TIDAL WORK ON MARGUERITE BAY, ANTARCTICA

compiled by

RONNE ANTARCTIC RESEARCH EXPEDITION

under contract with
Geophysics Branch
Physical Sciences Division
(Contract No. N6onr280)

Technical Report No. 7

prepared by

A. A. Thompson, Geophysicist

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no. 7

OFFICE OF NAVAL RESEARCH
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Washington, D. C.

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National Oceanic and Atmospheric Administration

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FOREWORD

Submitted herewith is a report entitled "Tidal Work of Marguerite Bay, Antarctica," compiled by A. A. Thompson, Geophysicist of the Ronne Antarctic Research Expedition under contract with the Geophysics Branch, Physical Sciences Division, Office of Naval Research.

Capt. W. H. Leahy, USN
Assistant Chief for Research

1 November 1948

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PREFACE

This report is the seventh of a series of reports on scientific projects completed by members of the Ronne Antarctic Research Expedition during 1947 and 1948. It contains a preliminary description of tidal work accomplished. Included are the results of processing by the U. S. Coast and Geodetic Survey. The tidal station was located at Stonington Island, Marguerite Bay, Palmer Peninsula, Antarctica, 68° 12'S-67°00'W., on the western coast of a glacier-clad mountainous plateau-peninsula projecting into prevailing westerly winds.

This report was prepared by A. A. Thompson, Geophysicist, in charge of geophysical investigations for the Expedition.

Finn Ronne

Commander Finn Ronne
USNR (Inactive)
Expedition Leader

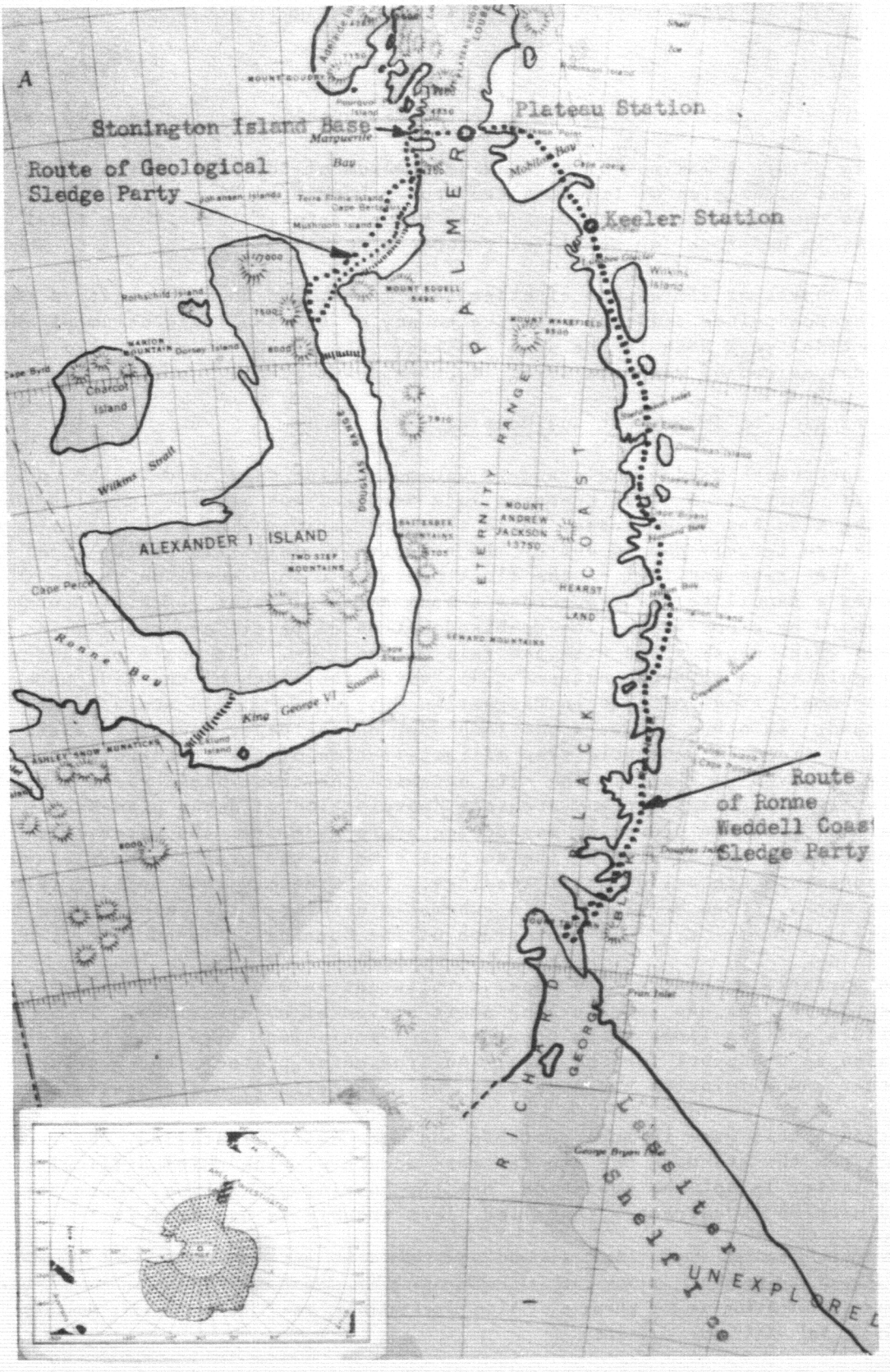

Fig. 1. Map showing locations of Stonington Island Base and Routes of Trail Parties.

TIDAL WORK ON MARGUERITE BAY, ANTARCTICA

I. Purposes.

The tidal studies of the Ronne Anarctic Research Expedition had two essential purposes:

(1) To obtain a maximum of continuous records of the tidal movement for the study and prediction of tides in the area. (See Fig. 2).

(2) To coordinate the resulting datum planes into at least three tidal bench marks in bed rock for sea level reference points.

Depth charts or elevations of other land marks, can be made relative to these reference points and thus relative to any of the sea level datum planes. Any later tidal work done in the area and tied into the bench marks, can be used for comparison of mean sea level or other datum planes.**

II. Description of Instrument and Housing.

The instrument used was a standard automatic tide gage used by the Coast and Geodetic Survey. A float operates in a vertical box or pipe to which the slow moving tide has free access, while the more rapid moving waves resulting from winds are largely damped out by the relatively small size of the inlet to the pipe. The rise and fall of the float operates a worm screw on the gage which moves a pencil to and fro across a wide strip of paper which, in turn, is moved forward by clock work. The combined motion of pencil and paper gives a continuous graph showing the rise and fall of the tide. The scale of the graph can be regulated so that the extreme tides cover the width of the tide paper. Due to the small range of tide in Marguerite Bay, Antarctica, a scale of one to six was used. In other words, a one-inch drop on the paper indicated a six-inch fall in tide. A schematic view of installation of the standard automatic tide gage is given in Fig. 3. The site on which the tidal house rests should be completely stationary for any accurate coordination of datum planes with bench marks. Frequent elevation measurements are made from the water level to a reference point and entered at the correct time on the graph. These elevation measurements are called staff readings. The tide may thus be tied into the bench marks. (See Section V). A schematic drawing of the inseallation actually used is found in Fig. 5. A photograph of the housing is found in Fig. 8.

The portable automatic tide gage, an alternative machine, was designed by the Coast Survey for use in obtaining short series of observations. It is provided with a smaller float which operates in a convenient size iron pipe which serves also as a support for the gage. An iron cover protects the gage from the weather and eliminates the necessity for any specially built shelter.

Although this gage is more portable and more easily installed, the records obtained from the standard one are far more accurate. The chief difficulty with the latter is not the operation, but the housing protection. Once the standard machine is correctly installed, less trouble is had from it.*

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*For more information about tide gages and their operation see "Manual of Tidal Observations" (Coast and Geodetic Survey Special Publication No. 196.)

**For more information on the purpose of tide observations, see "The Scientific Monthly," August, 1932, Vol. XXXV, pp. 162-168.

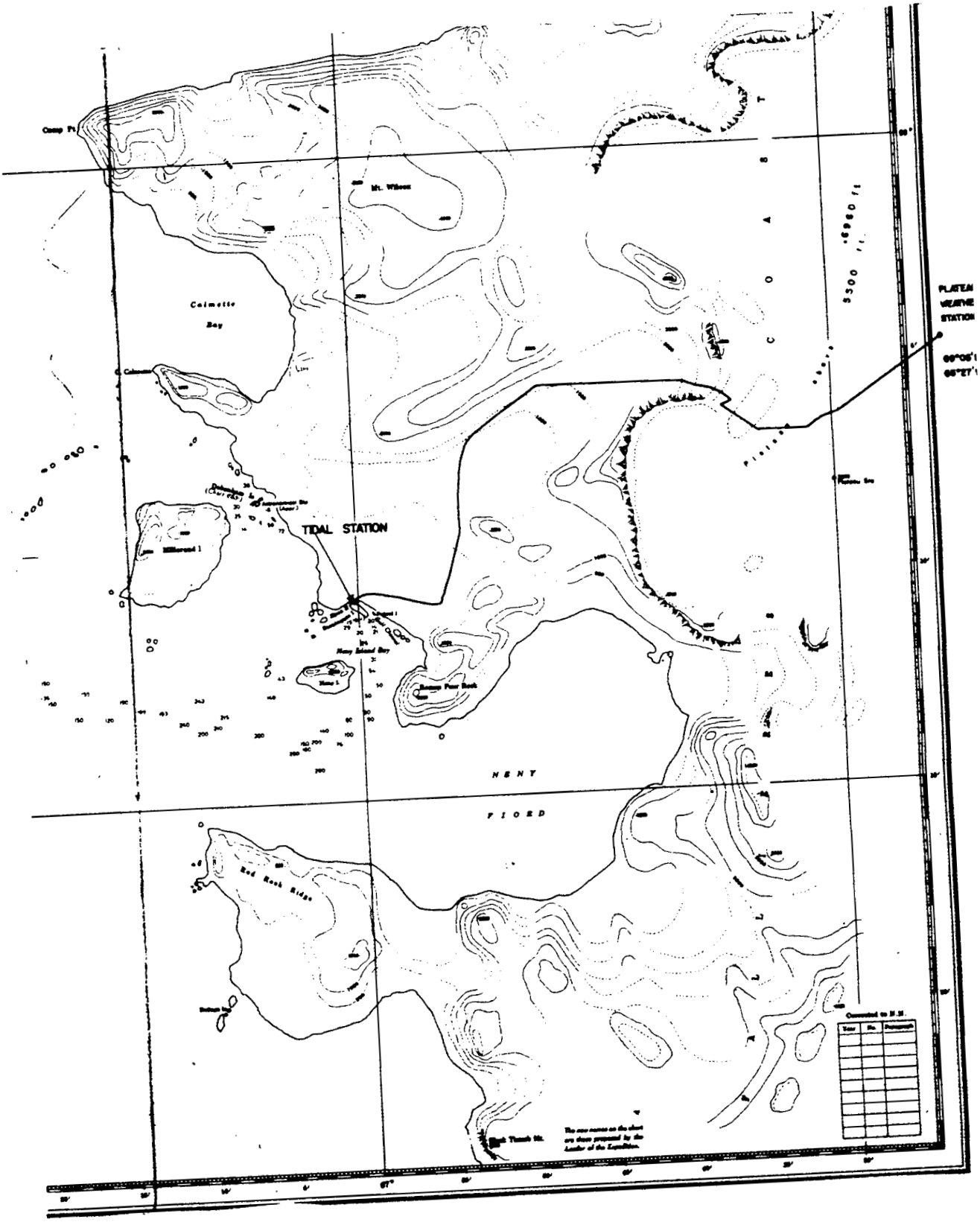


Fig. 2. Map showing location of tidal station.

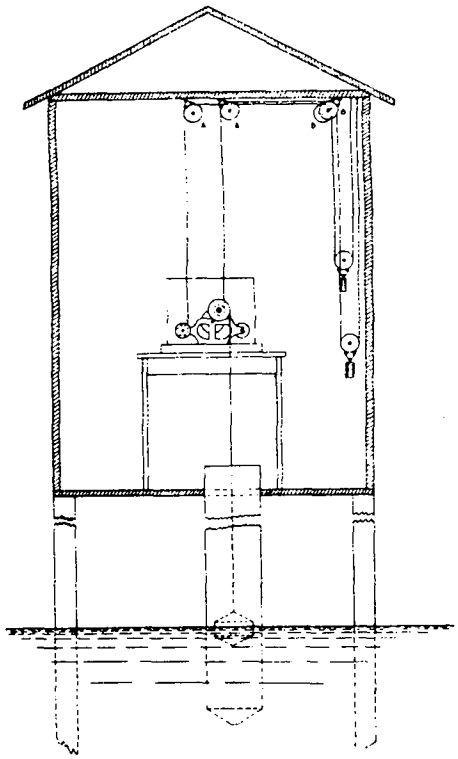


Fig. 3. Schematic view of installation of standard automatic tide gage.

III. Tide Stations in High Latitudes.

In cold climates, kerosene is generally used in float wells to prevent freezing. The column of kerosene should be from two to five feet in height. The amount of kerosene which can be retained in the float well will be limited by the depth of the intake below the lowest tide. When an iron float well is used and the intake is sufficiently low, the kerosene introduced at the time of installation may remain for many years; the loss from evaporation is small. It is not true when gasoline is used. Diesel or other thin types of oil are adequate; however, with extremely cold conditions - 30°F, it tends to thicken and gum up. If electricity is available, a 100 or 50 watt bulb put in to ride up and down just above the float is adequate to keep the float well free of ice. (See Section IV), p. 7.

In conditions found in Marguerite Bay, freezing in the float well is far from the only problem peculiar to high latitudes. During the relatively warm season, the sea ice usually goes out for one to four months a year. During this time, there are frequent tidal waves, produced by ice falls and the turning over of ice bergs which may throw water and ice against any construction that is less than five feet above water height. In the coldest month, the sea ice freezes to a depth up to five feet. Theoretically, therefore, the site for the tide house should be a position five feet above high tide and over water, at least five feet deep at lowest tide. All float well construction near the surface of the sea water should be well protected against moving brash ice and ice bergs. Such ice, when packed because of storm, has tremendous destructive abilities. Man-made protection seemed inadequate. (See Section IV). It is difficult to visualize any adequate wharf or dock construction in Antarctica, as used for the tide station sites in more temperate climates. The site on which the tide house rests should be completely stationary. Thus, installation of the gage on sea ice or on a moving glacier, would make any coordination of datum planes to a marker on rock difficult. Actually installation on any kind of ice is apt to be risky. (See Section IV), p. 8.

The U. S. Antarctic expedition of 1938 - 1939 and the British of the Falkland Island Dependency Survey of 1948 both put tide gages on sea ice. A small pipe below the gage containing oil or kerosene bypassed a wire leading to a stationary weight on the bottom. Since the gage rose and fell with the sea ice, a continuous record of tidal movement could be gotten. Several objections to this method follow. First, it is almost impossible to tie in datum planes to bench marks with any accuracy. Second, in areas near shore, shelf ice, glacier, or a grounded ice berg, the sea ice does not exactly follow the tide. Third, there is always some lateral motion in the sea ice that introduces errors in

the readings. Fourth, the tidal investigations are limited to the colder months, for as the sun heats the gage and the ice softens, the gage will melt deeper and deeper in the ice. As stated previously, however, definite results have been obtained by the above method.

IV. Construction and Operation of Tidal Station.

The exact conditions as specified in the previous section could not be found within a reasonable distance from the Main Base. Compromises, therefore, had to be made. Although bed rock would have made the most ideal site, no such rock could be either found high enough over deep enough water or shaped to give any adequate means of protection against wave and ice action.

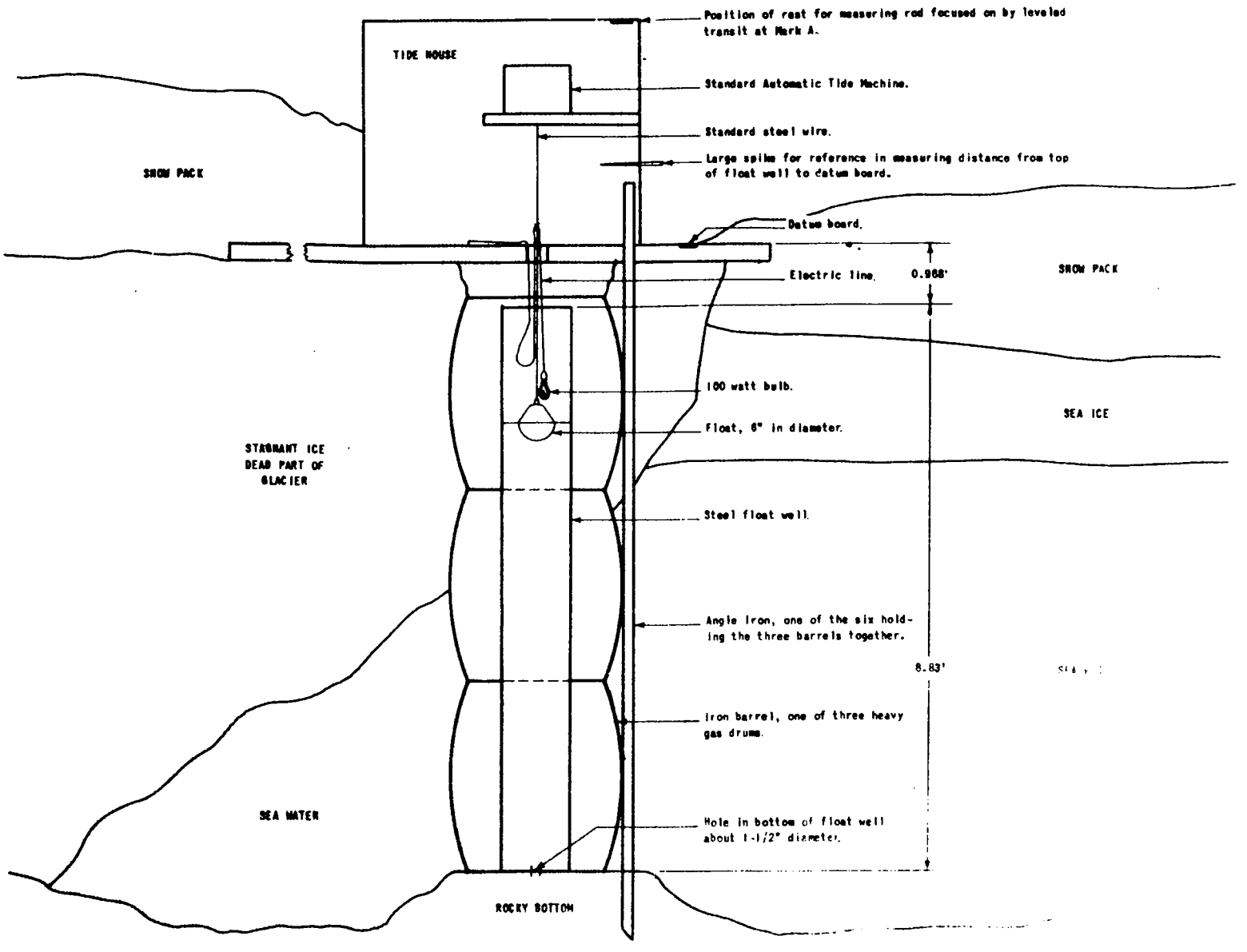
Thus, in April, 1947, when the bay ice was out, a tidal house was erected on stagnant ice where an ice toe met the deep part of a glacier. (See Figs. 4 - 5).

