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**National Science Foundation**

**Academic Fleet Review Meeting  
September 2-3, 1998**

***A History  
of the  
UNOLS Fleet***

**University-National Oceanographic Laboratory System**



# UNOLS Fleet History

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**Fleet Timeline (1972 - present)**

**and**

**Ship Characteristics:**

**Operator/Owner**

**Year Built/Converted/Mid-life**

**Length Overall**

**Science Accommodations**

# Fleet Capabilities

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## **A comparative view of the Ship Capabilities available in the 1970's to capabilities offered by today's ships.**

The attached spreadsheets give a comparative inventory of science and navigational equipment aboard UNOLS ships over a twenty six year period. Sheet one provides three "Global" ships which include GILLISS, pre-stretched KNORR and the newest AGOR general purpose ship, REVELLE. For the Intermediate class, TRIDENT, KANA KEOKI and post-overhaul WECOMA provide the comparative improvements. Not only has there been a dramatic increase in the technology aboard these ships through the years but the number of scientists verse the number of crew persons has shown a marked improvement. The combination of these two advancements have resulted in more efficient use of the platforms and a quantitative and qualitative increase in the data stream available to the scientific community.

Intermediate/Regional Ships	1972-1980	1981-1989	1990-1998
Average Number of Ships	9	12	13
<b>Typical Ship of the Class (150-200 ft)</b>	<b>TRIDENT</b>	<b>KANA KEOKI</b>	<b>WECOMA</b>
Length	179 ft	156 ft	185 ft
Cruising Speed	11kts	11 kts	12
Crew/Scientists ratio	1.58	0.68	0.67
<b>Navigation</b>			
LORAN	Y	Y	Y
TRANSIT Satellite	Y	Y	
GPS			Y
GPS - Differential			Y
GPS P-CODE			Y
3-Axis GPS			Y
Electronic Charting			Y
Dynamic Positioning			
Dual axis speed log			Y
<b>Communications</b>			
H F Radio	Y	Y	Y
INMARSAT A			Y
INMARSAT C			Y
INMARSAT M			Y
INMARSAT B			
SEANET			
M-SAT			
<b>Scientific Equipment</b>			
CTD	Y	Y	Y
SEA SOAR/SCAN FISH			Y
Gravity meters		Y	
Multi-Beam Sonar			
Chirp Sonar			Y
ADCP			Y
Bottom Sampling			
Coring	Y	Y	Y
Coring 30 meter			
Wire/Ropes/Cables			
1/4"			Y
1/2"	Y		Y
9/16"		Y	Y
0.219			
.322 Conductor		Y	Y
.680 Conductor			Y
ROV Handling			
Other			
Hi spd computer network			Y
CD Rom Data Distribution			Y
Inkjet Hi Res. Color printer			
Laser printer			Y

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# UNOLS Fleet Utilization

## 1972 - 1999

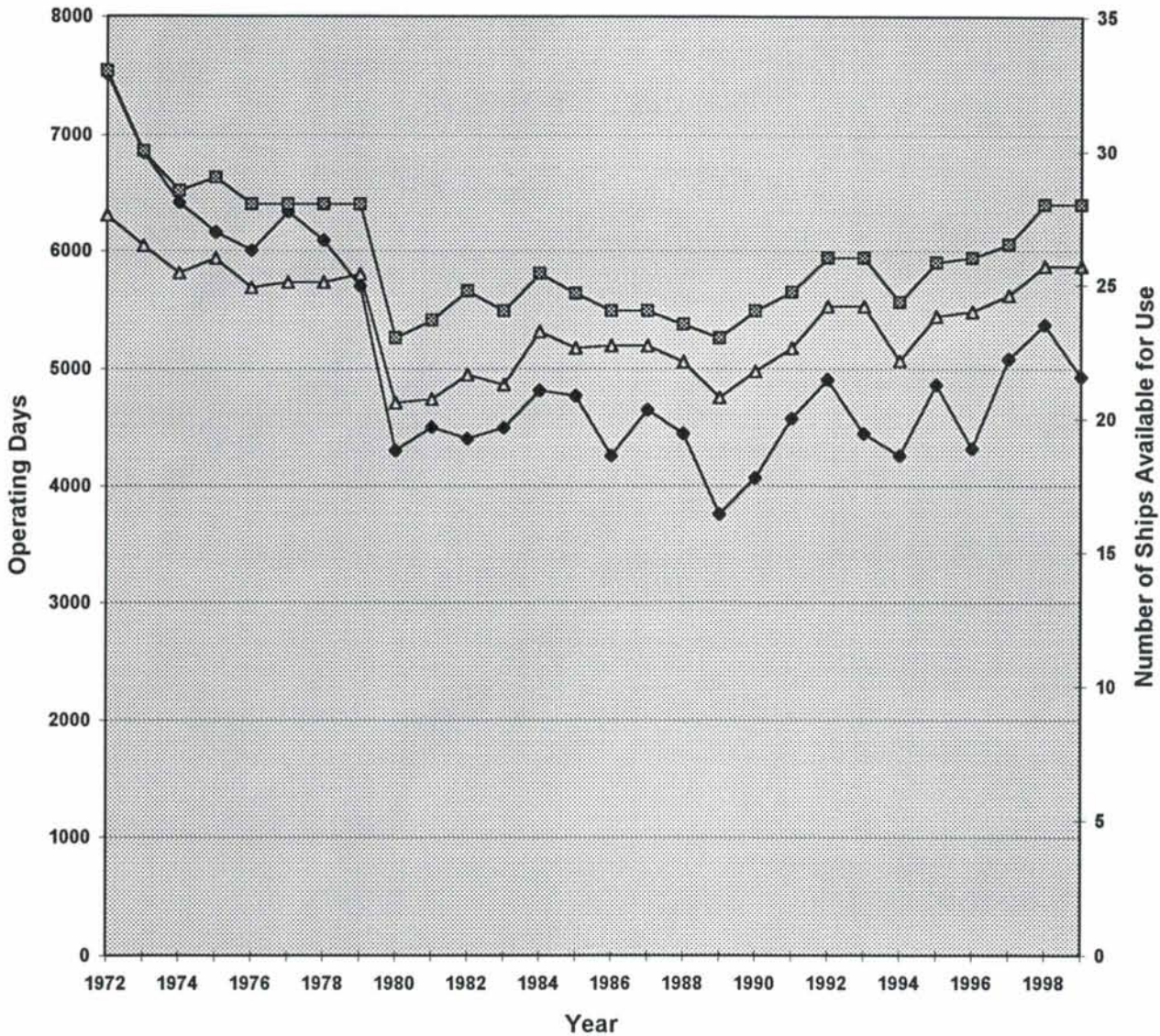
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The following charts show the total ship operating days by year for the fleet as well as the number of ships available for use each year. If a ship was laid up due to a shipyard period, it was not included in the total number of ships available. If a ship only operated a portion of a year, due to a yard period, only the portion of the year available for use was included in the total. Also shown in the following charts is the total days for a Full Operating Year (FOY) as defined by the Research Vessel Operators' Committee.

