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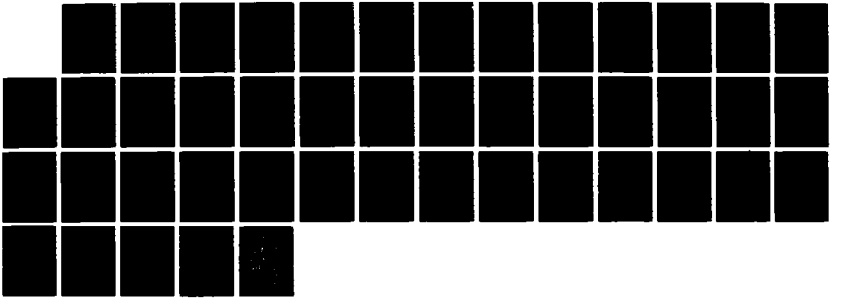

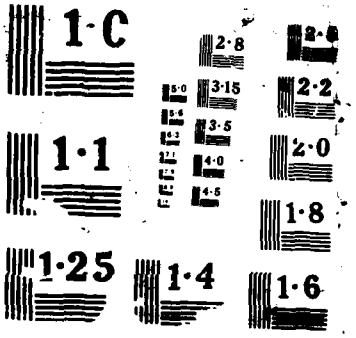
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Office of Naval Research
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SAFE HAVENS FOR AVOIDANCE OF DANGEROUS WEATHER AND SEA STATE IN THE MEDITERRANEAN

ASHDOD PORT

P.N.188/87

FEBRUARY 1987

TECHNION CITY, HAIFA, ISRAEL

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The port of Asodd is located approximately 25 miles south of Tel Aviv, at the mouth of Wadi Lakhis, on the southern side of Israeli Mediterranean coast. The port is protected by breakwaters of 2200m and 900m to the southwest and north respectively. The port presently has 950 berths.

The important environmental parameters are wind, visibility, waves, tides and currents. Climatologies of each are provided.

Tactics for five categories of Navy vessels ranging from motor boats to aircraft carriers are recommended for various weather scenarios to obtain safe havens and leave/stay decisions for Asdod Port are presented.

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ASHDOD PORT

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FEBRUARY 1987

TECHNION CITY, HAIFA, ISRAEL

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1. Description of the Port

1.1 Location

Ashdod Port is located approximately 25 miles south of Tel Aviv, at the mouth of Wadi Lakhish (Sukhreir), at the southern side of the Mediterranean coast of Israel (Figure 1).

1.2 Physical Data

Ashdod Port is protected by a 2200 m long main-breakwater based on the southern end of the coastline, heading first seawards and then continuing in the northern direction. A lee-breakwater of 900 m confines the basin to the north (Figure 2).

At present, the total length of berths in the port amounts to 950 m.

Future development projects include the extension of the main breakwater, the relocation of the lee-breakwater to the north, and the creation of another berthing basin.

The lighthouse of the port stands on Jonah's Hill, southeast of the harbour, 68 m above sea-level, and its beacon has a range of 15 nautical miles, the signal of identification is three short flashes every twenty seconds.

The various wharves of the port are described in Figure 2.

2. Climate of the Mediterranean Coast of Israel

2.1 General

The Mediteranean coast of Israel is characterized by the so called "Mediterranean sea climate". This climate is induced by the geographic location of the Israeli coast relative to the world pressure systems. Its characteristic properties are imposed by the subtropic "highs". These "highs", located between latitudes 25 and 30 degrees move with the sun, southward in winter and northward in summer. Consequently, the summer climate is under the influence of the tropic "highs", while in winter the climate of the region is located at the northern boundaries of the subtropic "highs".

In summer these conditions lead to uniform weather with no precipitations.

In winter the region is located between two climatic area, namely the subtropic "highs" in the south and the "conditioned weather" in the North. The conditioned weather area is characterized by moving "lows" (storms) which, when they "succed" to penetrate into the Mediterranean, precipitations and bad weather conditions occur. Therefore, the winter is characterized by changing weather, precipitations - seldom very strong and calms between them.

In addition to these general patterns defining the "Mediterranean sea climate", the region is influenced by other geographic factors, which can be divided in two categories: a) bodies of air and source regions and b) monsoons.

Since the coast of Israel is located at the eastern boundary of the Mediterranean sea, only westerly winds are wet (warm in winter and cold in summer). For other directions the winds will bring dry air (warm in summer and cold in winter).

Furthermore, the African coasts nearby, create a region of encounter between very different bodies of air - warm and dry terrestrial air from the South (dessert) and wet air from the North. Hence the coastal African region will be cyclo-genetic, mainly in the transition seasons (spring and autumn). In summer, the presence of the subtropical low will diminish any activity in that region, while in winter the dessert is not hot enough and consequently the cyclo-generation capability is weak.

Finally, the Mediterranean coast of Israel can be under the influence of monsoons coming from either NE or from SE. In both cases, the pressure systems generated improve the weather conditions in this region. These systems are the Indian monsoon in summer, the Siberian "high" in winter and the Sudano-Ethiopian "low" active during all seasons, but mainly in the transition seasons, especially in autumn.

2.2 Summer season

The typical atmospheric pressure at sea level in summer is presented in Figure 3.

2.3 Transition seasons (spring and autumn)

As mentioned previously, these seasons are characterized by being controlled by both the subtropical "highs" and by passing "lows". Main phenomena encountered in these seasons are the Red sea "trough" and the hot weather "lows", both characterized by very hot and dry weather.

Typical development and path of hot weather lows is represented in Figure 4a and the map of athmospheric presure at the peak of the low is represented in Figure 4b.

In Figure 5a is presented a typical Red sea "trough" weather map, while in Figure 5b the low of the Red sea trough has moved over the sea area.

2.4 Winter season

The winter is characterized by changing weather, hence it is difficult to speak about a representative condition. Nethertheless, one may observe situations leading to very well defined and characteristic weather, against the majority of winter days in which the weather is in a state of transition.

The most significant is the Mediterranean sea low which originates from the strong Icelandic low, present the year arround. The latter originates from the encounter between very cold polar air and the warm air raising in the area between England and Iceland due to the Gulf stream. This encounter leads to the creation of a strong cyclo-genetic source and the Icelandic low is present as mentioned above during most of the year.

The low migrates in the south east direction as indicated by the arrows in Figure 6. During its migration, the low lowers and weakens. However it [illegible] again in the Italy region due to Alpine winds blowing towards the Genova bay (Figure 7).

On its way between Italy and Greece the low may take either the north-eastern track inducing only slight cloudiness in the Israeli region or may take the eastern track bringing the low opposite to the Israeli coast. In the latter case the low will bring cloudiness and precipitation.

In the latter case, on its way towards Alexandretta bay, the low may strenghten again due to winds coming from Turkey and generate a strong "Cyprus low" (Figure 8a) which may remain stationary for a few days and induce high sea states in the coastal area of Israel. The surface weather chart of the storm on January 13, 1968, the largest storm encountered in the period 1958 - 1986, is presented in Figure 9.

Another characteristic situation which may occur is due to the presence of lows located with their centers in the south-eastern part of the Mediterranean, so called "Gaza lows" (Figure 8b).

3. WIND CLIMATE

3.1 Intensity distribution

light winds (less than 10 knots) - 81% of the time
fresh winds (11 to 21 knots) - 18% of the time
strong winds (22 to 33 knots) - 1% of the time
winds stronger than 34 knots - less than 1%. of the time

3.2 Directional distribution

77% of the fresh winds are from the W-NW-N directions
77% of the strong winds are from the SW-W directions

3.3 Diurnal distribution

81% of the strong winds are during the day, 06-09-12-15 GMT
19% of the strong winds are during the night, 18-21-00-13 GMT

3.4 Seasonal ditribution

94% of the strong winds are between Nov. and March
60% of the strong winds are in Jan. and Feb.

For details sea tables A1 , A2

4. VISIBILITY

4.1 Annual distribution

good visibility (greater than 6 Km) - 95% of the time
intermediate visibility (between 1 to 5 Km) - 4% of the time
bad visibility (less than 1 Km) - 1% of the time
extremely bay visibility (less than 100 m) - 3% of the time

4.2 Diurnal distribution

64% of the intermediate visibility conditions are at 00-03-06 GMT
76% of the bad visibility conditions are at 00-03-06 GMT
96% of the extremely bad conditions are at 21-00-03-06 GMT

4.3 Seasonal distribution

60% of the bad visibility conditions occur during March to June
73% of the extremely bad conditions occur during March to June

For more details see table A3

5. WAVE CLIMATE (DEEP WATER)

5.1 Annual significant wave height distribution

low waves (less than 1m) - 58% of the time
moderate waves (1 to 2 meters) - 28% of the time
high waves (2 to 4 meters) - 12% of the time
very high waves (more than 4m) - 2% of the time

All waves approach from the NNW-W-WSW directions
66% of the waves approach from the WNW trough W directions

5.2 Winter season (Nov.-March)

low waves (less than 1m) - 50% of the time
moderate waves (1 to 2 meters) - 25% of the time
high waves (2 to 4 meters) - 20% of the time
very high waves (more than 4m) - 5% of the time

5.3 Summer season (April-Oct.)

low waves (less than 1m) - 65% of the time
moderate waves (1 to 2 meters) - 30% of the time
high waves (2 to 4 waves) - 5% of the time

5.4 Extreme Wave Statistics

The average recurrence of extreme sea states (deep water significant wave heights) is given below:

Recurrence (years)	1	5	20	50	100	500
Wave height (m)	5.00	6.15	7.40	8.19	8.70	10.15

6. TIDES AND WATER LEVELS

Astronomical tidal variations are in the order of 0.4 m at spring tide and 0.15 m at neap tide. However, extreme levels may occur due to extreme meteorological conditions.

The average recurrence of extreme sea levels measured from MSL is given below:

Average Recurrence (years)	1	50	100
Lowest Low Sea Water Level (m)	-0.41	-0.79	-0.90
Highest High Sea Water Level (m)	+0.60	+1.00	+1.06

7. CURRENTS

7.1 Tidal Currents

The values of tidal currents in this region are in general low, about one tenth of a knot.

7.2 Wave Currents

Wave induced currents occur inside the breaker zone, flowing mainly parallel to the coast line (longshore currents induced by waves aproaching oblique to the contour lines), but sometimes also narrow currents flowing offshore may occur (rip currents). The maximum theoretical values of the longshore current may reach 3 to 4 knots during storms at a distance of about 2/3 of the surf zone measured from the shore line. However, outside the surf zone the longshore is estimated to diminishes rapidly to a few inches/second at about 15 m water depth.

7.3 General Currents

A general current due to the water mass circulation in the Mediterranean is encountered the year arround. Its activity is observed mainly in the offshore region beyond contour line of 20 m depth. Its direction is anticlockwise and parallel to the coast line and its mean velocity of about 1/4 to 1/2 knot.

