

Cruise I.D. IG 29Leg No. 3Year 78TZ 15m. E-Dm. E-D

G.D.

C.D.

## NAVIGATION LOG

OMEGA LOG

corrected LOPS

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MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT. DEGR.	LAT. MIN	LONG DEGR.	LONG MIN.	PRISE L	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
<u>VII</u>	<u>11</u>	<u>1</u>		<u>0530Z</u>					<u>80.80</u>	<u>14.54</u>	<u>NG</u>			
		<u>2</u>		<u>0600Z</u>					<u>80.94</u>	<u>14.34</u>				
				<u>1304</u>	<u>-32</u>	<u>13.08</u>	<u>+2</u>	<u>81.65</u>	<u>81.67</u>	<u>12.76</u>				
				<u>1333</u>	<u>-25</u>	<u>13.15</u>	<u>+2</u>	<u>81.58</u>	<u>81.60</u>	<u>12.90</u>				
				<u>1402</u>	<u>-17</u>	<u>13.25</u>	<u>+3</u>	<u>81.56</u>	<u>81.59</u>	<u>13.08</u>				
				<u>1430</u>	<u>-10</u>	<u>13.33</u>	<u>+3</u>	<u>81.53</u>	<u>81.56</u>	<u>13.23</u>				
				<u>1501</u>	<u>-03</u>	<u>13.28</u>	<u>+2</u>	<u>81.50</u>	<u>81.51</u>	<u>13.25</u>				
				<u>1532</u>	<u>0</u>	<u>13.30</u>	<u>+1</u>	<u>81.50</u>	<u>81.51</u>	<u>13.30</u>				
				<u>1600</u>	<u>+2</u>	<u>13.43</u>	<u>0</u>	<u>81.54</u>	<u>81.54</u>	<u>13.45</u>				
				<u>1630</u>	<u>+1</u>	<u>13.54</u>	<u>0</u>	<u>81.50</u>	<u>81.50</u>	<u>13.60</u>				
				<u>1700</u>	<u>+1</u>	<u>13.67</u>	<u>0</u>	<u>81.63</u>	<u>81.63</u>	<u>13.68</u>				
				<u>1731</u>	<u>+2</u>	<u>13.62</u>	<u>0</u>	<u>81.64</u>	<u>81.64</u>	<u>13.64</u>				
				<u>1800</u>	<u>+3</u>	<u>13.59</u>	<u>-1</u>	<u>81.67</u>	<u>81.66</u>	<u>13.62</u>				
				<u>1900</u>	<u>+6</u>	<u>13.40</u>	<u>-2</u>	<u>81.49</u>	<u>81.47</u>	<u>13.46</u>				
				<u>2220</u>		<u>14.36</u>			<u>81.97</u>					
<u>VII</u>	<u>12</u>			<u>1300</u>	<u>-32</u>	<u>13.63</u>	<u>+2</u>	<u>83.82</u>	<u>83.81</u>	<u>13.31</u>	<u>NG</u>			
				<u>1400</u>	<u>-17</u>	<u>13.98</u>	<u>+3</u>	<u>83.96</u>	<u>83.99</u>	<u>13.81</u>	<u>NG</u>		<u>7014.19</u>	<u>880.28</u>
				<u>1500</u>	<u>-3</u>	<u>14.54</u>	<u>+2</u>	<u>84.30</u>	<u>84.32</u>	<u>14.51</u>	<u>NG</u>			
				<u>1645</u>	<u>+1</u>	<u>14.11</u>	<u>0</u>	<u>84.91</u>	<u>84.91</u>	<u>14.12</u>	<u>NG</u>			
				<u>1700</u>		<u>14.05</u>		<u>84.87</u>			<u>NG</u>			
		<u>-2</u>		<u>1805</u>	<u>+3</u>	<u>12.70</u>	<u>-1</u>	<u>84.77</u>	<u>84.76</u>	<u>12.93</u>				