A table is attached <sup>as</sup> ~~at~~ the last page of this section. It shows the percent utilization based on the FOY totals.

## UNOLS Fleet Utilization -Operating Days by Year

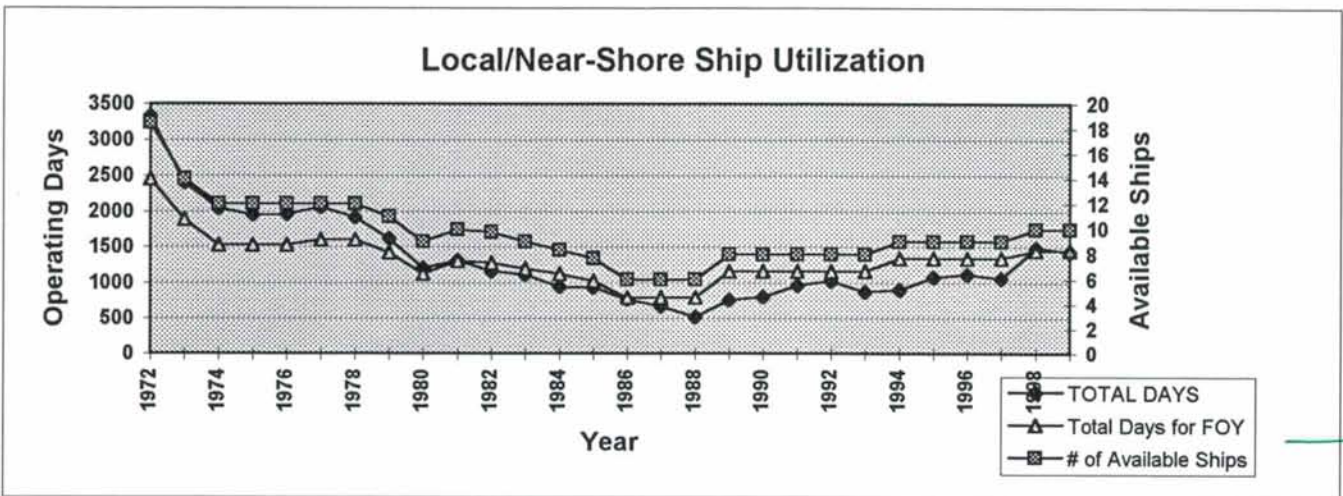
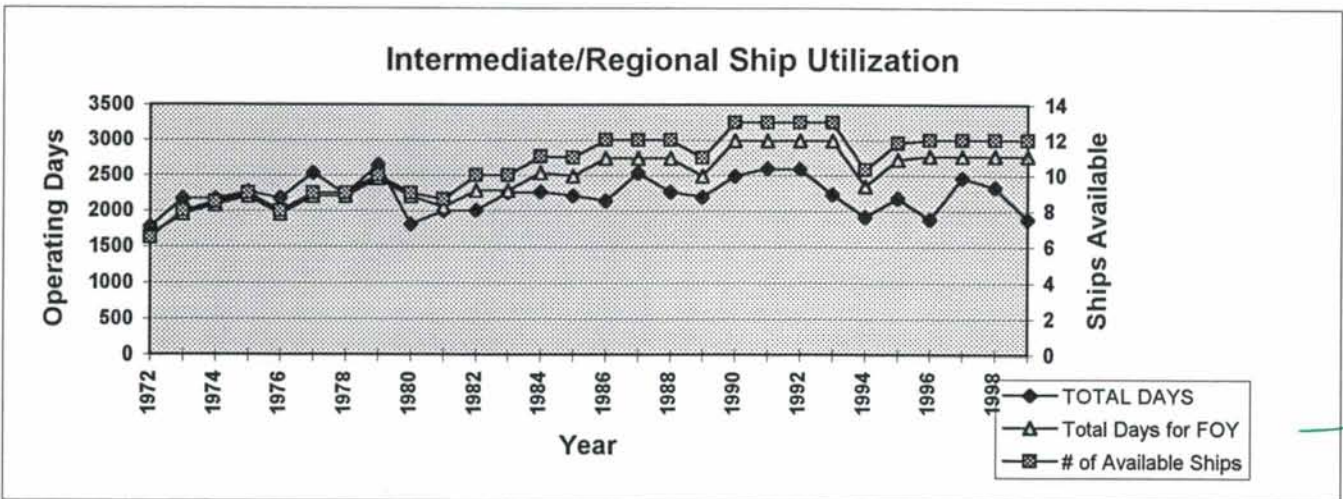
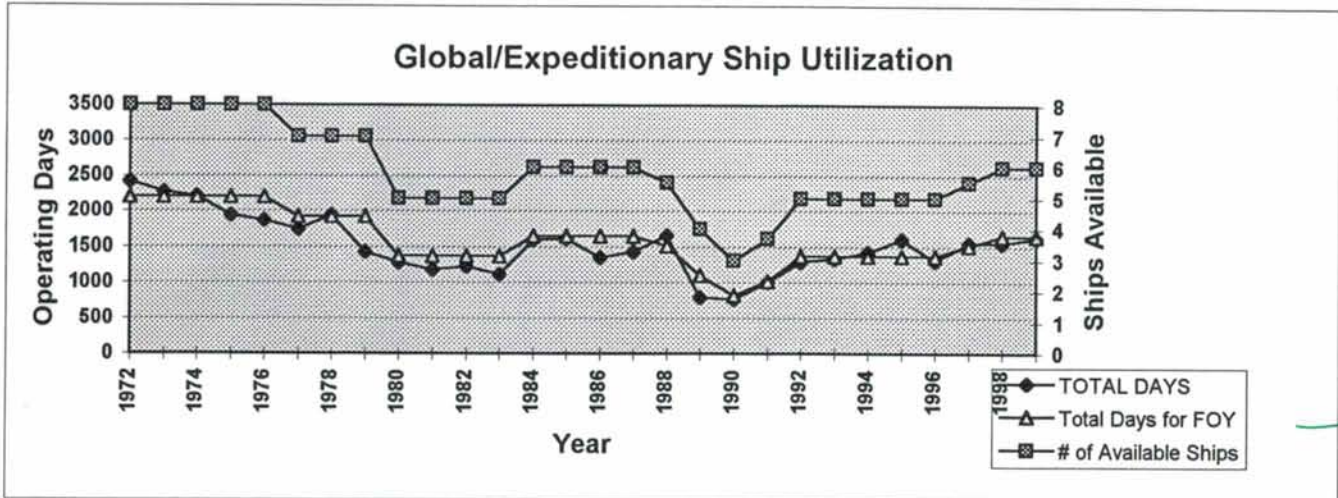