Fig. 4. Aerial View of Tidal Station.

Although the station was placed over water too shallow to meet the above requirements, the remaining conditions were satisfied. A niche was dug in the stagnant ice large enough for the one-foot diameter light steel float well to fit in about three feet back from where the ice fell off into the sea. (See Fig. 6). The niche was cut in on the sea side with ice axes.

This cliff sloped from the top to the rocky bottom as shown in Fig. 5. When the cut was large enough, a small can, holding flaming gasoline was lowered by wire to melt the ice to enlarge the niche from the bottom up. Consequently, more room was made to chip deeper into the stagnant ice cliff, and the burning process could again be applied. When the cut was adequate, the pipe was put in. Around the float well, fitted down to the rocky bottom, were two by six boards. The heavy board foundation for the tide house was laid over the niche on the stagnant ice cliff. Grooves in the ice for the foundation boards were cut for security and levelness. This foundation was made well over twice too long so that snow and ice could be piled on the section farthest from the cliff where the house would not extend. Part of the foundation can be seen in Fig. 7. At the time of the photo, the float well was removed. Short pieces of angle iron were driven in the ice around the foundation boards for more security. Three heavy iron gasoline drums were bolted together with six heavy angle irons; this protective device was placed partly in the niche in front of the float well. The barrels were filled with rocks. The top of the barrels was cabled to "dead men" in the stagnant ice. Dead men are short stout boards frozen about a foot down into the ice and snow. They are almost impossible to dislodge if the pressure is applied roughly parallel to the terrain and perpendicular to the board.

The tidal house was then nailed down to the foundation. The house consisted of a strongly built wooden hut; a five-foot cube. It contained one window


Position of rest for measuring rod focused on by leveled transit at Mark A.
TIDE HOUSE
Standard Automatic Tide Machine.
Standard steel wire.
Large spike for reference in measuring distance from top of float well to datum board.
SNOW PACK
Datum board.
Electric line.
0.968'
SNOW PACK
100 watt bulb.
SEA ICE
Float, 6" in diameter.
STAGNANT ICE
DEAD PART OF
GLACIER
Steel float well.
Angle iron, one of the six holding the three barrels together.
8.83'
Iron barrel, one of three heavy gas drums.
SEA WATER
Hole in bottom of float well about 1-1/2" diameter.
ROCKY BOTTOM

and was covered with tar paper and canvas. Cables stretching over the house were fastened to dead men with a turn buckle. (See Fig. 8). The tide machine was then installed.* Kerosene was put in the float well. The apparatus worked smoothly for several weeks.

During the first major storm, which drove large amounts of ice back and forth against the glacier, the heavy cables were snapped, the float well and boards were severed and swept away with the barrels. Thus, three more barrels were put together in the same way, the niche dug larger, and the barrels put in farther back in the stagnant ice. Unfortunately, they rested on an elevated portion of the bottom, further reducing the water depth which already was too shallow to work in. The float well fitted inside the barrels this time, which were secured at the top with cables to dead men. The angle irons, projecting below the barrels, anchored the construction to the rocky bottom. Sea water washing in the niche quickly encased the barrels completely in ice, except at the bottom. (See Fig. 5). No more trouble resulted from storms.

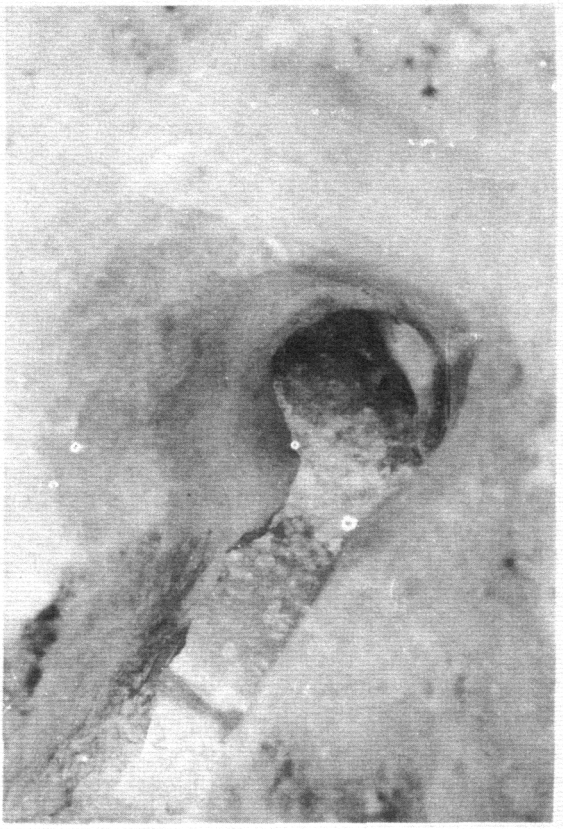


Fig. 6. View in niche in stagnant ice opening out to bay ice.

Fig. 7. Section of tidal house foundation placed over niche in stagnant ice.

When the lower low water was extreme, the kerosene escaped from the hole in the bottom of the float well; therefore, as autumn came on, continued trouble with freezing made it more and more difficult to keep the float well free. Finally, a hundred-watt bulb was arranged to move up and down next to the float. (See Fig. 5). The heat from this bulb proved adequate to keep the float-well clear of ice throughout the winter. Fifteen hours of electricity a day, proved sufficient to prevent freezing when the temperature hovered at -30° F. This may seem somewhat unusual. Evidently, it is a fact, that if ice is prevented from forming at the top, it will not form below this point. Snow drift and ice insulation probably helped to concentrate this small bit of heat. Some trouble resulted from short circuits near the float, and parts of the wiring

*For detailed information about installation, see "Manual of Tide Observations," U. S. Coast and Geodetic Survey, Special Publication, No. 196.

had to be replaced several times. This trouble was almost entirely reduced by freely using rubber tape in the vicinity of the socket.

In the relatively warm months of January and February, the strong sun had a strong heating effect on the dark boards of the foundation and house. Since the heavy blanket of snow around the house was then almost gone, the foundation had a decided melting effect on the ice in the immediate vicinity. Since any drop in elevation of the house would show on the records, care was taken to keep snow piled up fairly high around the house. This required a decided amount of shoveling. Transit measurements showed a 1.4 inch drop in elevation; however, this drop was accounted for.

It may be of interest to note that, throughout the year, when the sea ice was solidly frozen (over three feet) to well beyond the limit of vision from a plane at 6,000 ft., wave action from storms was very easily picked up by the tide gage. Wave action on the records was much stronger during the winter months than during the summer months. This follows logically from the almost complete lack of storms during the summer months. Tidal waves from ice falls and overturning ice bergs were frequently apparent.

When the expedition left Marguerite Bay, the sea ice had not yet gone out. Thus, the danger of a critical part of the glacier falling off was largely eliminated. On our departure the British Expedition at Base E of the Falkland Island Dependency took over the tidal station. They should be in a better position to discuss any possible difficulties incurred when the sea ice went out.

Fig. 8. Tidal house looking Southeast towards bay ice from glacier.
Part of frozen-in ship at left below Nemisis Mountain.

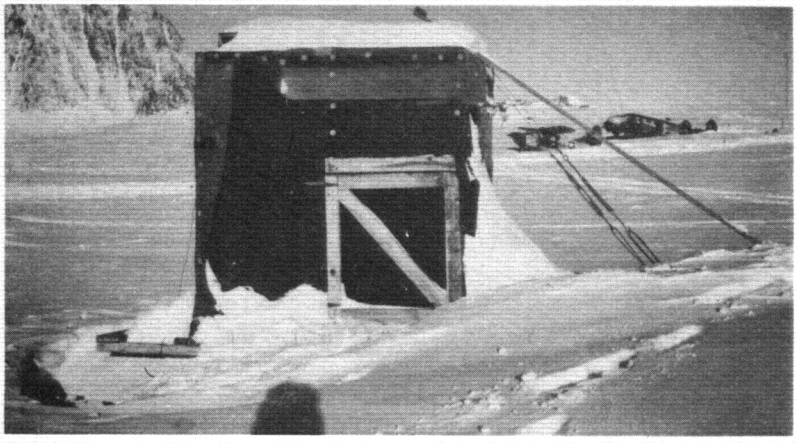


Fig. 9. Tidal house looking South Southeast, Planes on Stonington Island to right and bay ice to left.

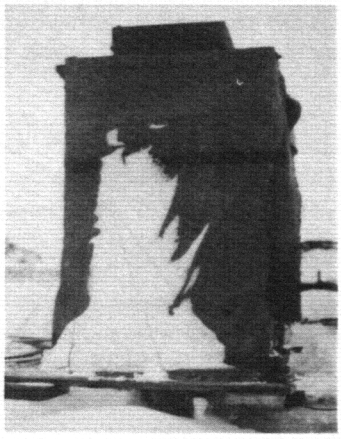


Fig. 10. Tidal house looking West from snow on bay ice. Part of main base in background to the left.

V. Tying in of Datum Planes to Bench Marks on Bed Rock.

Throughout most of the year, sea ice made staff readings impossible. There were instances in nearly every month, however, when an extreme tide caused the float to rest on the bottom of the float well. By measuring very carefully the vertical distance from the bottom of the float well to the datum board accurate staff readings could be made. The datum board is the position from which all staff readings were measured. To tie the tide into markers in bed rock, there remained only to measure the elevation of such markers relative to the datum board. A transit with stadia rod was the instrument used. Whenever possible, a leveled transit reading was taken to obtain more accuracy. See Elevation Sheet, p. 13.

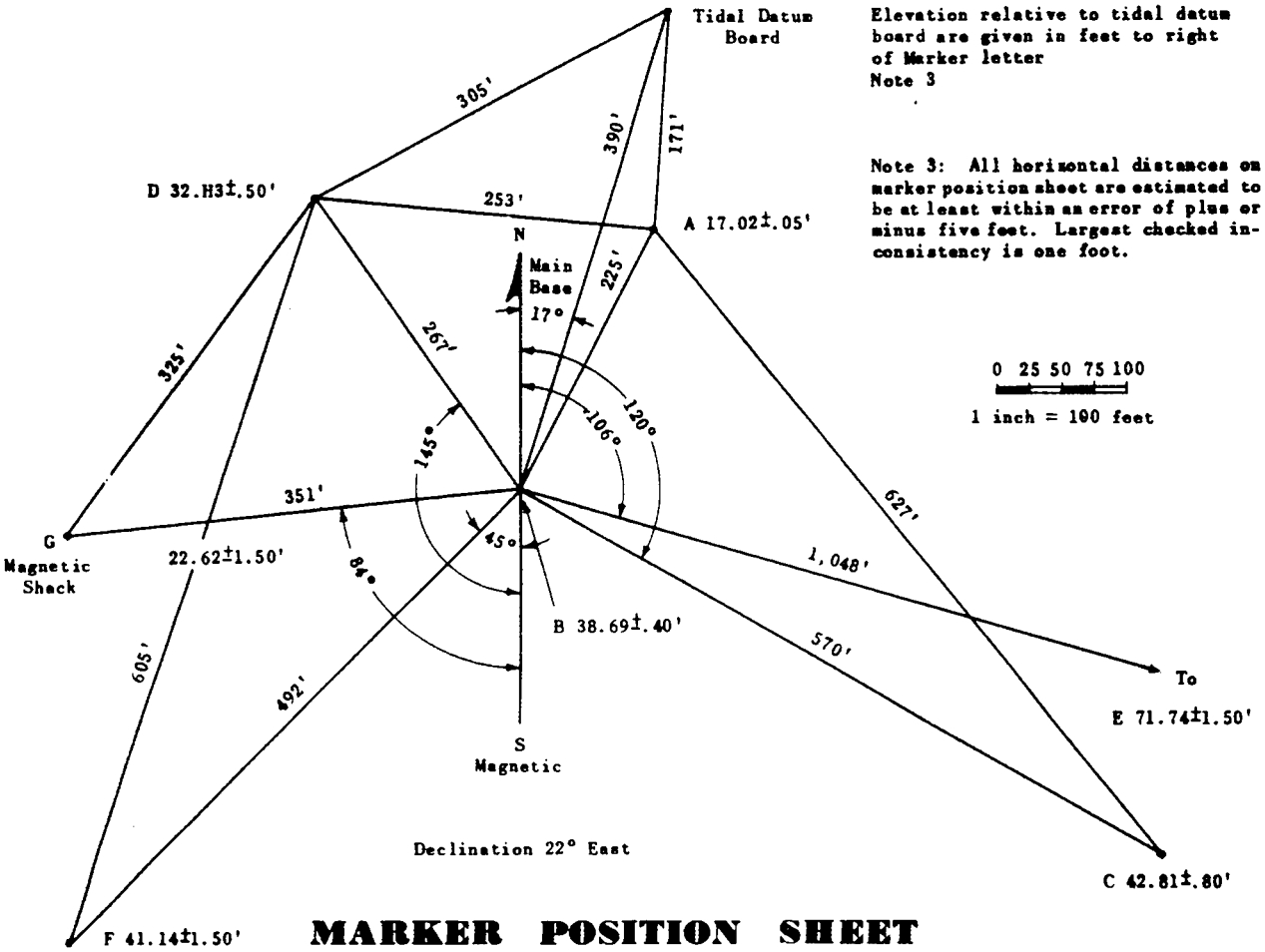
VI. Description of Bench Marks and Other Important Positions.

All following positions are indicated relative to each other and Main Base on the Marker Position Sheet. Calculated elevations and averages of the following are found on the Elevation Sheet. All letter bench mark and letter position elevations on the Elevation Sheet are relative to Tidal Datum Board at an arbitrary zero elevation. (See Fig. 11).

A-- is marked by the standard Coast and Geodetic Survey brass marker cemented into an outcrop of Granite Rock on the western side of the outhouse.

B-- is marked by the standard Coast and Geodetic Survey brass marker cemented into a high granite outcrop where the American Meteorological equipment stood.

C-- is marked by a heavy round metal can standing about three feet high. It is located on the rocky hill about half way between the British and American camps. It is a British marker. A small marker flag protruded from the can.



MARKER POSITION SHEET

ELEVATIONS OF TIDAL BENCH MARKS ABOVE MEAN SEA LEVEL*	
MARK	ELEVATION ABOVE MEAN SEA LEVEL
A	24.22'
B	45.89'
C	50.01'
D	39.63'
E	78.94'
F	48.34'
G	29.82'

*Description of marks on pp. 9 and 11.

D-- is marked by the Standard Coast and Geodetic Survey brass marker cemented into the highest granite outcrop of the immediate area northeast of the Blubber Shack.

E-- is a granite outcrop marked by a strong metal rod sticking out about three feet above the highest granite outcrop on Stonington Island. It is also the highest point on the island and is east of the British base. There is a small eye at the top of the rod.

F-- is marked by a standard Land Office brass marker cemented in a high granite outcrop southwest of Main Base. A few inches away was erected a high and sturdy flag pole. Both the marker and flag pole were installed by the U. S. Antarctic Expedition of 1939 and 1940 and the marker was used as their reference mark.

G-- represents the position where magnetic dip circle stood inside the magnetic shack. The latter was built for magnetic readings and was built on a snow drift ice slab. The magnetic results taken throughout the year including the calculated parameters describing the magnetic field at this point may be obtained from the magnetic report of the expedition.

TIDE PIPE - consists of a float well inside three iron barrels bolted together with strong heavy angle irons which extend about one foot below the barrels into the rocky bottom. The barrels are frozen into the dead part of a glacier and cabled at the top to dead men frozen in the glacier. (See Fig. 5).

TOP OF TIDE PIPE TO DATUM BOARD - Measured carefully at different times in year to check on any possible change in elevation of datum board, and thus tide house, with tide pipe, and thus the rocky bottom. Only change was measured in February of 1.4 inches due probably to melting down of house in ice during relatively hot and sunny month. (See Fig. 5).

TOP OF PIPE TO MARK A - is the sum of the elevation of the datum board above top of tide pipe and the elevation of Mark A above datum board. This measurement should not change due change in elevation of tide house due melting.

NOTES

1. Lack of agreement in February 16 leveled transit measured elevation of Mark A, to agree within the estimated error, relative to former leveled transit measured elevations of Mark A, is due most probably to the drop in elevation of datum board due melting. The decreased vertical distance between the top of tide pipe and datum board balances this lack of agreement within the estimated error.

2. Errors are crudely estimated from personal error in reading stadia rod and other smaller personal errors involved. There has been an attempt to make estimates large to get maximum possible error.

3. Indicated elevations are carried out beyond the error since, being roughly estimated, such errors are listed in most cases above the probable error. The weighted average should reduce chance errors even more.

4. All horizontal distances on marker position sheet are estimated to be at least within an error of ± 5 feet. Largest checked inconsistency is one foot.

5. Letter over elevation on Elevation Sheet denotes from which mark transit rested for elevation measurements.

6. All elevations on Elevation Sheet are gotten with transit and stadia rod unless otherwise specified.

1947 - 1948 ELEVATION SHEET--Note 5

Mark	(1) Beginning of Dec.	(2) Middle of Dec.	(3) Middle of Dec.	(4) End of Dec.	(5) Beginning of Jan.	(6) Jan. 24	(7) Feb. 16	Note 2 Weighted Average	How Weighted Average was Made
A	Note 6 A 17.10' ± 0.3	D 18.50' ± 1.0	leveled transit 17.00' ± .05	B 17.34' ± 0.8	leveled transit 17.03' ± 0.05	leveled transit 17.02' ± 0.05	leveled transit 17.13' ± .05	17.02' ± 0.05	(3),(5),(6)
B	A 39.18' ± 0.8	D 38.65' ± 1.0		B 38.48' ± 0.4				38.69' ± .40	(1),(2),(4), (4)
C	A 42.84' ± 1.0			B 42.77' ± 0.8				42.81' ± 0.8	(1),(4)
D	A 31.96' ± 1.0	D 32.61' ± 0.5		B 32.54' ± 1.0				32.43' ± 0.5	(1),(2),(2), (4)
E	A 72.11' ± 1.50			B 71.37' ± 1.5				71.74' ± 1.5	(1),(4)
F		D 40.95' ± 1.5		B 41.32' ± 1.5				41.14' ± 1.5	(2),(4)
G		D 22.07' ± 1.5		B 23.16' ± 1.5				22.62' ± 1.5	(2),(4)
Tide Pipe	with weighted string 106.5" ± 1.0	with weighted wire 105.75" ± 0.4					with weighted wire 106.00" ± 0.4	8.83' ± 0.03 or 106.00" ± 0.4	(1),(2),(2), (7),(7)
Top of Tide Pipe to Datum Board	eye level and tape 8" ± 4	eye level and tape 9" ± 4	nail, level, and tape 10.88" ± 0.50	nail, level, and tape 10.75" ± 0.50	nail, level, and tape 11.13" ± 0.50	nail, level, and tape 11.50" ± 0.50	nail, level, and tape 10.30" ± 0.50	0.968' ± .04 or 11.06" ± 0.50	(3),(4),(5), (6)
Top of Pipe to Mark A			17.91' ± .09		17.96' ± .09	17.98' ± 0.09	17.99' ± 0.09	17.96' ± 0.09	(3),(5),(6), (7)

VII. Results of Processing by U. S. Coast and Geodetic Survey.*

1. Monthly means and extremes for the 8-month period, June 1947-January 1948, inclusive.

2. Descriptions and elevations of tidal bench marks above mean sea level.

3. Recapitulation of results of harmonic analysis.

4. Hourly heights and times and heights of high and low waters for the period April 15, 1947 to February 18, 1948.

The height datum for the monthly means and extremes is the zero of the tide staff which was 24 feet below the "Tidal Datum Board" or 41.02 feet below Bench Mark A. These means and extremes can be referred to mean sea level by subtracting 16.80 feet, the staff reading corresponding to mean sea level.

