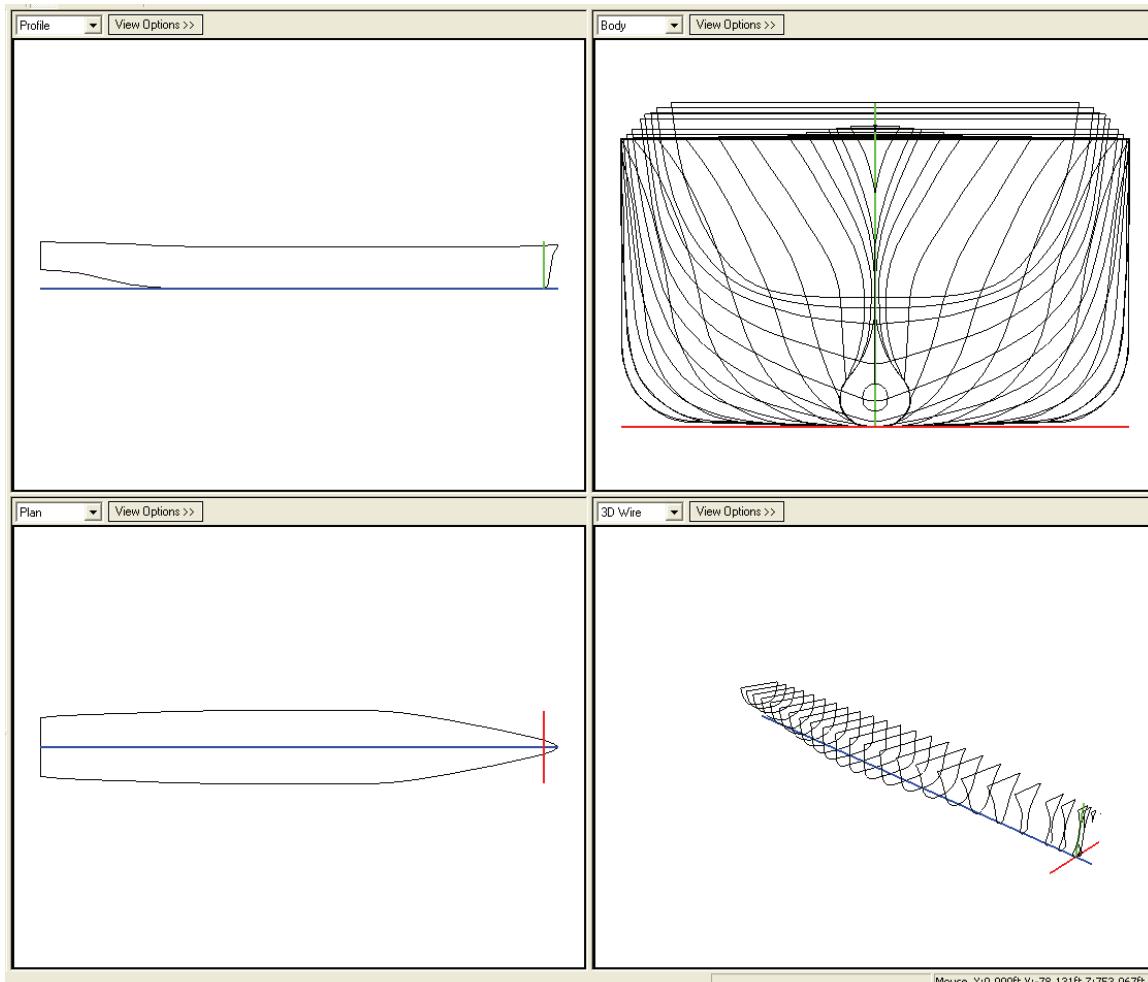


Figure 132: RO/RO 09

Small Waterplane Area Twin Hull Vessels (SWATHs)

SWATH 01

Table 134: SWATH 01 Principal Characteristics

Reference ID:	SWATH 01
Description:	SWATH Research Vessel
Special Codes:	
Length:	190.0 ft 57.9 m
Beam:	80.0 ft 24.4 m
Depth:	48.3 ft 14.7 m
Draft:	24.8 ft 7.6 m
Displacement:	3,350 LT 3,404 mt

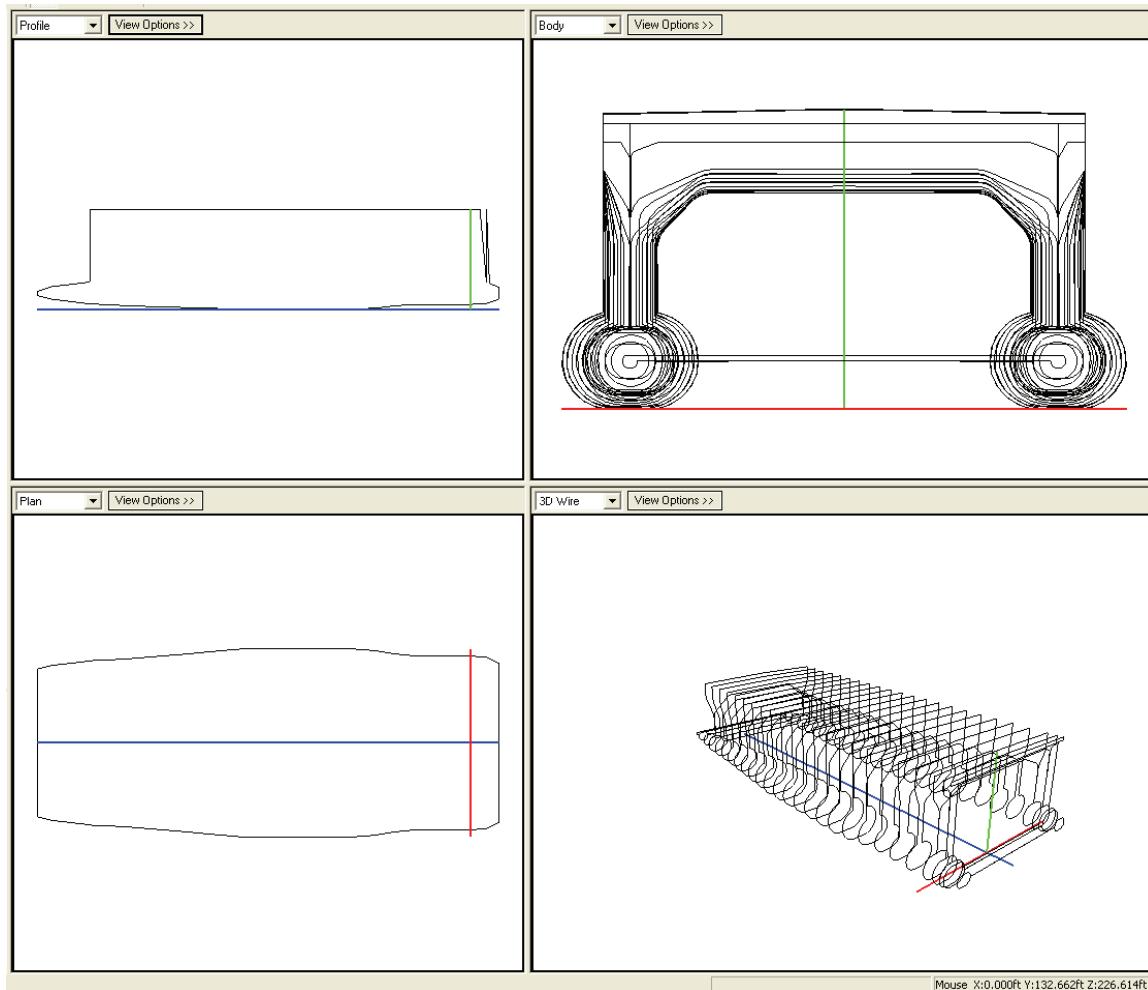


Figure 133: SWATH 01

SWATH 02

Table 135: SWATH 02 Principal Characteristics

Reference ID:	SWATH 02	
Description:	SWATH Crewboat	
Special Codes:	P	
Length:	106.0	ft
	32.3	m
Beam:	44.0	ft
	13.4	m
Depth:	19.0	ft
	5.8	m
Draft:	10.0	ft
	3.0	m
Displacement:	250	LT
	254	mt

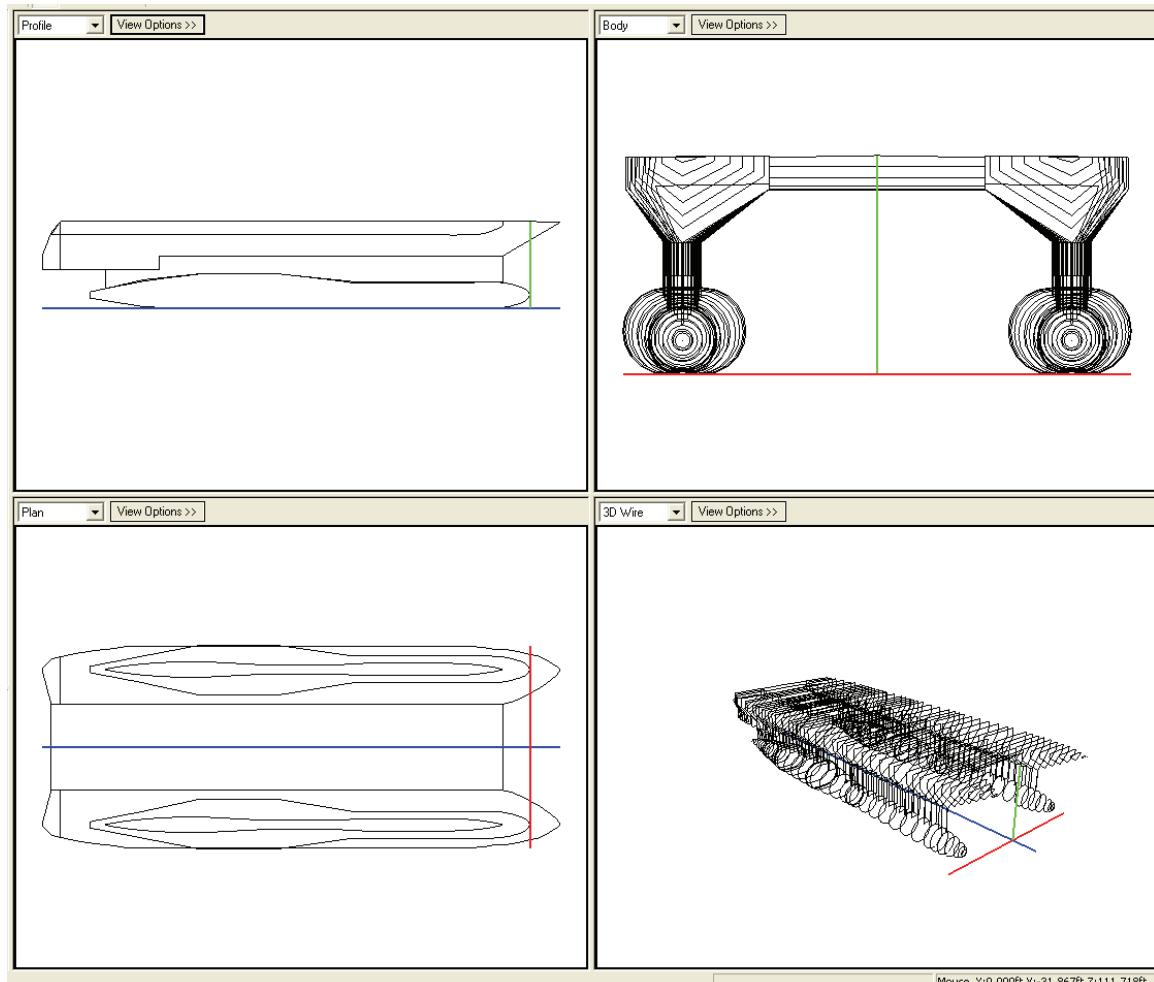


Figure 134: SWATH 02

SWATH 03

Table 136: SWATH 03 Principal Characteristics

Reference ID:	SWATH 03	
Description:	SWATH Dive Support Vessel	
Special Codes:	P	
Length:	211.0	ft
	64.3	m
Beam:	87.0	ft
	26.5	m
Depth:	47.5	ft
	14.5	m
Draft:	23.0	ft
	7.0	m
Displacement:	3,135	LT
	3,185	mt

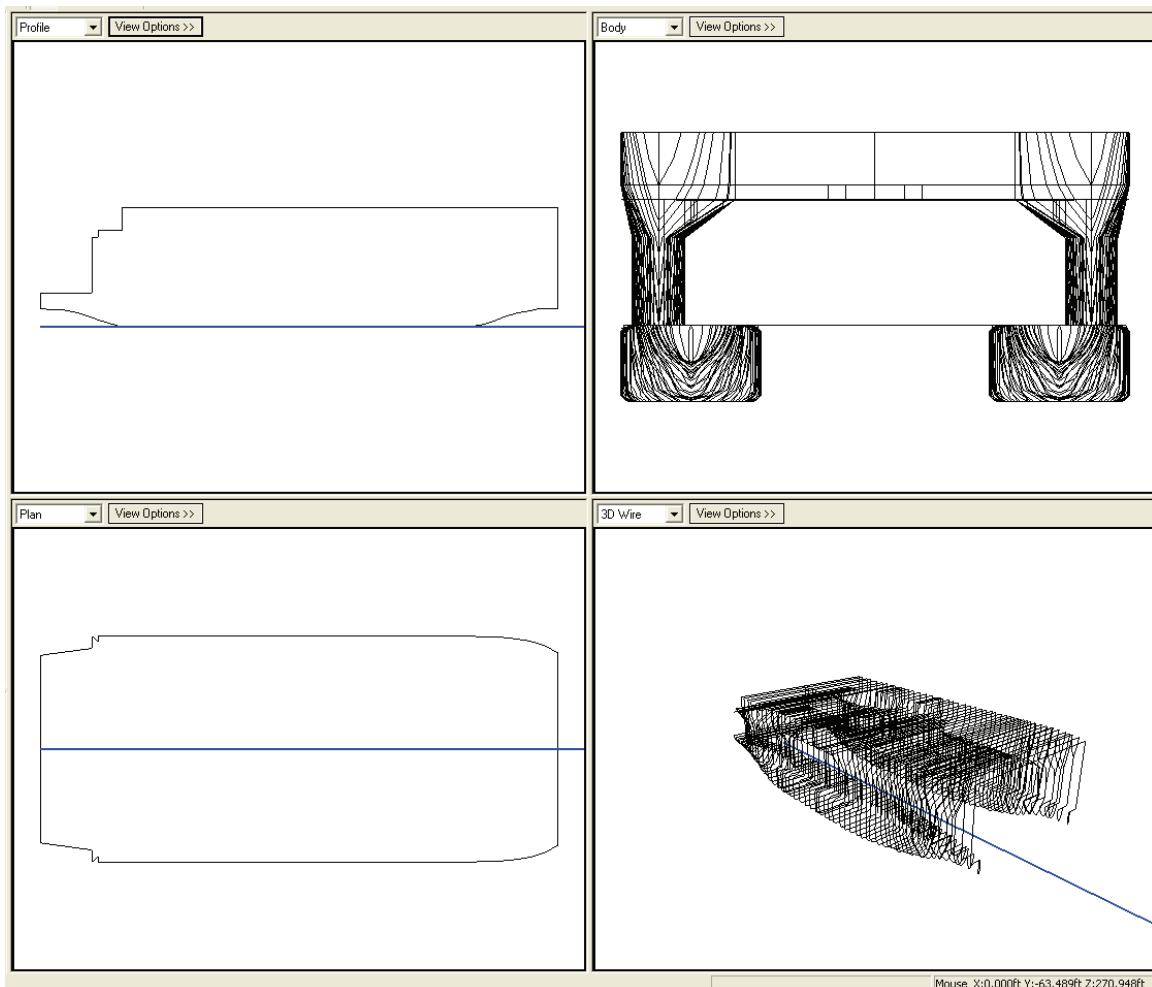


Figure 135: SWATH 03

Tankers

Tanker 01

Table 137: Tanker 01 Principal Characteristics

Reference ID:	Tanker 01	
Description:	Medium Products Tanker	
Special Codes:		
Length:	662.5	ft
	201.9	m
Beam:	90.1	ft
	27.5	m
Depth:	46.2	ft
	14.1	m
Draft:	35.0	ft
	10.7	m
Displacement:	33,200	LT
	33,731	mt

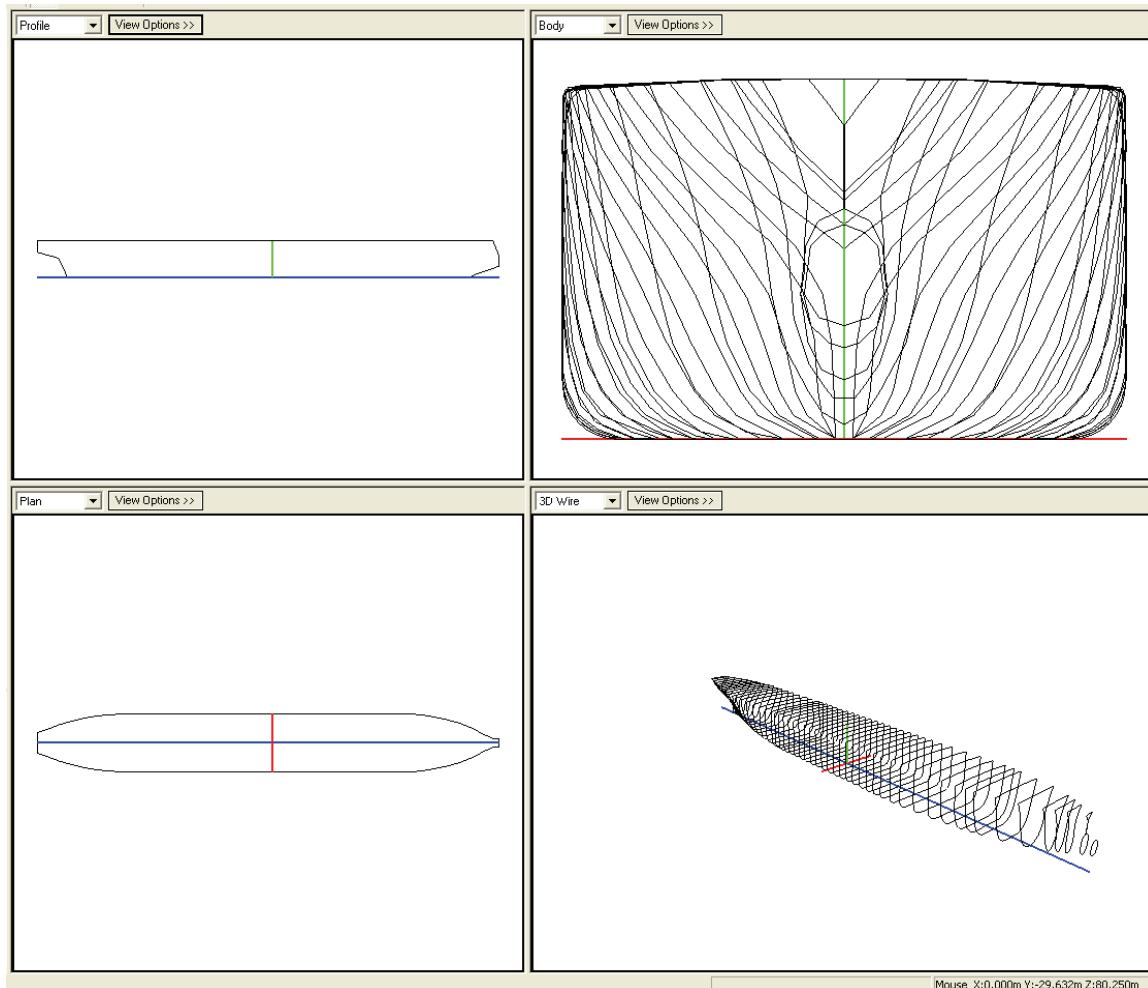


Figure 136: Tanker 01

Tanker 02

Table 138: Tanker 02 Principal Characteristics

Reference ID:	Tanker 02	
Description:	Fast Oiler	
Special Codes:	G	
Length:	633.2	ft
	193.0	m
Beam:	97.5	ft
	29.7	m
Depth:	49.2	ft
	15.0	m
Draft:	35.0	ft
	10.7	m
Displacement:	42,760	LT
	43,444	mt