This chart shows the total Fleet utilization by year as well as the number of ships available for use. Also shown ~~is~~ the total days for a Full Operating Year (FOY) as defined by the Research Vessel Operators' Committee (RVOC).

RVOC Recommended Definition of a Full Operating Year (FOY):

Class	Length	FOY (days)
Class I&II	200-300 ft	275
Class III	150-200 ft	250
Class IV	100-150 ft	180
Class V	<100 ft	110

# Fleet Utilization by Class



RVOC Recommended Definition of a Full Operating Year (FOY):

Class	Length	FOY (days)
Class I&II	200-300 ft	275
Class III	150-200 ft	250
Class IV	100-150 ft	180
Class V	<100 ft	110





# UNOLS

## Science Accommodations

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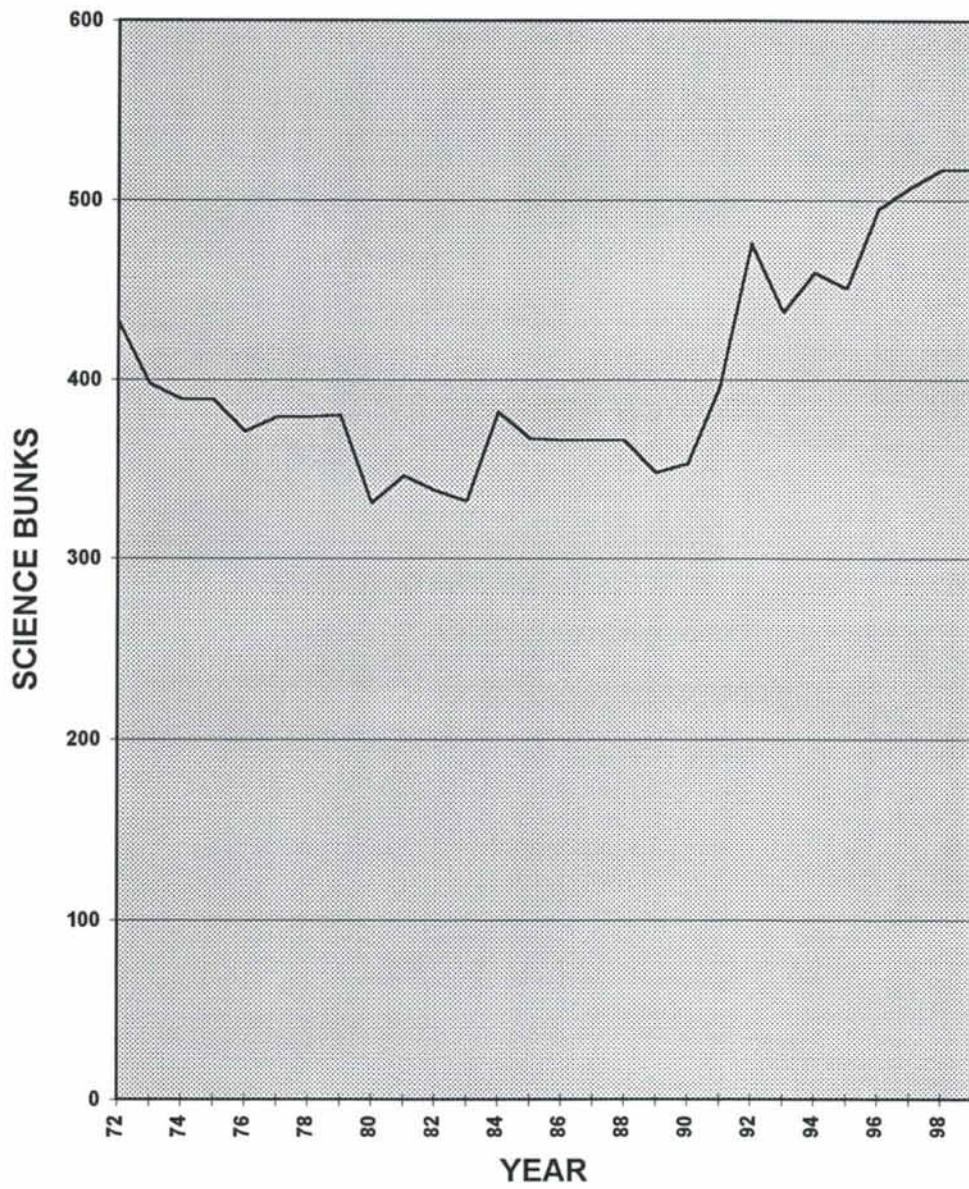
The following series of charts show the science accommodations available in comparison to the berths actually used over the years.