8. BATHYMETRY OF THE REGION AND OF THE PORT

The batymetry of the region of the eastern Mediterranean is presented in Figure 1.

In Figure 2 is presented the bathymetry of the Ashdod port and its surroundings.

9. DISCUSSION OF TACTICS FOR VARIOUS WEATHER SCENARIOS TO OBTAIN SAFE HAVEN AND LEAVE OR STAY DECISIONS

The tactics recommended for various weather scenarios to obtain safe haven and leave or stay decisions for Ashdod port are presented in tables A6 (a-e).

As they are mainly related to the seakeeping capabilities of the various U.S.Navy vessels as imposed by various sea state conditions both while underway and at anchorage, the vessels were roughly classified in 5 seakeeping categories as described below:

Category 1 (Lbp $\leq$ 15 meter, displacement less than 20 m tons.)

boats, motor boats, landing craft. See table A6-A.

Category 2 (Lbp=20-70 meter, displ. 20 m tons - 700 m tons.)

Patrol boats, rescuse boats, mine sweeping boats, patrol ships, SES, warping tugs, landing craft, mine warfare ships, hydrofoils, air cushion vehicles, world war II P.T. See table A6-B.

Category 3 (Lbp=70-160 meter, displ. 800 m tons - 9000 m tons.)

Corvettes, frigates, destroyers, salvage ships, cargo ships, cruisers, submarines (at surface), amphibious transport deck ships, tank landing ships. See table A6-C.

Category 4 (Lbp=140-250 meter, displ. 10000 m tons - 70000 m tons.)

Cruisers, submarines (at surface), amphibious ships, cargo ships, oilers, dock landing ships, auxiliary ships, salvage ships, battle ships. See table A6-D.

Category 5 (Lbp=270-330 meter, displ. 40000 m tons - 100000 m tons.)

Aircraft carriers. See table A6-E.

10. SEA BOTTOM DESCRIPTION

The sea bottom of the area opposite Ashdod port and southward is composed of sand (mean diameter about 0.25 mm) extending from shoreline to about contour lines - 30 m. Beyond this contour line the bottom is composed of fine sand and silt mixture to the edge of the coastal shelf.

Consequently the anchorage holding capacities differ in the two regions and depend also on the type and sizes of anchores used.

T A B L E S

TABLE A1

FREQUENCIES OF SURFACE WINDS (0/00) AT ASHDOD

HOURLY AND DAILY DISTRIBUTION

00 GMT	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									129
	1- 3	1	6	16	34	17	3	6	2	85
	4- 6	8	13	49	276	118	7	17	18	505
	7-10	6	10	16	76	79	3	16	11	216
	11-16	2	0	0	3	20	6	10	6	47
	17-21	0	0	0	0	2	1	9	2	14
	22-27	0	1	0	0	0	1	2	0	4
	28-33	0	0	0	0	0	0	0	0	0
	34-99	0	0	0	0	0	0	0	0	0
	TOT	17	30	80	389	236	21	59	39	

03 GMT	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									78
	1- 3	2	3	7	29	15	1	2	4	62
	4- 6	2	10	34	333	99	11	10	12	510
	7-10	9	5	15	109	115	5	10	7	274
	11-16	2	0	0	1	28	5	18	6	59
	17-21	0	0	0	0	2	3	8	0	13
	22-27	0	0	0	0	1	2	0	0	3
	28-33	0	0	0	0	0	0	0	0	0
	34-99	0	0	0	0	0	0	0	0	0
	TOT	15	18	55	471	259	27	48	29	

06 GMT	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									133
	1- 3	8	9	26	49	32	22	26	10	182
	4- 6	10	11	33	115	91	30	42	15	348
	7-10	12	2	8	45	92	39	26	12	237
	11-16	0	1	2	2	33	10	20	6	74
	17-21	1	0	0	0	6	2	6	1	16
	22-27	0	0	1	0	1	1	2	2	8
	28-33	0	0	0	0	0	1	0	1	2
	34-99	0	0	0	0	0	0	1	0	1
	TOT	32	23	70	211	256	105	123	47	

TABLE A1 - CONTINUED

FREQUENCIES OF SURFACE WINDS (O/OO) AT ASHDOD

HOURLY AND DAILY DISTRIBUTION

09 GMT	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									40
	1- 3	2	3	5	4	3	2	11	12	40
	4- 6	14	6	5	5	19	12	52	42	156
	7-10	33	7	5	3	33	28	191	149	449
	11-16	24	0	2	2	17	42	128	45	259
	17-21	1	0	0	0	4	20	14	4	42
	22-27	0	0	0	1	1	5	5	0	11
	28-33	0	0	0	0	0	0	1	0	1
	34-99	0	0	0	0	0	0	1	0	1
	TOT	73	16	16	14	77	108	402	252	

12 GMT	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									13
	1- 3	14	3	5	1	6	5	18	12	64
	4- 6	17	3	1	1	15	18	41	46	122
	7-10	53	4	1	3	12	22	190	138	324
	11-16	74	2	3	5	19	30	119	164	406
	17-21	17	1	0	0	1	9	12	14	55
	22-27	1	0	0	0	0	6	3	1	12
	28-33	0	0	0	0	1	0	2	0	3
	34-99	0	0	0	0	0	0	1	0	1
	TOT	177	13	10	11	34	80	287	375	

15 GMT	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									34
	1- 3	16	6	4	3	4	5	15	11	52
	4- 6	44	12	8	7	19	11	31	61	183
	7-10	141	17	5	1	10	20	163	189	446
	11-16	115	2	0	2	1	4	45	73	241
	17-21	15	0	0	0	0	3	7	7	33
	22-27	1	0	0	0	0	3	4	0	7
	28-33	0	0	0	0	0	1	3	0	4
	34-99	0	0	0	0	0	0	0	0	0
	TOT	332	36	17	12	24	46	157	341	

TABLE A1 - CONTINUED

FREQUENCIES OF SURFACE WINDS (0/00) AT ASHDOD

HOURLY AND DAILY DISTRIBUTION

18 GMT	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									173
	1- 3	50	27	38	20	7	9	20	38	208
	4- 6	76	61	51	54	25	9	33	41	349
	7-10	49	30	16	14	12	4	22	34	182
	11-16	18	3	0	1	4	6	14	7	53
	17-21	4	1	0	0	0	4	12	2	22
	22-27	0	1	0	0	1	3	4	3	11
	28-33	1	0	0	0	0	1	0	0	1
	34-99	0	0	0	0	0	0	0	0	0
	TOT	198	122	104	90	49	35	104	125	

21 GMT	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									273
	1- 3	10	11	28	42	15	4	9	7	125
	4- 6	16	26	71	147	43	12	26	31	372
	7-10	7	17	19	39	40	5	19	16	163
	11-16	10	2	2	0	11	2	12	7	36
	17-21	0	1	0	0	2	4	11	8	25
	22-27	0	0	0	0	0	2	2	0	4
	28-33	0	0	0	0	0	0	2	0	2
	34-99	0	0	0	0	0	0	0	0	0
	TOT	33	57	120	229	112	28	81	68	

DAILY	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									113
	1- 3	14	9	16	22	12	7	13	13	107
	4- 6	25	18	30	105	48	13	33	34	305
	7-10	39	12	10	33	47	17	55	70	283
	11-16	30	1	1	2	15	13	47	42	153
	17-21	5	0	0	0	2	6	10	5	28
	22-27	0	0	0	0	1	3	3	1	8
	28-33	0	0	0	0	0	0	1	0	2
	34-99	0	0	0	0	0	0	0	0	0
	TOT	114	40	58	163	125	59	162	165	

TABLE A2

FREQUENCIES OF SURFACE WIND (0/60) AT ASHDOD

MONTHLY DISTRIBUTION

JAN	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									70
	1- 3	7	10	22	21	11	3	8	6	88
	4- 6	21	10	48	129	45	7	17	13	295
	7-10	14	6	20	74	67	37	28	22	268
	11-16	13	0	1	6	49	41	41	17	167
	17-21	4	0	0	0	7	44	13	4	72
	22-27	1	0	0	0	3	17	8	1	31
	28-33	1	0	0	0	0	1	6	0	8
	34-99	0	0	0	0	0	0	0	0	0
	TOT	62	25	91	230	183	149	121	69	

FEB	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									66
	1- 3	6	1	10	16	15	4	7	10	71
	4- 6	7	12	40	120	50	27	56	45	358
	7-10	16	9	9	45	77	21	50	40	267
	11-16	9	0	3	4	42	31	43	21	153
	17-21	0	0	0	0	6	9	25	10	50
	22-27	0	0	1	1	3	13	11	1	30
	28-33	0	0	0	0	1	3	0	0	4
	34-99	0	0	0	0	0	0	0	0	0
	TOT	39	22	64	187	194	108	193	128	

MAR	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									92
	1- 3	23	8	23	71	17	4	12	8	117
	4- 6	20	17	39	94	37	15	23	21	275
	7-10	47	14	12	36	58	28	56	15	180
	11-16	22	0	1	1	22	21	11	22	121
	17-21	1	0	0	0	0	0	12	2	40
	22-27	0	0	0	0	1	1	1	0	3
	28-33	0	0	0	0	0	1	1	0	2
	34-99	0	0	0	0	0	0	0	0	0
	TOT	120	39	74	151	135	81	249	68	

TABLE A2 - CONTINUED

FREQUENCIES OF SURFACE WIND (0/00) AT ASHDOD

MONTHLY DISTRIBUTION

APR	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									99
	1- 3	18	12	21	19	19	6	23	14	133
	4- 6	36	28	36	139	40	10	35	35	259
	7-10	61	13	17	37	26	10	66	61	290
	11-16	41	0	3	4	5	9	85	41	188
	17-21	6	1	0	0	0	1	12	5	26
	22-27	1	0	0	0	0	1	3	0	5
	28-33	0	0	0	0	0	0	0	0	0
	34-99	0	0	0	0	0	0	0	0	0
	TOT	164	54	76	99	90	39	223	156	

MAY	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									127
	1- 3	18	10	19	18	1	6	12	18	103
	4- 6	45	21	24	55	34	13	28	41	262
	7-10	67	19	12	27	19	6	36	86	274
	11-16	89	5	2	1	4	0	46	60	208
	17-21	17	0	0	0	0	0	5	2	24
	22-27	1	0	0	0	0	0	0	0	1
	28-33	0	0	0	0	0	0	0	0	0
	34-99	0	0	0	0	0	0	0	0	0
	TOT	237	56	58	101	58	26	128	208	

JUN	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									112
	1- 3	24	4	10	11	11	12	14	20	106
	4- 6	45	12	9	27	52	17	41	36	280
	7-10	48	2	0	10	36	21	63	96	282
	11-16	40	0	0	0	1	5	55	57	158
	17-21	7	0	0	0	0	0	1	4	12
	22-27	0	0	0	0	0	0	0	0	0
	28-33	0	0	0	0	0	0	0	0	0
	34-99	0	0	0	0	0	0	0	0	0
	TOT	164	19	19	198	101	55	174	213	