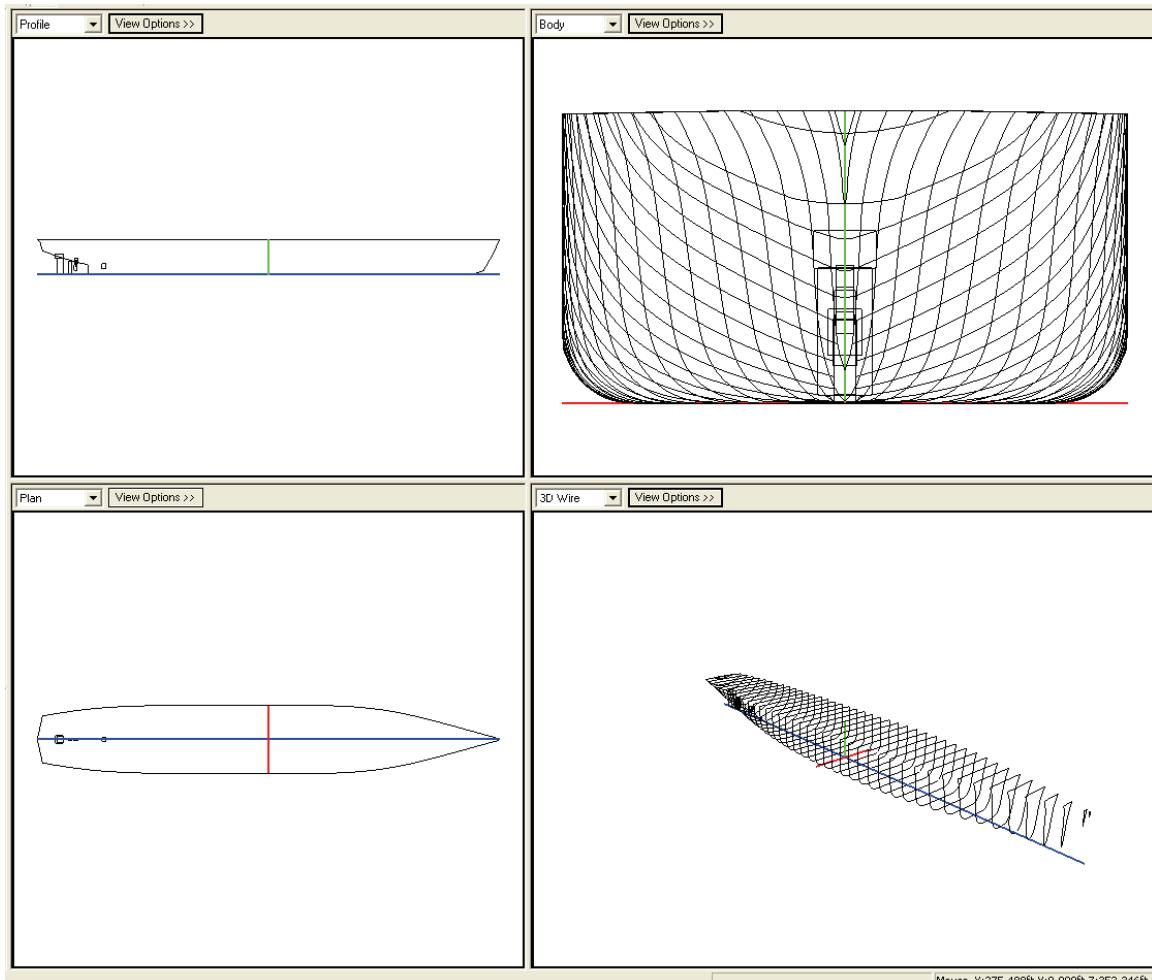


Figure 137: Tanker 02

Tanker 03

Table 139: Tanker 03 Principal Characteristics

Reference ID:	Tanker 03	
Description:	Small Products Tanker	
Special Codes:	P	
Length:	310.0	ft
	94.5	m
Beam:	51.5	ft
	15.7	m
Depth:	30.9	ft
	9.4	m
Draft:	18.5	ft
	5.6	m
Displacement:	5,875	LT
	5,969	mt

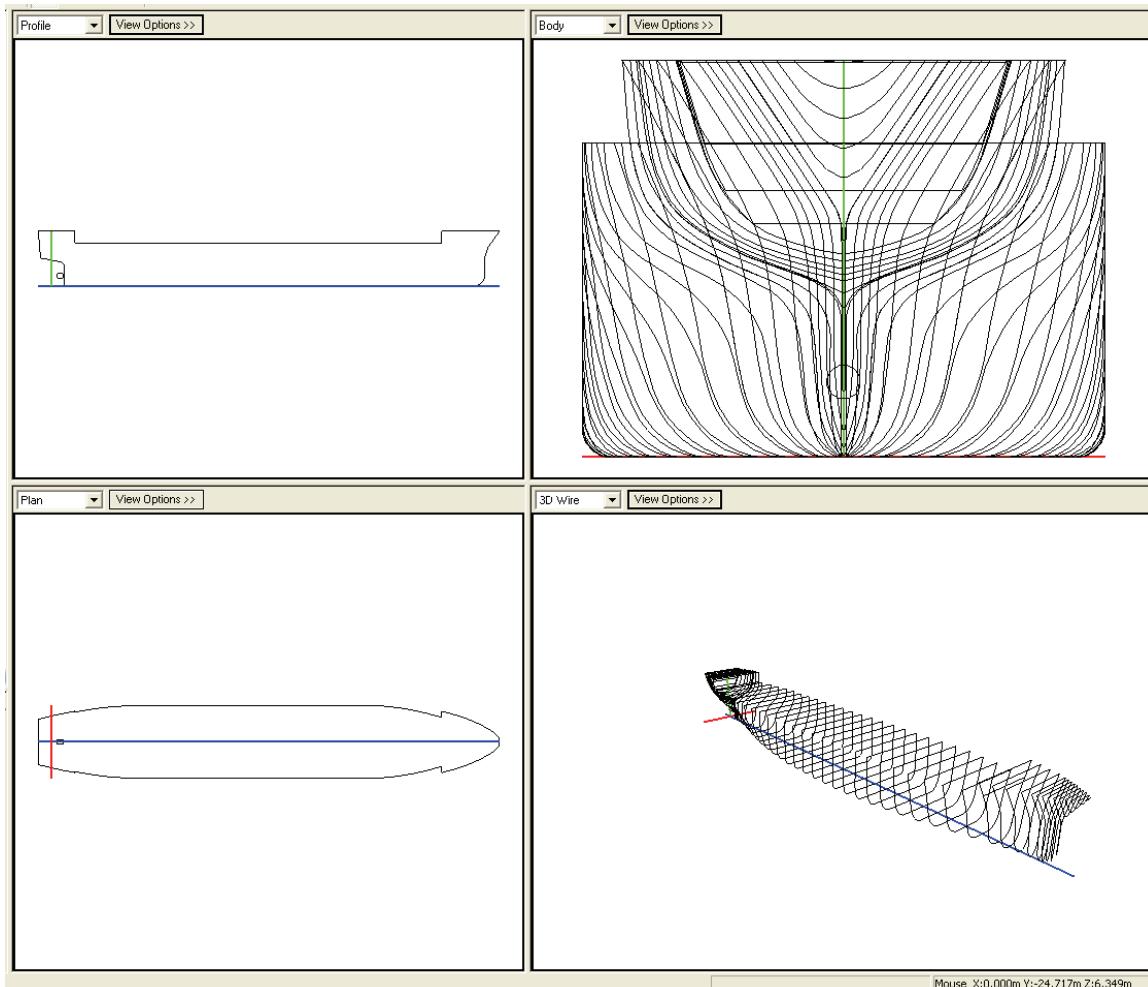


Figure 138: Tanker 03

Tanker 04

Table 140: Tanker 04 Principal Characteristics

Reference ID:	Tanker 04	
Description:	SMALL VLCC Double Hull Crude Tanker	
Special Codes:	P	
Length:	945.0	ft
	288.0	m
Beam:	166.0	ft
	50.6	m
Depth:	88.0	ft
	26.8	m
Draft:	64.5	ft
	19.7	m
Displacement:	217,415	LT
	220,894	mt

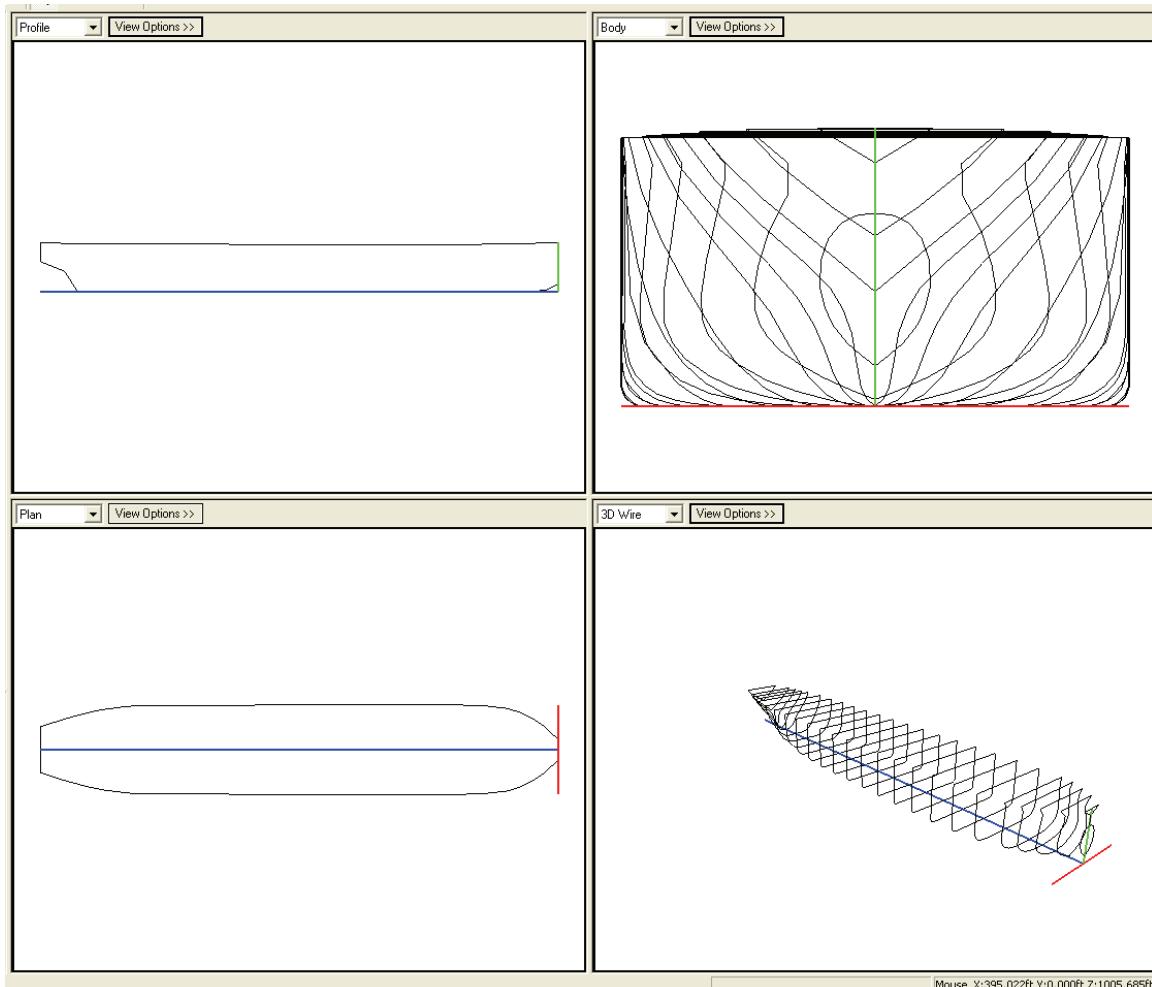


Figure 139: Tanker 04

Tanker 05

Table 141: Tanker 05 Principal Characteristics

Reference ID:	Tanker 05	
Description:	Large VLCC	
Special Codes:	P	
Length:	1,100.0	ft
	335.3	m
Beam:	178.0	ft
	54.3	m
Depth:	89.5	ft
	27.3	m
Draft:	65.0	ft
	19.8	m
Displacement:	292,430	LT
	297,109	mt

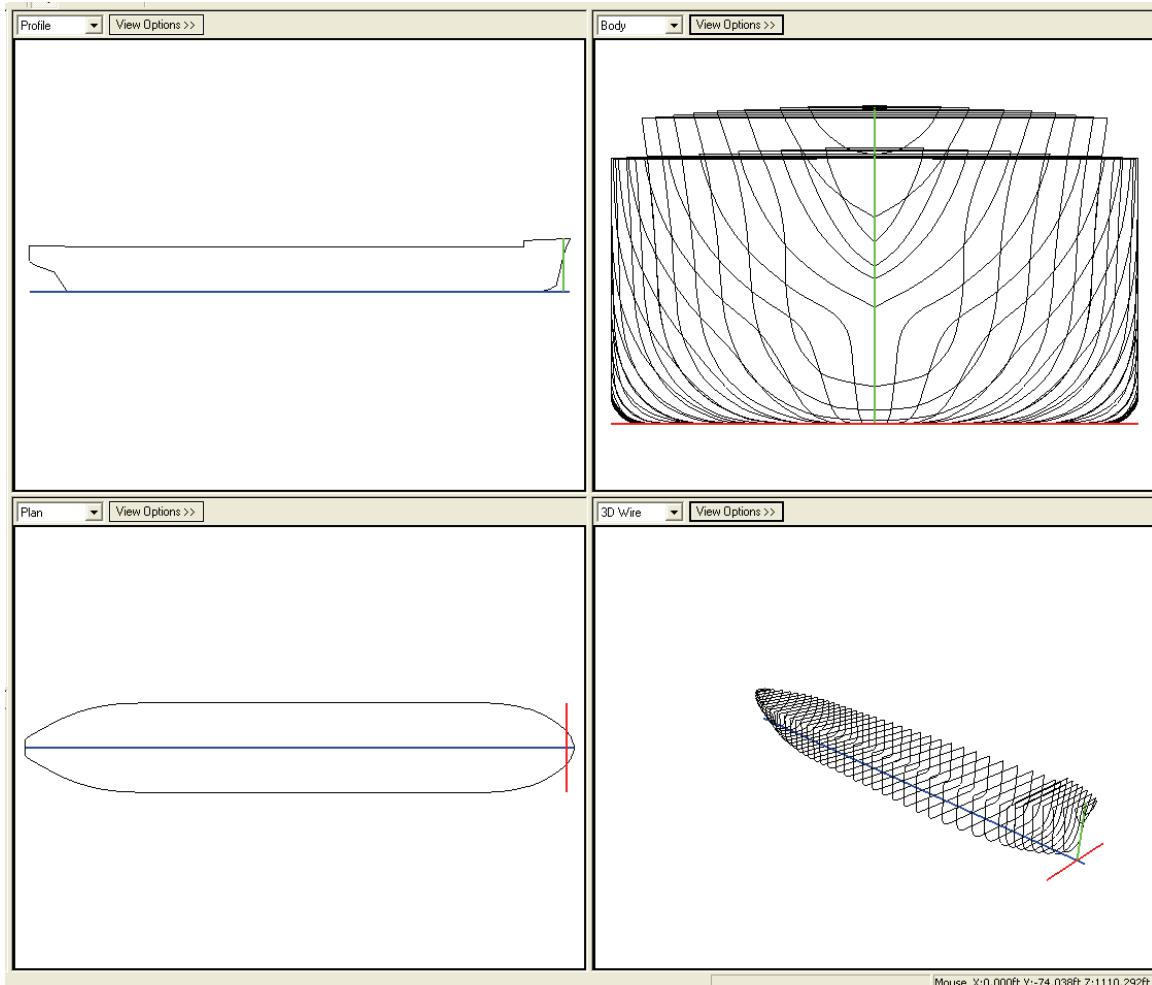


Figure 140: Tanker 05

Tanker 06

Table 142: Tanker 06 Principal Characteristics

Reference ID:	Tanker 06	
Description:	Large ULCC	
Special Codes:	P, C	
Length:	1,200.0	ft
	365.8	m
Beam:	229.7	ft
	70.0	m
Depth:	95.1	ft
	29.0	m
Draft:	72.0	ft
	21.9	m
Displacement:	440,150	LT
	447,192	mt