The first chart shows the science berths available by year for 1972 to 1998.

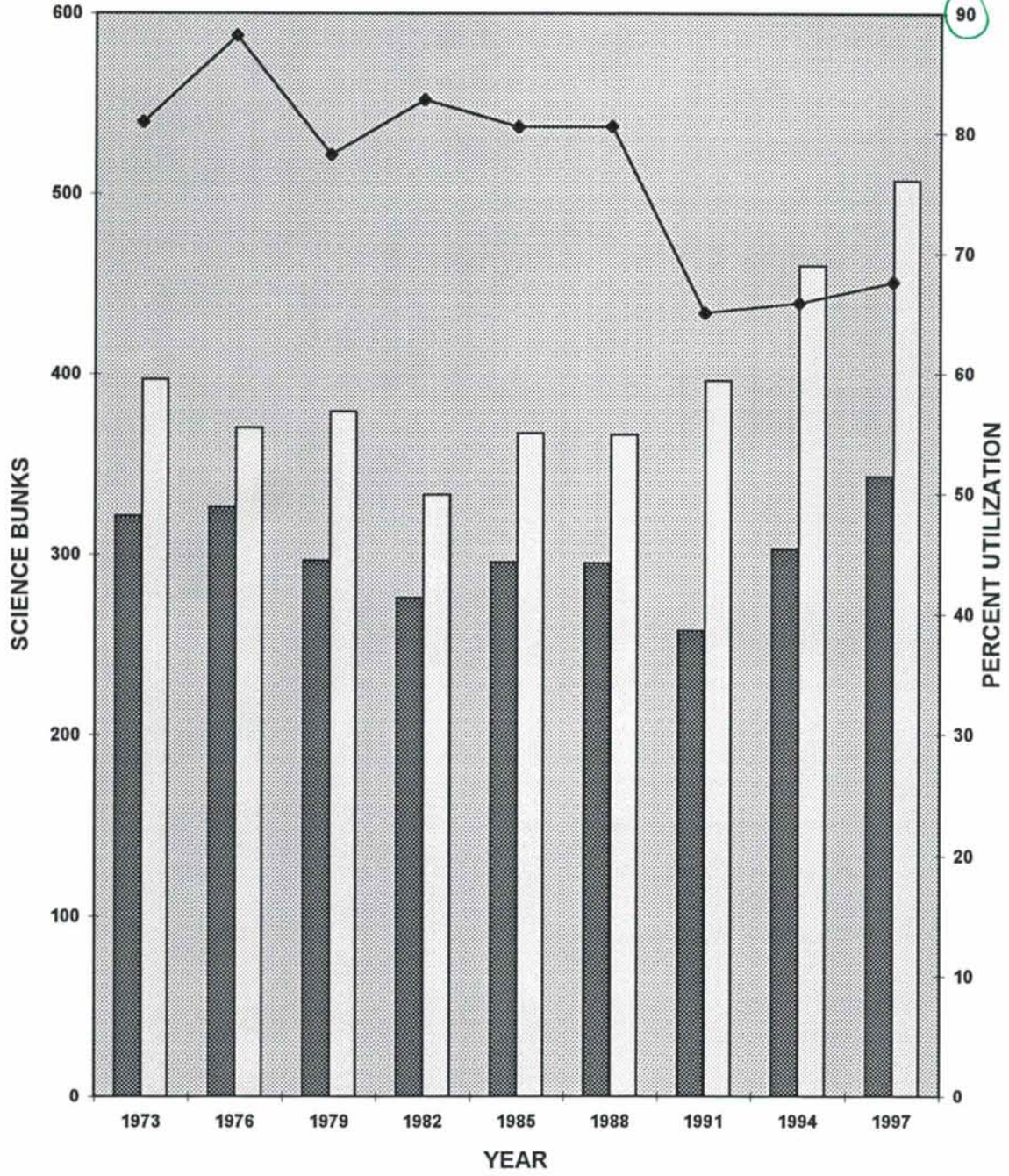
Next the bunk utilization is compared to the bunks available. The percent utilization is also provided. Utilization was calculated on three year intervals beginning in 1973. Science berth utilization included the entire science party; scientists, technicians, students, and observers. To calculate utilization the science party size was averaged by ship per year.

Lastly, the berth utilization comparisons are broken down by ship class.