TABLE A2 - CONTINUED

FREQUENCIES OF SURFACE WIND (0700) AT ASHDOD

MONTHLY DISTRIBUTION

JUL	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									115
	1- 3	13	6	5	16	18	24	28	16	126
	4- 6	16	4	66	63	64	19	49	49	269
	7-10	12	4	0	12	56	25	97	126	333
	11-16	8	0	0	0	0	5	75	63	152
	17-21	0	0	0	0	0	0	4	1	5
	22-27	0	0	0	0	0	0	0	0	0
	28-33	0	0	0	0	0	0	0	0	0
	34-99	0	0	0	0	0	0	0	0	0
	TOT	50	13	11	91	138	74	252	255	

AUG	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									121
	1- 3	8	3	7	14	8	4	15	17	77
	4- 6	20	8	3	112	70	13	36	28	289
	7-10	20	0	1	13	52	13	99	100	297
	11-16	17	0	0	0	4	4	79	67	172
	17-21	1	0	0	0	0	0	0	3	4
	22-27	0	0	0	0	0	0	0	0	0
	28-33	0	0	0	0	0	0	0	0	0
	34-99	0	0	0	0	0	0	0	0	0
	TOT	66	11	11	139	134	33	229	215	

SEP	KNTS	N	NE	E	SE	S	SW	W	NW	TOT
	CALM									114
	1- 3	16	12	10	10	17	10	17	16	120
	4- 6	26	20	13	126	62	9	20	24	312
	7-10	61	1	0	5	12	3	55	116	254
	11-16	42	0	0	0	0	1	26	71	140
	17-21	5	0	0	0	0	0	0	4	9
	22-27	0	0	0	0	0	0	0	0	0
	28-33	0	0	0	0	0	0	0	0	0
	34-99	0	0	0	0	0	0	0	0	0
	TOT	150	33	23	151	91	23	118	235	

TABLE A3

FREQUENCIES OF VISIBILITY (0/00) AT ACHDOD

ANNUAL HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	5.0 TO 9.0 KM.	GT. THAN 10. KM.
00	4	8	19	19	137	814
03	14	24	38	72	241	616
06	2	8	16	37	275	661
09	0	4	8	17	150	821
12	1	3	12	14	90	880
15	0	3	10	14	82	891
18	0	2	3	6	70	917
21	3	2	6	12	81	895

JAN. HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	5.0 TO 9.0 KM.	GT. THAN 10. KM.
00	0	0	17	33	83	867
03	13	0	0	113	65	909
06	11	0	11	121	121	736
09	0	0	11	65	98	826
12	0	0	33	65	98	804
15	0	0	34	34	80	851
18	0	0	11	34	46	900
21	0	0	34	12	36	929

FEB. HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	5.0 TO 9.0 KM.	GT. THAN 10. KM.
00	0	0	10	0	70	919
03	0	0	13	13	50	925
06	0	12	24	48	169	747
09	0	12	24	36	202	726
12	0	35	13	30	83	839
15	0	0	51	25	63	861
18	0	0	25	13	50	913
21	0	0	13	0	39	948

TABLE A3 - CONTINUED

FREQUENCIES OF VISIBILITY (0/00) AT ASHDOD

MAR HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	5.0 TO 9.0 KM.	GT. THAN 10. KM.
00	0	33	50	0	50	867
03	0	44	44	22	111	778
06	11	43	32	32	237	645
09	0	23	35	23	151	767
12	0	11	43	0	140	806
15	0	11	22	22	97	849
18	0	11	22	11	44	912
21	0	11	34	22	34	899

APRIL HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	5.0 TO 9.0 KM.	GT. THAN 10. KM.
00	0	17	34	17	155	776
03	10	10	53	70	34[illegible]	596
06	0	17	17	67	267	633
09	0	0	17	17	293	672
12	0	0	17	17	200	767
15	0	0	17	17	283	633
18	0	0	34	17	153	797
21	17	0	34	17	13[illegible]	797

MAY HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	5.0 TO 9.0 KM.	GT. THAN 10. KM.
00	32	0	11	0	151	806
03	32	43	32	90	424	378
06	0	11	22	11	312	645
09	0	0	11	11	211	767
12	0	0	0	11	120	870
15	[illegible]	0	0	11	110	879
18	0	0	11	[illegible]	130	859
21	[illegible]	0	0	11	108	882

TABLE A3 - CONTINUED

FREQUENCIES OF VISIBILITY (0/00) AT ASHDOD

JUN	HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	6.0 TO 9.0 KM.	GT. THAN 10. KM.
	00	11	22	67	56	303	539
	03	57	57	91	216	375	205
	06	0	0	22	67	400	511
	09	0	0	0	0	256	744
	12	0	0	0	11	100	889
	15	0	0	0	11	78	911
	18	0	0	0	0	133	867
	21	11	0	0	11	244	733

JUL	HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	5.0 TO 9.0 KM.	GT. THAN 10. KM.
	00	0	11	0	33	209	747
	03	33	11	89	144	456	267
	06	0	0	0	11	441	548
	09	0	0	0	0	118	882
	12	0	0	0	0	97	903
	15	0	0	0	0	87	913
	18	0	0	0	0	87	913
	21	0	0	0	11	76	913

AUG.	HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	6.0 TO 9.0 KM.	GT. THAN 10. KM.
	00	0	0	11	34	287	667
	03	0	00	11	227	477	285
	06	0	0	11	34	545	409
	09	0	0	0	0	101	899
	12	0	0	0	0	76	924
	15	0	0	0	0	87	913
	18	0	0	0	0	87	913
	21	0	0	0	11	100	889

TABLE A3 - CONTINUED

FREQUENCIES OF VISIBILITY (0/00) AT ASHDOD

SEP. HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	6.0 TO 9.0 KM.	GT. THAN 10. KM.
00	0	0	17	0	67	917
03	0	0	34	11	356	598
06	0	0	0	11	273	716
09	0	0	0	0	68	932
12	0	0	0	0	33	967
15	0	0	0	11	22	966
18	0	0	0	0	22	978
21	0	0	0	12	47	941

OCT. HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	6.0 TO 9.0 KM.	GT. THAN 10. KM.
00	0	0	0	13	62	924
03	11	11	0	22	169	787
06	11	0	32	0	172	785
09	0	0	0	0	75	925
12	0	0	0	0	22	978
15	0	0	0	0	22	978
18	0	0	0	0	11	989
21	0	0	0	11	75	914

NOV. HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	6.0 TO 9.0 KM.	GT. THAN 10. KM.
00	0	0	11	22	44	923
03	0	11	22	0	44	913
06	0	17	0	17	127	757
09	0	0	0	44	140	807
12	0	0	27	11	33	953
15	0	10	0	21	42	895
18	0	0	0	11	44	927
21	11	0	0	11	47	926

TABLE A3 - CONTINUED

FREQUENCIES OF VISIBILITY (0/00) AT ASHDOD

DEC. HOUR GMT	LT. THAN 0.1 KM.	0.2 TO 1.0 KM.	1.1 TO 3.0 KM.	3.1 TO 5.0 KM.	6.0 TO 9.0 KM.	GT. THAN 10. KM.
00	0	11	0	0	67	921
03	0	11	0	22	77	890
06	0	0	22	11	204	763
09	0	11	0	0	141	848
12	11	0	0	11	76	902
15	0	11	11	11	54	914
18	0	11	0	11	43	935
21	0	11	0	11	43	935

TABLE A4

TABLE A4: FREQUENCIES OF SIGNIFICANT WAVE OCCURANCE (%) AT ASHDOD

SUMMER (APRIL - OCTOBER)

DIR.	H_s (m)	T_s (SEC) 3-5.5	6-7.5	8-9.5	10-11.5	12-14	TOTAL	
WSW	0-1	3.38	0.11	0.06	0.00	0.00	3.55	
	1-2	2.13	0.26	0.03	0.00	0.00	2.42	
	2-3	0.20	0.06	0.03	0.00	0.00	0.29	6.40
	3-4	0.00	0.03	0.08	0.00	0.00	0.11	
	4-6	0.00	0.00	0.00	0.00	0.00	0.00	
	6-8	0.00	0.00	0.00	0.00	0.00	0.00	
W	0-1	13.63	2.03	0.03	0.00	0.00	15.70	
	1-2	7.38	5.00	0.43	0.03	0.00	12.84	
	2-3	1.30	0.68	0.88	0.03	0.00	2.89	31.90
	3-4	0.08	0.03	0.24	0.00	0.00	0.35	
	4-6	0.05	0.00	0.00	0.06	0.00	0.11	
	6-8	0.00	0.00	0.00	0.00	0.00	0.00	
WNW	0-1	15.91	5.23	0.41	0.03	0.00	21.58	
	1-2	3.68	4.38	0.64	0.00	0.00	8.70	
	2-3	0.40	0.39	0.26	0.00	0.03	1.08	31.50
	3-4	0.03	0.00	0.03	0.00	0.00	0.06	
	4-6	0.03	0.00	0.00	0.00	0.00	0.03	
	6-8	0.00	0.00	0.00	0.00	0.00	0.00	
NW	0-1	14.86	1.60	0.16	0.00	0.00	16.62	
	1-2	1.93	1.66	0.22	0.00	0.00	3.81	
	2-3	0.16	0.06	0.13	0.00	0.00	0.35	20.80
	3-4	0.05	0.00	0.00	0.00	0.00	0.05	
	4-6	0.00	0.00	0.00	0.00	0.00	0.00	
	6-8	0.00	0.00	0.00	0.00	0.00	0.00	
NNW	0-1	7.18	0.36	0.03	0.03	0.00	7.60	
	1-2	0.91	0.78	0.00	0.00	0.00	1.69	
	2-3	0.08	0.03	0.03	0.00	0.00	0.14	9.40
	3-4	0.00	0.00	0.00	0.00	0.00	0.00	
	4-6	0.00	0.00	0.00	0.00	0.00	0.00	
	6-8	0.00	0.00	0.00	0.00	0.00	0.00	