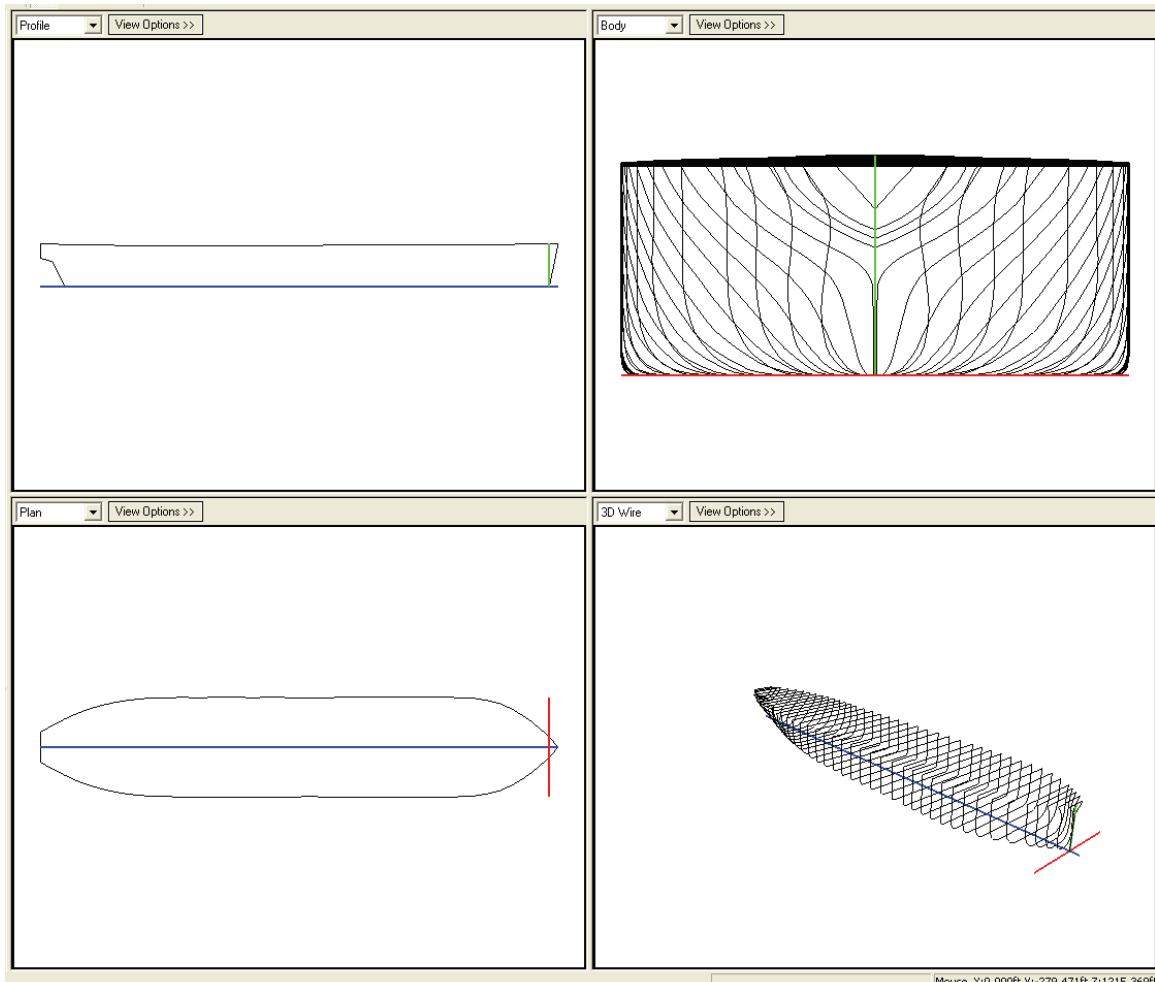


Figure 141: Tanker 06

Tanker 07

Table 143: Tanker 07 Principal Characteristics

Reference ID:	Tanker 07	
Description:	Small VLCC	
Special Codes:	P, C	
Length:	950.0	ft
	289.6	m
Beam:	166.0	ft
	50.6	m
Depth:	88.7	ft
	27.0	m
Draft:	64.5	ft
	19.7	m
Displacement:	240,140	LT
	243,982	mt

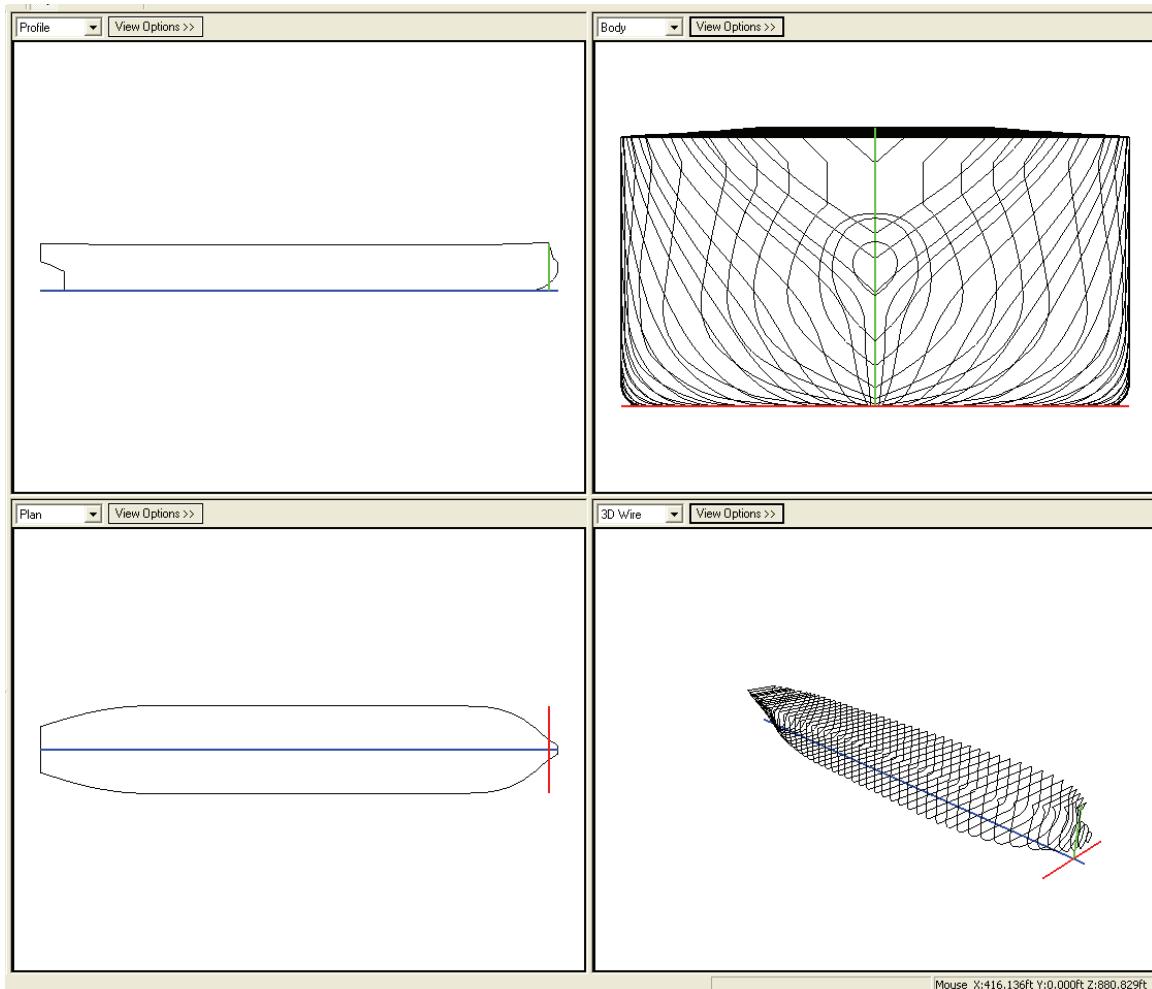


Figure 142: Tanker 07

Tanker 08

Table 144: Tanker 08 Principal Characteristics

Reference ID:	Tanker 08	
Description:	Small VLCC	
Special Codes:	P	
Length:	952.7	ft
	290.4	m
Beam:	166.0	ft
	50.6	m
Depth:	78.0	ft
	23.8	m
Draft:	59.3	ft
	18.1	m
Displacement:	216,650	LT
	220,116	mt

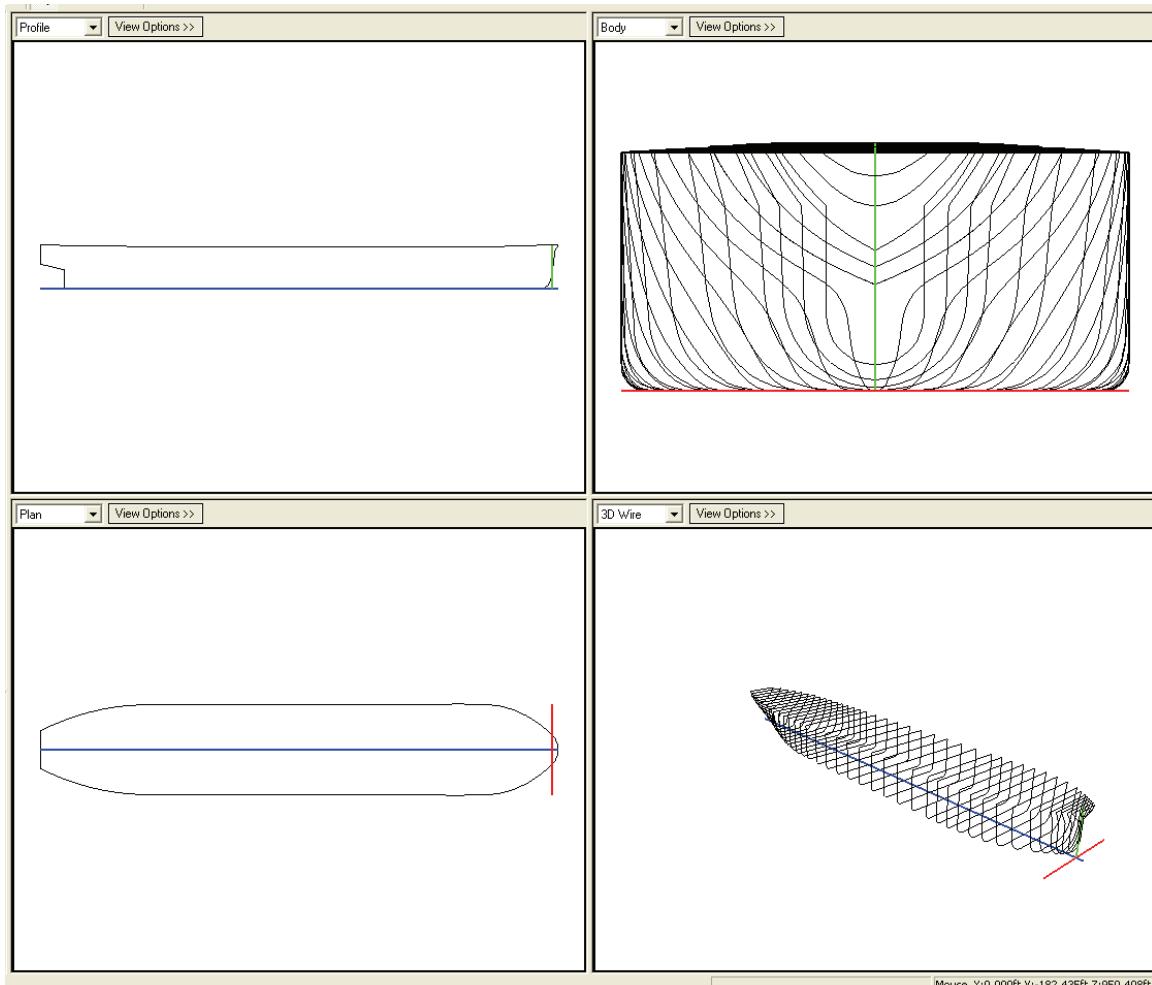


Figure 143: Tanker 08

Tanker 09

Table 145: Tanker 09 Principal Characteristics

Reference ID:	Tanker 09	
Description:	Small ULCC	
Special Codes:	P	
Length:	1,050.0	ft
	320.0	m
Beam:	197.0	ft
	60.0	m
Depth:	98.0	ft
	29.9	m
Draft:	72.0	ft
	21.9	m
Displacement:	352,500	LT
	358,140	mt

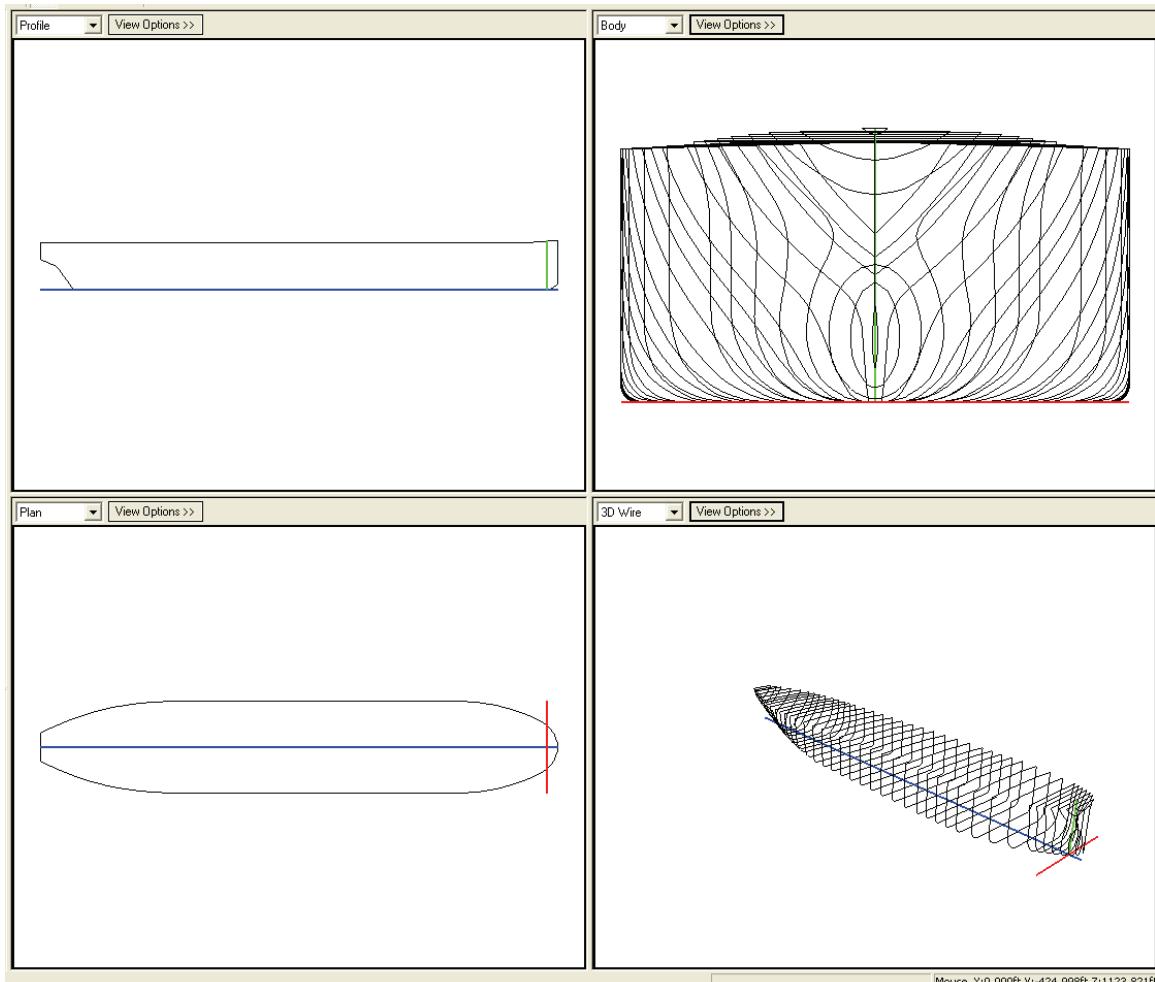


Figure 144: Tanker 09

Tanker 10

Table 146: Tanker 10 Principal Characteristics

Reference ID:	Tanker 10	
Description:	Fleet Oiler	
Special Codes:	G	
Length:	615.0	ft
	187.5	M
Beam:	90.0	ft
	27.4	M
Depth:	54.0	ft
	16.5	M
Draft:	36.0	ft
	11.0	M
Displacement:	39,625	LT
	40,259	Mt

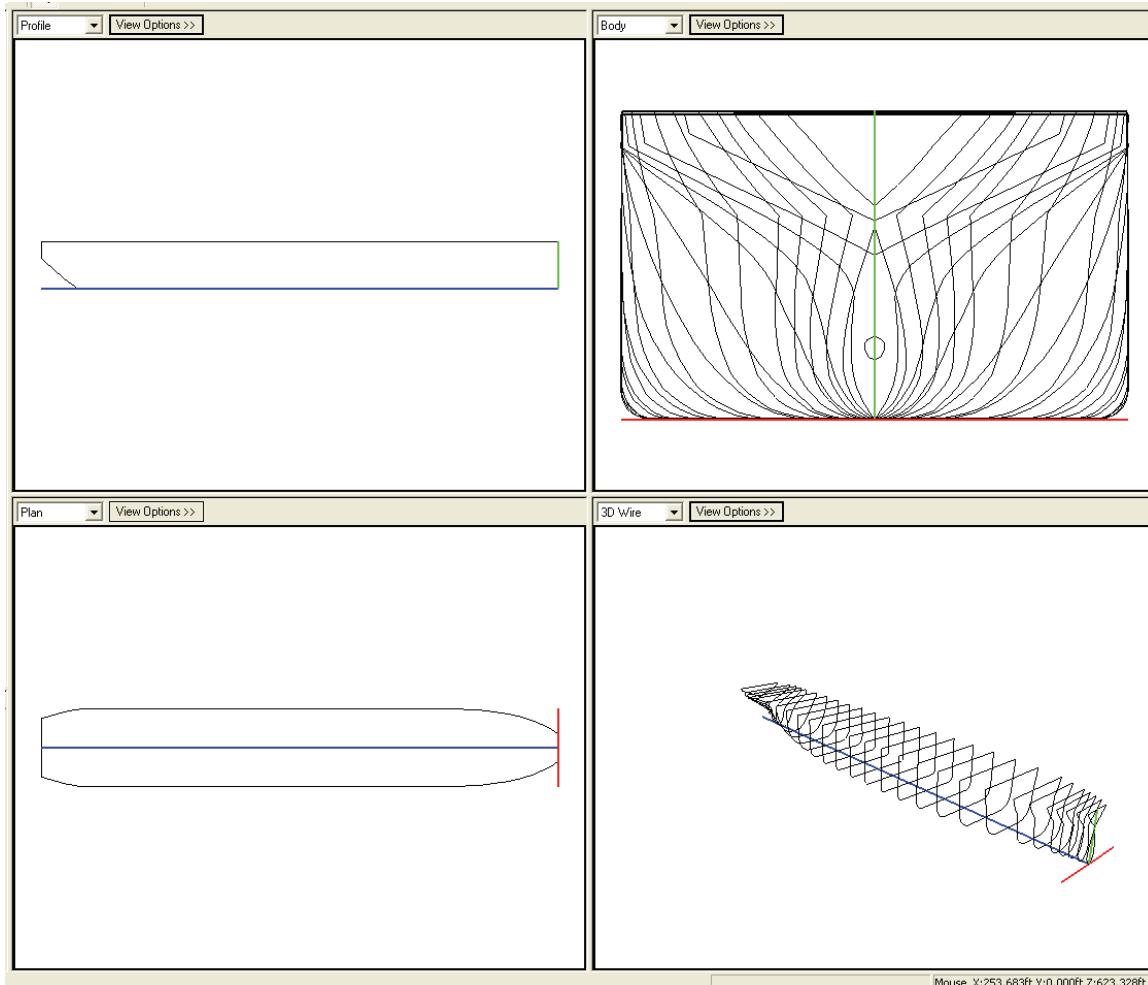


Figure 145: Tanker 10

Tanker 11

Table 147: Tanker 11 Principal Characteristics

Reference ID:	Tanker 11	
Description:	Large ULCC	
Special Codes:	P	
Length:	1160.0	ft
	353.6	m
Beam:	227.8	ft
	69.4	m
Depth:	94.5	ft
	28.8	m
Draft:	72.0	ft
	21.9	m
Displacement:	435,800	LT
	442,773	mt