# UNOLS SCIENCE BERTHS AVAILABLE (1972-1999)



# UNOLS Science Berths Utilization

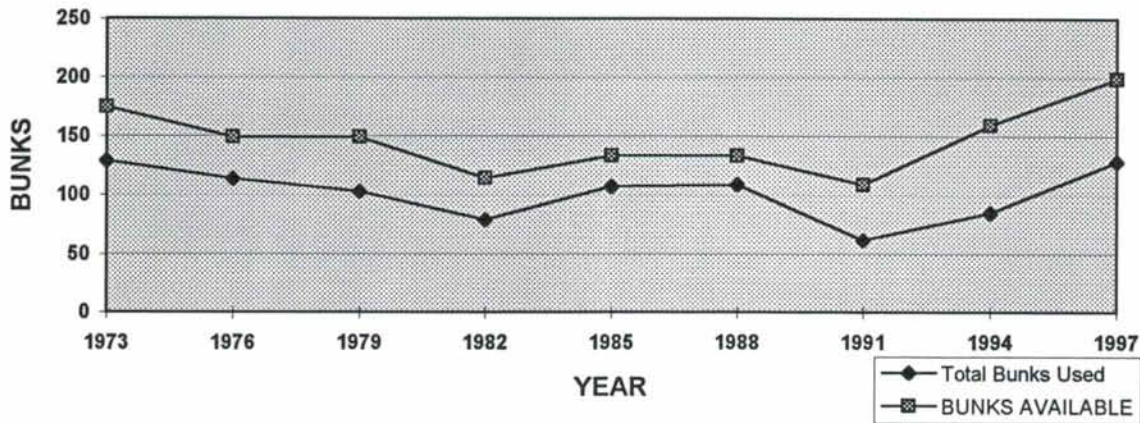


Legend:  
■ Total Bunks Used  
□ Total Bunk Available  
◆ % BERTH UTILIZATION

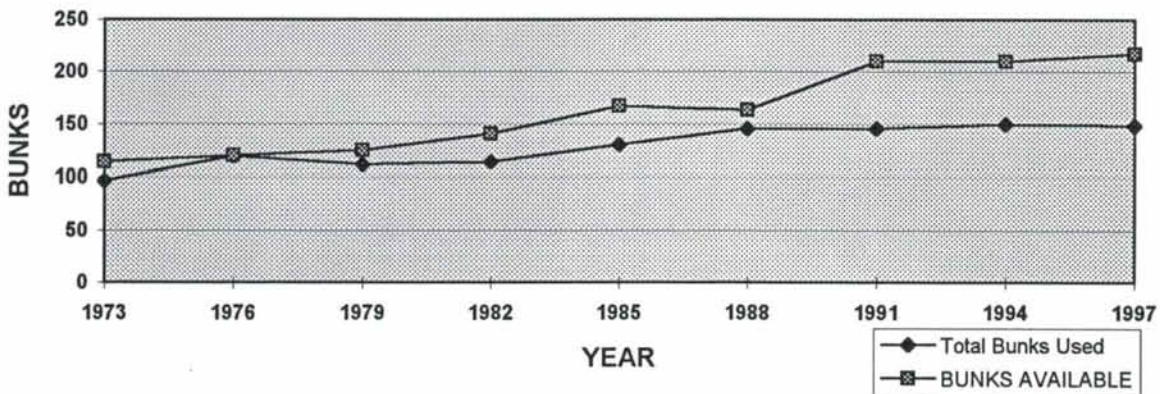
90  
100



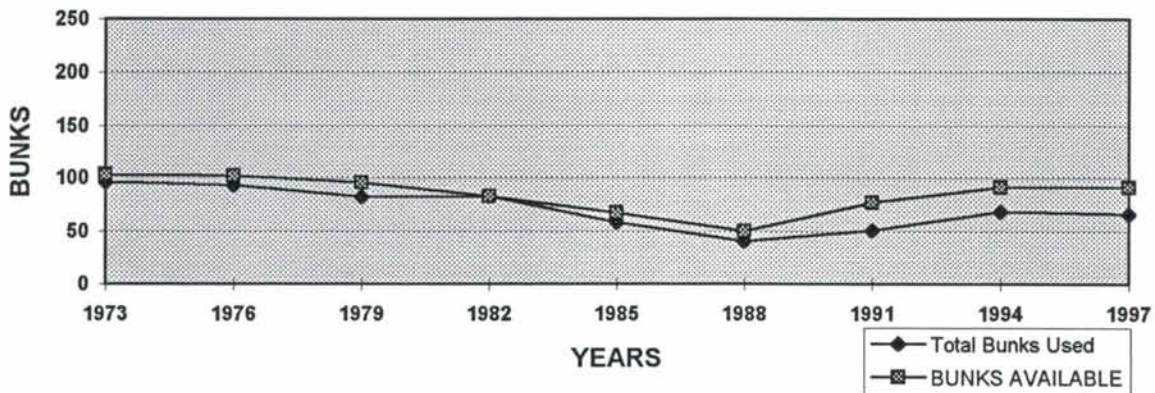
**Global/Expeditionary Ships - Berth Utilization**



**Regional/Intermediate Ships - Berth Utilization**



**Local/Near-Shore Ships - Berth Utilization**





# Appendix

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This Appendix includes all spreadsheets used to generate the charts in the preceding sections. They include the following:

UNOLS Ship Utilization: Operating days by ship, by year

UNOLS Fleet - Available Science Berths (1972-1999)

UNOLS Science Berths - Average Utilization by Ship.