The datum for the hourly heights and the high and low water heights was arbitrarily taken as 10 feet higher than the staff zero in order to avoid unnecessarily large numbers in the computations. Hourly and high and low water heights are therefore referred to a datum 14 feet below the "Tidal Datum Board" or 31.02 feet below Bench Mark A and can be referred to mean sea level by subtracting 6.80 feet.

Elevations of bench marks are referred to mean sea level as determined from 8 calendar months of record, June 1947 to January 1948, inclusive. A table is included showing the relation between the other tidal planes and mean sea level.

The harmonic constants and other data computed as shown in the recapitulation are based on a harmonic analysis of a 250-day series of hourly heights covering the period 1 June 1947 to 5 February 1948. These constants provide the necessary data for making daily predictions.

To a greater degree than usually experienced in most localities the tide at Marguerite Bay shows the influence of forces of solar origin. Instead of showing the customary progression in time from day to day, both high and low waters tend to occur at about the same time each day, high waters averaging about 10:00 O'clock and low waters about 4:00 O'clock, both morning and afternoon (60th Meridian Time). This condition would be expected from the fact that the principal solar semidiurnal constituent (S_2) is larger than the principal lunar semidiurnal constituent (M_2). The latter, however, is sufficiently large to cause times of individual tides to deviate considerably from the average time of occurrence, just as with the more common type of tide the solar effects introduce appreciable inequalities in the individual lunitidal intervals.**

The principal diurnal constituents (K_1 and O_1) are seen to be considerably larger than the principal semidiurnal constituents (M_2 and S_2), a condition tending to produce diurnal tides or semidiurnal tides with large inequalities. The high and low water tabulations show the tide to have been semidiurnal throughout the months from September through November and alternately diurnal and semidiurnal during the months from June through August and from December through February. This variation is the result of the solar declinational forces which reach a minimum at the times of the equinoxes and a maximum at the times of the solstices.

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*Tide and Current Glossary, Coast and Geodetic Survey, Special Publication No 228, United States Government Printing Office, 1941.

**Manual of Harmonic Analysis and Prediction of Tides, Coast and Geodetic Survey, Special Publication No. 98.

Form 470
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Ed. June 1931

TIDES: MONTHLY MEANS AND EXTREMES

Station: Marguerite Bay, Palmer Peninsula, Antarctica

Observations begin April 18, 1947 *Observations end* February 18, 1948

Datum is Zero of staff *which is* 41.92 *ft. below B. M. A* or 24.00 *ft. below Tidal Datum Box*

Months	A Mean Sea Level 1947 Feet	A Mean Sea Level 1948 Feet		Mean Higher High Water 1947 Feet	Mean Higher High Water 1948 Feet		Mean Lower Low Water 1947 Feet	Mean Lower Low Water 1948 Feet	
Jan.		16.72			18.63			14.89	
Feb.									
Mar.									
Apr.									
May									
June	16.86			18.88			14.79		
July	16.84			18.66			14.98		
Aug.	16.76			18.82			15.11		
Sept.	16.85			18.68			15.20		
Oct.	16.83			18.53			14.99		
Nov.	16.88			18.61			14.85		
Dec.	16.77			18.62			14.70		
Sum.		16.80							
Mean									

REMARKS: Means refer to zero of staff and can be referred to mean sea level by subtracting 16.80 feet, which is the staff reading corresponding to mean sea level as determined from 8 months of record, June 1947 - January 1948.

Time Meridian 60° West

Months	B Diurnal Range (Ft) 1947 Feet	B Diurnal Range (Ft) 1948 Feet	Mean Time of High Water 1947 (A.M.) Hours	Mean Time of High Water 1948 (A.M.) Hours	Mean Time of High Water 1947 (P.M.) Hours	Mean Time of High Water 1948 (P.M.) Hours	Mean Time of Low Water 1947 (A.M.) Hours	Mean Time of Low Water 1948 (A.M.) Hours	Mean Time of Low Water 1947 (P.M.) Hours	Mean Time of Low Water 1948 (P.M.) Hours
Jan.		8.74		9.50		11.72		5.30		3.49
Feb.										
Mar.										
Apr.										
May										
June	8.48		11.31		7.04		3.06		4.68	
July	8.88		11.61		8.97		3.21		6.01	
Aug.	8.81		11.24		10.49		3.34		5.77	
Sept.	8.63		10.87		10.28		3.29		5.05	
Oct.	8.54		9.06		10.89		3.15		4.24	
Nov.	8.76		7.75		11.37		3.24		3.55	
Dec.	8.82		8.50		11.85		3.72		2.91	
Sum.										
Mean										

REMARKS:

Note.—The following headings are to be written in lines "A" and "B" on successive forms, and in the order here given. Corrected RWL, Corrected LWL, Mean RW, Mean LW, Mean Tide Level, Mean Sea Level, Mean Range, Corrected Mean Range, Mean DHQ, Mean DLQ, Corrected DHQ, Corrected DLQ. For heavy DHQ, DLQ, survey Mean HRW—Mean HW and Mean LW—Mean LLW, respectively. For a survey of 4 years or less, put two headings in line "A", and two in line "B". For a series longer than 4 years, put only one heading in line "A", and one in line "B". Write the year, and the word "Sum" or "Mean" at the head of each column. Give heights in feet and hundredths, and times in feet and hundredths.

Form 470
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
Ed. June 1931

TIDES: MONTHLY MEANS AND EXTREMES

Station: Marguerite Bay, Palmer Peninsula, Antarctica

Observations begin *Observations end*

Datum is *which is* ? *ft. below B. M.*

HIGHEST TIDE OBSERVED

Months	1947 Date	1947 Feet	1948 Date	1948 Feet	Date	Feet	Date	Feet	Date	Feet
Jan.			26	19.9						
Feb.										
Mar.										
Apr.										
May										
June	19	20.0								
July	18	20.0								
Aug.	14,26	19.7								
Sept.	22	19.8								
Oct.	6,7,20	19.5								
Nov.	5	20.0								
Dec.	2	19.8								
Year										

REMARKS: Heights refer to zero of staff and can be referred to mean sea level by subtracting 16.80 feet which is the staff reading corresponding to mean sea level as determined from 7 months of record, June-1947 - January 1948.

LOWEST TIDE OBSERVED

Months	1947 Date	1947 Feet	1948 Date	1948 Feet	Date	Feet	Date	Feet	Date	Feet
Jan.			1,13,14	14.4						
Feb.										
Mar.										
Apr.										
May										
June	5	13.6								
July	28,29,30	14.4								
Aug.	24	14.3								
Sept.	8,9,10	14.4								
Oct.	5	13.8								
Nov.	3	13.9								
Dec.	14	13.9								
Year										

REMARKS:

Note.—Write the year at the head of each double column. When the extreme height for any month occurs on more than one day, give the different dates, separated by commas. The heights are to be given to feet and tenths.

Form 540
DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
(Revised May 1933)

TIDES: RECAPITULATION OF RESULTS

Station Marguerite Bay, Palmer Peninsula, Antarctica *Lat.* 68° 11'.5

Length of series 270 *days* *Series begin* 1947, June 1. 0^h *Long.* 67° 00'.0 W

HARMONIC CONSTANTS

Component	H Feet	κ °	Component	H Feet	κ °
A			S	0.616	287.3
Z	0.581	240.2	A		
M	0.180	158.6	B		
L			T		
MA			h		
MS	0.989	139.3	p		
MU			q		
NU			n		
2N			MK		
2MS			3MK		
2SM			MN		
2MN			MS		
3M			2MK		
O	0.841	274.7	MF		
OO			Mm		
J	0.891	171.0	Msf		
M			Msm		
2Q			Mk		
Sa			Ssa		
K					

Subject values are in parentheses

Remarks: Analysis by U.S. Coast and Geodetic Survey from records furnished by Andrew A. Thompson, Geographer, on Byrd Antarctic Research Expedition.

RESULTS FROM HARMONIC CONSTANTS

Observed Intervals

	Hours
Mean HWI	
Mean LWI	
Tropic HHWI	
Tropic LHWI	
Tropic HLWI	
Tropic LLWI	
Tropic D.HWI	

Age of Disturbances

	Hours
Phase	15.1
Parallax	13.3
Diurnal	1.5

Ratios and Indications

	Feet
Mean (Mn)	1.94
Spring (Sp)	
Neap (Np)	
Perigean (Pn)	
Apogean (An)	
Great diurnal (Gd)	2.66
Great tropic (Gt)	2.96
Tropic diurnal (3Ft)	
Inequality DHQ	0.72
Inequality DLQ	0.57
Tropic HWQ	
Tropic LWQ	
HTL-MSL	9.04

Sums and Differences

Sp+Mn	
Np+Mn	
Pn+Mn	
An+Mn	
(K1+O1)+M2	2.42
M2-(K1+O1)	1.02

Sequence

*Numerals inserted equals half inserted plus 1.5

Computed by _____ (Date) Verified by _____ (Date)

1 December 1947

I. Transit on marker near outhouse. Mark A
Ht. of instrument = 65.5"
Horizontal scale fixed to magnetic north and south however possible error in compass. Stadia constant = .96' = f + c. All following vertical hts. are measured from mark A to base of rod. f + c correction not included.

1. To marker near meteorological equipment. Mark B
Top cross hair = 2.26
Middle cross hair = 1.14
Bottom cross hair = 0
V scale = 57.4
H scale = +0.7
Direction = 26.7° west of south
Horizontal scale 206° 26' and 26° 26'.
Horizontal distance = 226.37' Vertical Ht. = +21.12'

2. To British marker, flag on can, to east of former marker, on top of hill between their camp and ours. Mark C.
Top = 7.32
Middle = 4.19
Bottom = 1.05
V = 53.9
H = +0.2
Direction = 38.75° East of south, horizontal scale 141° 02' or 321° 02' Horizontal distance = 627.5' - (.2) (6.275) + (.96) = 627.2'
Vertical ht. = (6.275) (53.9-50) - 4.19 + 5.46 = +25.74'

3. To tide House datum board
Top = 2.73
Middle = 1.86
Bottom = 1.00
V = 38.0
H = -1.4
Direction 2.7° E of N
Hor. scale = 3° 17' or 183° 18'
Hor. distance = 171.05'
Vertical ht. = (38-50) (1.725) + 5.46 - 1.86 = -17.10

4. To point on rock near marker near Blubber shack or near Mark D.
Couldn't see mark D from Mark A
Top = 2.52
Middle = 1.26
Bottom = 0
V scale = 53.0
H scale = +0.2
Direction = 87.5° W of N
Hor. scale = 272° 15' or 92° 16'
Hor. distance = 252 - (.2) (2.52) + .96 = 252.46
Vertical distance = (53-50) (2.52) + 5.46 - 1.26 = + 11.76
Point was about 3.1' lower than Mark D and 7.2' roughly south +. Vertical distance of Mark D = + 14.86'

5. To mid point in flagpole
Direction = 39.3 W of S
Hor. scale = 219° 11' or 39° 12'

6. To another British marker on high rock out crop east of British base or Mark E
Top = 10.75
Middle = 5.40
Bottom = 0
V = 55.1
H = + 0.5
Direction = 51.9° E of S
Hor. scale = 128° 14' or 308° 14'
Horizontal Distance = 1,072.6'
Vertical Distance = + 55.01'

From Tide House Datum Board--Calculated Results
Elevations
Mark A = + 17.10'
Mark B = + 39.18'
Mark C = + 42.84'
Mark E = + 72.11'
Mark D = + 31.96'

Ht. from top of tide pipe to tide datum board + 8", 9" measured with hand level and tape measure. Not accurate.

From bottom to top of tide pipe 106.5" measuring with string with wt. 105 3/4" with wire

Middle of December.

II. Transit on mark D or mark on high rock near Blubber shack
Ht. of instrument 68.5" or 5.71' above mark D
Hor. scale fixed so A scale reads 0 when lined in mag. meridian
Stadia constant = .96' which is considered only in hor. distances

1. To Tide Station datum board
Top = 10.07
Middle 8.54
Bottom 7.00
Angle from horizontal. Negative angle means dip.
Inclination -5° 30'
V + 40.3
H - 0.9
Dir. 60.3 W of N
A 239° 57'
B 59° 57'
True Dir. 300° 03'
Hor. distance = 307.0 - (.9) (3.07) + .96 = 305.20'
Ver. distance = -32.61'

2. To Mark B or marker near met. equipment
T 3.67'
M 2.34
B 1.00
Incl. + 0° 34'
V 51.0
H 0.1

Dir. 35° W of S
A 325° 12'
B 145° 12'
T.D. 214° 48'
Hor. Dist. = 267.69'
Ver. Dist. = +6.04

3. To marker A near out house
T 5.55
M 4.26
B 3.00
Incl. - 3° 42'
V 43.5
H - .6
Dir. 86.2 W of N
A 274 09
B 94 09
T.D. 265 51
Hor. dist. 253.44'
Ver. dist. - 17.07'

4. To flag pole marker or Mark F
T 7.05
M 4.03
B 1.00
Incl. + 0° 41'
V 51.1
H + .2
Dir. 19° E of S
A 19° 02'
B 199° 02'
TD 160° 58'
Hor. Dist. 604.75'
Vert. Dist. + 8.34'

5. To Magnetic Shack. Middle and vertical cross hair on instrument position.
T 7.75
M 9.37
B 11.00
Incl. - 0° 18'
V 45
H - .3
Dir. 38.0° East of South
A 38° 07'
B 218° 07'
T.D. 141° 53' T.D. means Two Direction
Hor. Dist. of window 324.98
Vert. Dist. of inst. - 10.54'
Inst. farther away by about 3'
From Tide House datum Board. Calculated Results
Elevations
Mark D + 32.61'
Mark B + 38.65'
Mark A + 18.50'
Mark F + 40.95'
Mag. Shack Inst. + 22.07'
Done near end of Dec. 1947
From top of tide pipe to tide datum board measured very carefully with tape and level with nail

Near end	Far end of Datum board
+ 10 7/8"	+ 10 1/4"
+ 10 6/8"	+ 10"

Done near end of Dec. 1947
Elevations from near end of tide datum board to Mark A
With transit leveled looking at a high rod on top of tide house. Most accurate method so far
Mark A = 17' 11" to near end of board
· Might have forgotten to substract H I which was about 11"

End of December.

III. Transit on Marker B near met. equipment
Ht. of inst. = 66.5" or 5.54'
Hor. scale reads 0 when compass reads 0.
Stadia constant - .96' not used in vertical heights.

1. To Marker A near out house
T 10.25
M 9.13
B 8.00
Inc. -4° 26'
Dir. 27° E of N
A 26° 39'
B 206 39'
V 42.2
H - 0.7
Hor. dist. 224.39'
Ver. dist. -21.14'

2. To tide datum board
T 9.92
M 7.97
B 6.00
Inc. -5° 15'
V 40.8
H -.8
Hor. Dist. 389.82'
Vert. Dist. -38.48'
Dir. 17° E of N
A 16° 49'
B 196° 49'

3. To Marker D near blubber shack
T 6.67
M 5.335
B 4.00
Inc. -1° 19'
Dir. 34.2° W of N
A 325° 18'
B 145° 18'
Hor. Dist. 267.43'
Vert. Dist. -5.94'
V 47.7
H -.2

4. To mag. Shack, middle and vert. crosshair on inst. position.
T 7.25
M 5.55
Inc. -3° 31'
V 43.8
H -.6
Hor. dist. 351.0'
Vert. dist. 23.16
Dir. 84.5° W of S
A 264° 15'
B 84° 15'

5. To Marker F near Flag pole
T 593
M 345
B 100
Inc. + 5'
V 50.1
H + .1
M = 2.70 when Inc. = 0
Hor. dist. 492.47'
Vert. dist. + 2.57' or by level method + 2.84' latter being most accurate
Dir. 45.2° W of S
A 224 48'
B 44 48'

6. To marker C, or British marker with flag.
T 6.70
M 3.85
B 1.00
Inc. 0° 16'
V 50.3
H + .1
Direction 59.5 E of S
A 120° 14'
B 300° 14'

M = 1.25 with inc. = 0°
Hor. dist. 570.39'
Vert. dist. + 3.40' or with level method + 4.29', the later probably more accurate

7. To marker E or British marker with eye.

T 11.50	Dir. 63.6° E of S
M 6.25	A 106° 14'
B 1.00	B 296° 13'

Ins. + 1° 53'
V 53.2
H + .25
Hor. Dist. 1,048.34'
Vert. Dist. + 32.89'
From Tide House datum board. Calculated Results
Elevations
Marker A + 17.34'
Marker B + 38.48'
Marker D + 32.54'
Marker F + 41.32'
Marker C + 42.77'
Marker E + 71.37'

13 January 1948.

Elevation of Mark A above near end of Tide datum board 204 3/8" or 17.03' taken with leveled transit to high rod. Method very accurate.