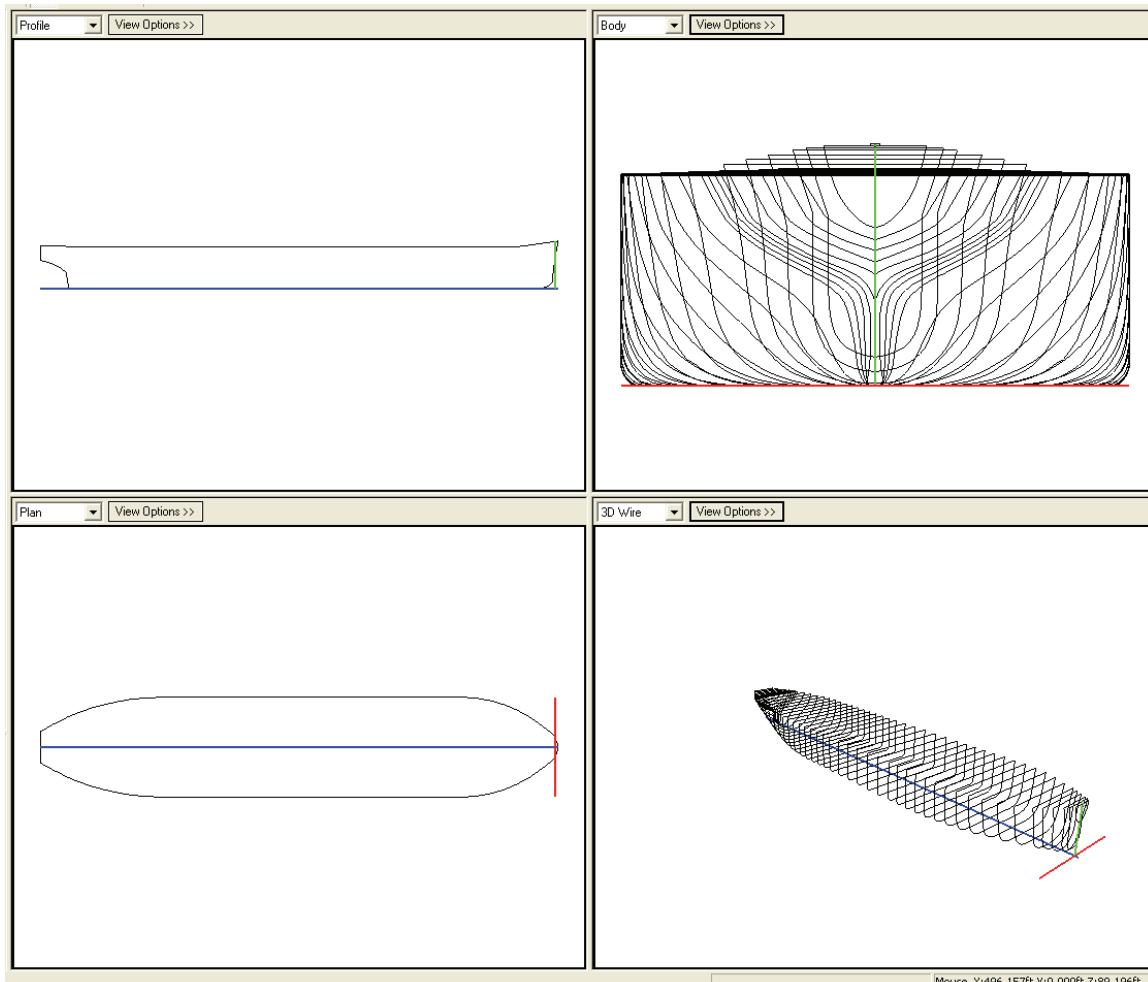


Figure 146: Tanker 11

Tanker 12

Table 148: Tanker 12 Principal Characteristics

Reference ID:	Tanker 12	
Description:	Large VLCC	
Special Codes:	P	
Length:	1060.0	ft
	323.1	m
Beam:	177.5	ft
	54.1	m
Depth:	93.5	ft
	28.5	m
Draft:	68.0	ft
	20.7	m
Displacement:	308,630	LT
	313,568	mt

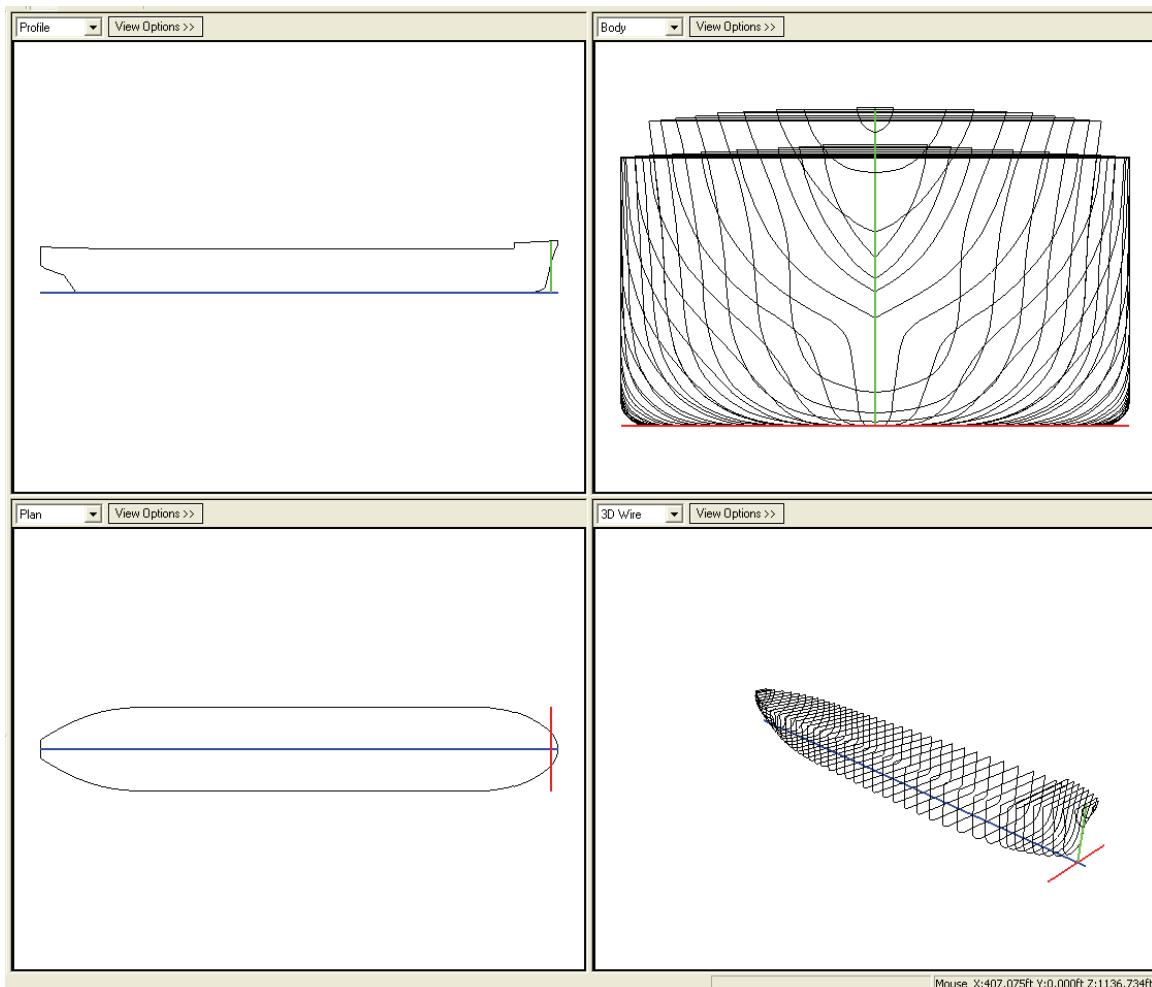


Figure 147: Tanker 12

Tanker 13

Table 149: Tanker 13 Principal Characteristics

Reference ID:	Tanker 13	
Description:	Small VLCC	
Special Codes:	P	
Length:	1056.5	ft
	322.0	M
Beam:	143.7	ft
	43.8	M
Depth:	91.0	ft
	27.7	M
Draft:	71.0	ft
	21.6	M
Displacement:	262,550	LT
	266,751	Mt

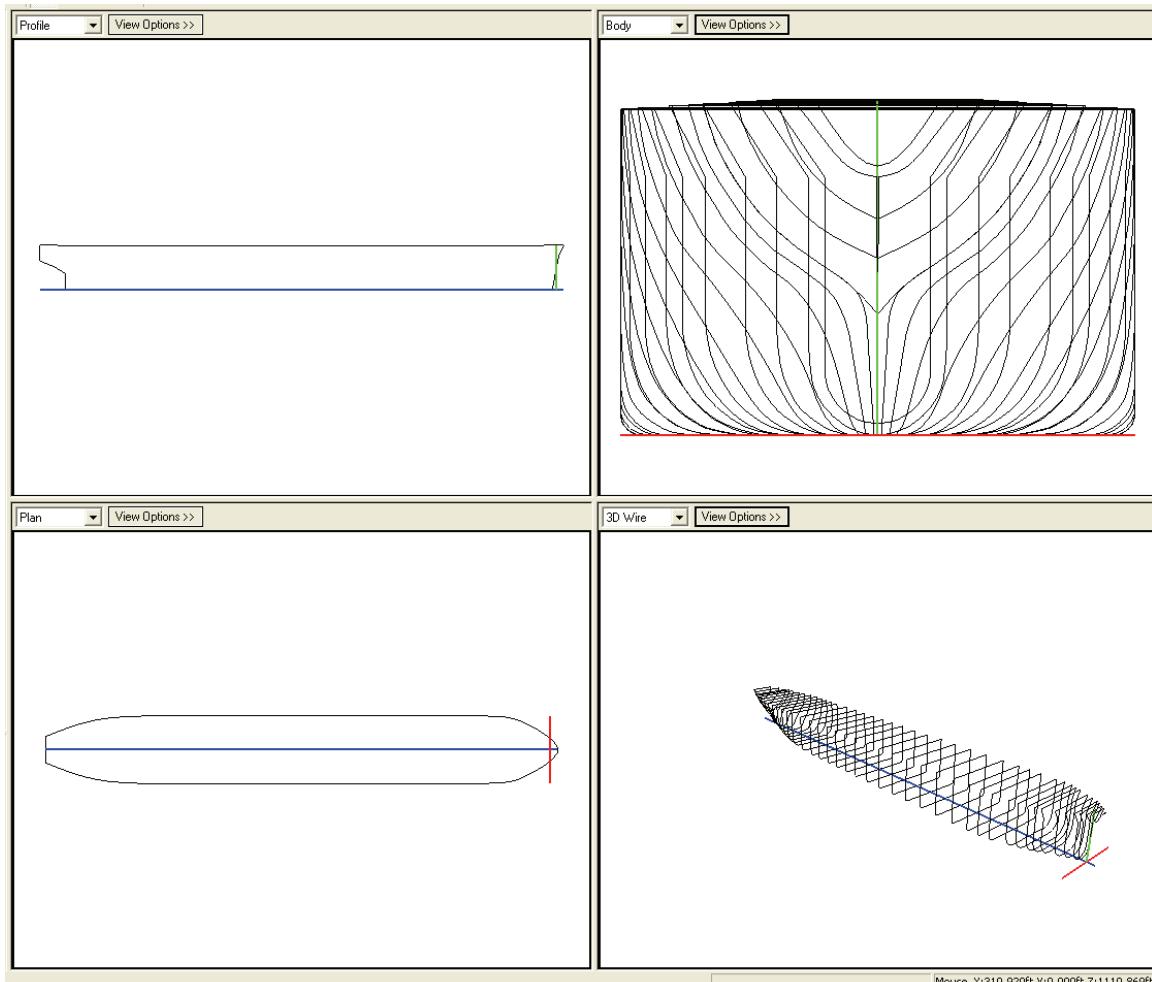


Figure 148: Tanker 13

Tanker 14

Table 150: Tanker 14 Principal Characteristics

Reference ID:	Tanker 14	
Description:		
Special Codes:	P	
Length:	900.0	ft
	274.3	M
Beam:	105.8	ft
	32.2	M
Depth:	66.0	ft
	20.1	M
Draft:	49.0	ft (baseline)
	14.9	M
Displacement:	111,230	LT
	113,010	Mt

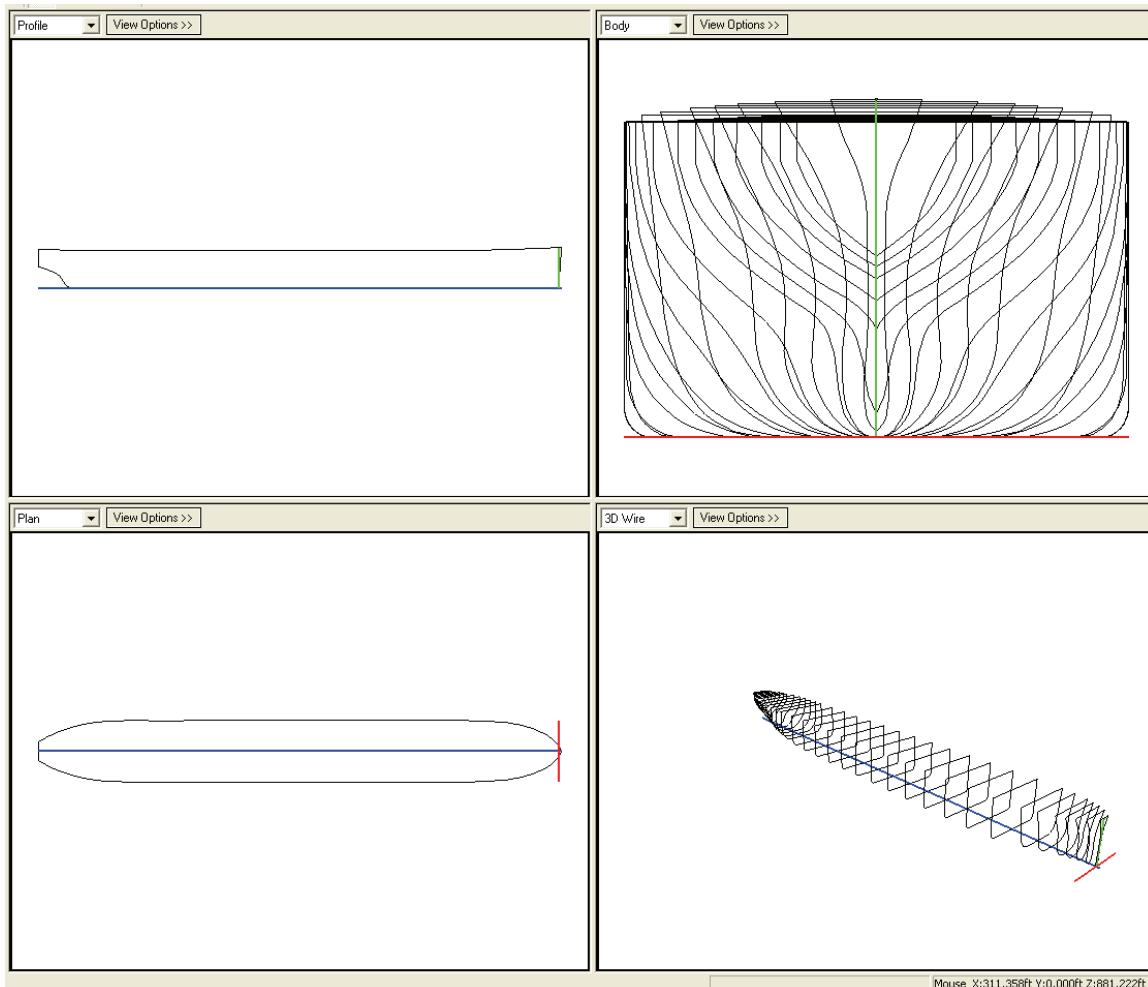


Figure 149: Tanker 14

Tanker 15

Table 151: Tanker 15 Principal Characteristics

Reference ID:	Tanker 15	
Description:		
Special Codes:	P	
Length:	825.3	ft
	251.6	M
Beam:	133.3	ft
	40.6	M
Depth:	72.4	ft
	22.1	M
Draft:	52.0	ft
	15.8	M
Displacement:	132,165	LT
	134,280	Mt

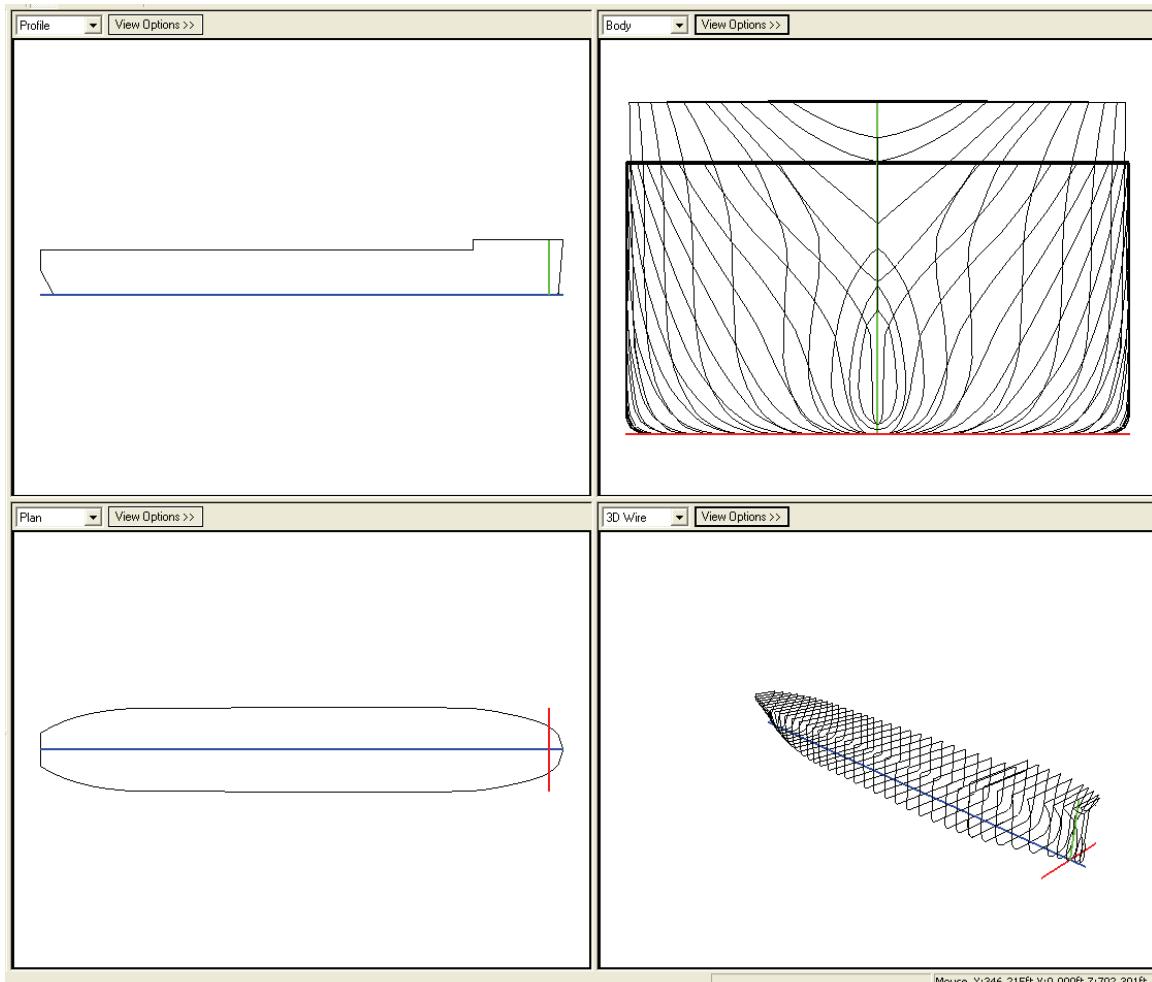


Figure 150: Tanker 15

Tanker 16

Table 152: Tanker 16 Principal Characteristics

Reference ID:	Tanker 16	
Description:		
Special Codes:	P	
Length:	825.0	ft
	251.5	m
Beam:	136.0	ft
	41.5	m
Depth:	71.7	ft (above baseline)
	21.9	m
Draft:	42.0	ft
	12.8	m
Displacement:	109,265	LT
	111,013	mt