**UNOLS SHIP UTILIZATION: Operating Days by ship, by year (1972-1999)**

SHIP/CLASS	LOA	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
<b>GLOBAL/EXPEDITIONARY SHIPS</b>																			
MELVILLE	245/279	261	223	283	149	203	290	353	126	159	247	175	257	195	271	241	231	208	224
KNORR	245/279	294	292	250	266	304	281	320	208	244	235	258	279	208	185	161	126	303	0
T.G. THOMPSON	274																		
ATLANTIS	274																		
R. REVELLE	274																		
EWING	239																		
CHAIN	213	280	282	294	298														
ATLANTIS II	210	308	335	252	309	351	307	244	84	322	221	0	0	331	287	215	310	343	220
T. WASHINGTON	209	362	273	248	201	226	253	254	172	270	213	240	155	293	241	200	231	331	260
THOMPSON (AGOR 9)	209	270	300	260	240	212	204	249	284	261	264	269	158	263	272	247	259	128	0
CONRAD	209	365	331	365	278	321	259	361	269	23	0	284	268	309	359	287	281	351	94
GILLISS	209	274	240	259	201	253	150	157	284										
TOTAL DAYS		2414	2276	2211	1942	1870	1744	1938	1427	1279	1180	1226	1117	1599	1615	1351	1438	1664	798
# of Available Ships		8	8	8	8	8	7	7	7	5	5	5	5	6	6	6	6	5.5	4
Total Days for FOY		2200	2200	2200	2200	2200	1925	1925	1375	1375	1375	1375	1375	1650	1650	1650	1650	1513	1100
% Utilization		110	103	101	88.3	85	90.6	101	74.1	93	85.8	89.2	81.2	96.9	97.9	81.9	87.2	110	72.5
Notes:		Full Operating Year (FOY) for ship: 200-300 feet = 275 days .																	
		1980-1981: CONRAD Mid-Life .																	
		1982-1983: ATLANTIS II Conversion .																	
		1983: THOMPSON (AGOR 9) - Operated for six months .																	
		1989: KNORR Mid-Life .																	

# UNOLS SHIP UTILIZATION

SHIP/CLASS	LOA	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>GLOBAL/EXPEDITIONARY SHIPS</b>											
MELVILLE	245/279	0	0	170	306	303	297	297	308	229	243
KNORR	245/279	0	0	271	278	253	350	279	284	263	103
T.G. THOMPSON	274		81	265	287	257	333	246	214	277	276
ATLANTIS	274								185	272	353
R. REVELLE	274							80	288	299	351
EWING	239	201	301	301	221	309	310	315	273	215	299
CHAIN	213										
ATLANTIS II	210	275	292	179	247	306	320	93			
T. WASHINGTON	209	293	336	105							
THOMPSON (AGOR 9)	209										
CONRAD	209										
GILLISS	209										
<b>TOTAL</b>		<b>769</b>	<b>1010</b>	<b>1291</b>	<b>1339</b>	<b>1428</b>	<b>1610</b>	<b>1310</b>	<b>1552</b>	<b>1555</b>	<b>1625</b>
<b># of Available Ships</b>		<b>3</b>	<b>3.7</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5.5</b>	<b>6</b>	<b>6</b>
<b>Total Days for FOY</b>		<b>825</b>	<b>1018</b>	<b>1375</b>	<b>1375</b>	<b>1375</b>	<b>1375</b>	<b>1375</b>	<b>1513</b>	<b>1650</b>	<b>1650</b>
<b>% Utilization</b>		<b>93.2</b>	<b>99.3</b>	<b>93.9</b>	<b>97.4</b>	<b>104</b>	<b>117</b>	<b>95.3</b>	<b>103</b>	<b>94.2</b>	<b>98.5</b>
Notes:	Full Operating Year (FOY) for ship 200-300 feet = 275 days.										
	1990-1991: KNORR & MELVILLE Mid-Life.										
	1991: THOMPSON (AGOR 23) - Operated for eight months.										
	1992: MELVILLE Operated six months, WASHINGTON Operated six months.										
	1996: REVELLE Operated five months, ATLANTIS II operated six months.										
	1997: ATLANTIS operated six months.										
	1999: Numbers based on schedules posted as of 8/24 (much work is still pending funds)										

SHIP/CLASS	LOA	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
<b>INTERMEDIATE/REGIONAL SHIPS</b>																			
MOANA WAVE	172/210			196	346	295	365	365	365	0	0	0	0	0	301	261	333	300	295
SEWARD JOHNSON	170/204																		
VEMA	202	326	364	319	365	331	365	161	160	363	21								
WECOMA	177/185					112	256	220	256	276	236	236	254	214	213	0	239	231	217
ENDEAVOR	177/184					11	225	236	260	121	272	248	227	230	239	236	209	223	258
GYRE	174/182			103	221	278	274	285	311	240	287	236	249	261	259	311	132	133	163
AGASSIZ	180	268	208	208	138	166													
YAQUINA	180	263	253	242	187														
ALAMINOS	180	227	245																
TRIDENT	179	276	257	287	302														
OCEANUS	177				188	241	249	249	233	257	239	225	253	244	223	217	234	230	252
NEW HORIZON	170						2	206	196	196	216	242	209	254	195	236	224	206	169
ISELIN	170	131	226	253	186	243	251	222	284	39	226	0	225	234	4	177	179	217	222
EDWIN LINK	168																		
FRED H. MOORE	165													62	44	14	282	32	
KONA KEOKI	156	282	285	286	202	252	248	242	280	181	262	192	286	154					
CAPE FLORIDA	135										101	203	180	219	218	20			
POINT SUR	135															161	192	141	163
CAPE HATTERAS	135											251	235	247	233	170	139	198	187
ALPHA HELIX	133	0	330	273	322	302	310	251	299	140	142	177	138	115	153	188	217	198	155
R. SPROUL	125													32	128	149	160	161	117
TOTAL DAYS		1773	2168	2167	2269	2178	2535	2233	2654	1813	2002	2010	2256	2266	2210	2140	2540	2270	2198
# of Available Ships		6.5	8	8.5	9	8	9	9	10	9	8.66	10	10	11.1	11	12	12	12	11
Total Days for FOY		1650	1955	2080	2205	1955	2205	2205	2455	2205	2056	2290	2290	2537	2495	2745	2745	2745	2495
% Utilization		1.07	1.11	1.04	1.03	1.11	1.15	1.01	1.08	0.82	0.97	0.88	0.99	0.89	0.89	0.78	0.93	0.83	0.88
NOTES:		Full Operating Year (FOY) for ship 200-300 feet = 275 days, 150-200 feet = 250 days, 100-150 feet = 180 days.																	
		1972: ISELIN operated six months, ALPHA HELIX not included in total number of ships.																	
		1974: GYRE operated six months.																	
		1975: WECOMA operated 1/2 year, ENDEAVOR not included in total # of ships, AGASSIZ operated 1/2 year.																	
		1978: NEW HORIZON not included in total # of ships.																	
		1980-1984: MOANA WAVE out of UNOLS service.																	
		1981: CAPE FLORIDA operated 7 months, VEMA operated 1 month.																	
		1984: SPROUL operated 4 months, KANA KEOKI operated 9 months.																	
		1985: ISELIN out of operation for mid-life.																	