From top of tide pipe to near end of tide datum board measured very accurate with tape and hand level. + 11 1/8"
∴ Elevation of Mark A from top of tide pipe is measured as + 17' 11 1/2"

24 January 1948.

Elevation of Mark A with level (transit) method HI = 11 1/4"
Or elevation of mark A above near end of tide datum board is 17.02'
From top of tide pipe to near end of datum board + 11.5" ± 0.5"
∴ From top of tide pipe to Mark A Elevation is 215.75"

16 February 1948.

To Mark A from near end of datum board is + 17' 1.5" with leveled transit.
From top of tide pipe to near end of datum board is + 10.3"
From bottom of tide pipe to top is 8' 10" or 106"
∴ From bottom of tide pipe to Mark A is 26' 9.8"

TIDES: HOURLY HEIGHTS

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. APR. 14	d. 15	d. 16	d. 17	d. 18	d. 19	d. 20	Hourly mental Sum
Day of Week								
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	.	.	3.8	8.4	8.2	7.0	7.1	.
1	.	.	8.3	8.0	7.9	6.7	6.8	.
2	.	.	7.8	7.6	7.4	6.4	6.6	.
3	.	.	7.2	7.3	7.1	6.3	6.5	.
4	.	.	6.7	7.0	6.8	6.2	6.5	.
5	.	.	6.4	6.9	6.7	6.3	6.8	.
6	.	.	6.2	6.8	6.6	6.5	7.1	.
7	.	.	6.2	6.8	6.7	6.9	7.4	.
8	.	.	6.3	7.0	6.9	7.2	7.9	.
9	.	.	6.7	7.3	7.0	7.4	8.2	.
10	.	.	6.9	7.5	7.0	7.4	8.2	.
11	.	.	7.0	7.5	6.9	7.4	8.2	.
Noon	.	.	7.0	7.4	6.7	7.2	7.9	.
13	.	7.3	6.9	7.3	6.5	6.9	7.6	.
14	.	7.2	6.8	7.2	6.3	6.6	7.3	.
15	.	7.2	6.7	7.0	6.1	6.4	7.2	.
16	.	7.2	6.7	7.0	6.0	6.5	7.1	.
17	.	7.4	6.8	7.2	6.1	6.7	7.1	.
18	.	7.8	7.2	7.6	6.4	7.0	7.3	.
19	.	8.2	7.7	8.0	6.8	7.2	7.4	.
20	.	8.6	8.0	8.4	7.1	7.4	7.6	.
21	.	8.8	8.3	8.6	7.3	7.6	7.6	.
22	.	9.0	8.5	8.7	7.3	7.6	7.4	.
23	.	9.0	8.6	8.5	7.2	7.5	7.1	.
Sum			173.7	181.0	165.0	166.3	175.8	

Sum for — Divisor — (SHO 672; (SHO 688; (SHO 720; (SHO 744. Mean for month —

Tabulated by S Date 6-16-48 Summed by B Date 6-16-48

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. APR. 21	d. 22	d. 23	d. 24	d. 25	d. 26	d. 27	Hourly mental Sum
Day of Week								
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	6.7	6.4	6.2	.	.	.	.	.
1	6.4	6.0	5.7	.	.	.	.	.
2	6.0	5.6	.	.	.	.	.	.
3	5.8	5.4	.	.	.	.	.	.
4	5.8	5.6	.	.	.	.	.	.
5	6.2	6.0	.	.	.	.	.	.
6	6.7	6.6	.	.	.	.	.	.
7	7.3	7.3	.	.	.	.	.	.
8	7.8	7.9	.	.	.	.	.	.
9	8.2	8.5	.	.	.	.	.	.
10	8.4	8.7	.	.	.	.	.	.
11	8.4	8.7	.	.	.	.	.	.
Noon	8.2	8.6	.	.	.	.	.	.
13	7.9	8.3	.	.	.	.	.	.
14	7.6	8.0	.	.	.	.	.	.
15	7.4	7.9	.	.	.	.	.	.
16	7.4	8.0	.	.	.	.	.	.
17	7.5	8.2	.	.	.	.	.	.
18	7.7	8.4	.	.	.	.	.	.
19	7.8	8.5	.	.	.	.	.	.
20	7.9	8.2	.	.	.	.	.	.
21	7.6	7.8	.	.	.	.	.	.
22	7.2	7.4	.	.	.	.	.	.
23	6.0	6.8	.	.	.	.	.	.
Sum	174.6	178.8						

Sum for — Divisor — (SHO 672; (SHO 688; (SHO 720; (SHO 744. Mean for month —

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. MAY 4	d. 5	d. 6	d. 7	d. 8	d. 9	d. 10	Hourly mental Sum
Day of Week								
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	.	.	5.0	5.5	6.3	6.3	6.7	.
1	.	.	.	5.0	5.5	5.5	5.8	.
2	.	.	.	4.7	4.9	4.8	5.0	.
3	.	.	.	4.6	4.7	4.4	4.5	.
4	.	.	.	4.9	4.8	4.3	4.3	.
5	.	.	.	5.5	5.3	4.7	4.4	.
6	.	.	.	6.2	6.1	5.4	4.9	.
7	.	.	.	7.0	6.8	6.1	5.8	.
8	.	.	.	7.7	7.7	6.9	6.5	.
9	.	.	.	8.2	8.2	7.7	7.2	.
10	.	.	.	8.4	8.5	8.1	7.8	.
11	7.9	.	.	8.5	8.6	8.3	8.1	.
Noon	7.7	7.5	7.6	8.4	8.5	8.2	8.2	.
13	7.5	7.2	7.3	8.2	8.3	8.1	8.1	.
14	7.5	7.1	7.2	8.0	8.0	7.9	7.9	.
15	7.5	7.2	7.2	7.9	7.9	7.6	7.8	.
16	7.5	7.3	7.5	8.1	7.9	7.5	7.8	.
17	7.5	7.4	7.7	8.4	8.2	7.9	8.1	.
18	7.5	7.6	8.1	8.9	8.6	8.4	8.5	.
19	7.4	7.6	8.2	9.1	8.9	8.8	9.0	.
20	7.1	7.3	8.0	9.0	9.0	8.9	9.5	.
21	6.6	6.9	7.6	8.6	8.7	8.8	9.6	.
22	6.2	6.2	6.8	8.0	8.1	8.4	9.2	.
23	5.7	5.6	6.2	7.1	7.2	7.7	8.6	.
Sum				175.59	176.7	170.7	172.3	

Sum for — Divisor — (SHO 672; (SHO 688; (SHO 720; (SHO 744. Mean for month —

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. MAY 11	d. 12	d. 13	d. 14	d. 15	d. 16	d. 17	Hourly mental Sum
Day of Week								
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.9	8.2	8.5	8.3	7.3	6.5	.	.
1	7.1	7.4	7.8	.	6.9	6.2	.	.
2	6.2	6.6	7.0	.	6.4	6.0	.	.
3	5.5	5.9	6.3	.	5.9	5.7	.	.
4	5.1	5.4	5.7	.	5.6	5.6	.	.
5	5.1	5.2	5.4	.	5.4	5.5	.	.
6	5.6	5.4	5.3	.	5.4	5.5	.	.
7	6.2	5.9	5.7	.	5.6	.	.	.
8	7.0	6.7	6.3	.	5.9	.	.	.
9	7.7	7.4	6.9	.	6.4	.	.	.
10	8.3	7.9	7.3	.	6.7	.	.	.
11	8.6	8.2	7.5	.	6.7	.	.	.
Noon	8.7	8.3	7.5	.	6.6	.	.	.
13	8.6	8.1	7.4	.	6.5	.	.	.
14	8.3	8.0	7.3	.	6.4	.	.	.
15	8.2	7.9	7.3	.	6.3	.	.	.
16	8.2	8.0	7.3	.	6.3	.	.	.
17	8.3	8.1	7.5	.	6.4	.	.	.
18	8.6	8.4	7.9	.	6.5	.	.	.
19	8.9	8.7	8.2	7.4	6.8	.	.	.
20	9.2	9.0	8.6	7.5	6.9	.	.	.
21	9.4	9.2	8.8	7.6	6.9	.	.	.
22	9.4	9.2	8.7	7.6	6.8	.	.	.
23	8.9	9.0	8.6	7.5	6.7	.	.	.
Sum	185.0	188.1	174.8		153.3			

Sum for — Divisor — (SHO 672; (SHO 688; (SHO 720; (SHO 744. Mean for month —

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

TIDES: HOURLY HEIGHTS

Form 525
U.S. Navy, 1946
Department of Commerce
U. S. Coast and Geodetic Survey

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	MAY 18	19	20	21	22	23	24	Mean-monthly Sum
Day of Series								
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0		5.2	5.1		5.0			
1		5.1	5.0		5.7			
2		5.2	5.0		4.6			
3		5.2	5.1		4.5			
4		5.6			4.6			
5		6.1			4.9			
6		6.6		5.3	5.4			
7		7.3		5.8	6.1			
8		7.9		6.5	6.8			
9		8.2		7.0	7.6			
10		8.3		7.6	8.1			
11		8.3		7.9	8.3			
Noon		8.2		8.0	8.2			
13		8.1	8.0	8.0	8.2	7.6		
14		7.9	7.9	7.9	8.2	7.7		
15		7.7	7.8	8.0	8.2	8.0		
16		7.5	7.7	8.0	8.4	8.4		
17	6.0	7.4	7.5	8.1	8.6	9.0		
18	6.0	7.3	7.2	8.2	8.7	9.4		
19	5.9	6.9	6.7	8.0	8.7	9.7		
20	5.8	6.4	6.2	7.6	8.1	9.7		
21	5.6	6.1	5.7	6.9	7.5			
22	5.5	5.8		6.3				
23	5.3	5.4		5.4				
Sum		163.7						

Sum for — Divisor = (24) 679; (23) 699; (22) 720; (21) 744 Mean for month =

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

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Form 525
U.S. Navy, 1946
Department of Commerce
U. S. Coast and Geodetic Survey

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W Height datum is which is ft. below B. M.

Month and Day	MAY 25	26	27	28	29	30	31	Mean-monthly Sum
Day of Series								
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0		6.7			6.9	6.6	6.0	
1					6.4	6.4	5.9	
2					5.9	6.1	5.8	
3					5.3	5.7	5.7	
4					4.9	5.5	5.6	
5					4.8	5.5	5.7	
6					4.9	5.6	5.9	
7	4.9				5.2	5.9	6.1	
8	5.5				5.7	6.3	6.4	
9	6.0				6.3	6.6	6.9	
10	6.5				6.8	7.1	7.4	
11	6.6				7.0	7.5	7.6	
Noon	6.5				7.0	7.6	7.6	
13	6.4				6.9	7.5	7.7	
14	6.4				6.6	7.2	7.6	
15	6.5				6.2	6.8	7.4	
16	6.8				5.9	6.5	7.1	
17	7.4		5.7		5.7	6.2	6.9	
18	7.9		5.9		5.7	5.9	6.6	
19	8.5		6.4		5.9	5.8	6.3	
20	8.9		6.7		6.0	5.8	6.0	
21	8.9		7.0		6.2	5.8	6.0	
22	8.5		7.1		6.5	5.8	6.0	
23	7.6		7.1		6.6	6.0	5.9	
Sum					145.3	151.7	156.1	

Sum for — Divisor = (24) 679; (23) 699; (22) 720; (21) 744 Mean for month =

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

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Form 525
U.S. Navy, 1946
Department of Commerce
U. S. Coast and Geodetic Survey

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	JUNE 1	2	3	4	5	6	7	Mean-monthly Sum
Day of Series	1	2	3	4	5	6	7	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	5.9	5.8	5.1	4.3	4.5	4.6	5.3	35.5
1	6.0	5.7	4.9	4.2	3.9	4.1	4.6	33.4
2	6.1	5.7	4.9	4.2	3.6	3.8	4.2	32.5
3	6.2	5.9	5.1	4.3	3.7	3.7	4.1	33.0
4	6.3	6.1	5.5	4.5	4.0	[illegible]	4.1	34.4
5	6.5	6.3	6.0	5.0	4.5	4.4	4.4	37.1
6	6.8	6.6	6.5	5.6	5.1	5.1	5.0	40.7
7	7.2	6.9	6.9	6.2	5.7	5.8	5.8	44.5
8	7.6	7.2	7.2	6.8	6.3	6.5	6.5	48.1
9	8.1	7.5	7.5	7.3	6.8	7.1	7.1	51.4
10	8.3	7.8	7.8	7.6	7.1	7.4	7.5	53.5
11	8.4	7.9	7.9	7.6	7.2	7.5	7.7	54.2
Noon	8.5	7.9	7.7	7.6	7.1	7.4	7.7	53.9
13	8.5	7.8	7.5	7.5	7.0	7.2	7.6	53.1
14	8.5	7.9	7.5	7.5	6.8	7.3	7.4	52.9
15	8.5	7.9	7.5	7.6	6.8	7.2	7.3	52.8
16	8.1	7.8	7.5	7.7	7.0	7.2	7.3	52.6
17	7.8	7.8	7.5	7.9	7.3	7.5	7.6	53.4
18	7.6	7.6	7.4	8.0	7.5	7.7	7.8	53.6
19	7.3	7.3	7.0	8.0	7.5	7.9	8.1	53.1
20	6.8	6.9	6.5	7.5	7.2	7.8	8.1	50.8
21	6.[illegible]	6.3	5.8	6.7	6.7	7.5	7.9	47.1
22	5.9	5.8	5.0	5.9	5.9	6.8	7.3	42.6
23	5.8	5.3	4.6	5.1	5.2	6.1	6.7	38.8
Sum	172.9	165.7	156.8	154.6	144.1	151.5	157.1	1103.0

Sum for — Divisor = (24) 679; (23) 699; (22) 720; (21) 744 Mean for month =

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

Form 525
U.S. Navy, 1946
Department of Commerce
U. S. Coast and Geodetic Survey

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	JUNE 8	9	10	11	12	13	14	Mean-monthly Sum
Day of Series	8	9	10	11	12	13	14	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	5.9	6.2	6.5	6.6	6.7	6.6	6.5	45.0
1	5.1	5.4	5.8	6.1	6.2	6.4	6.4	41.4
2	4.4	4.7	5.1	5.5	5.9	6.0	6.2	37.8
3	4.2	4.3	4.6	4.9	5.4	5.7	6.1	35.1
4	4.1	4.2	4.3	4.5	5.0	5.6	6.1	33.8
5	4.2	4.2	4.3	4.4	4.9	5.5	6.2	33.7
6	4.8	4.6	4.5	4.7	5.1	5.7	6.3	35.7
7	5.5	5.3	4.9	5.1	5.4	5.9	6.5	38.6
8	6.2	5.9	5.6	5.5	5.8	6.3	7.0	42.3
9	6.9	6.5	6.2	6.1	6.3	6.7	7.4	46.1
10	7.3	7.0	6.7	6.6	6.8	7.1	7.6	49.1
11	7.6	7.3	6.9	6.8	7.0	7.1	7.7	50.6
Noon	7.5	7.4	7.0	6.9	7.0	7.1	7.7	50.6
13	7.5	7.3	7.0	6.8	7.0	7.0	7.5	50.1
14	7.4	7.2	6.9	6.7	6.8	6.9	7.3	49.2
15	7.2	7.0	6.8	6.6	6.6	6.7	7.1	48.0
16	7.2	6.9	6.6	6.5	6.6	6.5	6.8	47.1
17	7.4	7.1	6.6	6.6	6.5	6.5	6.8	47.5
18	7.7	7.3	6.9	6.7	6.5	6.6	6.6	48.3
19	8.0	7.5	7.1	6.9	6.6	6.6	6.6	49.3
20	8.1	7.8	7.2	7.0	6.7	6.6	6.5	49.9
21	8.0	7.9	7.4	7.1	6.7	6.5	6.4	50.0
22	7.6	7.6	7.3	7.2	6.8	6.5	6.2	49.2
23	7.0	7.1	7.1	7.0	6.8	6.5	6.2	47.7
Sum	156.7	153.7	149.3	148.8	151.1	148.7	161.7	1076.0

Sum for — Divisor = (24) 679; (23) 699; (22) 720; (21) 744 Mean for month =

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

TIDES: HOURLY HEIGHTS

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Form 525
Ed. May, 1946
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. JUNE 15	d. 16	d. 17	d. 18	d. 19	d. 20	d. 21	Horizontal Sum
Day of Series	15	16	17	18	19	20	21	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	6.1	5.6	5.0	4.5	5.3	5.0	5.5	37.0
1	6.1	5.5	4.9	4.5	5.1	4.7	5.0	35.8
2	6.2	5.6	4.9	4.6	5.1	4.5	4.8	35.7
3	6.1	5.7	5.0	4.8	5.3	4.6	4.7	36.2
4	6.2	5.9	5.2	5.2	5.5	4.9	4.8	37.7
5	6.5	6.2	5.5	5.6	5.9	5.3	5.3	40.3
6	6.7	6.6	5.9	6.2	6.4	5.8	5.9	43.5
7	7.1	7.0	6.3	6.9	7.1	6.3	6.3	47.0
8	7.5	7.5	6.8	7.6	7.7	6.8	6.8	50.7
9	7.8	8.0	7.3	8.4	8.4	7.4	7.3	54.6
10	8.2	8.4	7.8	9.0	9.0	8.0	7.8	58.2
11	8.3	8.4	8.2	9.3	9.4	8.2	8.0	59.8
Noon	8.3	8.4	8.5	9.5	9.6	8.6	8.2	61.1
13	8.1	8.1	8.6	9.7	9.8	8.9	8.5	61.7
14	7.8	8.1	8.5	9.7	9.9	9.2	8.8	62.0
15	7.5	7.7	8.2	9.6	9.9	9.4	9.1	61.4
16	7.1	7.3	7.7	9.3	9.9	9.6	9.4	60.3
17	6.9	6.9	7.4	8.9	9.7	9.7	9.6	59.1
18	6.7	6.6	7.1	8.5	9.2	9.7	9.7	57.5
19	6.4	6.2	6.5	7.9	8.5	9.3	9.6	54.4
20	6.2	5.8	6.0	7.3	7.8	8.7	9.2	51.0
21	6.0	5.5	5.4	6.6	6.9	7.8	8.5	46.7
22	5.9	5.2	5.0	6.0	6.1	6.9	7.4	42.9
23	5.7	5.1	4.8	5.5	5.5	6.1	6.5	39.2
Sum	165.4	161.3	150.5	175.1	183.0	175.4	176.7	1193.4

Sum for — Divisor — (384) 673; (384) 686; (384) 719; (314) 764. Mean for month —

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

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Form 525
Ed. May, 1946
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. JUNE 22	d. 23	d. 24	d. 25	d. 26	d. 27	d. 28	Horizontal Sum
Day of Series	22	23	24	25	26	27	28	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	5.7	5.8	7.1	7.2	6.7	7.4	6.1	46.0
1	5.1	5.2	6.3	6.5	6.2	7.0	6.0	42.3
2	4.7	4.6	5.7	5.8	5.5	6.5	5.8	38.6
3	4.5	4.3	5.4	5.2	5.1	6.0	5.5	36.0
4	4.6	4.3	5.3	5.0	4.9	5.7	5.4	35.2
5	5.0	4.7	5.6	5.0	4.9	5.7	5.5	36.4
6	5.5	5.3	6.1	5.4	5.2	6.0	5.7	39.2
7	6.0	5.8	6.7	6.0	5.7	6.4	6.0	42.6
8	6.4	6.3	7.2	6.6	6.4	6.9	6.3	46.1
9	6.7	6.7	7.7	7.2	7.1	7.4	7.0	49.8
10	7.0	7.0	8.0	7.6	7.6	7.8	7.4	52.4
11	7.1	7.0	8.0	7.6	7.7	8.3	7.8	53.5
Noon	7.1	7.0	8.0	7.6	7.7	8.2	8.0	52.9
13	7.2	6.8	7.4	6.9	7.4	7.7	7.9	51.3
14	7.4	6.8	7.0	6.5	7.0	7.2	7.6	49.5
15	7.7	6.9	6.8	6.1	6.5	6.7	7.0	47.7
16	8.0	7.2	6.8	5.9	6.2	6.2	6.5	46.8
17	8.4	7.8	7.1	6.0	6.0	5.7	6.0	47.0
18	8.8	8.3	7.5	6.3	6.2	5.5	5.5	48.1
19	9.1	8.7	8.0	6.6	6.4	5.5	5.2	49.5
20	9.0	9.0	8.3	6.9	6.8	5.5	5.0	50.5
21	8.5	8.9	8.4	7.1	7.1	5.7	5.1	50.8
22	7.6	8.4	8.2	7.3	7.5	5.8	5.3	50.1
23	6.7	7.8	7.8	7.1	7.6	6.1	5.4	48.5
Sum	163.8	160.6	170.1	155.1	155.3	156.9	149.0	1110.8