# NAVIGATION LOG

Cruise I.D. 29

Year 1978

OMEGA LOG

Leg No. 3

TZ +5

C-D Em G-D Con C-D G-D

MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT. DEGR.	LAT. MIN.	LONG. DEGR.	LONG MIN.	°RISE L	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
VII	12		52	1900		12.83	+6	79.39	-2	12.89	79.39			
			"	2000		13.10	+8	79.57	-2	13.18	79.58			
			"	2100		13.18	+9	79.61	-4	13.27	79.75			
			"	2200		13.72	+10	79.98	-5	13.82	79.93			
			"	2300		14.06	+10	80.25	-13	14.16	80.12			
				0000		14.30	+11	80.25	-25	14.41	80.00			
	13			0100		14.53	+16	79.89	-16	14.69	79.73			
				0200		14.62	+15	79.59	-7	14.77	79.52			
				0311		14.65	+4	79.67	0	14.69	79.67			
				0400		14.95	-6	79.39	+1	14.89	79.40			
				0500		15.31	-17	79.01	+3	15.14	79.04			
				0600		15.10	-23	78.79	+2	14.87	78.81			
				0700		14.85	-26	78.49	+2	14.59	78.51			
				0800		14.66	-27	78.22	+2	14.39	78.24			
				0900		14.36	-27	78.83	+2	14.09	78.85			
				1000		14.08	-28	79.37	+10	13.80	79.47			
				1100		13.89	-48	79.83	+15	13.41	79.98			
				1200		14.15	-57	79.97	+3	13.58	79.97			
				1300		14.15	-32	79.68	+2	13.83	79.70			
				1400		14.30	-17	79.32	+3	14.13	79.35			
				1430		14.24	-10	79.05	+3	14.14	79.08			

Cruise I.D. 1629-3Year 78

## NAVIGATION LOG

Leg No. 15TZ 15

OMEGA LOG

(3)

MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT. DEGR.	LAT. MIN.	LONG. DEGR.	LONG MIN.	°RISE L	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
<u>VII</u>	<u>13</u>			1755	+3	13.56	-1	79.19	13.89	79.18				
				1900	+6	13.73	-2	79.27	13.81	79.25				
				1943	+7	13.58	-2	79.18	13.65	79.16				
				2100	+9	13.77	-4	78.33	13.86	78.29				
				2150	+9	13.74	-5	78.25	13.83	78.20				
				2233	+10	13.73	-13	78.33	13.83	78.20				
				2357	+11	13.75	-24	78.43	13.86	78.49				
<u>VII</u>	<u>14</u>			0100	+16	14.20	-16	78.16	14.36	78.00				
				0315	+3	15.35	0	76.90	15.38	76.90				
				0500	-20	16.34	+9	75.21	16.14	75.30				
				0700	-24	17.36	+9	73.94	17.07	74.03				
				0905	-30	18.02	+8	72.65	17.72	72.93				
				1102	-60	18.57	+12	71.46	17.97	71.58				
				1300	-31	18.91	+3	70.15	18.60	70.18				
				1500	-4	18.93	+3	68.75	18.89	68.78				
		38		1715	+3	19.01	0	67.16	19.04	67.16				
		39		1900	+7	19.13	-3	65.95	19.20	65.92				
		40		2100	+10	19.28	-5	64.56	19.38	64.57				
		41		2300	+4	19.48	-12	63.27	19.54	63.15				
<u>VII</u>	<u>15</u>			0100	+16	19.18	-10	62.21	19.34	62.11				
		43		0300	+4	19.30	+6	60.77	19.34	60.81				

# NAVIGATION LOG

Cruise I.D. \_\_\_\_\_

Year 78

IG 29-3

OMEGA LOG

Leg No. \_\_\_\_\_

TZ \_\_\_\_\_

CD

GD

(4)

MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT DEGR.	LAT. MIN	LONG. DEGR.	LONG. MIN.	°RISE L	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
11	15	44		0500	-20	19.26	+9	59.64	19.0	659.73				
		45		0700	-29	19.00	+9	58.80	18.77	588.9				
		46		0900	-30	19.19	+8	57.98	18.89	58.06				
		47		1100	-60	19.55	+12	56.70	18.95	56.80				
		48		1300	-31	19.38	+3	55.69	19.07	55.72				
		49		1510	-2	19.13	+2	54.60	19.11	54.62				
		50		1710	+3	18.96	0	53.65	18.99	53.65				
		51		1900	+7	19.04	-3	52.56	19.11	52.53				
		52		2100	+10	19.24	-5	51.33	19.34	51.28				
		53		2310	+5	19.18	-13	50.07	19.23	49.94				
		54		2400	+4	19.19	-21	49.02	19.23	49.61				
11	16	55		0100	+19	19.20	-5	49.04	19.39	48.99				
		56		0300	+5	19.22	+11	47.20	19.27	47.31				
		57		0503	-10	19.26	+13	45.52	19.00	45.65				
		58		0601	-26	19.18	+13	44.74	18.82	44.87				
		59		1123	-64	19.88	+11	42.77	19.24	42.88				
		60		1200	-57	20.04	-4	42.51	19.47	42.47				
		61		1300	-32	20.27	-1	42.48	19.95	42.47				
		62		1400	-19	20.56	-3	42.03	20.37	42.40				
		63		1500	-5	20.78	-3	42.37	20.73	42.34				
		64		1600	2	21.01	-5	42.37	21.03	42.32				