SHIP/CLASS	LOA	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>INTERMEDIATE/REGIONAL SHIPS</b>											
MOANA WAVE	172/210	283	269	279	249	215	195	144	202	169	136
SEWARD JOHNSON	170/204	176	226	214	144	88	271	304	290	281	189
VEMA	202										
WECOMA	177/185	239	202	270	220	84	145	198	199	226	180
ENDEAVOR	177/184	221	197	199	0	130	228	147	201	158	270
GYRE	174/182	216	222	130	153	149	122	219	184	131	55
AGASSIZ	180										
YAQUINA	180										
ALAMINOS	180										
TRIDENT	179										
OCEANUS	177	157	212	313	189	0	187	168	209	233	222
NEW HORIZON	170	233	207	175	240	241	240	174	259	221	191
ISELIN	170	279	239	201	222	140					
EDWIN LINK	168	107	195	145	139	254	158	186	214	174	79
FRED H. MOORE	165										
KONA KEOKI	156										
CAPE FLORIDA	135										
POINT SUR	135	177	155	177	174	173	164	118	188	193	193
CAPE HATTERAS	135	175	225	200	189	172	176	0	221	205	151
ALPHA HELIX	133	109	112	146	167	163	144	73	118	172	82
R. SPROUL	125	119	136	140	146	111	145	155	182	169	134
TOTAL		2491	2597	2589	2232	1920	2175	1886	2467	2332	1882
# of Available Ships		13	13	13	13	10.3	11.8	12	12	12	12
Total Days for FOY		2995	2995	2995	2995	2353	2728	2770	2770	2770	2770
% Utilization		0.83	0.87	0.86	0.75	0.82	0.8	0.68	0.89	0.84	0.68
NOTES:	Full Operating Year (FOY) for ship 200-300 feet = 275 days, 150-200 feet = 250 days, 100-150 feet = 180 days •										
	1993: ENDEAVOR out of service for mid-life.										
	1994: SEWARD JOHNSON conversion - operated 3 months.										
	1994: ENDEAVOR operated 6 mo, OCEANUS midlife- out of service, ISELIN operated 7 mo, WECOMA operated 7 mo.										
	1995: WECOMA operated 10 months.										
	1999: Numbers based on schedules posted as of 8/24 (much work is still pending funds)										

SHIP/CLASS	LOA	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
LOCAL/NEAR-SHORE SHIPS																			
CAPE HENLOPEN	120						113	172	0	0	154	163	69	166	161	150	113	57	103
EASTWARD	118	238	275	252	249	309	221	272	242	229	2								
WEATHERBIRD II	115																		
INLAND SEAS	114	164	106																
SEA DIVER	113																		
VELERO IV	110	185	248	178	199	191	213	164	176	153	164	147	131	87	85				
WARFIELD	106	188	181	157	140	117	150	136	148	0	84	97	124	133	132	125	67	110	112
LONGHORN	80/105				199	178	112	128	78	101	58	66	0	0	0	0	0	0	77
PELICAN	105																		89
OCONOSTOTA	100	138	159																
PROTEUS	100	125																	
GOSNOLD	99	141																	
DOLPHIN	96			159	158	84													
URRACA	96																		
E.B. SCRIPPS	95	181	122	143	150	117	152	162	127	138	146	109	135	122					
TERITU	90	250	101																
ACONA	85	150	194	175	170	192	186	193	148										
CAYUSE	80	191	163	198	169	125	214	129	70	140	158	136	127	87	111	4			
LAURENTIAN	80														24	70	65	58	57
GERDE	76	108																	
BLUE FIN	72					127	144	138	189	134	126	136	160	128	130	138	111	73	57
BARNES	66												4	101	153	138	143	80	109
ONAR	65	220	192	151	184	177	183	154	157	142	141	132	185	40					
HOH	65	219	192	150	157	140	141	134	115	120	97	30							
TURSIUPS	65	130																	
MAURY	65	120																	
KIT JONES	64	200	153	296	109														
CALANUS	64	223	177	180	155	182	161	154	120	74	146	155	120	88.3	148	143	172	137	160
MYSIS	50	160	137																
GOLDEN ISLES	47			X	111														
TOTAL DAYS		3331	2400	2039	1951	1960	2056	1920	1620	1208	1319	1163	1121	952	944	768	671	515	764
# of Available Ships		18.5	14	12	12	12	12	12	11	9	10	9.75	9	8.33	7.66	6	6	6	8
Total Days for FOY		2455	1890	1530	1530	1530	1600	1600	1420	1130	1310	1283	1200	1126	1029	800	800	800	1160
% Utilization		136	127	133	128	128	129	120	114	107	101	90.7	93.4	84.5	91.8	96	83.9	64.4	65.9
NOTES:	Full Operating Year (FOY) for ships 100-150 feet = 180 days, <100 ft = 110 days.																		
	1972: GERDE operated 6 months.																		
	1974: GOLDEN ISLES included in KIT JONES total.																		
	1979-1980: CAPE HENLOPEN not included in total number of ships operating •																		
	1980: WARFIELD not included in total number of ships operating.																		
	1981: EASTWARD not included in total number of ships operating.																		
	1982: HOH operated 9 months.																		
	1983: BARNES not included in total number of ships operating.																		
	1984-1988: LONGHORN not included in total number of ships operating, 1986 mid-life extension.																		
	1984: ONAR operated 4 months.																		
	1985: VELERO operated 8 months.																		
	1986: CAYUSE not included in total number of ships operating.																		