TABLE A4 - CONTINUED

FREQUENCIES OF SIGNIFICANT WAVE OCCURANCE (%) AT ASHDOD

YEARLY

DIR.	H_s (m)	T_s (SEC) 3-5.5	6-7.5	8-9.5	10-11.5	12-14	TOTAL	
WSW	0-1	2.94	0.24	0.06	0.00	0.00	3.24	6.70
	1-2	1.81	0.26	0.04	0.00	0.00	2.11	
	2-3	0.50	0.08	0.11	0.02	0.00	0.71	
	3-4	0.13	0.06	0.18	0.04	0.00	0.41	
	4-6	0.10	0.00	0.10	0.04	0.00	0.24	
	6-8	0.00	0.00	0.00	0.02	0.00	0.02	
W	0-1	12.91	1.63	0.06	0.00	0.00	14.60	35.60
	1-2	7.83	4.14	0.42	0.04	0.00	12.43	
	2-3	2.84	1.13	1.16	0.09	0.00	5.22	
	3-4	0.92	0.09	0.68	0.17	0.02	1.88	
	4-6	0.48	0.02	0.32	0.45	0.06	1.33	
	6-8	0.05	0.00	0.00	0.02	0.04	0.11	
WNW	0-1	14.20	4.40	0.64	0.07	0.00	19.31	31.50
	1-2	4.09	3.89	0.88	0.07	0.02	8.95	
	2-3	1.10	0.37	0.64	0.08	0.04	2.23	
	3-4	0.24	0.05	0.20	0.13	0.02	0.64	
	4-6	0.13	0.00	0.11	0.10	0.00	0.34	
	6-8	0.00	0.00	0.03	0.00	0.00	0.03	
NW	0-1	12.72	1.46	0.15	0.00	0.00	14.20	18.20
	1-2	1.68	1.34	0.26	0.00	0.00	3.20	
	2-3	0.22	0.10	0.21	0.00	0.02	0.60	
	3-4	0.11	0.00	0.05	0.04	0.00	0.20	
	4-6	0.00	0.00	0.00	0.02	0.02	0.04	
	6-8	0.00	0.00	0.00	0.00	0.02	0.02	
NNW	0-1	5.91	0.55	0.02	0.02	0.00	6.50	8.00
	1-2	0.68	0.57	0.06	0.00	0.00	1.31	
	2-3	0.08	0.09	0.02	0.00	0.00	0.19	
	3-4	0.00	0.00	0.00	0.00	0.00	0.00	
	4-6	0.00	0.00	0.00	0.00	0.00	0.00	
	6-8	0.00	0.00	0.00	0.00	0.00	0.00	

TABLE A4 - CONTINUED

FREQUENCIES OF SIGNIFICANT WAVE OCCURANCE (%) AT ASHDOD

WINTER (NOV. - MARCH)

DIR.	H_s (m)	T_s (SEC) 3-5.5	6-7.5	8-9.5	10-11.5	12-14	TOTAL	
WSW	0-1	2.58	0.34	0.04	0.00	0.00	2.96	7.10
	1-2	1.37	0.22	0.04	0.00	0.00	1.63	
	2-3	0.80	0.10	0.19	0.04	0.00	1.18	
	3-4	0.37	0.08	0.29	0.08	0.00	0.82	
	4-6	0.20	0.00	0.21	0.08	0.00	0.49	
	6-8	0.00	0.00	0.00	0.04	0.00	0.04	
W	0-1	12.27	1.41	0.08	0.00	0.00	13.70	40.90
	1-2	8.74	2.54	1.11	0.04	0.00	12.43	
	2-3	5.18	1.68	1.64	0.16	0.00	8.66	
	3-4	2.04	0.15	1.25	0.45	0.04	3.93	
	4-6	1.07	0.04	0.62	1.05	0.12	2.90	
	6-8	0.11	0.00	0.00	0.04	0.08	0.21	
WNW	0-1	12.69	3.01	0.89	0.11	0.00	16.70	31.40
	1-2	4.62	2.90	1.18	0.15	0.04	8.69	
	2-3	1.80	0.51	1.27	0.14	0.04	3.76	
	3-4	0.48	0.11	0.36	0.28	0.04	1.27	
	4-6	0.27	0.00	0.23	0.22	0.00	0.72	
	6-8	0.00	0.00	0.07	0.00	0.00	0.07	
NW	0-1	9.58	1.02	0.14	0.00	0.00	10.74	14.50
	1-2	1.37	0.95	0.26	0.00	0.00	2.58	
	2-3	0.30	0.15	0.28	0.00	0.04	0.77	
	3-4	0.14	0.00	0.11	0.08	0.00	0.33	
	4-6	0.00	0.00	0.00	0.04	0.04	0.08	
	6-8	0.00	0.00	0.00	0.00	0.04	0.04	
NNW	0-1	4.42	0.61	0.00	0.00	0.00	5.03	6.10
	1-2	0.51	0.21	0.12	0.00	0.00	0.84	
	2-3	0.07	0.14	0.00	0.00	0.00	0.21	
	3-4	0.00	0.00	0.00	0.00	0.00	0.00	
	4-6	0.00	0.00	0.00	0.00	0.00	0.00	
	6-8	0.00	0.00	0.00	0.00	0.00	0.00	

TABLE A5

DURATION OF STORMS EXCEEDING
A SPECIFIED DEEPWATER SIGNIFICANT WAVE HEIGHT AT ASHDOD

SEA STATE EXCEEDED : HS > = (M)	AVERAGE NO. OF STORMS PER YEAR	AVERAGE DURATION OF THE SEA STATE PER STORM (HOURS)	STANDARD DEVIATION OF THE DURATION OF THE STORM
SEA STATE OF THE STORM CROSSING THE SPECIFIED LEVEL ONLY			
1.5	33.61	30.35	33.78
2.0	22.70	25.44	28.08
2.5	14.65	22.67	23.23
3.0	9.57	20.83	20.65
3.5	6.61	18.12	17.79
4.0	4.39	15.55	14.35
4.5	2.70	11.87	11.35
5.0	1.39	10.76	9.90
5.5	.70	7.98	6.32
6.0	.39	4.78	3.57

TABLE No. A6-A

VESSEL SEAKEEPING CATEGORY – 1 ($L_{BP} \leq$ 15m Displacement = <20 ton)

Vessal types: BOATS, MOTOR BOATS, LANDING CRAFT

WAVE CONDITION		VESSEL LOCATION			
DEEP WATER		VESSEL IN OPEN SEA		VESSEL IN ASHDOD PORT	
		STORM CONDITION			
SEA STATE	$H_{s,o}$ (m)	STORM FORECAST	STORM STATE	STORM FORECAST	STORM STATE
0-3	0-1	PROCEED ON MISSION. OBSERVE FURTHER FORECASTS, ESPECIALLY IN WINTER.	PROCEED ON MISSION. OBSERVE FURTHER FORECASTS, ESPECIALLY IN WINTER.	PROCEED ON MISSION. OBSERVE FURTHER FORECASTS, ESPECIALLY IN WINTER.	PROCEED ON MISSION. OBSERVE FURTHER FORECASTS, ESPECIALLY IN WINTER.
4	1-2	PROCEED ON MISSION. OBSERVE FURTHER FORECASTS, ESPECIALLY IN WINTER.	PREPARE TO REFUGE TO CLOSEST PORT. OBSERVE FURTHER FORECASTS, ESPECIALLY IN WINTER.	PROCEED ON MISSION. OBSERVE FURTHER FORECASTS, ESPECIALLY IN WINTER.	STAY IN PORT. TAUT MOORINGS.
5	2-4	PREPARE FOR REFUGE TO CLOSEST PORT. IN WINTER OBSERVE FURTHER FORECASTS.	REFUGE TO CLOSEST PORT (ASHDOD) IMMEDIATELY.	STAY IN PORT. TAUT MOORINGS.	DO NOT LEAVE THE PORT. STRENGTHEN AND TAUT MOORINGS.
6	4-6	REFUGE TO CLOSEST PORT. IN WINTER OBSERVE FURTHER FORECASTS.	GET HELP AND TRY TO REFUGE TO NEAREST PORT.	STAY IN PORT. TAUT MOORINGS.	DO NOT LEAVE THE PORT. STRENGTHEN AND TAUT MOORINGS.

TABLE No. A6-B

VESSEL SEAKEEPING CATEGORY – 2 (L_{BP} = 20m ÷ 70m Displacement = 20 ton ÷ 700 ton)

Vessel types: PATROL BOATS, PATROL SHIPS, MINE SWEEPING BOATS, RESCUE BOATS, SES, WARPING TUGS LANDING CRAFT, MINE WARFARE SHIPS, HYDROFOILS, AIR CUSHION VEHICHES, WORLD WAR II P.T.

WAVE CONDITION		VESSEL LOCATION			
DEEP WATER		VESSEL IN OPEN SEA		VESSEL IN ASHDOD PORT	
		STORM CONDITION			
SEA STATE	$H_{s,o}$ (m)	STORM FORECAST	STORM STATE	STORM FORECAST	STORM STATE
0-3	0-1	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.
4	1-2	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.
5	2-4	PROCEED ON MISSION, IN WINTER OBSERVE FURTHER FORECASTS AND BE READY TO REFUGE TO ASHDOD PORT.	IN WINTER REFUGE TO HAIFA BAY OR ASHDOD PORT. IN SUMMER PROCEED ON MISSION AT LOWER SPEED.	PROCEED ON MISSION. OBSERVE FURTHER FORECASTS, ESPECIALLY IN WINTER.	IN SUMMER PROCEED ON MISSION. IN WINTER STAND BY TO REFUGE TO HAIFA BAY IF CONDITIONS WORSEN.
6	4-6	REFUGE TO HAIFA BAY.	ANCHOR IN OPEN SEA. TRY TO REFUGE TO HAIFA BAY OR HAIFA PORT.	REFUGE TO HAIFA BAY.	STAY IN PORT. STRENGTHEN AND TAUT MOORINGS.

TABLE No. A6-C

VESSEL SEAKEEPING CATEGORY – 3 (L_{BP} = 70m ÷ 160m Displacement = 800 ton ÷ 9000 ton)

Vessel types: CORVETTES, FRIGATES, DESTROYERS, SALVAGE SHIPS, CARGO SHIPS, SUBMARINES (AT SURFACE), CRUISERS, AMPHIBIOLS TRANSPORT DECK SHIPS, TANK LANDING SHIPS

WAVE CONDITION		VESSEL LOCATION			
DEEP WATER		VESSEL IN OPEN SEA		VESSEL IN ASHDOD PORT	
		STORM CONDITION			
SEA STATE	$H_{s,o}$ (m)	STORM FORECAST	STORM STATE	STORM FORECAST	STORM STATE
0-3	0-1	PROCEED ON MISSION.	PROCEED ON MISSION.	PROCEED ON MISSION.	PROCEED ON MISSION.
4	1-2	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.
5	2-4	PROCEED ON MISSION. IN WINTER PREPARE TO REFUGE TO ASHDOD PORT OR HAIFA BAY. OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER REFUGE TO ASHDOD PORT BUT PREPARE TO LEAVE FOR ANCHORAGE IN HAIFA BAY, IF CONDITIONS WORSEN.	PROCEED ON MISSION. IN WINTER PREPARE TO LEAVE FOR ANCHORAGE IN HAIFA BAY.	OBSERVE MOORINGS AND TAUT LINES. STAND BY FOR MOVING TO HAIFA BAY.
6	4-6	REFUGE TO ASHDOD PORT OR TO HAIFA BAY ANCHORAGE. OBSERVE FURTHER FORECASTS.	REFUGE TO ANCHORAGE IN HAIFA BAY OR PORT OR OUT OF STORM TRACK.	STRENGTHEN AND TAUT MOORING LINES. PREPARE TO LEAVE FOR OPEN SEA ANCHORAGE OR FOR HAIFA BAY.	LEAVE PORT FOR ANCHORAGE IN OPEN SEA OR IN HAIFA BAY.
7	6-9	REFUGE TO HAIFA BAY CR MOVE OUT OF STORM TRACK.	TRY TO REFUGE TO HAIFA BAY. IF REMOTE, ANCHOR IN OPEN SEA.	REFUGE TO HAIFA BAY. IF POSSIBLE TO HAIFA PORT.	LEAVE FOR ANCHORAGE IN OPEN SEA. TRY TO REACH HAIFA. IF IMPOSSIBLE TO LEAVE THE PORT, USE MORE MOORING LINES.