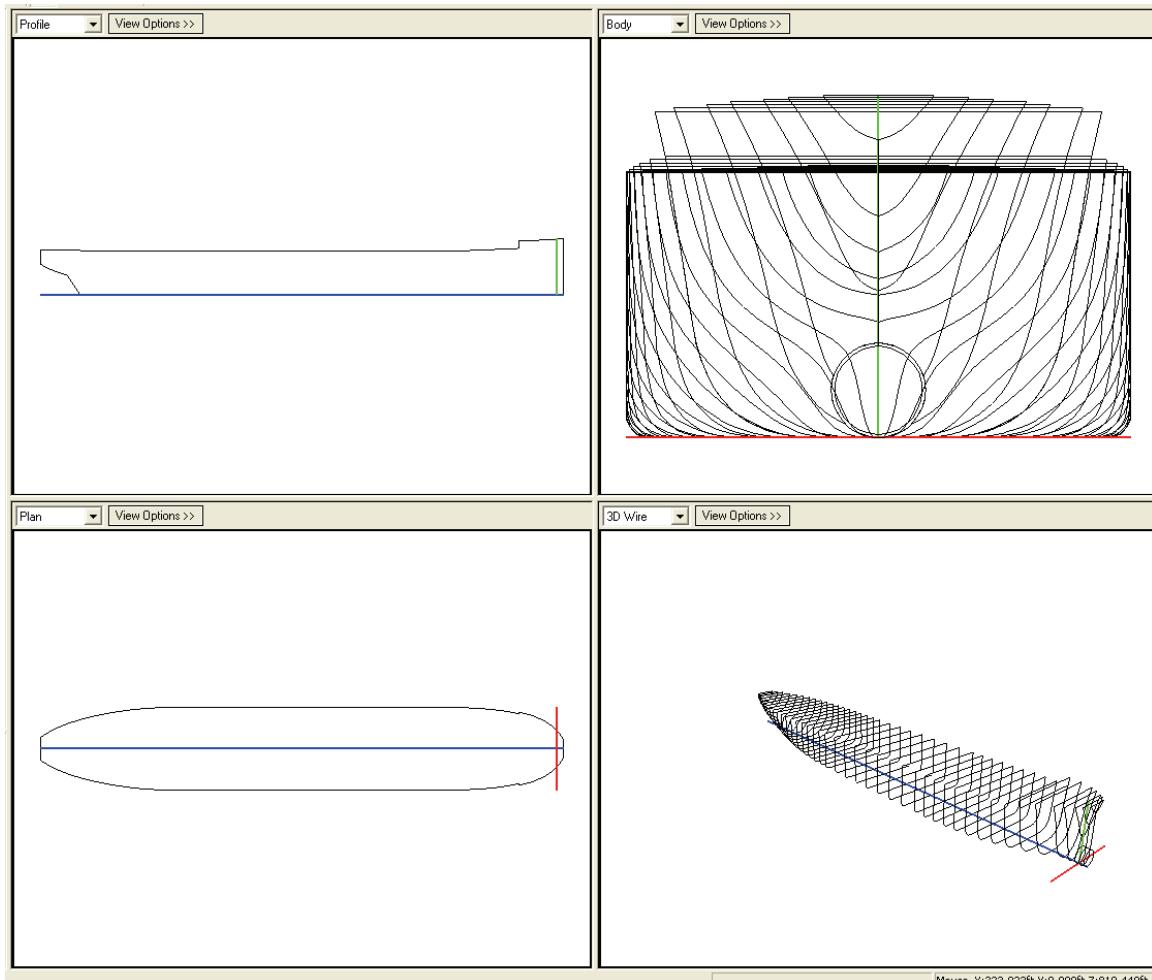


Figure 151: Tanker 16

Tanker 17

Table 153: Tanker 17 Principal Characteristics

Reference ID:	Tanker 17	
Description:		
Special Codes:	P	
Length:	786.0	ft
	239.6	m
Beam:	105.0	ft
	32.0	m
Depth:	57.0	ft (above baseline)
	17.4	m
Draft:	43.0	ft
	13.1	m
Displacement:	82,200	LT
	83,515	mt

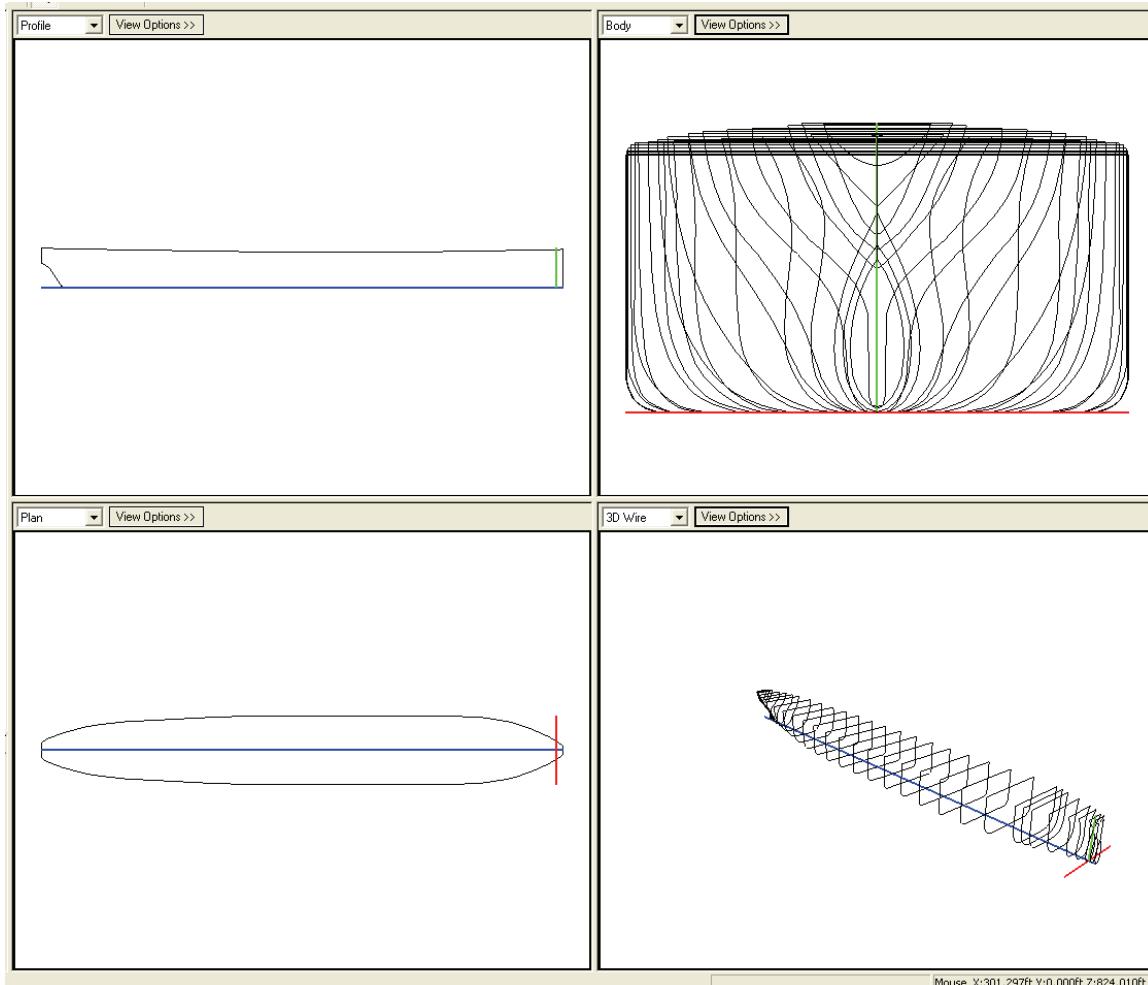


Figure 152: Tanker 17

Tanker 18

Table 154: Tanker 18 Principal Characteristics

Reference ID:	Tanker 18	
Description:		
Special Codes:	P	
Length:	785.0	ft
	239.3	m
Beam:	124.8	ft
	38.0	m
Depth:	54.5	ft
	16.6	m
Draft:	42.0	ft
	12.8	m
Displacement:	91,820	LT
	93,289	mt

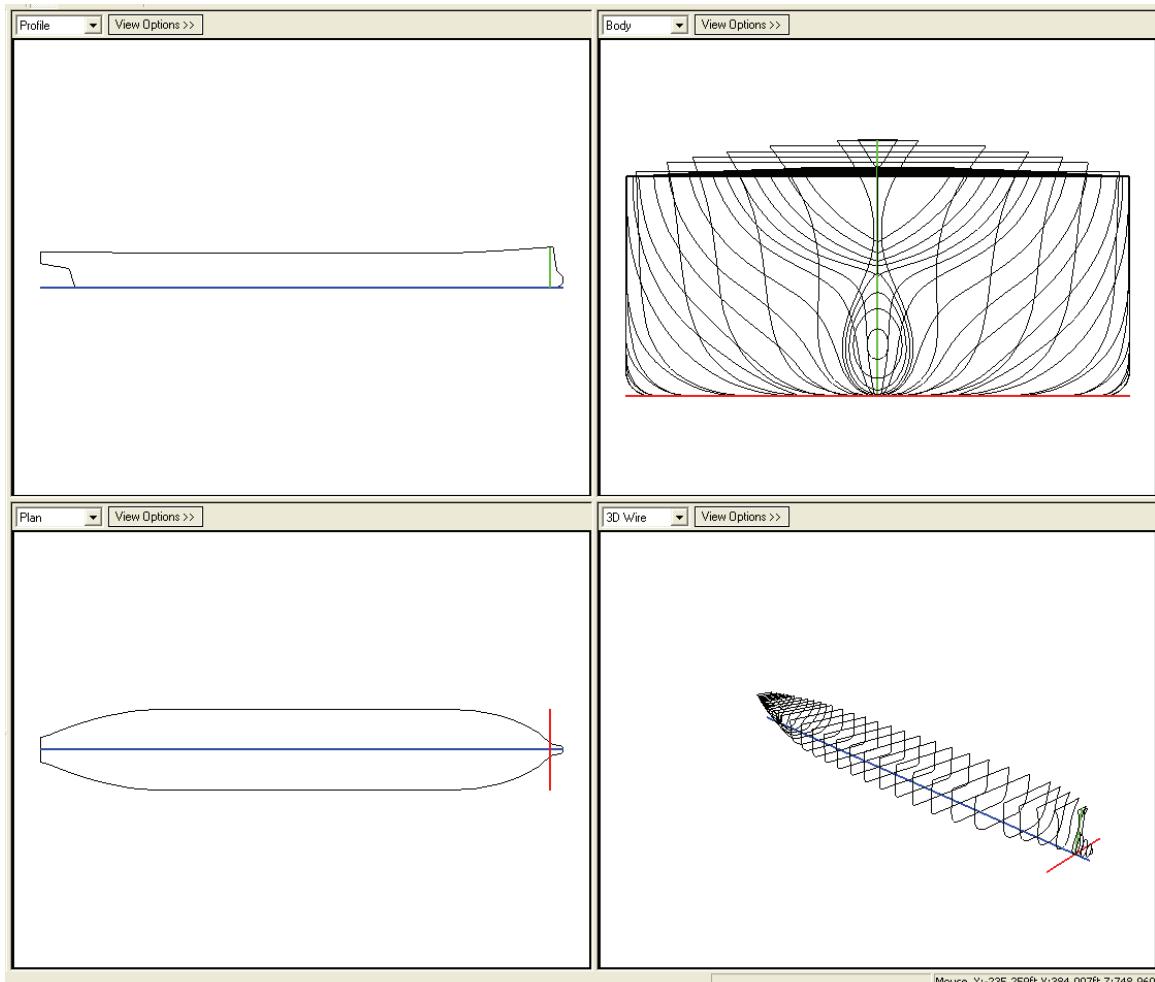


Figure 153: Tanker 18

Tanker 19

Table 155: Tanker 19 Principal Characteristics

Reference ID:	Tanker 19	
Description:		
Special Codes:	P	
Length:	633.9	ft
	193.2	M
Beam:	90.1	ft
	27.5	M
Depth:	47.9	ft
	14.6	M
Draft:	37.0	ft
	11.3	M
Displacement:	48,620	LT
	49,398	Mt

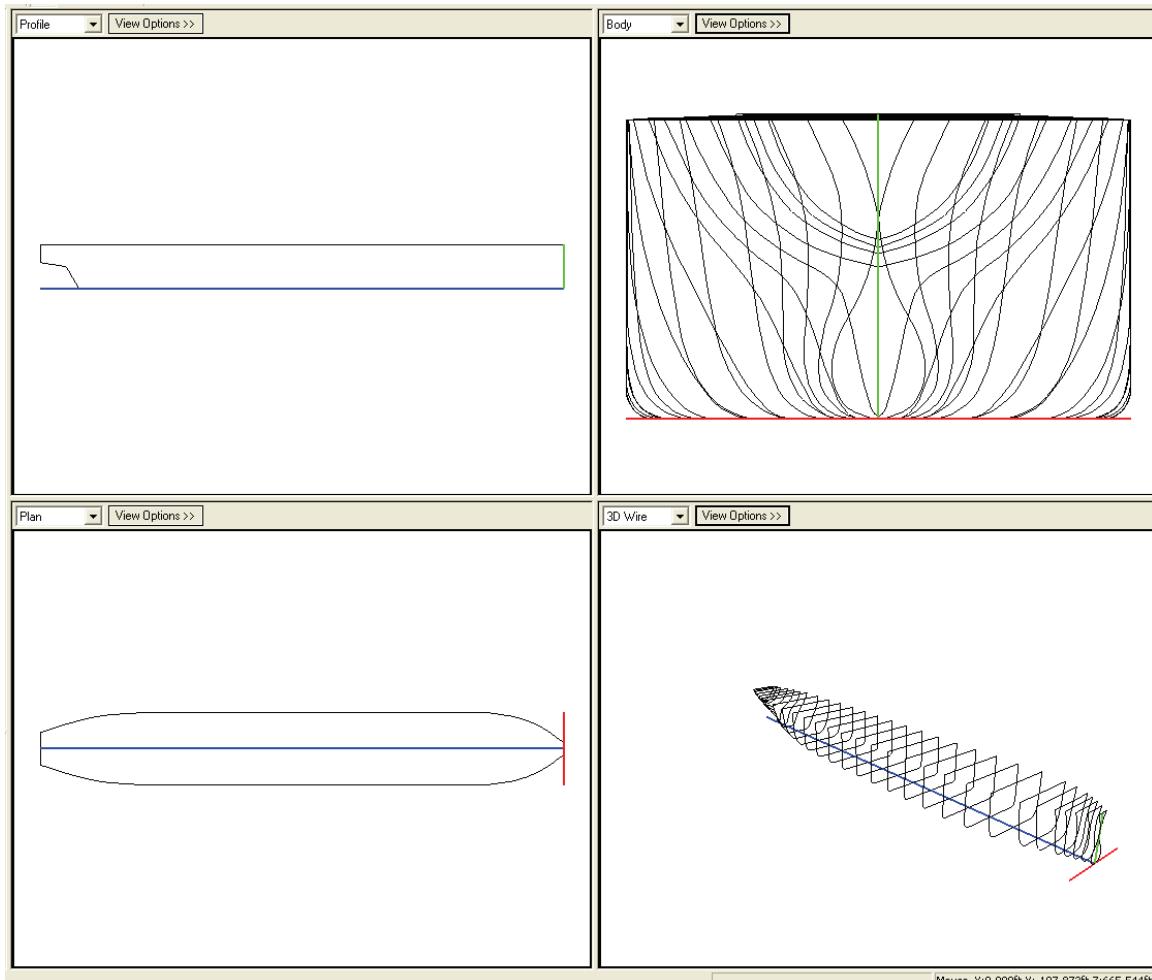


Figure 154: Tanker 19

Tanker 20

Table 156: Tanker 20 Principal Characteristics

Reference ID:	Tanker 20	
Description:		
Special Codes:	P	
Length:	780.0	ft
	237.7	M
Beam:	141.0	ft
	43.0	M
Depth:	61.4	ft
	18.7	M
Draft:	45.0	ft
	13.7	M
Displacement:	109,610	LT
	111,364	Mt