Sum for — Divisor — (384) 673; (384) 686; (384) 719; (314) 764. Mean for month —

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

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Form 525
Ed. May, 1946
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. JUNE 29	d. 30	d. JULY 1	d. 2	d. 3	d. 4	d. 5	Horizontal Sum
Day of Series	29	30	31	32	33	34	35	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	5.7	5.2	5.1	5.4	4.8	5.6	5.9	37.7
1	5.8	5.3	5.4	5.4	4.7	5.3	5.4	37.3
2	5.9	5.4	5.6	5.6	4.8	5.1	5.1	37.5
3	5.8	5.5	5.8	5.8	5.1	5.2	5.0	38.2
4	5.8	5.6	6.0	6.2	5.4	5.5	5.3	39.8
5	5.9	5.8	6.4	6.6	5.9	5.9	5.8	42.3
6	6.3	6.1	6.7	7.0	6.5	6.5	6.5	45.6
7	6.5	6.4	7.1	7.4	7.1	7.0	7.2	48.7
8	6.9	6.8	7.6	7.8	7.7	7.5	7.8	52.1
9	7.4	7.3	8.1	8.3	8.2	8.1	8.3	55.7
10	7.9	7.8	8.5	8.5	8.6	8.6	8.6	58.5
11	8.2	8.0	8.7	8.6	8.8	8.8	8.7	59.8
Noon	8.3	8.2	8.7	8.7	9.0	8.8	8.6	60.3
13	8.3	8.2	8.8	8.6	8.9	8.7	8.5	60.0
14	8.0	8.1	8.8	8.6	8.9	8.7	8.4	59.5
15	7.6	8.0	8.7	8.5	9.0	8.6	8.4	58.8
16	7.1	7.6	8.4	8.4	9.0	8.7	8.3	57.5
17	6.5	7.2	8.2	8.2	9.0	8.8	8.5	56.4
18	6.1	6.7	7.8	8.0	8.9	8.9	8.7	55.1
19	5.6	6.2	7.3	7.5	8.6	8.8	8.7	52.7
20	5.3	5.6	6.7	6.9	8.1	8.4	8.4	49.4
21	5.1	5.3	6.0	6.3	7.4	7.9	7.9	45.9
22	5.0	5.1	5.6	5.6	6.7	7.2	7.2	42.4
23	5.0	5.1	5.5	5.1	6.0	6.5	6.5	39.7
Sum	156.0	156.5	172.5	173.0	177.1	179.1	177.7	1190.9

Sum for — Divisor — (384) 673; (384) 686; (384) 719; (314) 764. Mean for month —

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

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Form 525
Ed. May, 1946
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. JULY 6	d. 7	d. 8	d. 9	d. 10	d. 11	d. 12	Horizontal Sum
Day of Series	36	37	38	39	40	41	42	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	5.9	6.1	6.8	6.5	6.8	6.4	6.4	44.9
1	5.3	5.5	6.2	6.0	6.4	6.0	6.2	41.6
2	4.8	5.0	5.6	5.6	6.1	5.7	6.1	38.9
3	4.5	4.7	5.1	5.1	5.6	5.3	6.0	36.3
4	4.6	4.6	4.9	4.8	5.2	5.0	5.8	34.9
5	5.0	4.9	5.0	4.7	5.1	4.8	5.8	35.3
6	5.6	5.4	5.5	5.1	5.4	5.0	6.0	38.0
7	6.1	6.0	6.0	5.6	5.8	5.4	6.3	41.2
8	6.6	6.6	6.5	6.3	6.4	5.8	6.9	45.1
9	7.2	7.2	7.0	6.8	6.9	6.4	7.4	48.9
10	7.8	7.8	7.5	7.2	7.3	6.8	7.9	52.3
11	8.0	8.0	7.8	7.4	7.4	7.0	8.1	53.7
Noon	7.9	7.9	7.8	7.5	7.4	6.9	7.9	53.3
13	7.9	8.0	7.7	7.4	7.2	6.7	7.0	50.5
14	7.9	7.9	7.4	7.1	6.8	6.4	7.0	50.5
15	7.7	7.7	7.2	6.8	6.4	6.1	6.6	48.5
16	7.7	7.6	7.0	6.6	6.3	5.6	6.4	47.2
17	7.8	7.8	7.0	6.7	6.0	5.4	6.1	46.8
18	8.0	8.0	7.1	6.8	6.1	5.4	5.8	47.2
19	8.2	8.3	7.2	7.0	6.1	5.6	5.6	48.0
20	8.1	8.5	7.6	7.2	6.2	5.7	5.7	48.9
21	7.9	8.4	7.6	7.3	6.4	5.9	5.9	49.4
22	7.4	7.9	7.4	7.3	6.5	6.2	5.9	48.6
23	6.7	7.3	7.0	7.2	6.5	6.3	6.0	47.0
Sum	164.6	167.1	161.9	155.9	152.3	141.8	155.3	1098.9

Sum for — Divisor — (384) 673; (384) 686; (384) 719; (314) 764. Mean for month —

Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	JULY 13	14	15	16	17	18	19	Normal Sum
Day of Series	43	44	45	46	47	48	49	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	6.1	5.7	4.9	4.3	4.8	5.0	5.4	36.7
1	6.2	5.8	5.2	4.9	4.8	4.9	5.3	37.1
2	6.2	5.9	5.3	5.0	4.8	5.0	5.2	37.4
3	6.0	5.9	5.4	5.1	5.0	5.0	5.2	37.6
4	6.0	6.0	5.7	5.4	5.2	5.2	5.5	39.0
5	6.2	6.3	6.2	5.7	5.6	5.5	5.6	41.1
6	6.5	6.4	6.7	6.2	6.1	5.9	5.9	43.7
7	6.8	6.9	7.1	6.9	6.8	6.5	6.3	47.3
8	7.4	7.5	7.9	7.5	7.5	7.1	6.9	51.8
9	8.0	7.9	8.6	8.3	8.2	7.7	7.4	56.1
10	8.4	8.3	9.3	8.9	9.0	8.5	8.0	60.4
11	8.5	8.4	9.5	9.3	9.5	9.2	8.4	62.8
Noon	8.5	8.4	9.6	9.5	9.8	9.6	8.7	64.1
13	8.2	8.3	9.5	9.5	9.9	9.8	9.1	64.3
14	7.3	7.7	9.1	9.3	9.8	10.0	9.3	63.0
15	7.2	7.0	8.5	8.9	9.6	10.0	9.4	60.6
16	6.7	6.3	7.8	8.2	9.2	9.9	9.5	54.8
17	6.4	5.9	7.2	7.5	8.6	9.7	9.5	54.8
18	6.1	5.5	6.6	6.9	8.0	9.2	9.3	51.6
19	6.2	5.3	6.0	6.3	7.3	8.5	8.8	48.4
20	5.8	5.0	5.6	5.8	6.7	7.8	8.1	44.8
21	5.7	4.7	5.3	5.3	6.0	7.0	7.4	41.4
22	5.5	4.7	5.0	4.9	5.5	6.3	6.6	38.5
23	5.6	4.7	4.8	4.9	5.2	5.8	6.0	37.0
Sum	162.0	154.5	166.8	165.0	172.9	179.1	176.8	1177.1

Sum for — Divisor = (28d) 672; (29d) 696; (30d) 720; (31d) 744 Mean for month —
Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	JULY 20	21	22	23	24	25	26	Normal Sum
Day of Series	50	51	52	53	54	55	56	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	5.6	6.0	6.5	6.7	6.6	8.0	7.2	46.6
1	5.3	5.6	6.0	6.1	6.1	7.7	6.9	43.7
2	5.3	5.4	5.7	5.7	5.8	7.3	6.5	41.7
3	5.3	5.4	5.6	5.4	5.5	6.9	6.2	40.3
4	5.4	5.6	5.7	5.4	5.5	6.6	6.0	40.2
5	5.7	6.0	6.1	5.7	5.7	6.7	5.9	41.8
6	6.0	6.5	6.6	6.2	6.3	7.1	6.1	44.8
7	6.5	6.9	7.2	6.7	7.0	7.6	6.5	48.4
8	6.8	7.2	7.5	7.3	7.8	8.3	7.1	52.0
9	7.2	7.5	7.8	7.7	8.5	9.0	7.9	55.6
10	7.5	7.6	7.9	8.0	8.7	9.4	8.6	57.7
11	7.7	7.6	7.7	7.8	8.6	9.4	8.9	57.7
Noon	7.8	7.6	7.5	7.4	8.3	9.0	8.8	56.4
13	8.2	7.6	7.3	6.9	7.8	8.5	8.4	54.7
14	8.5	7.7	7.1	6.4	7.3	7.6	7.6	52.2
15	8.7	7.9	7.0	6.1	6.6	6.9	6.6	49.8
16	8.8	8.2	7.1	6.0	6.4	6.2	5.9	48.6
17	9.1	8.6	7.4	6.2	6.4	5.8	5.4	48.9
18	9.3	8.9	7.8	6.6	6.7	5.8	5.2	50.3
19	9.2	9.1	8.2	7.0	7.1	6.0	5.0	51.6
20	8.6	9.0	8.4	7.4	7.6	6.3	5.2	52.5
21	8.0	8.6	8.3	7.6	8.1	6.5	5.4	52.5
22	7.2	7.9	7.9	7.5	8.3	6.8	5.9	51.5
23	6.6	7.1	7.4	7.1	8.4	7.2	6.2	50.0
Sum	174.3	175.5	171.7	160.9	171.1	176.6	159.4	1189.5

Sum for — Divisor = (28d) 672; (29d) 696; (30d) 720; (31d) 744 Mean for month —
Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	JULY 27	28	29	30	31	AUG 1	2	Normal Sum
Day of Series	57	58	59	60	61	62	63	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	6.3	5.6	5.0	4.6	4.4	4.5	5.1	35.5
1	6.3	5.8	5.2	4.8	4.5	4.4	4.9	35.9
2	6.2	5.8	5.2	4.7	4.5	4.4	4.8	35.6
3	5.9	5.6	5.2	4.9	4.6	4.6	4.8	35.6
4	5.8	5.5	5.2	5.0	4.9	4.9	5.0	36.3
5	5.9	5.6	5.4	5.2	5.2	5.3	5.4	38.0
6	6.1	5.9	5.7	5.7	5.7	5.8	5.9	40.8
7	6.5	6.2	6.0	6.1	6.1	6.2	6.4	43.5
8	7.1	6.7	6.6	6.6	6.7	6.8	7.0	47.5
9	7.7	7.4	7.2	7.2	7.2	7.4	7.5	52.6
10	8.3	8.0	7.7	7.8	7.7	7.8	7.8	55.1
11	8.7	8.3	7.9	8.2	7.8	8.1	8.0	57.0
Noon	8.8	8.3	8.0	8.2	7.8	8.1	8.1	57.3
13	8.4	8.3	8.0	8.1	7.9	8.1	8.1	56.9
14	7.7	7.8	7.8	7.9	7.8	8.0	7.9	54.9
15	7.1	7.2	7.3	7.7	7.7	7.9	7.7	52.6
16	6.3	6.6	6.7	7.3	7.4	7.8	7.7	49.8
17	5.6	5.9	6.1	6.8	7.2	7.7	7.8	47.1
18	5.0	5.3	5.6	6.3	6.9	7.7	7.8	44.6
19	4.7	4.8	5.0	5.8	6.5	7.3	7.6	41.7
20	4.7	4.5	4.7	5.4	6.0	6.9	7.2	39.4
21	4.9	4.4	4.5	4.9	5.6	6.5	6.8	37.6
22	5.1	4.6	4.4	4.5	5.1	5.9	6.3	35.9
23	5.4	4.8	4.5	4.4	4.7	5.4	5.8	35.0
Sum	154.5	148.9	144.9	148.1	149.9	157.5	161.4	1065.2

Sum for — Divisor = (28d) 672; (29d) 696; (30d) 720; (31d) 744 Mean for month —
Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	AUG. 3	4	5	6	7	8	9	Normal Sum
Day of Series	64	65	66	67	68	69	70	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	5.3	5.5	6.4	6.5	6.7	6.8	7.0	44.2
1	5.0	5.1	6.0	6.0	6.3	6.5	6.9	41.8
2	4.7	4.8	5.5	5.4	5.9	6.1	6.6	39.0
3	4.6	4.5	5.2	5.1	5.5	5.7	6.3	36.9
4	4.3	4.6	5.1	4.9	5.4	5.5	6.0	36.3
5	5.3	5.0	5.3	5.1	5.5	5.5	6.1	37.8
6	5.8	5.6	5.9	5.5	6.0	5.9	6.3	41.0
7	6.3	6.2	6.3	6.0	6.5	6.4	6.7	44.4
8	6.9	6.9	7.0	6.5	7.1	7.0	7.4	48.8
9	7.4	7.4	7.5	7.0	7.6	7.4	7.8	52.1
10	7.8	7.8	7.8	7.4	7.9	7.8	8.2	54.7
11	8.0	7.9	8.0	7.5	7.9	7.9	8.2	55.4
Noon	7.9	7.9	8.0	7.2	7.6	7.6	8.0	54.0
13	7.7	7.9	7.6	6.9	7.2	7.1	7.4	51.8
14	7.5	7.6	7.2	6.6	6.9	6.7	6.8	49.3
15	7.4	7.5	7.0	6.3	6.5	6.2	6.4	47.3
16	7.3	7.4	6.8	6.1	6.2	5.8	6.0	45.6
17	7.4	7.6	6.9	6.1	6.0	5.7	5.8	45.5
18	7.4	7.8	7.2	6.4	6.2	5.7	5.9	46.6
19	7.5	8.0	7.5	6.7	6.4	6.0	6.1	48.2
20	7.4	8.0	7.6	7.1	6.7	6.4	6.5	49.7
21	7.1	7.9	7.7	7.3	7.0	6.8	6.7	50.5
22	6.6	7.5	7.4	7.2	7.2	7.1	7.2	50.2
23	6.0	7.0	7.1	7.0	7.0	7.1	7.6	48.9
Sum	159.1	163.4	163.8	153.8	159.2	154.7	163.9	1339.9

Sum for — Divisor = (28d) 672; (29d) 696; (30d) 720; (31d) 744 Mean for month —
Tabulated by B Date 6/16/48 Summed by B Date 6/16/48

TIDES: HOURLY HEIGHTS

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	AUG. 10	11	12	13	14	15	16	Mean-monthly Data
Day of Station	71	72	73	74	75	76	77	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.6	6.7	5.3	5.5	5.0	5.2	5.1	40.4
1	7.4	6.7	5.6	5.6	5.0	5.2	5.1	40.6
2	7.3	6.6	5.5	5.5	5.0	5.2	5.0	40.1
3	7.0	6.4	5.6	5.5	5.0	5.2	4.9	39.6
4	6.9	6.3	5.6	5.7	5.1	5.3	5.0	39.9
5	7.0	6.4	5.9	6.0	5.5	5.5	5.1	41.4
6	7.3	6.6	6.4	6.4	6.0	6.0	5.4	44.1
7	7.8	7.2	7.1	7.0	6.6	6.6	5.8	48.1
8	8.5	7.8	7.8	7.8	7.4	7.3	6.4	53.0
9	9.2	8.4	8.6	8.5	8.4	8.1	7.1	58.3
10	9.5	8.8	9.2	9.2	9.1	8.8	7.8	62.4
11	9.4	8.8	9.4	9.5	9.6	9.3	8.4	64.4
Noon	9.2	8.4	9.3	9.4	9.7	9.5	8.7	64.2
13	8.7	7.9	8.8	9.1	9.6	9.6	8.8	62.5
14	8.0	7.0	8.1	8.4	9.2	9.3	8.7	58.7
15	7.2	6.3	7.4	7.7	8.5	8.9	8.6	52.6
16	6.6	5.5	6.7	6.8	7.7	8.3	8.2	49.8
17	6.2	4.9	6.0	6.1	6.9	7.7	7.8	45.6
18	5.9	4.6	5.6	5.5	6.3	7.1	7.3	42.3
19	5.9	4.4	5.3	5.1	5.9	6.5	6.9	40.0
20	5.9	4.5	5.3	4.8	5.5	6.0	6.4	38.4
21	6.1	4.7	5.3	4.8	5.3	5.6	5.9	37.7
22	6.3	4.8	5.4	4.9	5.2	5.3	5.5	37.4
23	6.6	5.2	5.4	4.9	5.1	5.3	5.2	37.7
Sum	177.5	154.9	160.6	159.7	162.6	166.8	159.1	1141.2

Sum for — Divisor—(28d) 672; (29d) 696; (30d) 720; (31d) 744. Mean for month—

Tabulated by B Date 6/27/48 Summed by B Date 6/27/48

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	AUG. 17	18	19	20	21	22	23	Mean-monthly Data
Day of Station	78	79	80	81	82	83	84	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	5.0	5.3	5.6	5.9	6.0	6.9	7.2	41.9
1	4.9	5.2	5.3	5.6	5.7	6.4	6.8	39.9
2	4.8	5.0	5.2	5.3	5.4	6.1	6.4	38.2
3	4.7	5.0	5.2	5.2	5.0	5.9	6.1	37.1
4	4.9	5.0	5.3	5.3	5.1	6.1	6.2	37.9
5	5.1	5.4	5.6	5.7	5.5	6.5	6.3	40.1
6	5.3	5.6	6.0	6.2	6.1	7.0	6.8	43.0
7	5.6	5.8	6.4	6.7	6.7	7.7	7.5	46.4
8	6.1	6.1	6.7	7.1	7.3	8.5	8.4	50.2
9	6.6	6.4	6.8	7.3	7.7	9.0	9.1	52.9
10	7.0	6.6	6.8	7.2	7.7	9.2	9.6	54.1
11	7.4	6.6	6.7	6.9	7.3	8.8	9.6	53.3
Noon	7.7	6.8	6.4	6.4	6.7	8.2	9.2	51.4
13	7.9	6.8	6.2	6.0	5.9	7.3	8.5	48.6
14	8.0	6.9	6.0	5.5	5.4	6.5	7.7	46.0
15	7.9	6.9	6.1	5.3	4.8	5.7	6.9	43.6
16	7.9	7.1	6.2	5.3	4.6	5.1	6.1	42.3
17	7.8	7.3	6.5	5.6	4.7	5.0	5.7	42.6
18	7.6	7.5	6.9	6.1	5.3	5.3	5.7	44.4
19	7.2	7.5	7.3	6.5	6.0	5.7	5.9	46.1
20	6.8	7.3	7.3	6.9	6.6	6.3	6.3	47.5
21	6.4	7.0	7.2	7.1	6.9	7.0	6.7	48.3
22	5.9	6.5	6.8	7.0	7.2	7.3	7.2	47.9
23	5.5	6.0	6.4	6.5	7.2	7.4	7.5	46.5
Sum	154.0	153.6	150.9	148.6	146.8	164.9	173.4	1090.2