TABLE No. A6-D

VESSEL SEAKEEPING CATEGORY – 4 (L_{BP} = 140m ÷ 250m Displacement = 10,000ton ÷ 70,000ton)

Vessel types: CRUISERS, SUBMARINES (AT SURFACE), AMPHIBIOUS SHIPS, CARGO SHIPS, DOCK LANDING SHIPS, TANKERS, AUXILIARY SHIPS, SALVAGE SHIPS, BATTLE SHIPS.

WAVE CONDITION		VESSEL LOCATION			
DEEP WATER		VESSEL IN OPEN SEA		VESSEL IN ASHDOD PORT	
SEA STATE	$H_{s,o}$ (m)	STORM CONDITION			
		STORM FORECAST	STORM STATE	STORM FORECAST	STORM STATE
0-3	0-1	PROCEED ON MISSION.	PROCEED ON MISSION.	PROCEED ON MISSION.	PROCEED ON MISSION.
4	1-2	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER OBSERVE FURTHER FORECASTS.
5	2-4	PROCEED ON MISSION. IN WINTER PREPARE TO REFUGE TO HAIFA BAY. OBSERVE FURTHER FORECASTS.	PROCEED ON MISSION. IN WINTER CEASE MISSION AND REFUGE TO ASHDOD PORT, BUT BE PREPARED TO LEAVE TO HAIFA BAY, OR TO OPEN SEA IF CONDITIONS WORSEN.	PROCEED ON MISSION. IN WINTER PREPARE TO REFUGE TO HAIFA BAY. OBSERVE FURTHER FORECASTS.	OBSERVE MOORINGS AND TAUT LINES. IN WINTER STAND BY TO REFUGE TO HAIFA BAY. OBSERVE FURTHER FORECASTS.
6	4-6	REFUGE TO HAIFA BAY ANCHORAGE OR MOVE OUT OF STORM TRACK. OBSERVE FURTHER FORECASTS.	REFUGE TO ANCHORAGE IN OPEN SEA OR TO HAIFA BAY OR OUT OF STORM TRACK.	REFUGE TO HAIFA BAY ANCHORAGE OR MOVE OUT OF STORM TRACK. OBSERVE FURTHER FORECASTS.	REFUGE TO HAIFA BAY OR TO ANCHORAGE IN OPEN SEA. IF IMPOSSIBLE TO LEAVE, STRENGTHEN AND TAUT MOORINGS.
7	6-9	REFUGE TO HAIFA BAY ANCHORAGE OR MOVE OUT OF STORM TRACK.	TRY TO REFUGE TO HAIFA BAY. IF TOO REMOTE ANCHOR IN OPEN SEA.	REFUGE TO HAIFA BAY ANCHORAGE OR MOVE OUT OF STORM TRACK.	TRY TO LEAVE FOR ANCHORAGE IN OPEN SEA OR IN HAIFA BAY. IF IMPOSSIBLE TO LEAVE PORT, ADD EXTRA LINES TO MOORINGS.

F I G U R E S

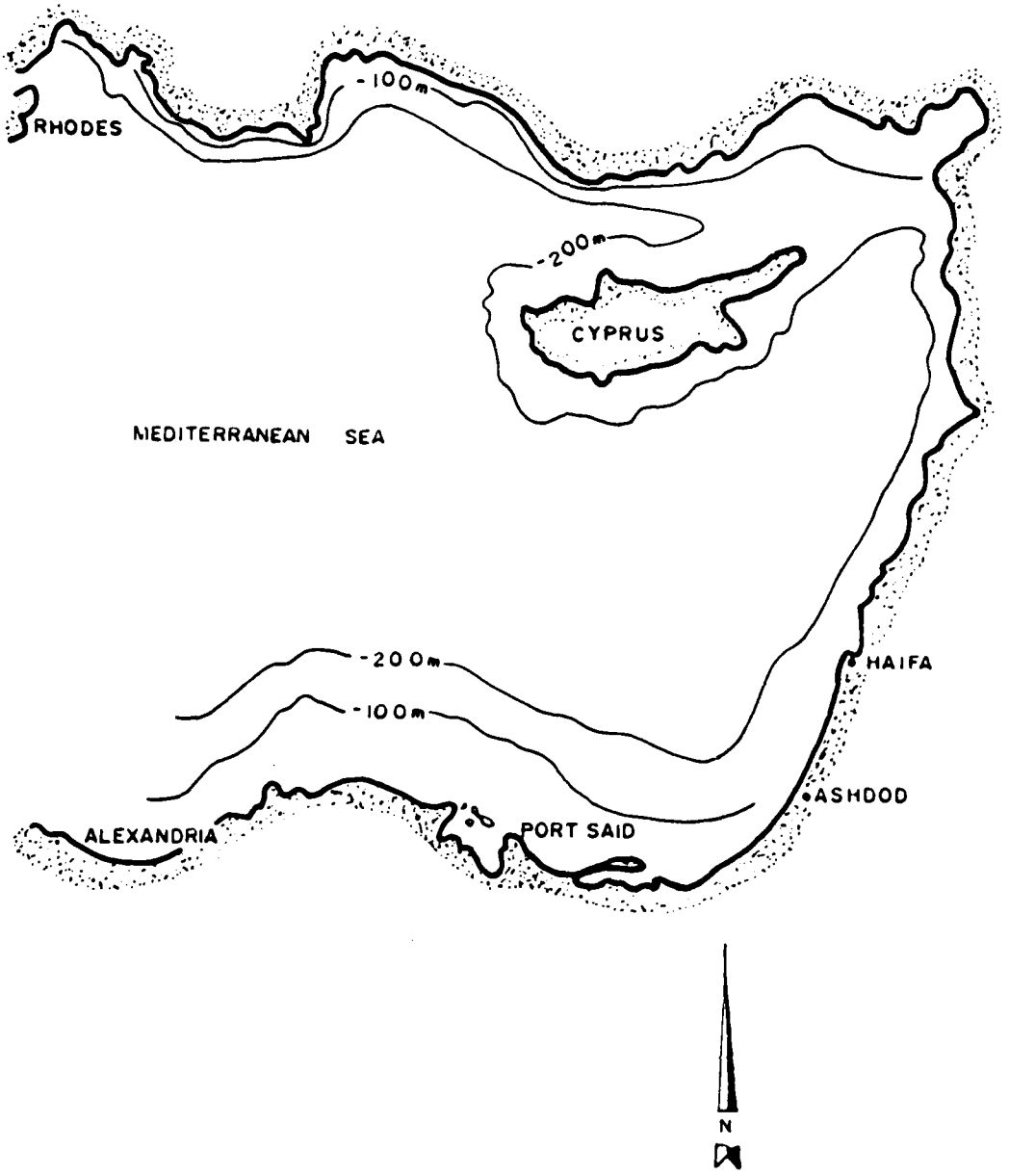

Figure 1 - Location of Ashdod port.

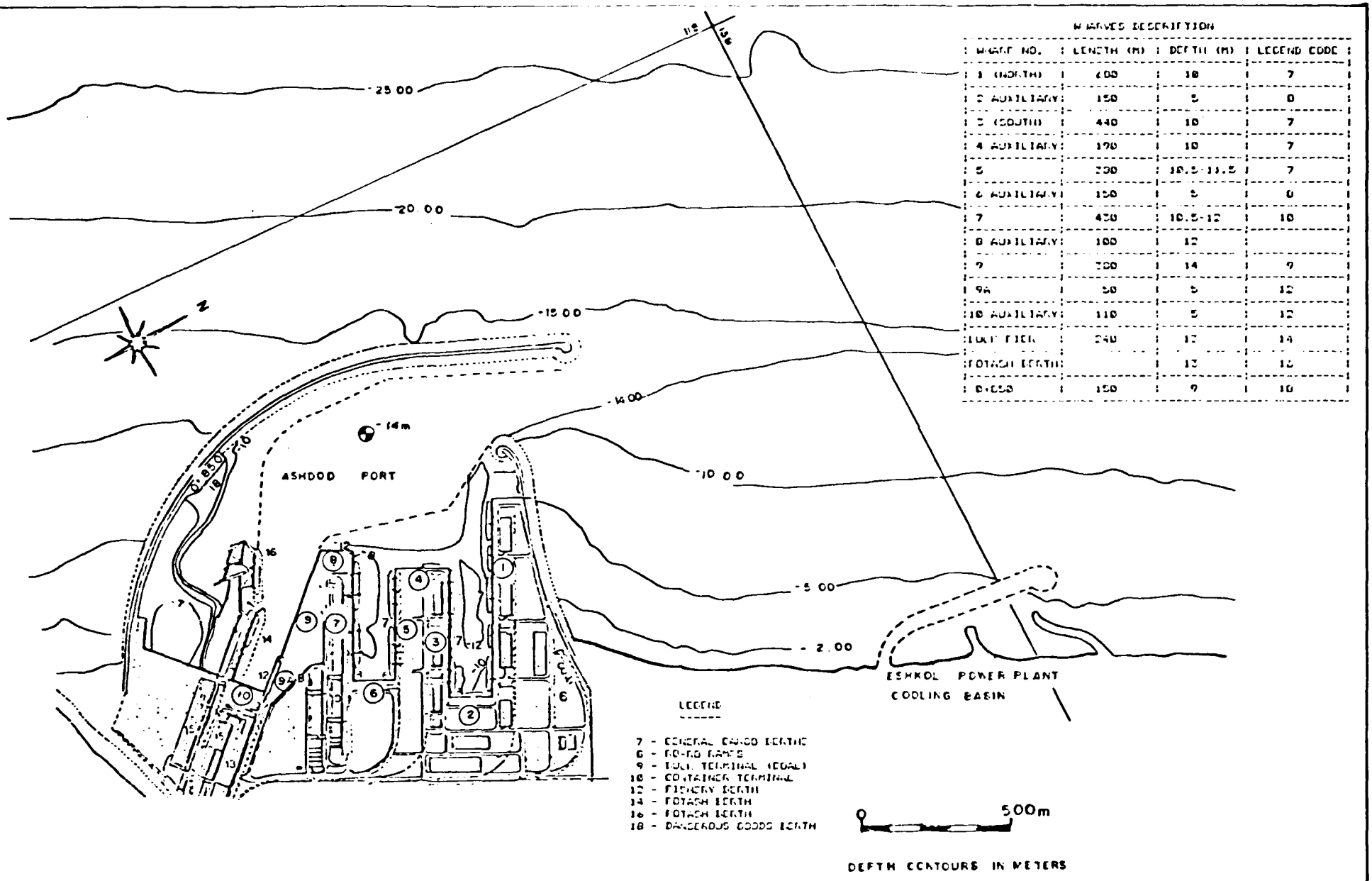

Figure 2 - Bathymetric chart and layout details for Ashdod port.