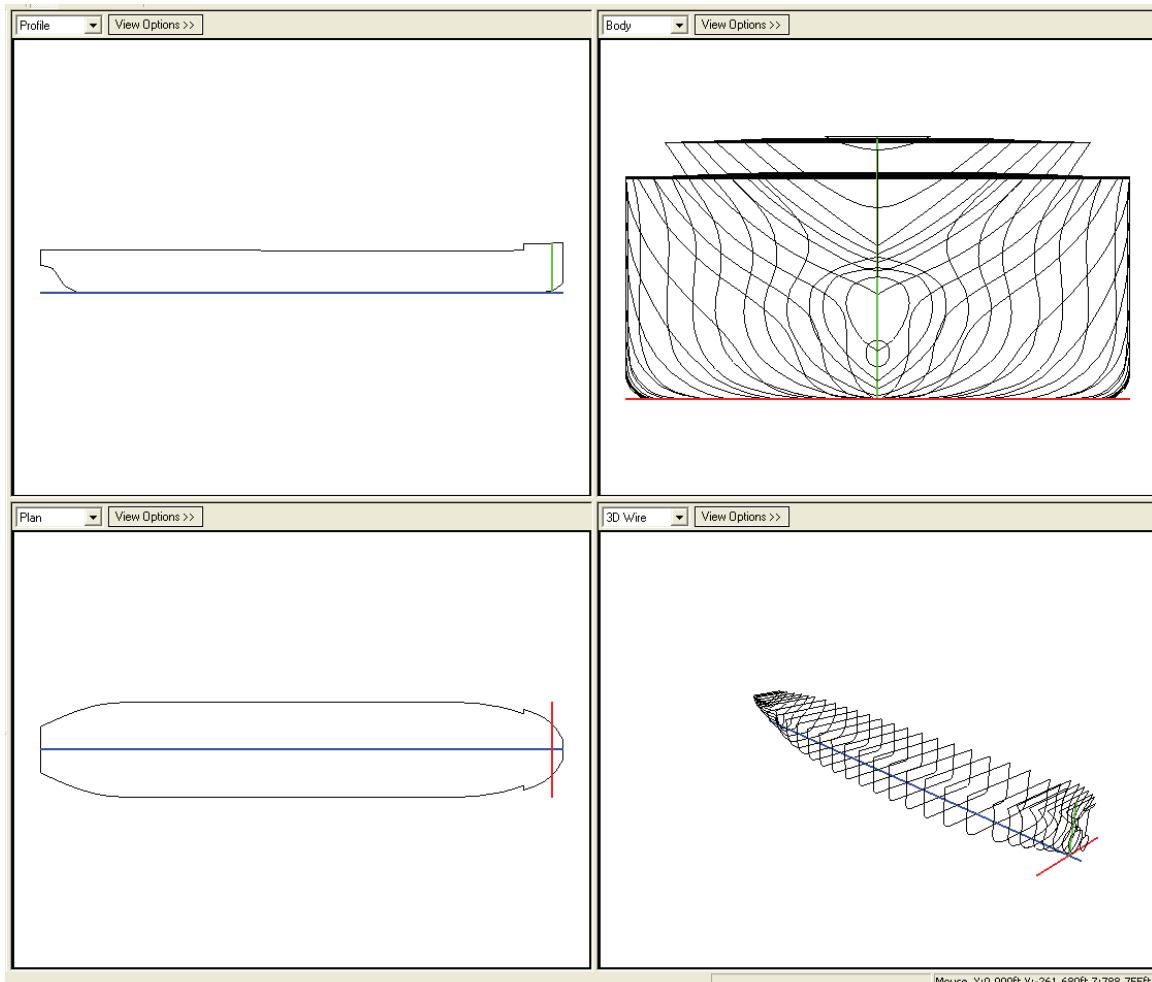


Figure 155: Tanker 20

Tanker 21

Table 157: Tanker 21 Principal Characteristics

Reference ID:	Tanker 21	
Description:		
Special Codes:	P	
Length:	708.0	ft
	215.8	M
Beam:	102.0	ft
	31.1	M
Depth:	50.0	ft
	15.2	M
Draft:	40.0	ft
	12.2	M
Displacement:	66,000	LT
	67,056	Mt

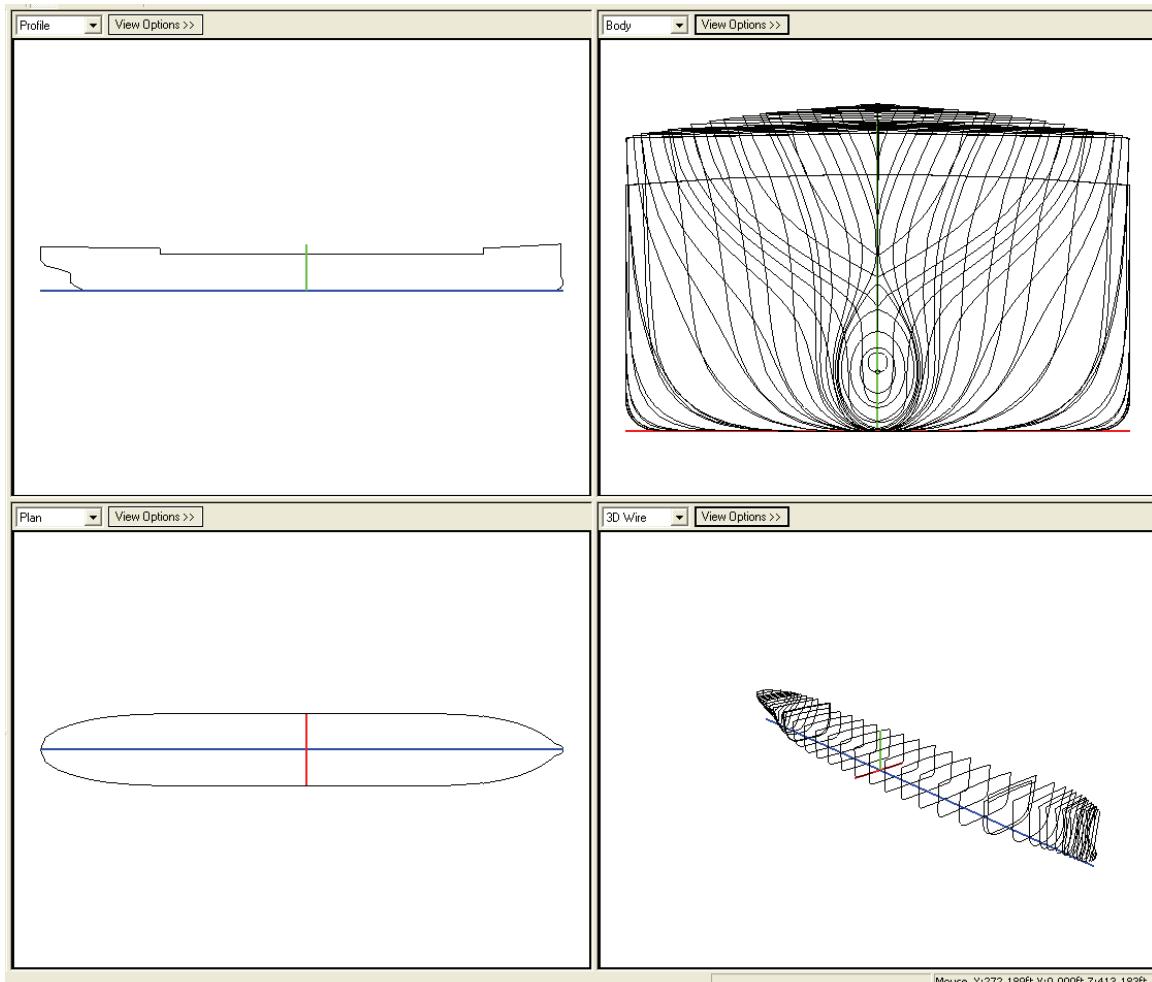


Figure 156: Tanker 21

Tanker 22

Table 158: Tanker 22 Principal Characteristics

Reference ID:	Tanker 22	
Description:		
Special Codes:	P	
Length:	688.5	ft
	209.9	m
Beam:	90.0	ft
	27.4	m
Depth:	47.0	ft
	14.3	m
Draft:	35.0	ft
	10.7	m
Displacement:	46,850	LT
	47,600	mt

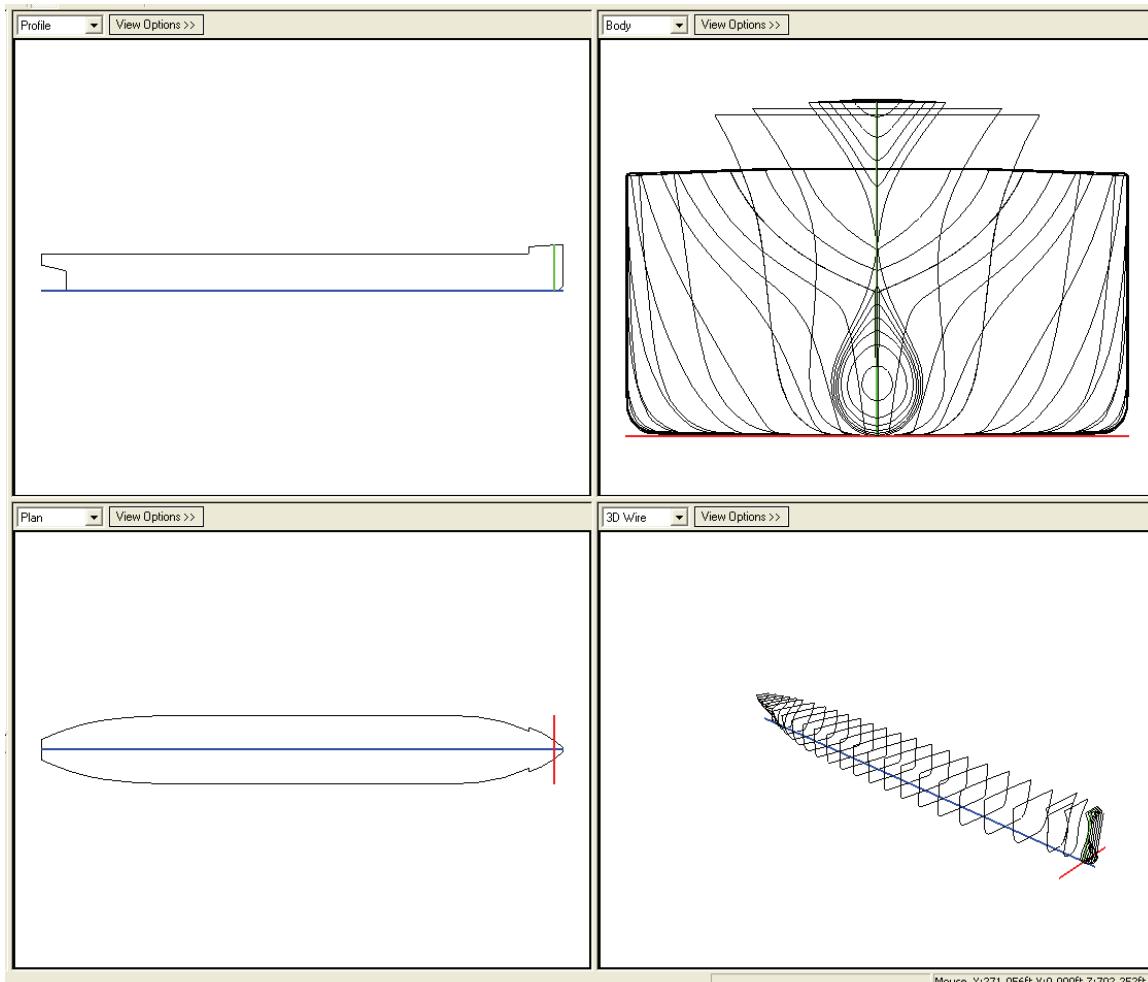


Figure 157: Tanker 22

Tanker 23

Table 159: Tanker 23 Principal Characteristics

Reference ID:	Tanker 23	
Description:		
Special Codes:	P	
Length:	675.5	ft
	205.9	m
Beam:	99.2	ft
	30.2	m
Depth:	50.0	ft
	15.2	m
Draft:	36.0	ft
	11.0	m
Displacement:	54,550	LT
	55,423	mt

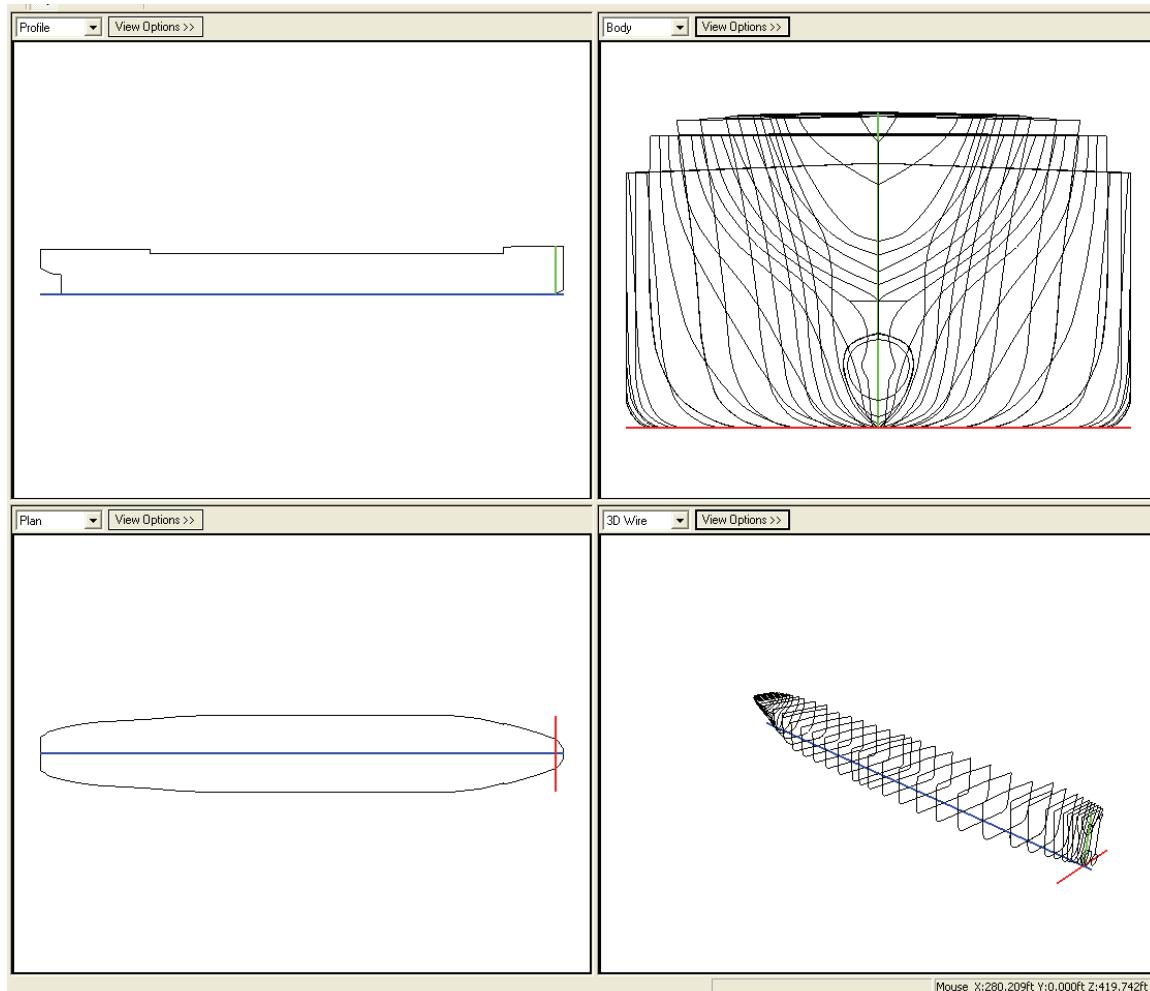


Figure 158: Tanker 23

Tanker 24

Table 160: Tanker 24 Principal Characteristics

Reference ID:	Tanker 24	
Description:		
Special Codes:	P	
Length:	639.0	ft
	194.8	m
Beam:	84.0	ft
	25.6	m
Depth:	50.7	ft
	15.5	m
Draft:	32.0	ft
	9.8	m
Displacement:	36,865	LT
	37,455	mt

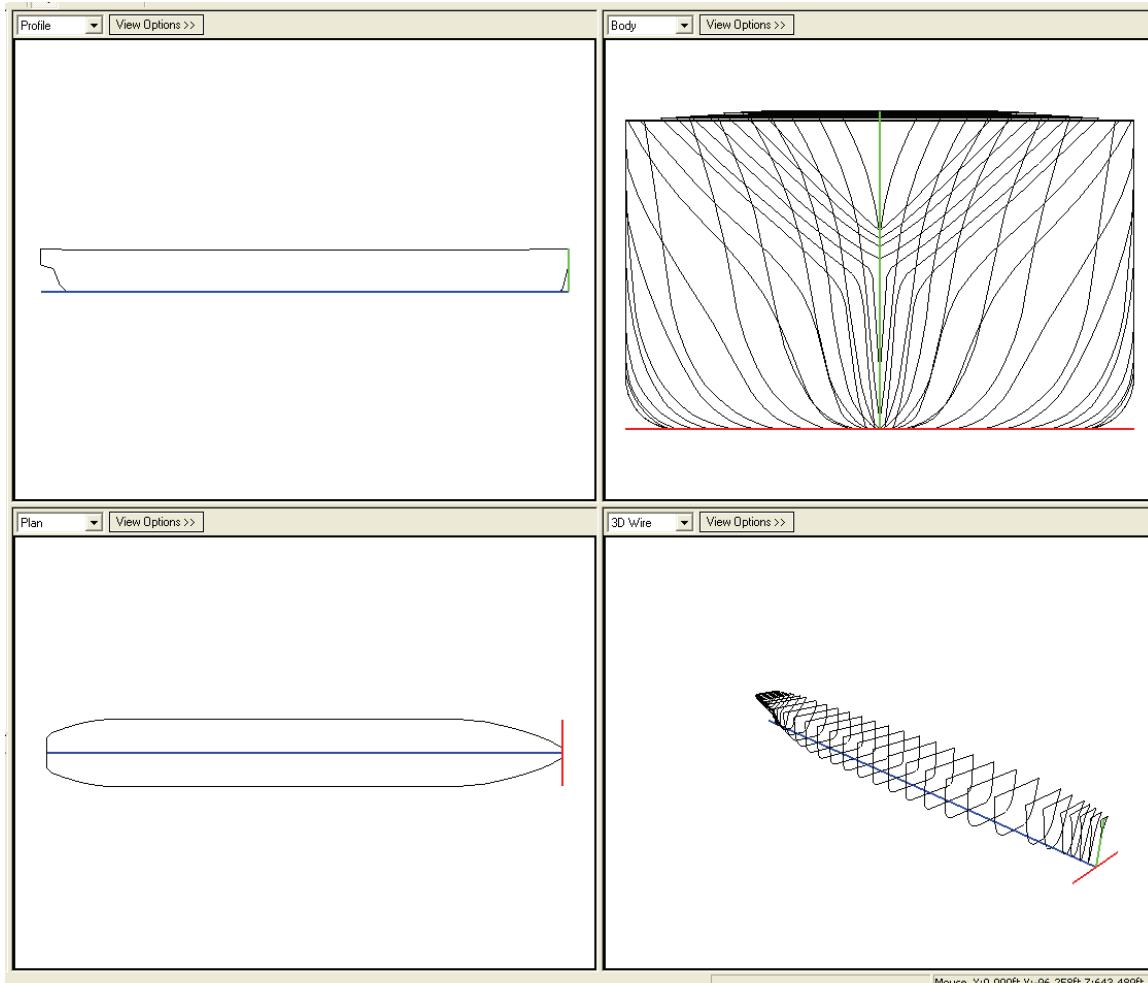


Figure 159: Tanker 24

Tanker 25

Table 161: Tanker 25 Principal Characteristics

Reference ID:	Tanker 25	
Description:		
Special Codes:	P	
Length:	636.5	ft
	194.0	M
Beam:	100.0	ft
	30.5	M
Depth:	49.5	ft
	15.1	M
Draft:	36.9	ft
	11.2	M
Displacement:	53,070	LT
	53,919	Mt