Sum for — Divisor—(28d) 672; (29d) 696; (30d) 720; (31d) 744. Mean for month—

Tabulated by B Date 6/27/48 Summed by B Date 6/27/48

13

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	AUG. 24	25	26	27	28	29	30	Mean-monthly Data
Day of Station	85	86	87	88	89	90	91	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.5	6.3	6.8	5.9	5.6	6.0	6.3	44.4
1	7.3	6.2	6.9	6.0	5.8	5.9	6.1	44.2
2	6.9	6.1	6.9	5.9	5.8	5.8	6.0	43.4
3	6.5	5.8	6.7	5.7	5.8	5.8	6.0	42.3
4	6.3	5.9	6.6	5.9	5.8	6.0	6.2	42.7
5	6.3	6.0	6.7	6.0	6.1	6.2	6.4	43.7
6	6.6	6.3	7.0	6.3	6.5	6.6	6.6	45.9
7	7.2	7.0	7.6	6.8	7.1	7.0	7.1	49.8
8	7.9	7.8	8.2	7.4	7.7	7.7	7.8	54.5
9	8.4	8.6	8.8	8.0	8.3	8.3	8.3	58.7
10	8.9	9.2	9.3	8.5	8.8	8.7	8.7	62.1
11	9.0	9.5	9.6	8.8	9.2	8.8	8.8	63.7
Noon	8.6	9.5	9.6	8.7	9.4	8.8	8.7	63.3
13	7.8	8.9	9.1	8.4	9.3	8.6	8.5	60.6
14	6.9	8.1	8.4	8.1	9.0	8.5	8.3	57.3
15	5.9	7.3	7.5	7.5	8.7	8.2	8.1	53.2
16	5.1	6.5	6.7	6.9	8.3	7.9	7.9	49.3
17	4.5	5.9	6.0	6.3	7.9	7.6	7.8	46.0
18	4.3	5.5	5.6	5.8	7.6	7.5	7.8	44.1
19	4.4	5.4	5.2	5.5	7.2	7.4	7.7	42.8
20	4.7	5.5	5.2	5.3	6.8	7.1	7.5	42.1
21	5.2	5.9	5.3	5.4	6.5	6.7	7.2	42.2
22	5.7	6.3	5.5	5.4	6.2	6.5	6.8	42.4
23	6.2	6.6	5.7	5.5	6.1	6.4	6.6	43.1
Sum	158.1	166.1	170.9	160.0	175.5	176.0	177.2	1183.8

Sum for — Divisor—(28d) 672; (29d) 696; (30d) 720; (31d) 744. Mean for month—

Tabulated by B Date 6/27/48 Summed by B Date 6/27/48

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	AUG. 31	SEPT. 1	2	3	4	5	6	Mean-monthly Data
Day of Station	92	93	94	95	96	97	98	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	6.3	6.0	5.9	6.2	6.5	7.2	8.2	46.3
1	6.0	5.7	5.6	5.8	6.2	7.0	7.9	44.2
2	5.9	5.4	5.2	5.3	5.7	6.5	7.5	41.5
3	5.8	5.4	4.9	5.0	5.3	6.2	7.1	39.7
4	6.1	5.5	5.0	5.0	5.3	6.2	7.0	40.1
5	6.3	5.8	5.4	5.4	5.5	6.4	7.1	41.9
6	6.7	6.2	5.7	5.9	6.0	6.9	7.4	44.8
7	7.2	6.7	6.1	6.3	6.5	7.5	7.9	48.2
8	7.7	7.2	6.6	6.8	7.1	8.0	8.5	52.9
9	8.2	7.7	7.0	7.0	7.4	8.4	8.7	54.4
10	8.4	7.6	6.9	6.7	6.8	8.4	8.7	55.0
11	8.5	7.9	7.1	7.0	7.3	8.3	8.4	54.5
Noon	8.4	7.6	6.9	6.7	6.8	7.8	7.6	51.8
13	8.1	7.4	6.4	6.3	6.2	7.1	6.7	48.2
14	7.8	7.1	6.1	5.9	5.8	6.5	6.0	45.2
15	7.6	7.0	5.9	5.7	5.4	6.1	5.3	43.0
16	7.5	6.9	5.9	5.8	5.2	5.8	4.8	41.9
17	7.6	6.9	6.1	6.0	5.4	5.8	4.6	42.4
18	7.7	7.2	6.6	6.3	5.9	6.3	4.8	44.8
19	7.7	7.4	7.0	6.9	6.5	6.9	5.5	47.9
20	7.5	7.3	7.2	7.2	7.0	7.5	6.2	49.9
21	7.3	7.2	7.3	7.5	7.4	8.1	6.8	52.6
22	7.0	6.9	7.0	7.3	7.6	8.3	7.4	52.3
23	6.5	6.4	6.6	7.0	7.5	8.3	7.3	48.6
Sum	173.8	168.6	150.7	151.4	158.9	171.5	167.2	1130.1

Sum for Aug., 1947: 9085.8 Divisor—(28d) 672; (29d) 696; (30d) 720; (31d) 744. Mean for month— 6.74

Tabulated by B Date 6/27/48 Summed by B Date 6/27/48

TIDES: HOURLY HEIGHTS

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Form 502
Ed. May, 1946
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. SEPT. 7	d. 8	d. 9	d. 10	d. 11	d. 12	d. 13	Hori-zontal Sum
Day of Series	99	100	101	102	103	104	105	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.4	7.5	6.5	6.0	5.4	5.0	5.2	43.0
1	7.3	7.5	6.5	6.0	5.4	5.0	5.1	42.8
2	7.0	7.2	6.5	5.9	5.2	4.9	5.0	41.7
3	6.8	7.0	6.3	5.8	5.1	4.7	4.8	40.5
4	6.7	6.9	6.4	5.9	5.2	4.7	4.7	40.5
5	6.9	7.2	6.7	6.2	5.6	4.9	4.9	42.4
6	7.4	7.6	7.1	6.7	6.2	5.4	5.4	45.7
7	8.1	8.2	7.8	7.5	6.8	6.1	6.0	50.5
8	8.8	8.8	8.6	8.3	7.8	6.9	6.7	55.9
9	9.3	9.3	9.3	9.0	8.5	7.7	7.5	60.6
10	9.4	9.5	9.5	9.3	9.0	8.4	8.3	63.4
11	9.2	9.3	9.5	9.3	9.1	8.7	8.6	63.7
Noon	8.6	8.6	9.0	9.0	8.9	8.7	8.8	61.6
13	7.8	7.6	8.0	8.3	8.5	8.4	8.8	57.4
14	6.9	6.7	7.0	7.4	7.7	7.9	8.4	52.0
15	6.0	5.8	6.1	6.4	6.8	7.3	8.1	46.5
16	5.5	5.1	5.2	5.5	5.9	6.5	7.7	41.4
17	5.2	4.6	4.6	4.8	5.2	5.8	7.3	37.5
18	5.3	4.4	4.4	4.5	4.8	5.4	7.0	35.8
19	5.6	4.7	4.5	4.4	4.7	5.2	6.7	35.8
20	6.2	5.2	4.9	4.6	4.6	5.1	6.6	37.2
21	6.9	5.7	5.2	4.8	4.7	5.0	6.6	38.9
22	7.4	6.2	5.6	5.0	4.9	5.2	6.7	41.0
23	7.5	6.5	5.9	5.3	5.0	5.2	6.7	42.1
Sum	173.2	167.1	161.1	155.9	150.9	148.1	161.6	1117.9

Sum for — Divisor = (364) 673; (364) 699; (364) 730; (314) 744 Mean for month =

Tabulated by 3 Date 6/17/48 Summed by 3 Date 6/17/48

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Form 502
Ed. May, 1946
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. SEPT. 14	d. 15	d. 16	d. 17	d. 18	d. 19	d. 20	Hori-zontal Sum
Day of Series	106	107	108	109	110	111	112	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	6.6	6.8	6.5	6.2	6.8	7.0	7.4	47.3
1	6.5	6.4	6.5	6.1	6.5	6.7	7.1	45.8
2	6.5	6.1	6.3	6.0	6.3	6.4	6.7	44.3
3	6.5	5.9	6.2	6.0	6.3	6.2	6.5	43.6
4	6.5	6.0	6.3	6.3	6.4	6.4	6.6	44.5
5	6.6	6.3	6.4	6.7	6.8	6.9	7.0	46.7
6	6.8	6.8	6.6	7.1	7.3	7.4	7.6	49.6
7	7.2	7.3	6.8	7.5	7.8	8.1	8.3	53.0
8	7.7	7.6	6.8	7.7	8.1	8.6	9.0	55.5
9	8.2	7.7	6.7	7.6	8.1	8.7	9.3	56.3
10	8.6	7.6	6.6	7.3	7.7	8.5	9.2	55.5
11	8.8	7.4	6.3	6.9	7.0	7.8	8.7	52.9
Noon	8.7	7.2	6.1	6.3	6.2	6.8	7.8	49.1
13	8.5	6.9	5.8	5.8	5.5	6.0	6.8	45.3
14	8.2	6.7	5.6	5.6	5.0	5.3	5.8	42.2
15	7.8	6.5	5.6	5.6	4.8	4.7	5.0	40.1
16	7.5	6.7	5.8	5.7	4.8	4.5	4.6	39.6
17	7.3	6.8	6.1	6.0	5.1	4.8	4.6	40.7
18	7.2	6.8	6.5	6.6	5.7	5.4	5.0	43.2
19	7.2	7.0	6.7	7.2	6.5	6.2	5.8	46.6
20	7.3	6.9	6.8	7.4	7.2	7.0	6.7	49.3
21	7.4	6.9	6.8	7.6	7.5	7.5	7.4	51.1
22	7.4	6.8	6.6	7.4	7.4	7.6	7.8	51.0
23	7.2	6.6	6.4	7.1	7.2	7.6	7.8	49.9
Sum	178.2	163.8	152.8	159.7	158.0	162.1	168.5	1143.1

Sum for — Divisor = (364) 673; (364) 699; (364) 730; (314) 744 Mean for month =

Tabulated by 3 Date 6/17/48 Summed by 3 Date 6/17/48

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Form 502
Ed. May, 1946
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. SEPT. 21	d. 22	d. 23	d. 24	d. 25	d. 26	d. 27	Hori-zontal Sum
Day of Series	113	114	115	116	117	118	119	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.6	7.7	7.4	7.2	6.6	6.5	6.8	49.8
1	7.3	7.5	7.3	7.0	6.5	6.5	6.5	48.6
2	6.9	7.2	7.1	6.8	6.4	6.4	6.3	47.1
3	6.6	7.0	6.9	6.7	6.2	6.5	6.2	46.1
4	6.6	6.9	6.9	6.7	6.3	6.5	6.3	46.2
5	6.8	7.2	7.1	6.9	6.5	6.8	6.6	47.9
6	7.5	7.7	7.5	7.2	6.9	7.2	7.0	51.0
7	8.2	8.3	8.1	7.7	7.4	7.7	7.5	54.9
8	8.9	9.1	8.7	8.3	8.0	8.3	7.9	59.2
9	9.4	9.5	9.2	8.3	8.5	8.8	8.3	62.5
10	9.5	9.7	9.6	9.0	8.8	9.0	8.6	64.2
11	9.1	9.6	9.6	9.1	8.8	9.2	8.7	64.1
Noon	8.4	9.1	9.2	8.9	8.6	9.1	8.6	61.9
13	7.3	8.2	8.4	8.4	8.2	8.8	8.3	57.6
14	6.3	7.2	7.5	7.6	7.6	8.3	8.0	52.5
15	5.5	6.2	6.7	6.8	6.9	7.7	7.7	47.5
16	4.8	5.4	6.0	6.1	6.4	7.2	7.4	43.3
17	4.6	5.1	5.5	5.6	6.0	6.9	7.2	40.9
18	5.0	5.1	5.3	5.2	5.8	6.7	7.2	40.3
19	5.6	5.5	5.4	5.3	5.8	6.8	7.1	41.5
20	6.3	6.1	5.8	5.6	5.9	6.9	7.0	43.6
21	7.0	6.6	6.3	5.9	6.0	7.0	7.0	45.8
22	7.5	7.2	6.7	6.2	6.2	7.1	6.9	47.8
23	7.7	7.4	7.0	6.5	6.4	7.0	6.8	48.8
Sum	170.4	176.5	175.2	169.5	166.7	178.9	175.9	1213.1

Sum for — Divisor = (364) 673; (364) 699; (364) 730; (314) 744 Mean for month =

Tabulated by 3 Date 6/17/48 Summed by 3 Date 6/17/48

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Form 502
Ed. May, 1946
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. SEPT. 28	d. 29	d. 30	d. OCT. 1	d. 2	d. 3	d. 4	Hori-zontal Sum
Day of Series	120	121	122	123	124	125	126	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	6.5	6.5	6.4	7.4	7.0	8.4	8.3	50.5
1	6.3	6.3	6.1	7.0	6.6	8.0	8.0	48.3
2	6.2	6.0	5.8	6.7	6.2	7.7	7.5	46.1
3	6.2	6.0	5.7	6.5	5.9	7.5	7.2	45.0
4	6.3	6.0	5.8	6.6	6.0	7.5	7.2	45.4
5	6.5	6.2	6.1	6.8	6.3	7.8	7.6	47.3
6	6.9	6.6	6.4	7.2	6.7	8.1	8.1	50.0
7	7.4	7.0	6.9	7.5	7.0	8.5	8.5	52.8
8	7.8	7.4	7.2	7.8	7.3	8.8	8.8	55.1
9	8.1	7.6	7.3	7.9	7.3	8.7	8.6	55.5
10	8.3	7.7	7.4	7.7	7.0	8.3	8.3	54.7
11	8.3	7.6	7.3	7.4	6.6	7.6	7.5	52.3
Noon	8.1	7.3	7.0	7.0	6.2	6.8	6.6	49.0
13	7.7	6.9	6.6	6.5	5.7	6.1	5.6	45.1
14	7.4	6.5	6.3	6.0	5.2	5.5	4.9	41.8
15	7.2	6.5	6.3	5.6	5.0	5.1	4.5	40.2
16	7.1	6.5	6.5	5.6	5.2	4.9	4.3	40.1
17	7.2	6.6	6.9	5.9	5.7	5.2	4.5	42.0
18	7.2	6.9	7.3	6.4	6.4	6.0	5.0	45.2
19	7.3	7.1	7.8	7.0	7.2	6.9	5.8	49.1
20	7.3	7.3	8.2	7.4	7.9	7.7	6.6	52.4
21	7.2	7.3	8.3	7.5	8.4	8.2	7.2	54.1
22	7.0	7.0	8.1	7.4	8.5	8.4	7.4	53.8
23	6.8	6.7	7.8	7.3	8.5	8.4	7.5	53.-
Sum	172.3	163.5	165.5	166.1	159.8	176.1	165.5	1168.8

Sum for Sept., '47 = 4931.7 Divisor = (364) 673; (364) 699; (364) 730; (314) 744 Mean for month = 6.85

Tabulated by 3 Date 6/17/48 Summed by 3 Date 6/17/48

TIDE: HOURLY HEIGHTS

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANGHERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	OCT. 5	6	7	8	9	10	11	Mean monthly datum
Day of Station	127	128	129	130	131	132	133	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.3	7.3	6.9	6.1	5.8	6.2	6.2	45.8
1	7.0	7.1	6.2	5.9	5.6	6.0	6.0	44.4
2	6.6	6.9	6.7	5.8	5.4	5.8	5.8	43.0
3	6.4	6.8	6.6	5.7	5.4	5.7	5.7	42.3
4	6.4	6.9	6.7	5.8	5.5	5.8	5.6	42.7
5	6.8	7.3	7.0	6.0	5.8	6.1	5.8	44.8
6	7.4	8.0	7.6	6.7	6.4	6.6	6.2	48.9
7	7.9	8.6	8.4	7.5	7.2	7.2	6.8	53.6
8	8.3	9.2	9.0	8.3	7.9	7.9	7.5	58.1
9	8.4	9.4	9.4	8.8	8.5	8.5	8.1	61.1
10	8.0	9.3	9.4	9.0	8.9	9.0	8.5	62.1
11	7.2	8.6	8.9	8.8	8.8	9.0	8.7	60.0
Noon	6.2	7.6	7.9	8.1	8.4	8.7	8.6	55.5
13	5.2	6.4	6.8	7.0	7.6	8.1	8.3	49.4
14	4.4	5.4	5.5	6.0	6.7	7.4	7.8	43.2
15	4.0	4.5	4.5	5.0	5.8	6.6	7.2	37.6
16	3.8	4.2	4.1	4.3	5.0	6.0	6.7	34.1
17	3.9	4.2	3.9	4.0	4.7	5.6	6.4	32.7
18	4.3	4.4	4.0	4.0	4.6	5.4	6.3	33.0
19	5.1	4.9	4.3	4.2	4.8	5.5	6.4	35.2
20	5.9	5.7	4.9	4.8	5.2	5.8	6.5	38.8
21	6.6	6.4	5.5	5.3	5.7	6.1	6.7	42.3
22	7.1	6.8	6.0	5.6	6.0	6.3	6.9	44.7
23	7.2	7.0	6.2	5.8	6.1	6.3	7.1	45.7
Sum	151.4	168.9	157.0	148.5	151.8	161.6	165.8	1099.0

Sum for — Divisor—(366) 073; (365) 080; (362) 720; (354) 744. Mean for month —

Tabulated by J Date 6/17/48 Checked by B Date 6/17/48

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANGHERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	OCT. 12	13	14	15	16	17	18	Mean monthly datum
Day of Station	134	135	136	137	138	139	140	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.1	7.2	7.0	7.3	7.2	7.2	7.6	50.6
1	6.9	6.9	6.7	7.0	7.0	6.9	7.2	48.6
2	6.7	6.7	6.5	6.9	6.7	6.7	7.1	47.3
3	6.6	6.6	6.5	7.0	6.8	6.7	7.0	47.2
4	6.5	6.5	6.6	7.1	6.9	7.0	7.2	47.8
5	6.6	6.4	6.6	7.3	7.3	7.5	7.7	49.4
6	6.7	6.5	6.7	7.4	7.6	7.9	8.4	51.2
7	7.0	6.7	6.8	7.4	7.8	8.2	8.9	52.8
8	7.3	6.9	6.8	7.3	7.7	8.3	9.1	53.4
9	7.8	7.0	6.6	7.0	7.2	8.1	8.8	52.5
10	8.1	7.0	6.5	6.5	6.6	7.4	8.2	50.3
11	8.1	7.1	6.2	6.0	5.8	6.4	7.3	46.9
Noon	8.0	6.9	6.0	5.5	5.1	5.5	6.4	43.4
13	7.8	6.8	5.9	5.3	4.5	4.7	5.3	40.3
14	7.5	6.7	5.8	5.1	4.2	4.3	4.5	38.1
15	7.0	6.5	5.8	5.1	4.2	4.1	4.3	37.0
16	6.7	6.5	6.1	5.4	4.4	4.2	4.3	37.6
17	6.6	6.6	6.5	6.0	5.0	4.7	4.6	40.0
18	6.6	6.7	6.8	6.5	5.8	5.6	5.3	43.3
19	6.7	6.9	7.0	7.0	6.4	6.4	6.2	46.6
20	6.9	7.0	7.2	7.4	7.0	7.2	7.0	49.7
21	7.0	7.1	7.4	7.6	7.3	7.7	7.6	51.7
22	7.1	7.1	7.5	7.5	7.4	7.8	7.8	52.2
23	7.2	7.1	7.4	7.4	7.4	7.7	7.8	52.0
Sum	170.5	163.4	158.9	160.0	153.3	158.2	165.6	1139.9