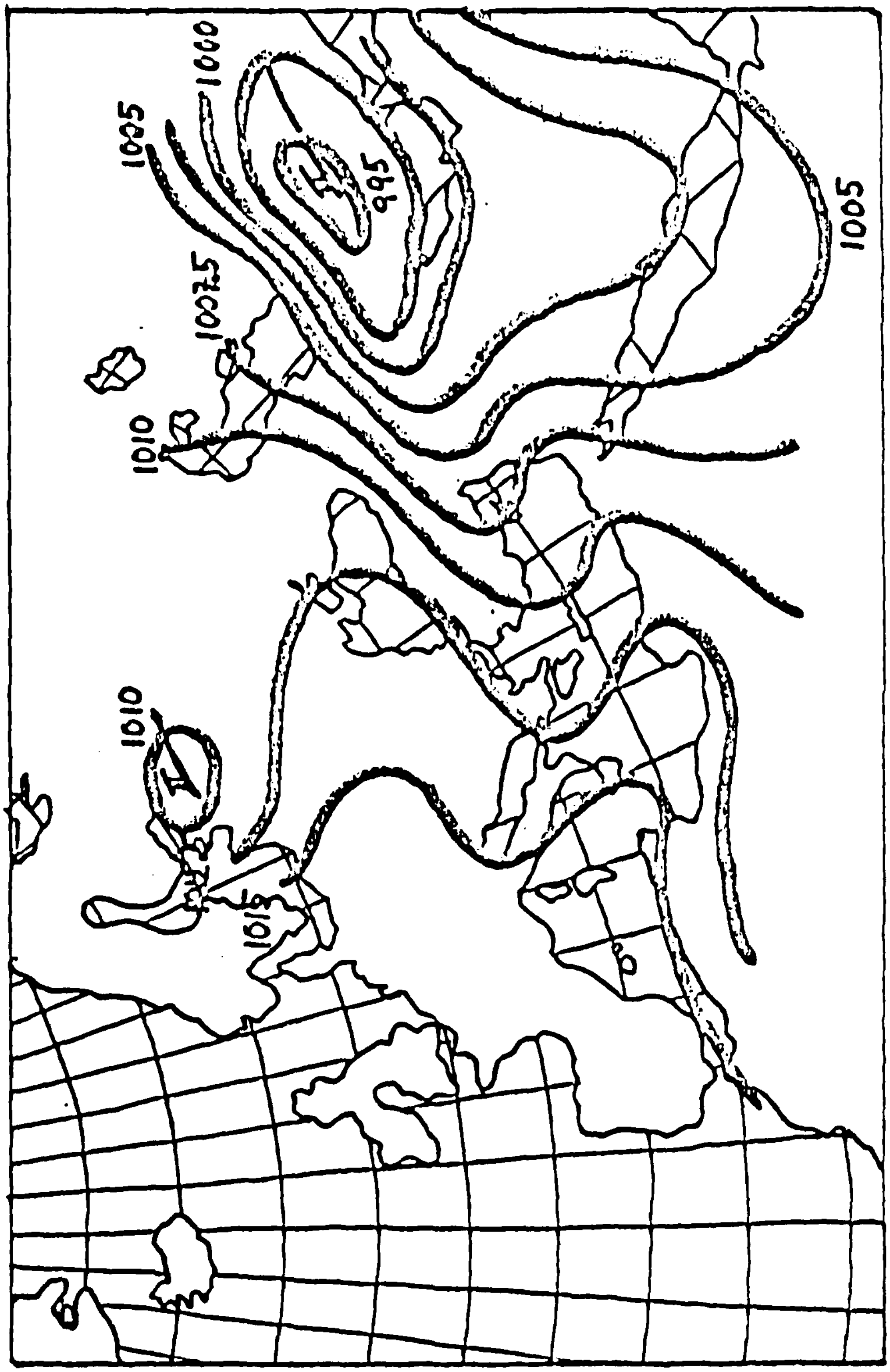

Figure 3 - Summer season - Representative synoptic map at sea level.

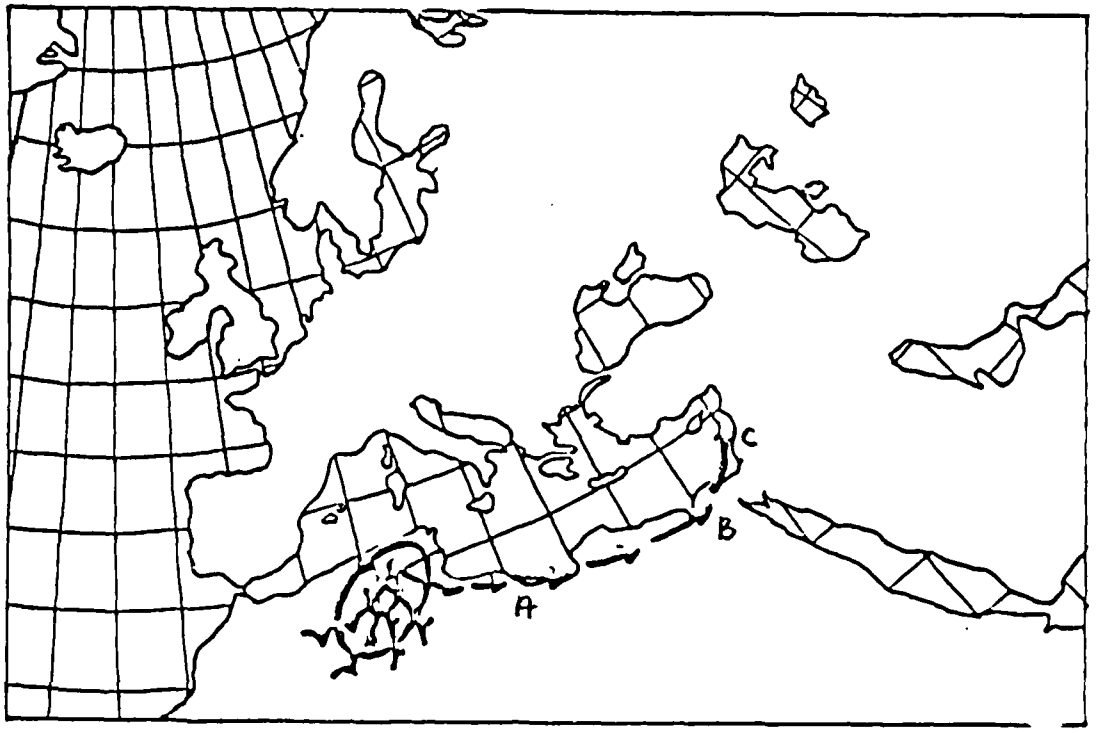

Figure 4a - Transition seasons - Hot "low" and its path: A - Very cloudy in easterm Mediterranean, B - Peak of hot low
C - Displacement of low to sea and disappearence of hot weather.