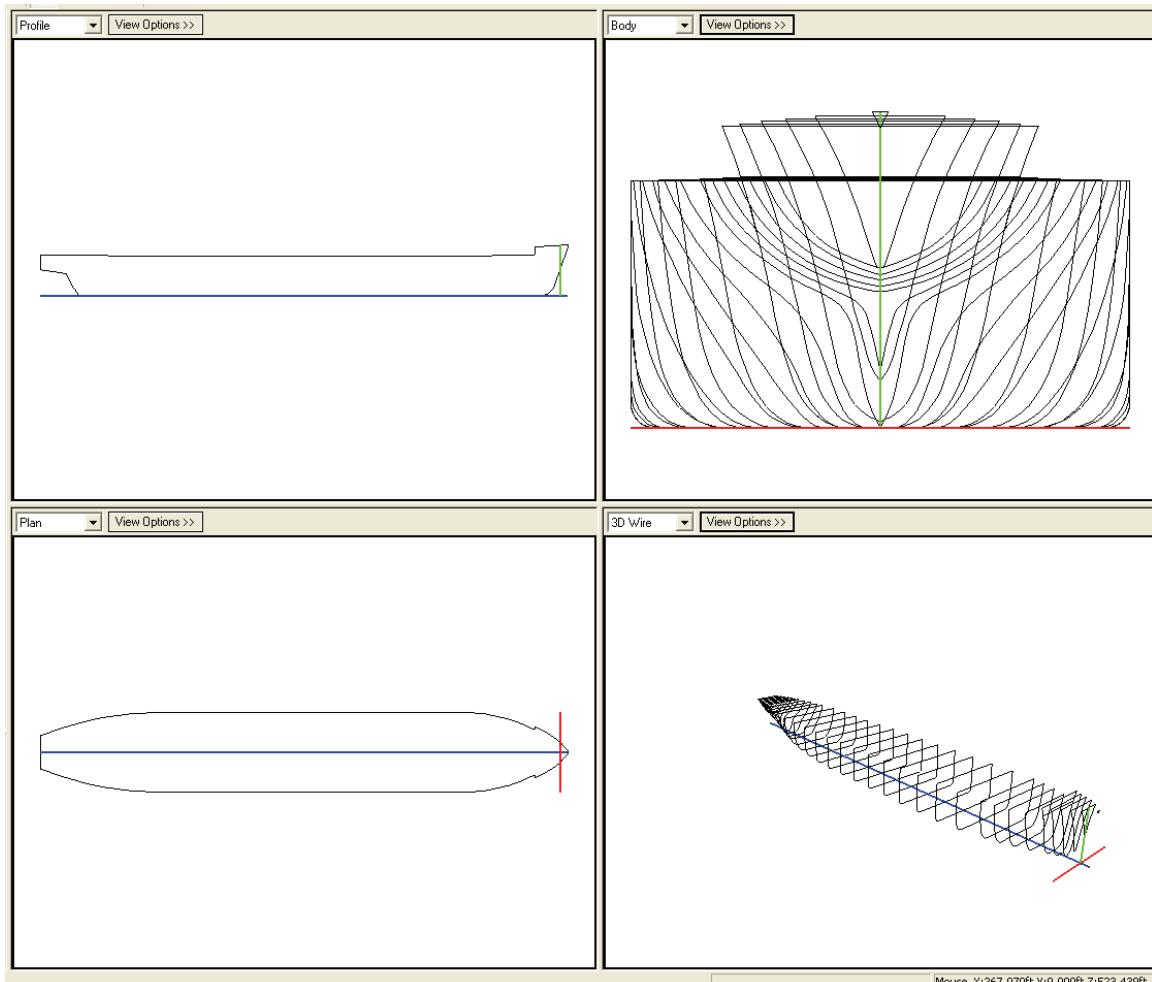


Figure 160: Tanker 25

Tanker 26

Table 162: Tanker 26 Principal Characteristics

Reference ID:	Tanker 26	
Description:		
Special Codes:	P	
Length:	610.0	ft
	185.9	m
Beam:	91.6	ft
	27.9	m
Depth:	61.7	ft
	18.8	m
Draft:	34.0	ft
	10.4	m
Displacement:	37,750	LT
	38,354	mt

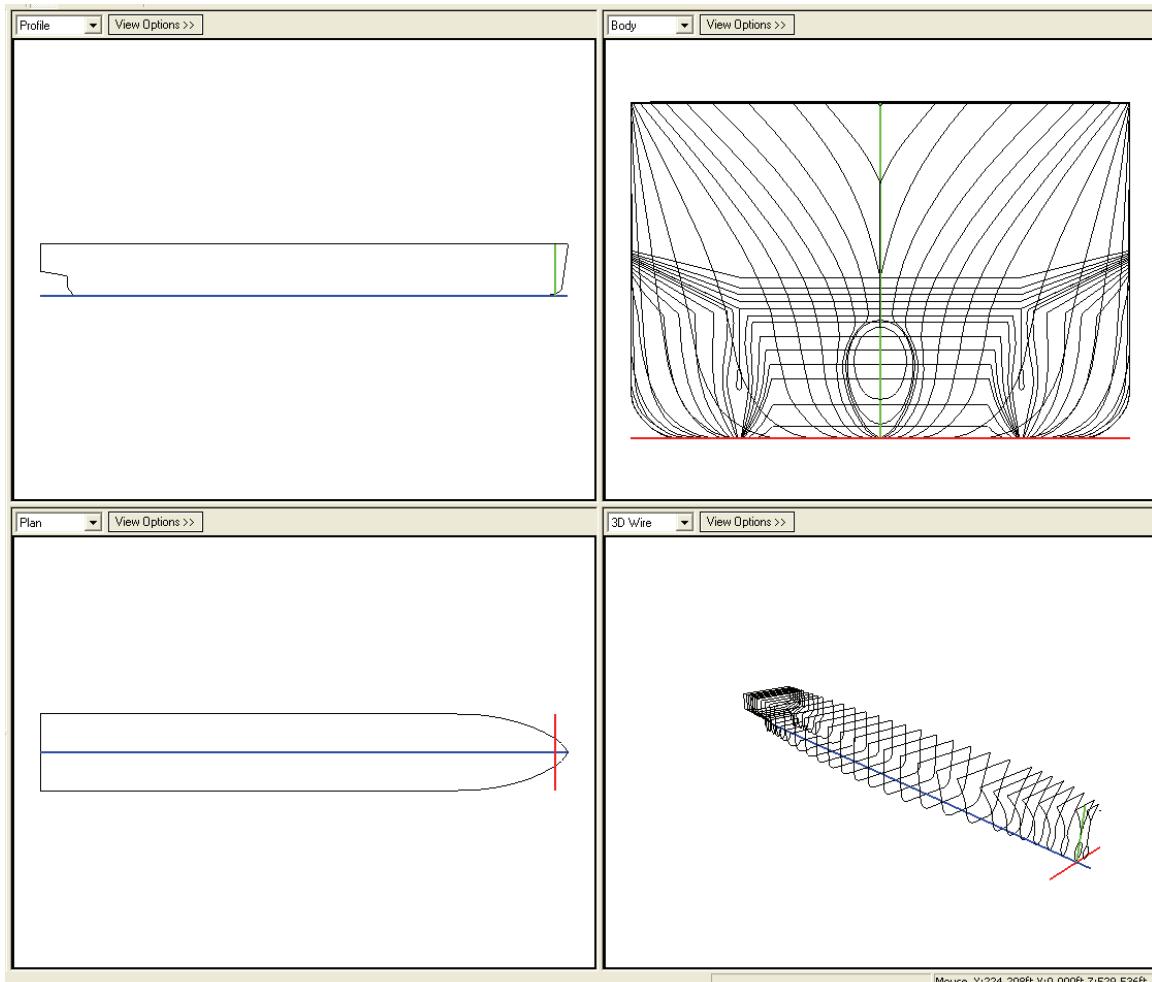


Figure 161: Tanker 26

Tanker 27

Table 163: Tanker 27 Principal Characteristics

Reference ID:	Tanker 27	
Description:	Double Hull Products Tanker	
Special Codes:	P	
Length:	619.8	ft
	188.9	m
Beam:	105.8	ft
	32.2	m
Depth:	68.2	ft
	19.2	m
Draft:	40.0	ft
	12.2	m
Displacement:	97,650	LT
	99,212	mt

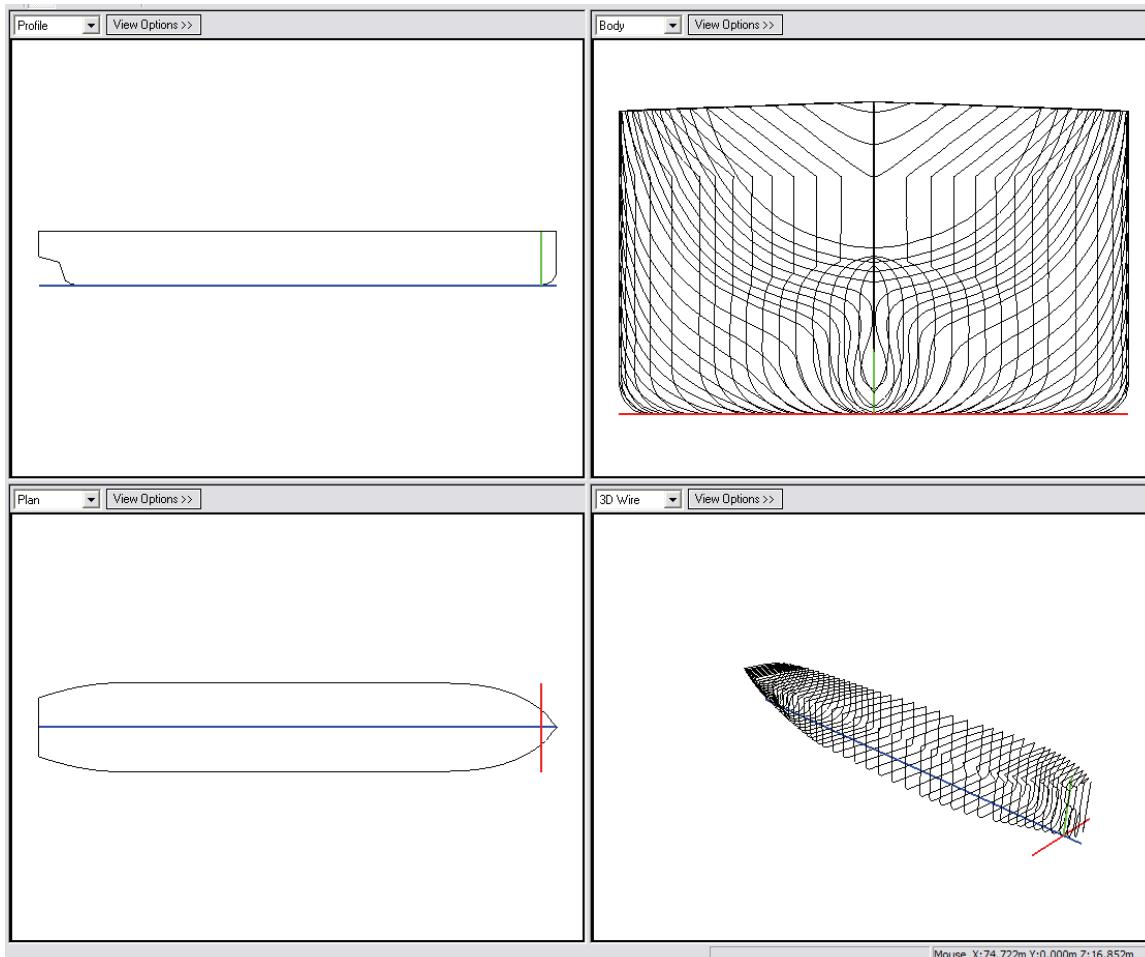


Figure 162: Tanker 27

Tugboats

Tugboat 01

Table 164: Tugboat 01 Principal Characteristics

Reference ID:	Tugboat 01	
Description:	Harbor Tug	
Special Codes:	P	
Length:	90.0	ft
	27.4	m
Beam:	32.0	ft
	9.8	m
Depth:	15.0	ft
	4.6	m
Draft:	12.0	ft
	3.7	m
Displacement:	485	LT
	493	mt

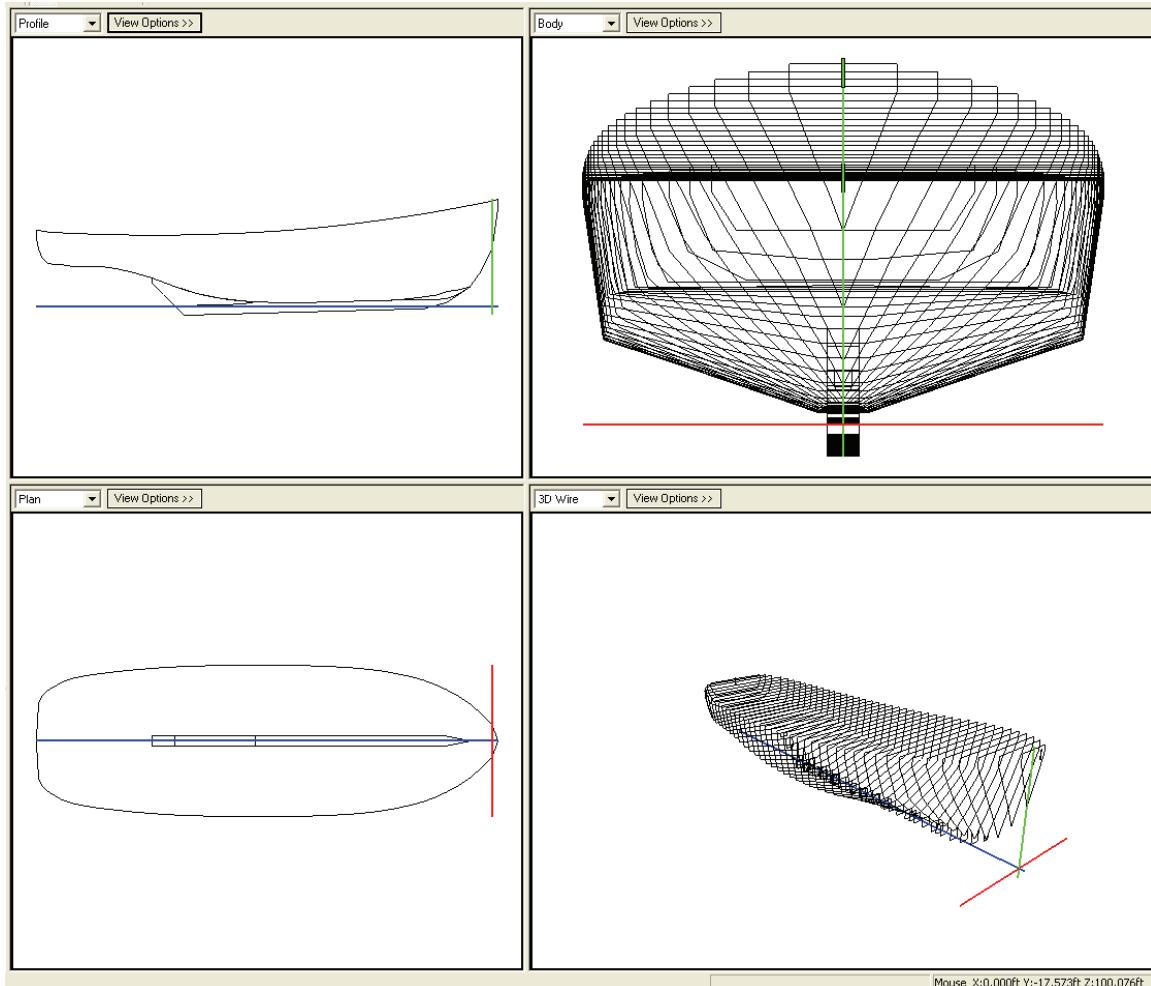


Figure 163: Tugboat 01

Tugboat 02

Table 165: Tugboat 02 Principal Characteristics

Reference ID:	Tugboat 02	
Description:	Tug	
Special Codes:		
Length:	110.0	ft
	33.5	m
Beam:	34.0	ft
	10.4	m
Depth:	19.0	ft
	5.8	m
Draft:	17.0	ft
	5.2	m
Displacement:	1,010	LT
	1,026	mt

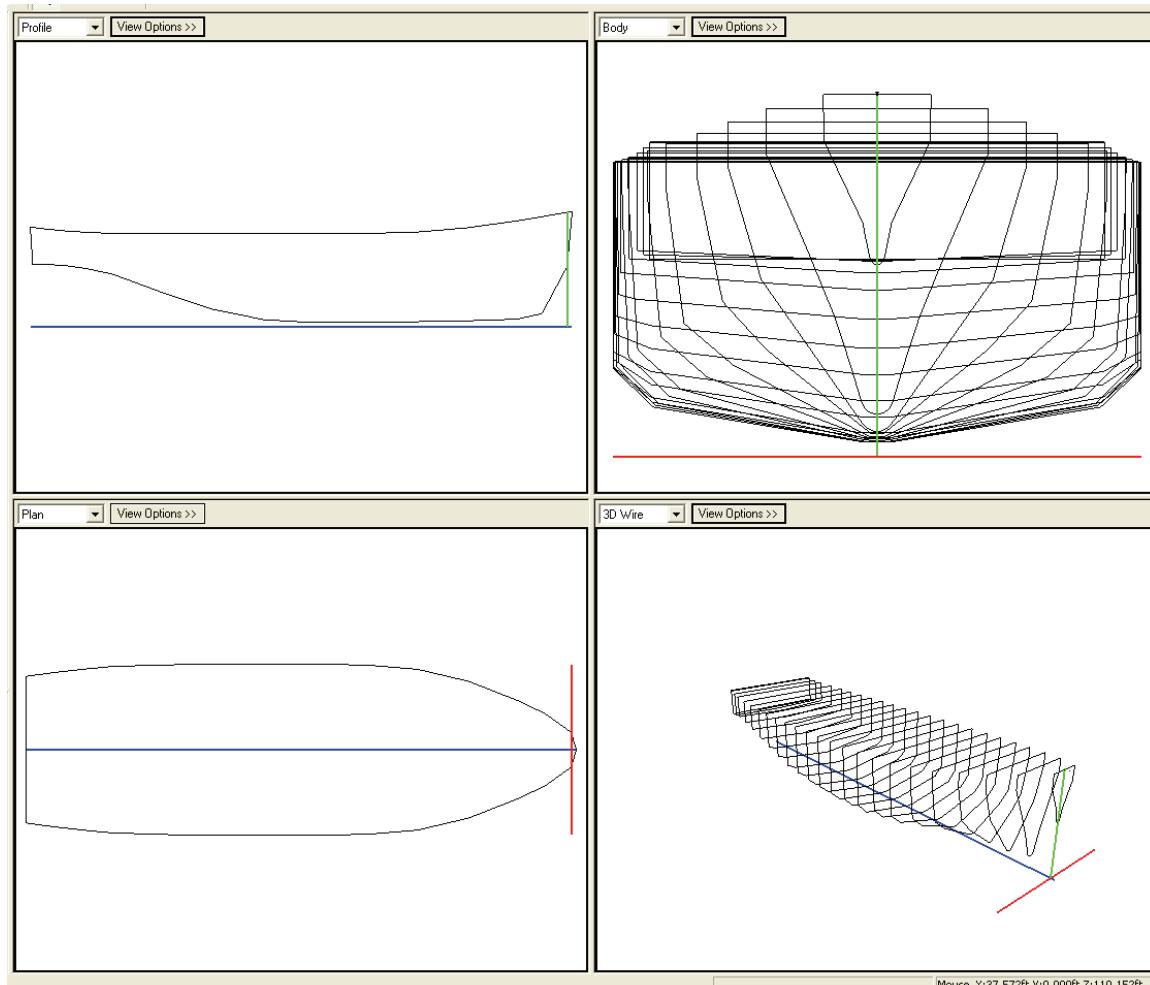


Figure 164: Tugboat 02

APPENDIX A
General Hydrostatics System (GHS)
Geometry File (GF) Format

Appendix A. General Hydrostatics System (GHS) Geometry File (GF) Format Description¹

The GHS Geometry File (GF) describes the shapes and locations of the elements of the vessel model which are involved in: 1) the ship's hull, appendages and other displacers; 2) the internal tanks and compartments; and 3) the non-displacing elements which contribute windage.