Sum for — Divisor—(366) 073; (365) 080; (362) 720; (354) 744. Mean for month —

Tabulated by B Date 6/17/48 Checked by B Date 6/17/48

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANGHERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	OCT. 19	20	21	22	23	24	25	Mean monthly datum
Day of Station	141	142	143	144	145	146	147	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.7	7.8	7.5	7.3	7.3	6.9	6.8	51.3
1	7.3	7.6	7.3	7.2	7.0	6.8	6.7	49.9
2	6.9	7.3	7.0	7.0	6.9	6.6	6.5	48.2
3	6.8	7.2	6.8	6.8	6.8	6.6	6.5	47.5
4	7.0	7.3	6.9	6.7	6.9	6.7	6.5	48.0
5	7.4	7.6	7.3	7.0	7.1	6.8	6.8	50.0
6	8.0	8.3	7.9	7.5	7.5	7.2	7.2	53.6
7	8.5	8.8	8.4	8.0	8.0	7.7	7.6	57.0
8	8.9	9.3	8.9	8.4	8.0	8.0	7.9	59.7
9	9.1	9.5	9.3	8.8	8.7	8.3	8.1	61.8
10	8.8	9.4	9.4	9.0	8.9	8.4	8.2	62.1
11	7.9	8.6	9.0	8.8	8.7	8.3	8.0	59.3
Noon	6.9	7.6	8.0	8.2	8.1	8.0	7.7	54.5
13	5.8	6.5	7.2	7.3	7.5	7.6	7.2	49.0
14	5.0	5.6	6.3	6.4	6.8	7.0	6.7	43.8
15	4.5	4.8	5.4	5.6	6.1	6.4	6.3	39.1
16	4.3	4.4	4.8	5.0	5.5	6.0	6.1	36.1
17	4.4	4.3	4.6	4.8	5.2	5.8	6.0	35.1
18	5.0	4.6	4.9	4.9	5.2	5.8	5.9	36.3
19	5.9	5.4	5.4	5.3	5.4	5.9	6.1	39.4
20	6.9	6.2	6.1	5.9	5.9	6.2	6.4	43.6
21	7.5	6.8	6.7	6.5	6.3	6.6	6.6	47.0
22	7.9	7.2	7.2	6.9	6.6	6.8	6.8	49.4
23	7.9	7.5	7.3	7.1	6.8	6.9	6.8	50.3
Sum	146.3	160.6	157.5	154.4	157.5	167.3	165.4	1113.0

Sum for — Divisor—(366) 073; (365) 080; (362) 720; (354) 744. Mean for month —

Tabulated by B Date 6/17/48 Checked by B Date 6/17/48

22

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANGHERITE BAY), ANTARCTICA Year: 1947
Observer: Lat. Long.
Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	OCT. 26	27	28	29	30	31	NOV. 1	Mean monthly datum
Day of Station	148	149	150	151	152	153	154	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	6.7	7.3	7.3	7.7	7.7	8.3	8.7	53.7
1	6.7	6.8	7.0	7.3	7.3	8.0	8.5	52.6
2	6.6	6.7	7.0	7.1	7.1	7.7	8.4	50.6
3	6.7	6.6	7.0	7.0	7.1	7.7	8.6	50.7
4	6.7	6.6	7.0	6.9	7.1	7.8	8.9	52.0
5	6.8	6.7	7.2	7.0	7.2	8.0	9.2	52.1
6	7.3	6.9	7.5	7.2	7.4	8.3	9.4	54.0
7	7.8	7.2	7.8	7.2	7.5	8.3	9.6	55.4
8	8.0	7.4	8.0	7.1	7.4	8.1	9.5	55.5
9	8.1	7.5	7.9	6.9	7.2	7.7	9.1	54.4
10	8.2	7.5	7.8	6.6	6.7	7.1	8.4	52.3
11	8.1	7.2	7.4	6.2	6.2	6.4	7.4	48.9
Noon	7.9	6.9	6.9	5.7	5.7	5.7	6.4	45.2
13	7.6	6.7	6.3	5.3	5.3	5.2	5.7	42.1
14	7.2	6.5	5.9	5.1	5.0	4.8	5.2	39.7
15	7.0	6.3	5.9	5.1	4.9	4.6	4.9	38.7
16	6.9	6.3	6.1	5.5	5.2	4.8	4.9	39.7
17	7.0	6.5	6.6	6.0	5.8	5.4	5.3	42.6
18	7.2	6.6	7.0	6.5	6.5	6.1	6.0	45.9
19	7.3	7.0	7.4	7.0	7.3	6.9	6.8	49.7
20	7.4	7.3	7.7	7.5	7.9	7.8	7.5	53.1
21	7.6	7.6	7.9	7.8	8.2	8.2	7.8	55.1
22	7.6	7.6	8.0	7.9	8.3	8.5	8.0	55.9
23	7.5	7.5	8.0	7.8	8.4	8.6	8.0	55.4
Sum	175.9	167.2	172.6	161.4	161.4	170.0	168.2	1177.7

Sum for Oct., 1947 is 5889.0 Divisor—(366) 073; (365) 080; (362) 720; (354) 744. Mean for month 48.24

Tabulated by B Date 6/17/48 Checked by B Date 6/17/48

TIDES: HOURLY HEIGHTS

23

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	NOV. 2	3	4	5	6	7	8	Horizontal Sum
Day of Series	155	156	157	158	159	160	161	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.9	7.8	7.4	7.4	7.8	7.0	7.2	52.5
1	7.7	7.5	7.3	7.2	7.5	6.7	7.0	50.9
2	7.5	7.4	7.2	7.1	7.2	6.3	6.7	49.4
3	7.5	7.5	7.3	7.1	7.1	6.1	6.4	49.0
4	7.7	7.8	7.7	7.4	7.1	6.1	6.3	50.1
5	8.0	8.3	8.1	7.9	7.4	6.4	6.4	52.5
6	8.4	8.8	8.8	8.6	8.0	6.9	6.8	56.3
7	8.7	9.2	9.4	9.3	8.5	7.5	7.4	60.0
8	8.7	9.3	9.7	9.8	9.0	8.1	7.8	62.4
9	8.3	9.1	9.7	9.9	9.4	8.5	8.1	63.0
10	7.6	8.4	9.2	9.8	9.4	8.7	8.2	61.3
11	6.6	7.3	8.3	9.4	8.9	8.4	8.1	57.0
Noon	5.6	6.2	7.2	8.4	8.1	7.8	7.8	51.1
13	4.8	5.2	6.1	7.4	7.2	7.1	7.2	45.0
14	4.3	4.4	5.2	6.4	6.2	6.3	6.6	39.4
15	4.0	4.0	4.5	5.6	5.4	5.6	6.1	35.2
16	4.0	3.9	4.2	5.2	4.9	5.1	5.7	33.0
17	4.3	4.1	4.3	5.2	4.7	4.9	5.6	33.1
18	5.1	4.6	4.8	5.5	4.9	5.1	5.7	35.7
19	6.1	5.5	5.5	6.2	5.4	5.6	6.1	40.4
20	6.9	6.3	6.3	6.8	6.1	6.2	6.6	45.2
21	7.3	6.9	6.9	7.4	6.6	6.7	7.0	48.8
22	7.6	7.3	7.3	7.7	6.9	7.1	7.3	51.2
23	7.8	7.4	7.4	7.9	7.0	7.3	7.5	52.3
Sum	162.4	164.2	169.8	180.6	170.7	161.5	165.6	1174.8

Sum for — Divisor—(24) 973; (25) 936; (26) 899; (27) 799; (31) 744 Mean for month—

Tabulated by B Date 6/17/48 Summed by B Date 6/17/48

21

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	NOV. 9	10	11	12	13	14	15	Horizontal Sum
Day of Series	162	163	164	165	166	167	168	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.4	7.0	7.4	7.9	7.8	8.0	8.2	53.7
1	7.1	6.9	7.2	7.3	7.6	7.8	7.9	52.3
2	6.7	6.7	6.9	7.7	7.5	7.7	7.7	50.9
3	6.4	6.4	6.7	7.7	7.5	7.8	7.8	50.3
4	6.1	6.2	6.6	7.7	7.6	8.1	8.0	50.3
5	6.1	6.1	6.6	7.7	7.6	8.4	8.3	50.8
6	6.2	6.1	6.4	7.6	7.6	8.7	8.6	51.2
7	6.4	6.1	6.2	7.4	7.4	8.7	8.7	50.9
8	6.7	6.3	6.0	7.1	7.0	8.3	8.5	49.9
9	7.0	6.5	5.8	6.7	6.4	7.8	8.0	48.2
10	7.1	6.7	5.7	6.2	5.8	6.9	7.2	45.6
11	7.0	6.7	5.5	5.9	5.1	6.0	6.2	42.4
Noon	6.8	6.7	5.3	5.6	4.7	5.3	5.3	39.7
13	6.4	6.7	5.3	5.5	4.5	4.9	4.7	38.0
14	6.1	6.6	5.3	5.4	4.4	4.5	4.3	36.6
15	5.7	6.4	5.5	5.6	4.6	4.6	4.7	36.6
16	5.5	6.5	5.8	5.9	5.0	4.9	4.4	33.0
17	5.4	6.6	6.0	6.3	5.7	5.6	5.0	40.6
18	5.5	6.8	6.4	6.7	6.4	6.5	5.9	44.2
19	5.9	7.0	6.9	7.2	7.0	7.3	6.7	48.0
20	6.3	7.1	7.3	7.6	7.5	7.8	7.4	51.0
21	6.7	7.1	7.6	7.7	7.8	8.1	7.8	52.8
22	7.0	7.3	7.8	7.8	8.0	8.3	8.1	54.3
23	7.1	7.5	7.9	7.9	8.1	8.4	8.3	55.2
Sum	154.6	160.0	154.1	166.6	158.6	170.4	167.2	1131.5

Sum for — Divisor—(24) 973; (25) 936; (26) 899; (27) 799; (31) 744 Mean for month—

Tabulated by B Date 6/17/48 Summed by B Date 6/17/48

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	NOV. 16	17	18	19	20	21	22	Horizontal Sum
Day of Series	169	170	171	172	173	174	175	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	8.2	8.3	8.3	8.1	7.7	7.2	6.9	54.7
1	7.9	8.1	8.1	7.9	7.5	7.0	6.9	53.4
2	7.7	7.7	7.8	7.6	7.3	6.8	6.7	51.6
3	7.7	7.7	7.7	7.5	7.1	6.7	6.6	51.0
4	7.9	7.8	7.8	7.5	7.1	6.7	6.6	51.4
5	8.4	8.2	8.0	7.8	7.3	6.9	6.8	53.4
6	8.8	8.6	8.5	8.2	7.7	7.1	7.0	55.9
7	9.0	9.0	8.9	8.6	8.0	7.4	7.3	58.2
8	9.1	9.1	9.2	8.9	8.3	7.7	7.5	59.8
9	8.8	9.0	9.3	9.1	8.5	7.8	7.6	60.1
10	8.0	8.4	8.9	8.9	8.5	7.9	7.6	58.2
11	6.9	7.6	8.1	8.3	8.0	7.7	7.6	54.2
Noon	6.0	6.5	7.1	7.5	7.3	7.2	7.3	48.9
13	5.2	5.6	6.2	6.6	6.5	6.6	6.9	43.6
14	4.6	4.9	5.4	5.8	5.8	6.0	6.5	39.0
15	4.3	4.5	4.8	5.1	5.1	5.6	6.1	35.5
16	4.4	4.4	4.5	4.7	4.7	5.1	5.8	33.6
17	4.8	4.8	4.7	4.6	4.6	4.9	5.7	34.1
18	5.7	5.5	5.3	5.0	4.9	5.0	5.8	37.2
19	6.7	6.4	6.1	5.7	5.3	5.4	6.0	41.6
20	7.5	7.2	6.9	6.4	6.0	5.9	6.3	46.2
21	8.0	7.8	7.5	7.0	6.5	6.3	6.8	49.9
22	8.3	8.2	7.9	7.4	7.1	6.6	7.0	52.5
23	8.4	8.4	8.1	7.7	7.2	6.8	7.2	53.8
Sum	172.3	173.7	175.1	171.9	164.0	158.3	162.5	1177.8

Sum for — Divisor—(24) 973; (25) 936; (26) 899; (27) 799; (31) 744 Mean for month—

Tabulated by B Date 6/17/48 Summed by B Date 6/17/48

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	NOV. 23	24	25	26	27	28	29	Horizontal Sum
Day of Series	176	177	178	179	180	181	182	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.2	7.4	7.6	7.8	8.4	8.7	8.9	56.0
1	7.0	7.3	7.4	7.5	8.2	8.5	8.9	54.8
2	6.8	7.1	7.2	7.3	8.1	8.3	8.8	53.6
3	6.7	7.0	7.0	7.1	7.9	8.2	8.9	52.8
4	6.7	6.8	6.8	7.0	7.7	8.2	8.9	52.1
5	6.8	6.8	6.8	6.9	7.6	8.0	8.8	51.7
6	7.0	6.9	6.8	6.7	7.5	7.9	8.7	51.5
7	7.2	7.0	6.8	6.6	7.2	7.5	8.3	50.6
8	7.3	7.1	6.8	6.5	6.9	7.1	7.8	49.5
9	7.4	7.1	6.6	6.3	6.4	6.5	7.0	47.3
10	7.4	7.0	6.5	6.0	6.0	5.9	6.2	45.0
11	7.3	6.8	6.2	5.6	5.6	5.3	5.4	42.2
Noon	7.0	6.5	5.9	5.3	5.2	4.8	4.8	39.5
13	6.8	6.4	5.8	5.1	5.0	4.5	4.4	38.0
14	6.5	6.3	5.8	5.2	4.9	4.4	4.2	37.3
15	6.3	6.2	5.8	5.4	5.1	4.6	4.2	37.6
16	6.2	6.2	6.0	5.8	5.5	5.0	4.5	39.2
17	6.2	6.3	6.3	6.2	6.1	5.7	5.2	42.0
18	6.3	6.6	6.7	6.7	6.7	6.4	5.9	45.3
19	6.5	7.0	7.1	7.2	7.4	7.1	6.5	48.8
20	6.9	7.3	7.5	7.8	8.0	7.8	7.3	52.6
21	7.2	7.4	7.7	8.2	8.4	8.3	7.8	55.0
22	7.4	7.5	7.9	8.4	8.6	8.7	8.2	56.7
23	7.6	7.6	8.0	8.4	8.8	8.9	8.4	57.7
Sum	165.7	165.6	163.0	161.0	167.2	166.3	160.0	[illegible]

Sum for — Divisor—(24) 973; (25) 936; (26) 899; (27) 799; (31) 744 Mean for month—

Tabulated by B Date [illegible] Summed by B Date [illegible]

TIDES: HOURLY HEIGHTS

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	NOV. 30	Dec. 1	2	3	4	5	6	Next special date
Day of Julian	183	184	185	186	187	188	189	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	8.6	8.4	7.8	7.4	7.5	7.3	7.5	54.5
1	8.6	8.5	7.8	7.3	7.3	7.1	7.2	53.8
2	8.6	8.5	7.9	7.4	7.1	6.7	6.8	53.0
3	8.7	8.6	8.2	7.7	7.1	6.5	6.5	53.3
4	8.8	8.9	8.6	8.1	7.4	6.6	6.3	54.7
5	9.0	9.3	9.0	8.6	7.9	7.0	6.3	54.7
6	9.0	9.6	9.5	9.1	8.6	7.4	6.6	59.8
7	8.7	9.6	9.8	9.5	9.1	7.9	7.0	61.6
8	8.2	9.2	9.7	9.7	9.4	8.3	7.4	61.9
9	7.4	8.5	9.1	9.5	9.4	8.6	7.6	60.1
10	6.6	7.5	8.2	8.9	9.0	8.5	7.9	56.6
11	5.6	6.4	7.1	7.7	8.2	8.1	7.9	51.0
Noon	4.8	5.4	6.0	6.5	7.1	7.3	7.4	44.5
12	4.3	4.7	5.2	5.6	6.1	6.6	6.8	39.3
13	4.1	4.3	4.4	4.9	5.3	5.8	6.2	35.0
14	4.0	4.1	4.1	4.6	4.8	5.2	5.8	32.6
15	4.2	4.2	4.1	4.5	4.6	4.9	5.5	32.0
16	4.7	4.6	4.3	4.9	4.7	4.9	5.4	33.5
17	5.5	5.3	4.8	5.5	5.3	5.3	5.6	37.3
18	6.2	6.0	5.7	6.3	6.0	6.0	6.0	42.2
19	6.9	6.7	6.6	7.0	6.7	6.6	6.6	47.1
20	7.5	7.2	7.2	7.5	7.2	7.2	7.3	51.1
21	8.0	7.6	7.4	7.7	7.4	7.5	7.8	53.4
22	8.2	7.7	7.5	7.7	7.5	7.6	8.0	54.2
Sum	166.2	170.8	170.0	173.6	170.7	164.9	163.4	1179.6

Sum for Nov., Σh^2 = 1409.3 Divisor = (360 ft); (180 ft); (360 ft); (540 ft) Mean for month = 6.93

Tabulated by B Date 6/17/48 Reviewed by B Date 6/17/48

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	DEC. 7	8	9	10	11	12	13	Next special date
Day of Julian	190	191	192	193	194	195	196	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.9	8.2	8.3	8.4	8.3	8.1	8.1	57.3
1	7.7	7.9	8.2	8.4	8.3	8.1	8.1	56.7
2	7.2	7.4	7.9	8.3	8.3	8.1	8.0	55.2
3	6.8	7.0	7.6	8.0	8.2	8.1	8.0	53.7
4	6.4	6.7	7.1	7.6	8.0	8.1	8.1	52.8
5	6.2	6.4	6.6	7.3	7.7	8.0	8.2	50.4
6	6.2	6.1	6.3	6.9	7.3	7.7	8.2	48.8
7	6.5	6.0	6.1	6.5	6.8	7.3	7.9	47.1
8	6.8	6.1	5.9	6.0	6.2	6.7	7.5	45.2
9	7.0	6.2	5.8	5.6	5.6	5.9	6.7	42.8
10	7.1	6.3	5.7	5.4	5.1	5.1	5.9	40.6
11	7.2	6.3	5.6	5.1	4.5	4.3	5.1	38.8
Noon	7.1	6.2	5.0	5.1	4.5	4.3	4.5	37.3
12	6.8	6.2	5.7	5.1	4.5	4.2	4.2	36.7
13	6.4	6.0	5.7	5.2	4.6	4.2	4.0	36.1
14	6.0	5.9	5.8	5.5	4.9	4.4	4.1	36.6
15	5.8	5.8	5.9	5.7	5.3	4.8	4.5	37.8
16	5.7	5.9	6.1	6.0	5.8	5.3	5.1	39.9
17	6.0	6.2	6.4	6.4	6.2	5.9	5.8	42.9
18	6.4	6.5	6.9	6.8	6.7	6.5	6.5	46.3
19	6.9	7.1	7.3	7.3	7.3	7.1	7.1	50.1
20	7.4	7.5	7.7	7.8	7.7	7.6	7.5	53.2
21	7.9	8.0	8.0	8.1	7.9	7.9	7.9	55.7
22	8.2	8.2	8.3	8.2	8.0	8.1	8.1	57.1
Sum	163.6	160.1	160.5	160.8	157.9	156.3	159.1	1118.3