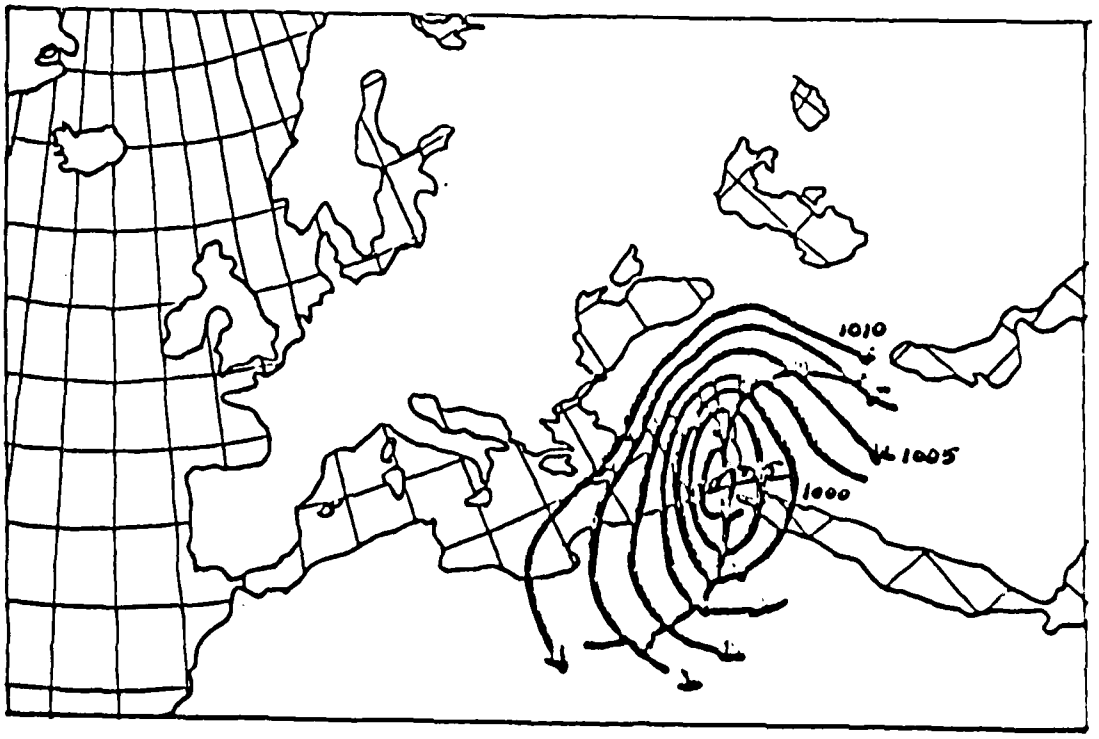

Figure 4b - Transition seasons-Hot low at its peak

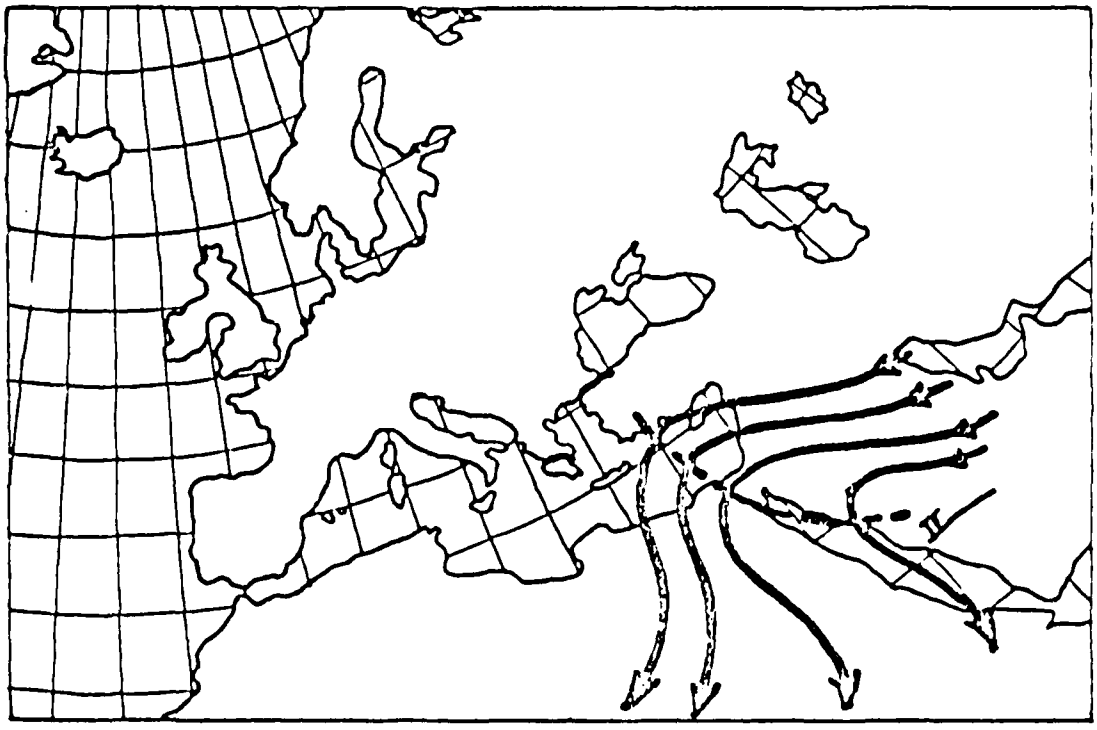

Figure 5a - Transition seasons - Red Sea Trough with western axis

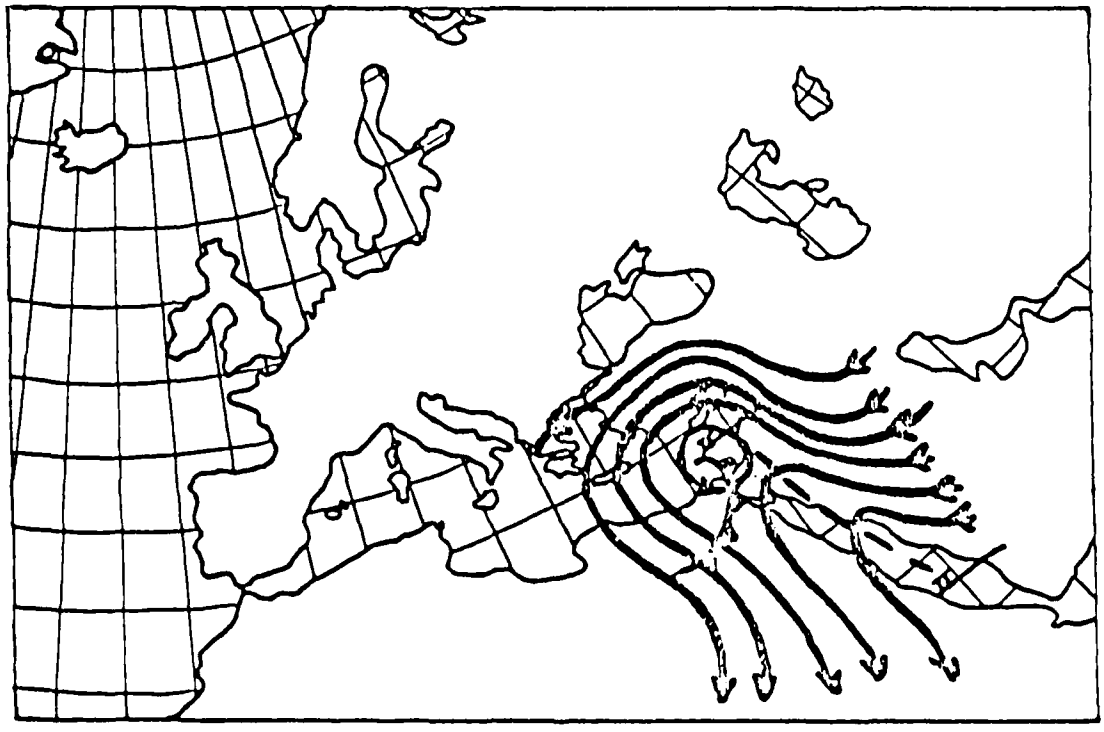

Figure 5b - Transition seasons - Red Sea Trough closing a "low" over the sea

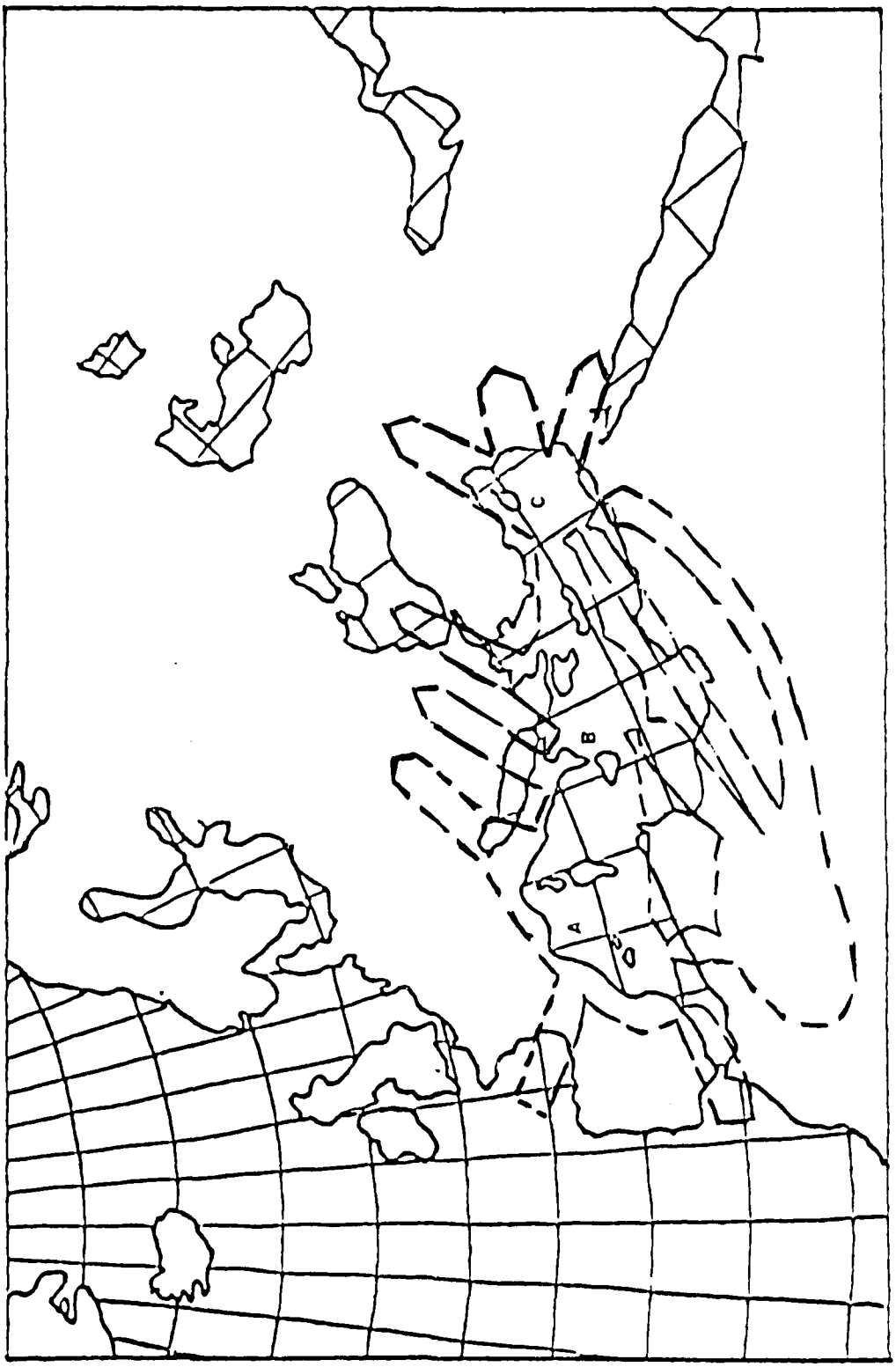

Figure 6 - Winter season - Typical Icelandic "low" and its paths in the Mediterranean

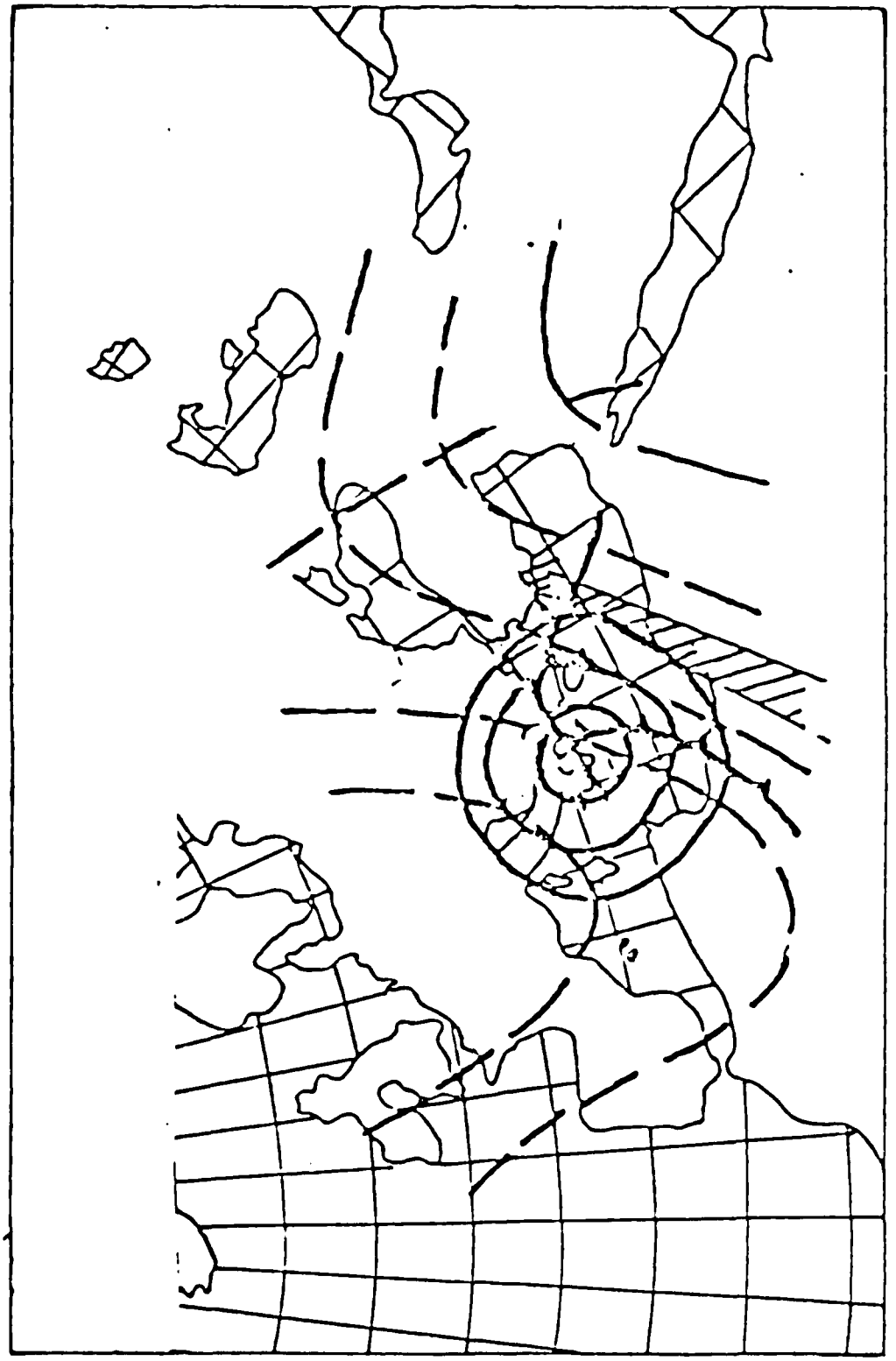

Figure 7 - Winter season - Schematic description of "Italian low" approaching the eastern Mediterranean