The Geometry File format is designed to be easily handled by various programs using various means of internal data storage. Hence, it is an ASCII text file and the numerical values are decimal.

The details of the Geometry File format are presented here. This information can be used to construct interfaces enabling programs using other geometrical representations to read and write GHS Geometry Files.

General

The Geometry File consists of a series of text lines, beginning with a title line and ending with a line containing four asterisks (****). Between these limits there may be one or more of the several data elements and structures described below. The order of occurrence and number of occurrences within the file are restricted only where such restrictions are mentioned.

Where a series of numbers is on a single line, the numbers must be separated by commas (commas within a number are not allowed). Spaces surrounding the commas are optional. A trailing comma at the end of a numerical line should not be used.

Title Line

The title is a single line containing a description and name of the vessel. It must be the first line of a GF, and its length should not exceed 58 characters.

Reference Number

Immediately following the title is an optional line containing a reference number. If present, this line must begin with a digit. The reference number may be divided into two parts separated by a slash:

Vessel reference \ Owner reference

The vessel reference must begin with a digit and may contain up to 12 characters. The owner reference, which is limited to 3 characters, may contain letters and digits. If the owner reference is omitted, the slash may be omitted also. Blanks are not allowed on this line.

¹ This appendix is extracted from the GHS user documentation by Creative Systems, copyright 1997-2002.

Comments

Comments may be included in the GF to convey notes or to alert the user to peculiarities. (GHS displays the comments when reading a GF, and they are available subsequently through the COMMENT command.) A comment is one line beginning with a back slash character (\) followed by up to 79 characters of text. Example:

\Offsets were scaled from a copy of the lines drawing 1234-A dated 12/19/1938.

Up to 10 comments may be included between the title and the first shape.

Miscellaneous-Information Lines

Also between the title and the first shape, any number of lines of miscellaneous information may appear, subject to the following restrictions:

- The first character on any such line must not be an asterisk or a back slash.
- To avoid conflict with GHS programs which may place information in this area, such a line should contain neither colons (:) nor equal signs (=) if it begins with an alphabetic character.

GHS uses the following miscellaneous-information lines:

L:*Overall length of the model*

W:*Overall breadth of the model*

P:*Units Preference*

OL:*Longitudinal origin plane description*

OT:*Transverse origin plane description*

OV:*Vertical origin plane description*

N:*Number of Part records in the file*

The Units Preference is a single letter: M for meters or F for feet. This does not affect the units used in the Geometry File itself (they are always feet) but indicates to the using program what units it should initially present.

The origin plane descriptions are limited to a maximum of 25 characters of text each.

Shapes

The shape data structure represents the solid model of some element of the vessel such as, for

example, the hull, a skeg or a tank. The solid is represented as a discrete series of slices or planes all parallel to one another. It is assumed that the spacing between these slices (which may vary) is greater than 0.01 and small enough that all important aspects of the solid are adequately represented by the slices. The orientation of these planes is always normal to the longitudinal axis of the overall model.

At each slice or "section" of the solid shape is a closed curve representing the complete outline of the intersection of the solid with the cross-sectioning plane. Each curve is represented as an ordered series of points where either a straight line or circular arc connects points. The first and last points are always connected by a straight line.

The vertical axis is recognized as a possible line of symmetry, and the shape data structure takes advantage of this kind of symmetry by allowing the portion of a symmetrical curve that would be on the negative side (to the left of the vertical axis) to be omitted but still implied.

When a sectional curve is viewed with the positive transverse axis to the right and the positive vertical axis upwards, the progression of points is always such that the area enclosed in going from the first to the last point is positive.

The format of each shape record in the ASCII Geometry File is:

```
*  
Shape name  
n  
Section 1  
...  
Section n  
Shell thicknesses  
Property table
```

1st shape line: One asterisk. This must be the only character on the line.

2nd shape line: The shape name (e.g. HULL). The shape name must be the only thing on this line and there must be no leading or trailing blanks. Only letters and digits may be used, and letters should be upper case (except for the shape names automatically assigned that are of no concern to the user, which may include lower-case letters). Its length must not exceed 8 characters. No two shapes may have the same name within the same Geometry File.

3rd shape line: An integer n where $1 < n < 256$ giving the number of sections comprising the shape.

4th shape line: The first line of the first section.

The section format is:

```
Location, m  
Point 1  
...  
...
```

Point *m*

1st section line: The section's longitudinal location and number of points on the section. Longitudinal locations may be relative to any convenient origin (different shapes may use different origins). The sections must be arranged in ascending order of their longitudinal locations. A section must have at least one point and less than 256 points.

2nd section line: The first point of the section. Points must be arranged in sequence so that going from point 1 to point 2 ... to point *m* results in a counterclockwise traversal of the section curve in a plane where the positive transverse axis is to the right and the positive vertical axis is upward.

The point format is:

Trans, Vert [, Surface code, Radius, Line code]

Trans is the transverse coordinate of the point relative to the shape's origin.

Vert is the vertical coordinate of the point relative to the shape's origin.

The remaining three items on the point line are optional. If the values of all three are zero or blank, they may be omitted along with the preceding comma.

Surface code is a single digit from 0 to 3. It indicates the wettable/covered and shell/no-shell status of the line segment between the point it is attached to and the next point:

Surface code	Segment Covered?	Shell Gap Present?
0	No	No
1	Yes	No
2	No	Yes
3	Yes	Yes

Surface code 2 is a special case used to indicate portions of a section curve which are not on the surface of the actual shape. Surface codes may be ignored in some programs.

Radius, if present and not zero, is the radius of the arc connecting this point and neighboring points having exactly the same radius value. The distance between these points should be sufficiently small compared to the radius that straight lines connecting the same points would be an acceptable approximation to the curve. If the center of curvature of the arc is to the right when looking from the point to the next point (with the same radius), the radius number should be negative. The presence of the radius allows programs that recognize it to store the curve in a more compact form while programs that do not recognize the radius can treat the connections between points as linear with acceptable accuracy.

Line code is a short alphabetical string identifying a longitudinal line such a chine or knuckle. The only line code fully supported is "DK" which marks the point at the deck edge.

Shell thicknesses indicate the cumulative history of incremental expansions (positive) or contractions (negative) of the sectional outlines in a direction normal to the outline curve in the sectional plane and applying to the bottom, sides and top of every sectional curve on the shape. If omitted, all three thicknesses are assumed to be zero. If present, all three numbers must be present in the following sequence:

Bottom, Sides, Top

Zero shell thickness implies that the outlines are to the inside of any shell. A nonzero shell thickness means that the shell is included within the shape and that the interior space of the body it represents can be deduced by contracting the sectional outlines by the amounts of the shell thicknesses.

In the absence of Line codes defining the transition from bottom to side and side to top, the bottom of each sectional curve extends to the point where the slope passes through 1.0; the top begins where the magnitude of the slope becomes less than 0.25.

Property table is an optional data structure that contains formal properties of the portions of the shape below a series of horizontal planes. Its purpose is to provide alternate "Calibrated" properties that cannot be derived from the foregoing geometry. The format of this table is:

PROP, *n*
Height 1, Props 1
...
Height *n*, Props *n*

1st property table line: The keyword "PROP" followed by *n*, the number of rows in the property table.

Other property table lines: Height, the vertical offset a "waterplane" normal to the vertical axis; Props, the properties of the portion of the solid below the waterplane. The format of the properties is:

Volume, LCV, TCV, VCV, Area, LCA, TCA, CML, CMT

Volume is the volume of the solid below the waterplane in cubic feet.

LCV, TCV, VCV are the longitudinal, transverse and vertical coordinates of the centroid of the volume below the waterplane, in feet.

Area is the area of the waterplane's intersection with the shape, in square feet.

LCA, TCA are the center of the waterplane area, in feet.

CML, CMT are the longitudinal and transverse moments of inertia of the waterplane area about its own center divided by the volume, in feet.

The rows in the table must be arranged such that the height increases monotonically. The height should range such that the volume goes from zero to the full volume of the shape.

A shape definition must appear before any of the component definitions that refer to it.

Components

The component data structure gives further definition to a shape by locating it relative to the ship's overall origin and assigning it an effectiveness factor. It also provides symmetry information for proper interpretation of the section curves. Note that more than one component may use the same shape.

Component format:

**

Component name

Side

Effectiveness

Shape origin shift

Shape name

Margins (optional)

1st component line: two asterisks. These must be the only characters on the line.

2nd component line: the component name (e.g. HULL). The component name must be the only thing on this line and there must be no leading or trailing blanks. Only upper case letters and digits, periods and hyphens should be used. (Lower case letters may be used for component names that are of no concern to the user.) Its length must not exceed 14 characters including any suffix denoting side. The suffix, if present, may be in one of two forms: 1) of the form ".P", ".C", or ".S" which correspond, respectively, with -1, 0 and 1 values of the "side factor" on the next line; or 2) "-n" where n must be "0" if the side factor is zero, even if the side factor is negative, and odd if the side factor is positive.

3rd component line: the side factor is an integer which must be -1, 0 or 1. If the component is fully described by the referenced shape data, the side factor is 1. If the component is as described by the shape data except that the shape's transverse coordinates are to be negated (moved to the opposite side) the side factor is -1. If only half of the component is described by the shape data (the other half being described by reflecting the transverse coordinates about the shape's origin), the side factor is 0.

4th component line: effectiveness is a factor which multiplies the volume and waterplane area of the component. It should be a real number in the range negative 1.0 to positive 1.0. If the component represents a tank or compartment where a permeability factor is to be used, the effectiveness is the permeability. Components which represent buoyant or windage structures normally have an effectiveness of 1.0, but in cases where the detail of structure is represented by a simpler enveloping surface, the effective volume would be less than the volume of the envelope, thereby requiring a lesser effectiveness factor. A negative

effectiveness factor may be used to deduct the volume of a component when it is representing a void within a part.

5th component line: the shape's origin shift is a vector (longitudinal, transverse, vertical coordinates) representing the shift of the origin to which the shape data is referred, relative to the overall vessel origin. For example, if the shape data for a skeg is referred to a local origin at the skeg's centerline -- which is 9 feet from the ship's centerline -- and to the forward end of the skeg -- which is 40 feet aft of the ship's longitudinal origin -- the component origin shift would be 40,9,0.

6th component line: the name of the shape representing this component. The shape data structure must precede the component data which refers to it.

7th (optional) component line: three numbers representing freeboard margins relative to the deck edge. The first number applies to the forwardmost (least) section location and the last number applies to the aftmost (greatest) section location. The middle number applies to a location midway between the other two. (The margin distance at other locations is derived by parabolic interpolation.)

No two components belonging to the same part may have the same name. Two components may have the same name provided only one of them precedes the part to which it belongs (see the part data structure description, below).

Parts

The part data structure collects one or more components under a common name, and supplies additional data common to the part.

Part format:

Part name \ Part description

Fluid name

Type of part

Specific gravity of the fluid

Reference point

n (number of components in the part)

Component 1 name

...

Component n name

m (number of points defining a sounding tube)

Point 1

...

Point m

-1

Shear correction factor

1st part line: three asterisks. These must be the only characters on the line.

2nd part line: the part name and optional description. The part name must be the only thing preceding the backslash or the only thing on the line; there must be no leading or trailing blanks around the part name. Only upper-case letters and digits, periods and hyphens should be used. Its length should be not more than 12 characters (14 characters for tanks if a side-indicating suffix is present). Suffixes are only recognized on tank parts and must have the same format as component suffixes, but are otherwise irrelevant to the data structure. No two parts in the Geometry File may have the same name. If the part description is present, it immediately follows the back slash and contains 20 or fewer characters.

3rd part line: Fluid name is the description of the fluid with which this part is concerned. If it is a displacer, this would be the water environment in which the vessel is floating (e.g. SEA WATER or FRESH WATER). If it is a container such as a tank, this would be the contents (e.g. FUEL OIL, LUBE OIL, FRESH WATER, etc.). The fluid name should not exceed 12 characters.

4th part line: Part type is an integer indicating whether the part a) contributes to displacement, b) is essentially a container or c) is only for windage purposes; specifically:

- 1 - Displacement part (e.g. HULL including appendages)
- 4 - Containment part (e.g. a tank or compartment)
- 10 - Sail (windage) part (e.g. non-watertight superstructure)

5th part line: specific gravity of the fluid named in line 3 above. Specific gravity is the density of the fluid divided by the maximum density of pure water, which is 1000 kg per cubic meter.

6th part line: The reference point is used for various purposes, depending on the type of the part. For tanks, the reference point can mark the point of suction, the point from which an ullage is taken, the point of damage or spilling, etc. The reference point text contains three numbers giving the longitudinal, transverse and vertical coordinates, respectively. It is relative to the vessel's overall origin.

7th part line: the number of components included in the part. This must be an integer greater than zero. It is the count of the component-referencing lines which follow.

8th ... 7+*m*th part lines: These lines contain component names exactly matching one of the component names which have previously been defined.

8+*m*th part line: Beginning the sounding tube definition, this line contains the count of the number of points representing the sounding tube. For displacement-type parts the sounding tube is irrelevant, and this line may be omitted. Containment-type groups should always include this line, even if there is no sounding tube (in which case the number of points is zero).

9+*mth* ... 8+*m+nth* part lines: If there is a sounding tube, these lines give the points which define the center of the tube, starting from the striker plate and continuing to the top of the tank or beyond. In case of a straight tube, only two points are required. If the tube is bent or curved, enough points should be included to model the tube with reasonable accuracy. Sounding tube points are relative to the vessel's origin. Each line contains the coordinates of one point; i.e. three numbers in longitudinal, transverse, vertical order.

Additional optional lines: -1 introduces a "shear correction factor" which applies only to tank parts and must be in the range zero to 1.0. The value depends on details of the construction of the tank and is used to reduce the slope of the shear force curve contributed by the load in the tank.

Critical Points

The critical point data structure gives the description and location of a point on the vessel which is of some particular interest, such as a downflooding point.

Critical Point Format:

*CRT
n, description
location

1st critical point line: a single asterisk immediately followed by the upper case letters "CRT".

2nd line: *n* is the number of the critical point which must be an single digit from 1 to 99. Each critical point must be assigned a different number; hence the total number of critical points cannot exceed 9. Immediately following the critical point number and separated from it by a comma is the description, which may be any displayable text string of up to 25 characters in length.

3rd line: location of the critical point relative to the overall vessel origin (three coordinates in longitudinal, transverse, vertical order).

Notes

Units

Distance units are always in feet. If the metric system is preferred, the programs reading and writing the Geometry File are responsible for conversion.

The Coordinate System

A three-dimensional cartesian coordinate system is used. The three directions are referred to as longitudinal, transverse and vertical.

The longitudinal direction is identified with the vessel's fore and aft direction. Longitudinal

coordinates are lesser toward the bow and greater toward the stern. A baseline, assigned when the ship is designed or measured, determines the longitudinal direction. (The baseline may or may not be parallel to the keel.) The longitudinal direction is the direction of the baseline.

Vertical is the direction perpendicular to the waterplane when the baseline is parallel to the waterplane and the vessel has no list or heel. Greater vertical coordinates are more upward, lesser downward.

The transverse direction is identified with the vessel's athwartship direction and is perpendicular to both the vertical and longitudinal directions. Greater transverse coordinates are more to starboard, lesser to port.

The origin of the coordinate system is arbitrary, but its location should be noted prominently, preferably by use of the OL:, OT: and OT: information lines. A COMMENT line further describing the location of the origin may also be helpful. It is usually most convenient to have the origin on the baseline at the centerplane of the vessel.

The Interpretation of Shape Geometry

A three-dimensional shape is represented as a series of sections, or cuts, made perpendicular to the longitudinal axis. The surface of the shape is considered to be flat between sections (i.e. the surface area between sections is minimum). The faces of the first and last sections are themselves the end surfaces of the shape.

It is further assumed that the immersed sectional area and wetted girth from one section to the next varies nearly linearly. Since this requirement should be met at any anticipated angle of heel, depth and trim, even parallel-sided shapes need to be represented by several sections along their length.

Each section is interpreted as a closed curve made up of straight lines connecting points 1...*m*. In the case of transverse symmetry about the shape's centerplane, it is permissible to omit the negative (port) side of the section curve, in which case the points are re-traversed in reverse order with the transverse coordinate negated. It is always assumed that the curve is closed by returning to the starting point after the last point.

Approximating Curved Surfaces

Curved surfaces can only be represented approximately, since the shape geometry is based on straight lines. However, a close approximation can be obtained by placing the sections and points close together.

The error in area under a smooth curve of average height *c* which departs from the straight line approximation by an amount *d* is less than the fraction *d/c* of the area. This can be used as a guide in fixing the distance between points on sections and the distance between sections.

A reasonable standard of accuracy for ship stability/strength calculations is a volume error of 0.3%. This can be attained if the errors due to longitudinal and transverse linearization are each kept to 0.15%. Most section curves can be represented to this degree of accuracy with 20 or fewer intervals. Typical longitudinal area curves require about 25 intervals.

More closely spaced points and sections are required where extreme curvature or discontinuities are present. Any abrupt change in section should be represented by two closely spaced sections, one on either side of the change. However, the closest section spacing should not be less than 0.01 foot.

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