Cruise I.D. 29Year 1928

## NAVIGATION LOG

Leg No. 3CD TZ +5 CD250  
11.2 mi.

CD B-D

OMEGA LOG

(5)

MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT. DEGR.	LAT. MIN.	LONG DEGR.	LONG MIN.	°RISE L.	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
		65		1700	1	21.27	-6	42.23	21.28	42.17				
		66		1800	3	21.48	-7	42.25	21.51	42.18				
		67		1902	6	21.76	-8	42.23	21.82	42.15				
		68		2000	9	21.89	-7	42.19	21.98	42.12				
		69		2057	9	22.12	-10	42.17	22.21	42.07				
		70		2206	11	22.48	-10	42.10	22.59	42.00				
		71		2300	11	22.69	-18	41.85	22.86	41.67				
		72		0000	+4	22.67	-21	41.63	22.71	41.42				
		73		0100	+19	22.70	-5	41.17	22.89	41.12				
				0110	+17	22.69	-2	41.07	22.86	41.07				
		74		0200	+15	22.62	+5	40.57	22.67	40.42				
		75		0300	+5	22.61	+11	40.03	22.65	40.14				
		76		0400	-9	22.45	+13	39.97	22.36	40.10				
		77		0500	-20	22.31	+13	39.88	22.11	40.01				
		78		0600	-26	22.13	+13	39.75	21.87	39.88				
		79		0700	-28	21.77	+13	39.72	21.49	39.85				
		80		0812	-29	21.37	+13	39.77	21.08	39.90				
		81		0902	-30	21.08	+12	39.83	20.78	39.95				
		82		1000	-30	20.72	+19	39.94	20.42	40.13				
		<del>83</del>		<del>1100</del>	<del>-64</del>	<del>20.62</del>	<del>+11</del>	<del>39.92</del>	<del>19.98</del>	<del>40.03</del>	No Good - dip on CD scale			
		84		1130	-60	20.60	+5	40.13	20.00	40.18				

03032

8.2

3520

10° 4 mi

## NAVIGATION LOG

Cruise I.D. 29Year 78Leg No. 3TZ +5

OMEGA LOG

6

C-D

E-D

C-D

E-D

MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT. DEGR.	LAT. MIN	LONG. DEGR.	LONG. MIN	°RISE L	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
VII	17	85		1200	-59	20.31	-4	40.14	19.74	40.08				
		86		1300	-32	20.17	-1	39.50	19.85	39.49				
		87		1400	-19	20.16	-3	38.80	19.97	38.77				
		88		1440	-10	20.03	-3	38.48	19.93	38.45				
		89		1540	0	19.70	-4	39.09	19.70	39.05				
		90		1600	2	19.74	-5	39.17	19.76	39.12				
		91		1700	1	20.12	-6	38.94	20.13	38.88				
		92		1800	3	20.48	-7	38.72	20.51	38.65				
		93		1900	+6	20.79	-8	38.56	20.83	38.48				
				1930	+8	20.96	-8	38.52	21.04	38.44				
		94		2000	+9	21.14	-7	38.47	21.23	38.40				
		95		2100	+9	21.52	-10	38.44	21.61	38.34				
				2130	+10	21.73	-10	38.35	21.71	38.25				
		96		2200	+11	21.87	-10	38.34	21.98	38.24				
		97		2300	+11	22.34	-8	38.15	22.45	37.97				
VII	18	98		0000	+4	22.75	-21	38.22	22.79	38.01	bad			
		99		0119	+18	23.12	-2	37.69	23.30	37.67	bad			
		100		0200	+5	22.31	+11	37.54	22.82	37.65	bad			
		101		0400	-9	22.67	+13	37.54	22.58	37.67				
		102		0500	-20	22.47	+13	37.56	22.27	37.69				
		103		0700	-28	22.17	+13	37.84	21.89	37.97				