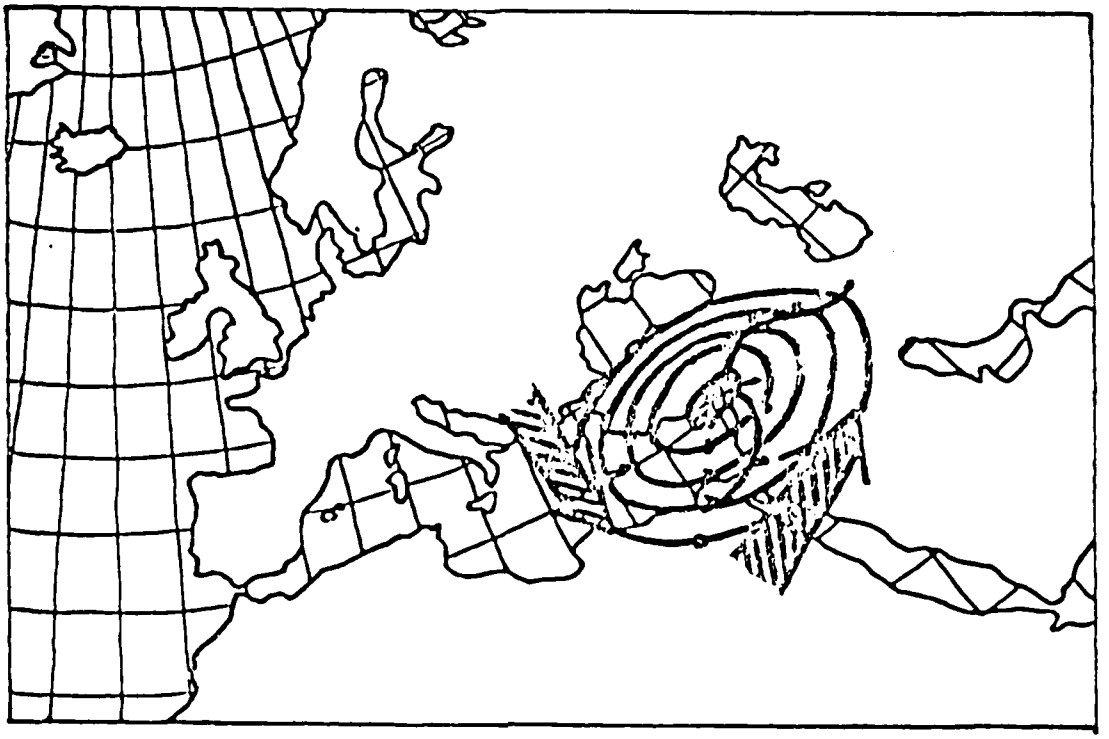

Figure 8a - Winter season - Northern (Cyprus) low

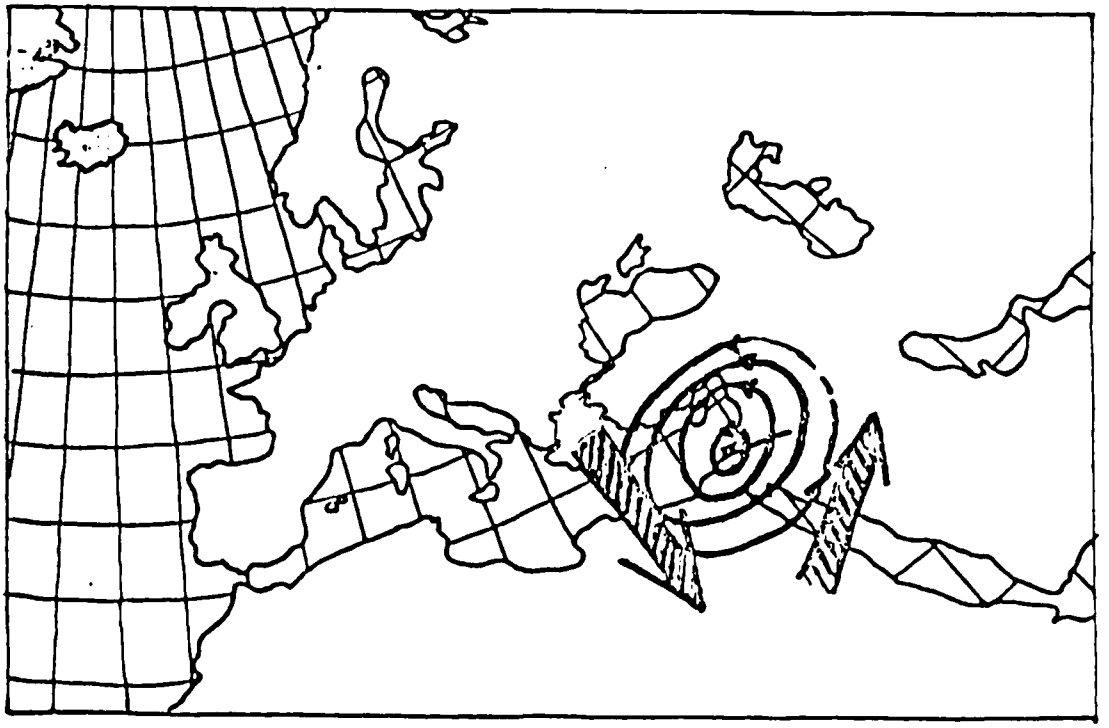

Figure 8b - Winter season - Southern (Gaza) low

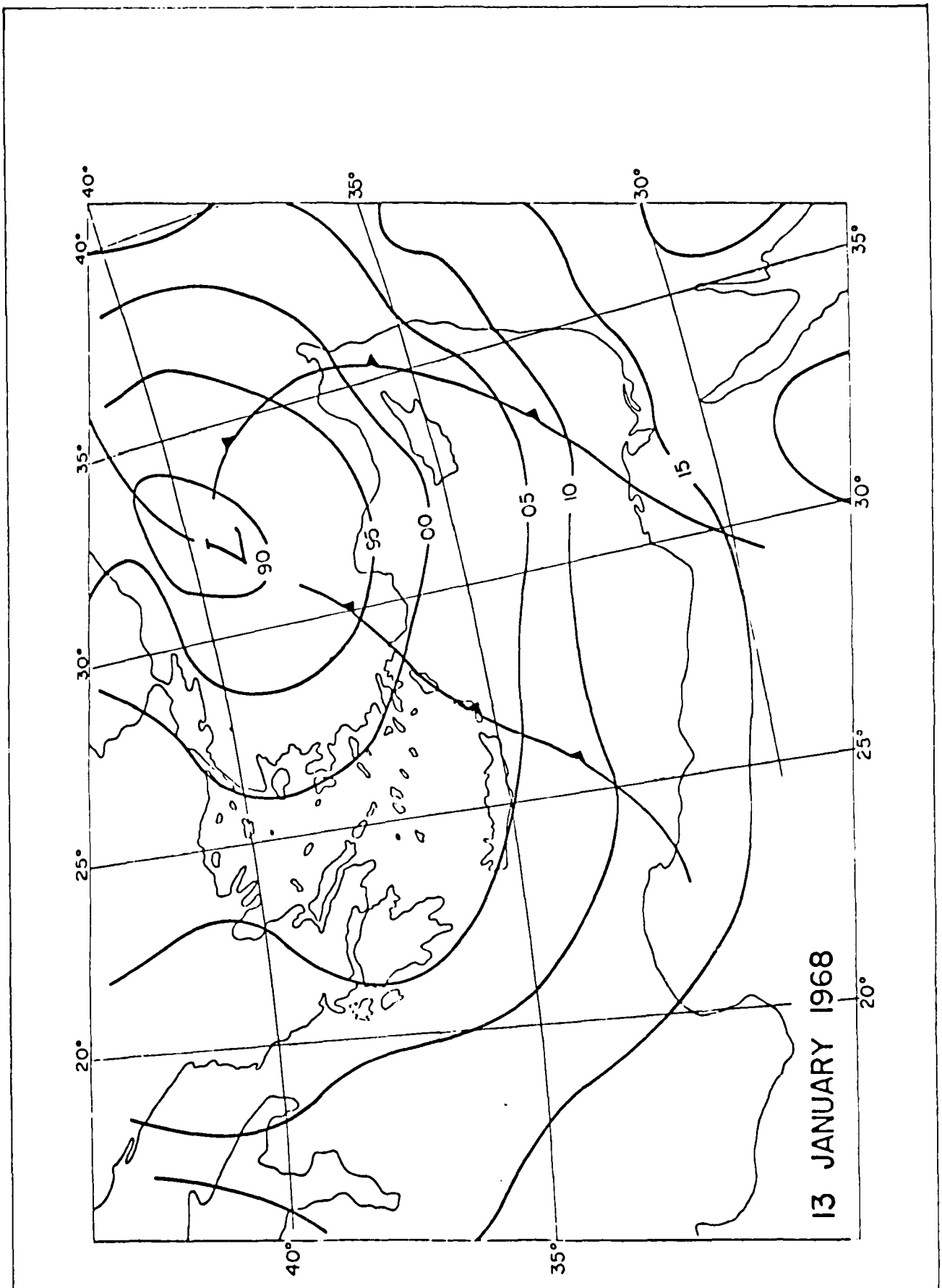

Figure 9 - Weather chart of the storm on January 13, 1968 - the largest storm in the 1958 - 1986 period

END

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