SHIP/CLASS	LOA	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>LOCAL/NEAR-SHORE SHIPS</b>											
CAPE HENLOPEN	120	59	158	170	159	172	198	185	195	202	186
EASTWARD	118										
WEATHERBIRD II	115	185	244	109	144	154	171	152	134	120	
INLAND SEAS	114										
SEA DIVER	113				145	181	132	105	149	48	
VELERO IV	110										
WARFIELD	106	107									
LONGHORN	80/105	148	110	76	53	53	72	130	46	58	67
PELICAN	105	121	98	169	226	134	184	201	203	244	222
OCONOSTOTA	100										
PROTEUS	100										
GOSNOLD	99										
DOLPHIN	96										
URRACA	96								173	109	
E.B. SCRIPPS	95										
TERITU	90										
ACONA	85										
CAYUSE	80										
LAURENTIAN	80	53	83	55	62	77	91	72	44	146	215
GERDE	76										
BLUE FIN	72	71	49	108	96	59	77	96	82	95	180
BARNES	66	154	157	100	62	70	77	86	126	119	115
ONAR	65										
HOH	65										
TURSIUPS											
MAURY											
KIT JONES	64										
CALANUS	64	93	127	110	106	54	47	50	111	167	166
MYSIS											
GOLDEN ISLES	47										
TOTAL		806	967	1032	873	908	1081	1123	1064	1487	1428
# of Available Ships		8	8	8	8	9	9	9	9	10	10
Total Days for FOY		1160	1160	1160	1160	1340	1340	1340	1340	1450	1450
% Utilization		69.5	83.4	89	75.3	67.8	80.7	83.8	79.4	103	98.5
NOTES:		Full Operating Year (FOY) for ships 100-150 feet = 180 days, <100 ft = 110 days.									
		1999: Numbers based on schedules posted as of 8/24 (much work is still pending funds)									

SHIP/CLASS	LOA	1973	1976	1979	1982	1985	1988	1991	1994	1997
<b>Local/Near-shore ships</b>										
CAPE HENLOPEN	120			0	11.8	9.4	10.3	8.3	7.1	9.9
EASTWARD	118	13.2	12.5	12.3						
WEATHERBIRD II	115							5.3	6.4	6.2
INLAND SEAS	114	11								
SEA DIVER	113								4.6	6.8
VELERO IV	110	7.9	9.9	9.8	8.8	10.4				
WARFIELD	106	11.2	7.9	8.5	9.5	6.6	6.5			
PELICAN	105							7.7	9.2	7.5
LONGHORN	80/105		8.7	9.7	11.2	0	0	7.4	12.2	8.4
OCONOSTOTA	100	5.3								
PROTEUS	100									
GOSNOLD	99									
URRACA	96									
DOLPHIN	96		6.9							
E.B. SCRIPPS	95	6	8.7	7.2	9.1					
TERITU	90	***								
ACONA	85	4.3	7.1	5.7						
CAYUSE	80	7.2	7.9	9.6	13.2	11.2				
LAURENTIAN	80					6.6	5.5	6.6	11.5	9.8
GERDE	76									
BLUE FIN	72		2.9	3.1	2.7	2.2	2.6	2.3	3.2	5.6
BARNES	66					6.4	8.9	5.4	5.3	4.8
ONAR	65	5	6.3	7.4	6.6					
HOH	65	5.9	6.3	3.7	4.3					
MAURY	65									
TURSIUPS	65									
CALANUS	64	9.3	7.8	5	5.3	5.5	6.7	7.4	8.8	7.2
KIT JONES	64	5.1								
MYSIS	50	4.7								
GOLDEN ISLES	47									
Total Bunks Used		96.1	92.9	82	82.5	58.3	40.5	50.4	68.3	66.2
BUNKS AVAILABLE		103	102	95	83	67	50	77	91	91
% BERTH UTILIZATION		93	91	86	99	87	81	65	75	73
Total Bunks Used		322	326	297	276	296	295	258	303	343
Total Bunk Available		397	370	379	333	367	366	396	460	507
% BERTH UTILIZATION		81	88	78	83	81	81	65	66	68
Notes:	* 1997 THOMPSON cruise reports not available, used 1996 reports.									
	*** Cruise reports not available, not included in these statistics.									
	NIS = Not in service									
	Utilization includes bunks used by the entire science party: Scientists,									
	students, technicians, and observers.									