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## NAVIGATION LOG

Cruise I.D. 29Year 78Leg No. 3TZ +5

OMEGA LOG

MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT. DEGR.	LAT. MIN	LONG. DEGR.	LONG. MIN.	RISE L	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
	10	104		0800	-29	21.88	+13	37.75	21.59	37.88				
		105		0900	-30	21.70	+12	37.94	21.40	38.06				
		106		1000	-30	21.90	+19	38.09	21.60	38.28				
		107		1100	-60	22.43	+11	37.95	21.79	38.06				
				1130	-60	22.66	+3	38.09	22.06	38.12				
		108		1200	-55	22.68	-4	38.00	22.13	37.96				
		109		1302	-32	22.99	-1	37.88	22.47	37.87				
		110		1400	-19	22.93	-3	37.78	22.74	37.75				
		111		1500	-5	23.03	-3	37.71	22.98	37.68				
		112		1600	2	23.16	-5	37.68	23.18	37.63				
		113		1700	1	23.29	-6	37.35	23.28	37.29				
		114		1800	3	23.19	-7	36.80	23.22	36.73				
		115		1900	6	23.29	-8	36.50	23.35	36.42	?			
		116		2000	9	23.09	-7	36.28	23.18	36.21	?			
		117		2100	9	23.18	-10	35.99	23.27	35.89	?			
		118		2200	11	23.58	-10	35.35	23.69	35.25				
		119		2300	11	23.72	-18	35.06	23.82	34.88	?			
<u>VII</u>	19	120		0000	+4	23.32	-21	35.38	23.36	35.17	?			
		121		0100	+9	23.10	-5	35.55	23.29	35.50	?			
		122		0200	+5	22.92	+5	35.41	23.07	35.46				
		123		0300	+5	22.75	+11	35.13	22.80	35.24				

# NAVIGATION LOG

Cruise I.D. 29  
Leg No. 3

Year 78  
TZ +5

OMEGA LOG

(8)

MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT. DEGR.	LAT. MIN.	LONG. DEGR.	LONG. MIN.	°RISE L	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
<u>VII</u>	<u>19</u>	<u>124</u>		<u>0400</u>	<u>-9</u>	<u>22.52</u>	<u>+13</u>	<u>35.33</u>	<u>22.43</u>	<u>35.46</u>				
		<u>2125</u>		<u>0500</u>	<u>-20</u>	<u>22.29</u>	<u>+13</u>	<u>35.37</u>	<u>22.09</u>	<u>35.50</u>				
		<u>126</u>		<u>0600</u>	<u>-26</u>	<u>21.92</u>	<u>+13</u>	<u>35.42</u>	<u>21.66</u>	<u>35.55</u>				
		<u>127</u>		<u>0700</u>	<u>-28</u>	<u>21.59</u>	<u>+13</u>	<u>35.58</u>	<u>21.31</u>	<u>35.71</u>				
		<u>128</u>		<u>0800</u>	<u>-29</u>	<u>21.20</u>	<u>+13</u>	<u>35.54</u>	<u>20.91</u>	<u>35.70</u>				
		<u>129</u>		<u>0900</u>	<u>-30</u>	<u>20.70</u>	<u>+12</u>	<u>35.55</u>	<u>20.46</u>	<u>35.67</u>				
		<u>130</u>		<u>1000</u>	<u>-30</u>	<u>20.66</u>	<u>+19</u>	<u>36.05</u>	<u>20.36</u>	<u>36.24</u>				
		<u>131</u>		<u>1100</u>	<u>-64</u>	<u>20.78</u>	<u>+11</u>	<u>36.63</u>	<u>20.14</u>	<u>36.74</u>				
		<u>132</u>		<u>1200</u>	<u>-57</u>	<u>20.73</u>	<u>-4</u>	<u>37.45</u>	<u>20.16</u>	<u>37.41</u>				
		<u>133</u>		<u>1302</u>	<u>-32</u>	<u>20.45</u>	<u>-1</u>	<u>38.07</u>	<u>20.13</u>	<u>38.06</u>				
		<u>134</u>		<u>1405</u>	<u>-19</u>	<u>20.11</u>	<u>-3</u>	<u>38.81</u>	<u>19.82</u>	<u>38.78</u>	<u>Poor!</u>			
		<u>135</u>		<u>1500</u>	<u>-5</u>	<u>20.13</u>	<u>-3</u>	<u>39.04</u>	<u>20.08</u>	<u>39.01</u>				
		<u>136</u>		<u>1600</u>	<u>2</u>	<u>20.35</u>	<u>-5</u>	<u>39.02</u>	<u>20.37</u>	<u>38.97</u>				
		<u>137</u>		<u>1700</u>	<u>1</u>	<u>20.68</u>	<u>-6</u>	<u>38.92</u>	<u>20.69</u>	<u>38.86</u>				
		<u>138</u>		<u>1800</u>	<u>3</u>	<u>21.04</u>	<u>-7</u>	<u>38.69</u>	<u>21.07</u>	<u>38.62</u>				
		<u>139</u>		<u>1900</u>	<u>6</u>	<u>21.40</u>	<u>-8</u>	<u>38.41</u>	<u>21.46</u>	<u>38.33</u>				
		<u>140</u>		<u>2300</u>	<u>11</u>	<u>21.56</u>	<u>-18</u>	<u>38.48</u>	<u>21.67</u>	<u>38.30</u>				
<u>VII</u>	<u>20</u>	<u>141</u>		<u>0100</u>	<u>+19</u>	<u>21.75</u>	<u>-5</u>	<u>36.82</u>	<u>21.94</u>	<u>36.77</u>				
		<u>142</u>		<u>0300</u>	<u>+5</u>	<u>21.95</u>	<u>+11</u>	<u>34.77</u>	<u>22.00</u>	<u>34.88</u>				
		<u>143</u>		<u>0500</u>	<u>-20</u>	<u>22.33</u>	<u>+13</u>	<u>33.01</u>	<u>22.13</u>	<u>33.14</u>				
		<u>144</u>		<u>0700</u>	<u>-28</u>	<u>22.30</u>	<u>+13</u>	<u>31.30</u>	<u>22.02</u>	<u>31.43</u>				



# NAVIGATION LOG

Cruise I.D. 29

Year 48

Leg No. 3

TZ +5

CD

GP C-D 8-17

OMEGA LOG 19 96 9

MONTH	DAY	FIX NO.	FIX QUAL	TIME (Z)	LAT. DEGR.	LAT. MIN	LONG DEGR.	LONG MIN	°RISE L	TIME (Z)	COURSE	SPEED	COMMENTS	WATCH I.D.
VII	20	145		0900	-30	22.70	+12	29.50	22.40	29.62				
		146		1120	-62	23.50	6	27.75	22.88	27.81				
		147		1300	-32	23.48	-1	26.30	23.16	26.29				
		148		1511	-4	23.15	-3	24.48	23.11	24.45				
		149		1700	1	22.90	-6	22.93	22.91	22.87				
		150		1900	6	23.47	-8	21.26	23.53	21.18				
		151		2120	+10	24.12	-10	19.55	24.22	19.45				
		152		2300	11	24.59	-15	18.22	24.70	18.07				
	21	153		0100	+16	25.30	+2	16.71	25.46	16.73				
		154		0309	+2	26.08	+2	14.76	26.01	14.78				
		155		0500	-25	26.78	+19	13.19	26.54	13.38				
		156		0700	-32	27.88	+20	12.18	27.56	12.38				
		157		0856	-34	28.92	+22	10.98	28.58	11.20				
		158		1100	-78	29.28	-3	10.40	28.53	10.42	?		lane jump	
		159		1300	-42	28.80	0	10.76	29.38	10.76				
		160		1502	-5	31.25	-5	11.21	31.20	11.16				
		161		1700	1	31.83	-8	11.76	31.84	11.68				
		162		1907	6	22.27	-8	12.67	32.33	12.59				
		163		2100	+10	33.16	-10	12.86	33.26	12.76				
VIII	21	164		2309	11	33.33	-15	13.47	33.44	13.32				

End IG 29-3 OMEGA LOG 3450 21008