Sum for — Divisor = (360 ft); (180 ft); (360 ft); (540 ft) Mean for month =

Tabulated by B Date 6/17/48 Reviewed by B Date 6/17/48

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	DEC. 14	15	16	17	18	19	20	Next special date
Day of Julian	197	198	199	200	201	202	203	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	8.1	7.9	8.0	7.9	7.9	7.8	7.8	55.4
1	8.0	7.9	7.9	7.8	7.8	7.7	7.6	54.7
2	7.9	7.8	7.8	7.5	7.5	7.4	7.4	53.3
3	7.8	7.7	7.7	7.4	7.3	7.3	7.1	52.3
4	8.0	7.9	7.7	7.5	7.3	7.1	7.0	52.5
5	8.2	8.1	8.0	7.6	7.4	7.2	6.9	53.4
6	8.3	8.4	8.3	7.9	7.7	7.3	7.1	55.0
7	8.2	8.5	8.5	8.2	8.0	7.7	7.2	56.3
8	7.9	8.4	8.6	8.5	8.3	8.0	7.4	57.1
9	7.1	7.9	8.4	8.4	8.4	8.1	7.6	55.9
10	6.3	7.1	7.7	8.0	8.2	8.1	7.7	53.1
11	5.4	6.2	6.9	7.3	7.6	7.7	7.7	48.8
Noon	4.7	5.3	6.0	6.4	6.9	7.2	7.5	44.0
12	4.2	4.6	5.1	5.6	6.1	6.5	7.1	39.2
13	4.0	4.2	4.5	4.9	5.4	6.5	7.1	39.2
14	4.0	4.0	4.2	4.4	4.7	5.3	6.0	32.6
15	4.2	4.1	4.1	4.2	4.4	5.0	5.6	31.6
16	4.6	4.5	4.4	4.3	4.6	5.0	5.4	32.8
17	5.4	5.2	5.0	4.9	5.0	5.4	5.6	36.5
18	6.2	6.1	5.8	5.7	5.7	5.8	6.0	41.3
19	6.8	6.8	6.6	6.5	6.4	6.6	6.5	46.2
20	7.4	7.4	7.2	7.2	7.1	7.1	7.0	50.4
21	7.8	7.8	7.7	7.6	7.6	7.6	7.4	53.5
22	8.0	8.0	7.9	7.9	7.8	7.8	7.6	55.0
Sum	140.5	140.8	140.0	140.4	140.1	146.0	146.7	1134.3

Sum for — Divisor = (360 ft); (180 ft); (360 ft); (540 ft) Mean for month =

Tabulated by B Date 6/17/48 Reviewed by B Date 6/17/48

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (MARGUERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	DEC. 21	22	23	24	25	26	27	Next special date
Day of Julian	204	205	206	207	208	209	210	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.6	7.5	7.8	8.4	8.7	8.9	9.2	58.1
1	7.5	7.4	7.6	8.2	8.5	8.8	9.2	57.2
2	7.3	7.0	7.3	7.8	8.2	8.5	9.1	55.2
3	7.0	6.7	6.8	7.4	7.7	8.2	8.8	52.6
4	6.8	6.5	6.5	7.0	7.2	7.7	8.4	50.1
5	6.6	6.3	6.3	6.7	6.8	7.3	8.0	48.0
6	6.5	6.2	6.2	6.4	6.5	6.8	7.6	44.2
7	6.6	6.1	6.0	6.2	6.1	6.3	7.0	44.3
8	6.7	6.2	5.9	6.0	5.8	5.8	6.3	42.7
9	6.9	6.2	6.0	5.9	5.5	5.3	5.7	41.5
10	7.0	6.3	6.0	5.7	5.2	5.0	5.1	40.3
11	7.1	6.3	6.0	5.6	5.0	4.7	4.6	39.3
Noon	7.0	6.3	5.9	5.5	4.8	4.5	4.3	38.3
12	6.8	6.2	5.9	5.6	4.8	4.5	4.2	38.0
13	6.4	6.0	6.0	5.7	4.9	4.5	4.2	37.7
14	6.0	5.9	6.0	5.8	5.1	4.7	4.5	38.0
15	5.8	5.8	6.2	6.0	5.4	5.0	4.9	39.1
16	5.7	5.8	6.4	6.3	5.9	5.5	5.4	41.0
17	5.8	6.1	6.7	6.8	6.5	6.2	6.0	44.1
18	6.0	6.5	7.1	7.3	7.1	6.9	6.6	47.5
19	6.4	6.8	7.6	7.9	7.7	7.5	7.3	51.2
20	6.9	7.3	8.0	8.3	8.3	8.1	8.0	54.9
21	7.3	7.6	8.4	8.6	8.7	8.7	8.6	57.9
22	7.5	7.7	8.5	8.7	8.9	9.1	9.0	59.4
Sum	146.2	146.7	148.3	150.8	149.3	148.5	146.0	1135.8

Sum for — Divisor = (360 ft); (180 ft); (360 ft); (540 ft) Mean for month =

Tabulated by B Date 6/17/48 Reviewed by B Date 6/17/48

TIDES: HOURLY HEIGHTS

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANOVERITE BAY), ANTARCTICA Year: 1947

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. DEC. 28	d. 29	d. 30	d. 31	d. 32	d. 33	d. 34	Mean monthly Rise
Day of Series	211	212	213	214	215	216	217	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	9.2	8.7	8.1	7.4	7.0	7.1	7.2	54.7
1	9.2	8.8	8.2	7.5	7.0	6.8	6.8	54.3
2	9.1	8.7	8.2	7.7	6.9	6.5	6.3	53.4
3	8.8	8.7	8.3	7.9	7.0	6.3	5.9	52.9
4	8.4	8.8	8.5	8.3	7.3	6.4	5.7	53.4
5	7.9	8.8	8.7	8.6	7.6	6.7	5.8	54.1
6	7.4	8.7	8.8	8.9	8.1	7.0	6.1	55.0
7	6.8	8.4	8.7	9.0	8.5	7.5	6.5	55.4
8	6.2	7.8	8.3	8.8	8.7	7.9	6.9	54.6
9	5.7	6.9	7.4	8.3	8.4	8.1	7.4	52.2
10	5.2	5.9	6.3	7.4	7.9	7.8	7.4	47.9
11	4.7	5.0	5.2	6.4	7.1	7.3	7.2	42.9
Noon	4.3	4.4	4.5	5.6	6.2	6.5	6.7	38.2
13	4.1	4.1	4.2	4.8	5.4	5.8	6.1	34.5
14	4.0	4.0	4.0	4.4	4.8	5.1	5.6	31.9
15	4.1	4.1	4.0	4.2	4.5	4.8	5.1	30.8
16	4.3	4.4	4.1	4.2	4.4	4.6	4.9	30.9
17	4.7	4.9	4.5	4.5	4.6	4.7	5.0	32.9
18	5.3	5.4	5.1	5.1	5.2	5.2	5.4	36.7
19	5.9	5.9	5.6	5.7	5.9	6.0	6.0	41.0
20	6.6	6.4	6.0	6.2	6.5	6.6	6.9	45.2
21	7.3	6.9	6.5	6.6	7.0	7.1	7.6	49.0
22	7.9	7.4	7.0	6.9	7.3	7.4	8.1	52.0
23	8.4	7.8	7.3	7.0	7.3	7.5	8.2	53.5
Sum	155.5	160.9	157.5	161.4	160.6	156.7	154.8	1107.4

Sum for DEC., '47 = 5035.9 Divisor = (28) 372; (29) 372; (30) 372; (31) 720; (32) 744. Mean for month = 6.77

Tabulated by B Date 6/17/48 Summed by B Date 6/18/48

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANOVERITE BAY), ANTARCTICA Year: 1948

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. JAN. 4	d. 5	d. 6	d. 7	d. 8	d. 9	d. 10	Mean monthly Rise
Day of Series	218	219	220	221	222	223	224	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.8	8.3	8.5	8.7	9.0	8.7	8.7	59.7
1	7.3	7.9	8.2	8.7	8.9	8.7	8.7	58.4
2	6.6	7.1	7.6	8.2	8.6	8.6	8.6	55.3
3	6.1	6.4	6.9	7.7	8.2	8.4	8.5	52.2
4	5.6	5.7	6.2	7.0	7.6	8.0	8.2	48.3
5	5.3	5.3	5.5	6.4	7.1	7.5	7.9	45.0
6	5.5	5.2	5.1	5.8	6.5	7.0	7.6	42.7
7	5.8	5.2	4.9	5.4	5.9	6.5	7.2	40.9
8	6.2	5.5	5.0	5.2	5.4	6.0	6.6	39.9
9	6.6	5.8	5.2	5.1	5.1	5.4	6.0	39.2
10	6.9	6.0	5.4	5.1	5.0	5.1	5.5	39.0
11	6.9	6.3	5.6	5.3	5.0	4.8	5.1	39.0
Noon	6.6	6.3	5.7	5.4	5.1	4.7	4.8	38.6
13	6.2	6.1	5.7	5.5	5.2	4.8	4.6	38.1
14	5.8	5.8	5.6	5.7	5.3	5.0	4.6	37.8
15	5.5	5.6	5.5	5.7	5.4	5.2	4.8	37.7
16	5.2	5.4	5.5	5.6	5.5	5.5	5.2	37.9
17	5.1	5.4	5.6	5.9	5.8	5.8	5.6	39.2
18	5.4	5.7	5.9	6.2	6.2	6.2	6.1	41.7
19	6.0	6.2	6.3	6.6	6.7	6.7	6.7	45.2
20	6.8	6.8	6.9	7.2	7.2	7.3	7.4	49.6
21	7.6	7.4	7.5	7.8	7.7	7.8	7.9	53.7
22	8.1	8.1	8.2	8.3	8.2	8.3	8.3	57.5
23	8.4	8.5	8.6	8.7	8.6	8.5	8.6	59.9
Sum	153.3	152.0	151.1	157.2	159.2	160.5	163.2	1096.5

Sum for — Divisor = (28) 372; (29) 336; (30) 372; (31) 744. Mean for month =

Tabulated by B Date 6/18/48 Summed by B Date 6/18/48

33

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANOVERITE BAY), ANTARCTICA Year: 1948

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. JAN. 11	d. 12	d. 13	d. 14	d. 15	d. 16	d. 17	Mean monthly Rise
Day of Series	225	226	227	228	229	230	231	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	8.7	8.7	8.5	8.4	8.0	7.7	7.6	57.6
1	8.6	8.6	8.4	8.2	7.8	7.5	7.3	56.4
2	8.5	8.4	8.2	8.0	7.4	7.1	7.0	54.6
3	8.5	8.3	8.0	7.8	7.2	6.8	6.7	53.3
4	8.4	8.3	8.0	7.8	7.2	6.6	6.4	52.7
5	8.4	8.4	8.1	7.8	7.2	6.6	6.3	52.8
6	8.2	8.3	8.2	8.0	7.5	6.8	6.4	53.4
7	7.9	8.3	8.3	8.3	7.7	7.2	6.8	54.5
8	7.3	8.0	8.3	8.4	8.0	7.6	7.2	54.8
9	6.7	7.4	7.8	8.2	8.1	7.8	7.5	53.5
10	6.1	6.7	7.2	7.8	7.8	7.7	7.6	50.9
11	5.5	5.9	6.4	7.0	7.2	7.3	7.5	46.8
Noon	5.0	5.3	5.7	6.2	6.4	6.7	7.1	42.4
13	4.6	4.8	5.0	5.5	5.8	6.1	6.5	38.3
14	4.5	4.6	4.7	4.9	5.2	5.4	5.9	35.2
15	4.7	4.6	4.5	4.5	4.6	4.9	5.5	33.3
16	5.0	4.7	4.5	4.4	4.5	4.6	5.2	32.9
17	5.5	5.2	4.9	4.7	4.6	4.6	5.2	34.7
18	6.0	5.9	5.6	5.3	5.1	5.2	5.6	38.7
19	6.7	6.6	6.2	6.0	5.8	5.9	6.3	43.5
20	7.4	7.2	6.9	6.7	6.5	6.6	6.9	48.2
21	7.9	7.8	7.5	7.3	7.1	7.1	7.5	52.2
22	8.4	8.2	8.0	7.7	7.6	7.6	8.0	55.5
23	8.6	8.5	8.3	8.0	7.8	7.8	8.3	57.3
Sum	167.1	168.7	167.2	166.9	164.1	159.2	162.3	1153.5

Sum for — Divisor = (28) 372; (29) 336; (30) 372; (31) 744. Mean for month =

Tabulated by B Date 6/18/48 Summed by B Date 6/18/48

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANOVERITE BAY), ANTARCTICA Year: 1948

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	mo. d. JAN. 18	d. 19	d. 20	d. 21	d. 22	d. 23	d. 24	Mean monthly Rise
Day of Series	232	233	234	235	236	237	238	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	8.2	8.5	8.5	8.5	8.8	9.1	9.5	62.1
1	7.9	8.2	8.1	8.2	8.4	8.8	9.3	58.9
2	7.5	7.7	7.6	7.6	7.8	8.3	8.9	55.4
3	7.1	7.2	7.0	6.9	7.0	7.6	8.2	52.0
4	6.8	6.8	6.5	6.3	6.4	6.8	7.5	47.1
5	6.6	6.5	6.1	5.8	5.9	6.2	6.8	43.9
6	6.6	6.5	5.9	5.5	5.5	5.7	6.2	41.9
7	6.9	6.5	5.8	5.3	5.2	5.3	5.7	40.7
8	7.2	6.7	5.9	5.3	5.1	5.0	5.2	40.4
9	7.6	7.0	6.2	5.4	5.0	4.9	5.0	41.1
10	7.8	7.3	6.4	5.5	5.0	4.8	4.8	41.6
11	7.8	7.6	6.6	5.7	5.1	4.8	4.7	42.3
Noon	7.6	7.4	6.6	5.8	5.1	4.8	4.6	41.9
13	7.2	7.2	6.6	5.8	5.2	4.8	4.6	41.4
14	6.9	7.0	6.6	5.9	5.4	4.9	4.5	41.2
15	6.4	6.7	6.5	6.0	5.5	5.1	4.6	40.8
16	6.1	6.5	6.4	6.1	5.7	5.3	4.8	40.9
17	6.0	6.3	6.3	6.2	6.0	5.7	5.3	41.8
18	6.2	6.5	6.6	6.5	6.5	6.3	5.9	44.5
19	6.8	7.0	7.0	7.0	7.0	7.0	6.6	48.4
20	7.4	7.5	7.5	7.5	7.6	7.7	7.5	51.7
21	8.0	8.0	8.1	8.1	8.2	8.3	8.3	57.0
22	8.4	8.4	8.5	8.5	8.8	8.9	9.0	60.5
23	8.6	8.6	8.7	8.8	9.1	9.3	9.6	62.7
Sum	173.6	173.6	166.0	158.2	155.3	155.4	157.3	1138.2

Sum for — Divisor = (28) 336; (29) 336; (30) 372; (31) 744. Mean for month =

Tabulated by B Date 6/18/48 Summed by B Date 6/18/48

TIDES: HOURLY HEIGHTS

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANOVERIE BAY), ANTARCTICA Year: 1968

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	JAN. 25	26	27	28	29	30	31	Mean monthly Mean
Day of Station	239	240	241	242	243	244	245	
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	9.7	9.8	9.1	7.9	7.4	6.9	7.1	57.9
1	9.7	9.8	9.2	8.2	7.5	6.7	6.5	57.6
2	9.5	9.3	9.2	8.2	7.4	6.4	5.9	56.4
3	9.1	9.7	9.1	8.2	7.5	6.4	5.7	55.7
4	8.5	9.3	9.1	8.3	7.5	6.4	5.6	54.7
5	7.8	8.7	8.8	8.4	8.1	6.7	5.7	53.9
6	7.2	8.1	8.4	8.4	8.1	7.1	6.1	53.4
7	6.6	7.6	8.0	8.2	8.2	7.5	6.6	52.7
8	6.2	7.1	7.5	7.8	8.1	7.8	7.1	51.6
9	5.8	6.5	7.0	7.4	7.7	7.7	7.4	49.5
10	5.4	6.0	6.3	6.8	7.2	7.4	7.3	46.4
11	5.1	5.5	5.7	6.2	6.6	6.9	7.0	43.0
Noon	4.9	5.2	5.2	5.5	5.9	6.4	6.5	39.6
12	4.7	4.9	4.8	5.2	5.4	5.8	5.9	36.7
14	4.6	4.8	4.6	5.0	5.1	5.3	5.5	34.9
15	4.6	4.7	4.5	4.9	5.0	5.1	5.2	34.0
16	4.9	4.8	4.6	4.9	5.0	5.1	5.2	34.5
17	5.2	5.0	4.9	5.1	5.3	5.4	5.3	36.2
18	5.7	5.4	5.1	5.5	5.7	5.9	5.8	39.1
19	6.4	6.0	5.6	6.0	6.3	6.6	6.5	43.4
20	7.2	6.7	6.1	6.5	6.7	7.2	7.4	47.8
21	8.0	7.3	6.6	6.8	6.9	7.5	7.9	51.0
22	8.8	8.0	7.0	7.0	7.0	7.6	8.2	53.6
23	9.4	8.7	7.5	7.2	7.0	7.5	8.0	55.3
Sum	165.0	169.4	163.9	163.6	162.3	159.3	155.4	1138.9

Sum for Jan., ×48 = 5000.2 Divisor = (280 672; (280 696; (280 720; (314) 744. Mean for month = 6.72

Tabulated by B Date 6/18/68 Summed by B Date 6/18/68

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TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANOVERIE BAY), ANTARCTICA Year: 1968

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	FEB. 1	2	3	4	5	6	7	Mean monthly Mean
Day of Station	246	247	248	249	250			
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	7.6	8.6	9.2	9.6	9.7	9.1	9.1	60.9
1	6.8	7.9	8.6	9.2	9.5	9.1	9.0	60.1
2	6.1	6.9	7.6	8.3	8.8	8.7	8.8	55.2
3	5.4	5.9	6.8	7.3	8.0	8.0	8.4	49.8
4	5.1	5.2	5.8	6.5	7.2	7.3	7.9	45.0
5	4.9	4.9	5.3	5.8	6.4	6.6	7.2	41.0
6	5.2	4.9	5.1	5.2	5.9	6.1	6.8	39.2
7	5.7	5.2	5.2	5.1	5.4	5.7	6.3	38.6
8	6.3	5.7	5.5	5.3	5.2	5.3	5.9	39.2
9	6.3	6.3	6.0	5.6	5.4	5.2	5.6	40.9
10	7.1	6.8	6.5	6.0	5.6	5.4	5.5	42.9
11	7.1	7.1	6.9	6.3	5.8	5.5	5.4	44.0
Noon	6.9	7.1	7.0	6.5	5.9	5.5	5.4	44.2
12	6.3	6.8	6.9	6.5	6.1	5.6	5.4	43.6
14	5.9	6.5	6.6	6.4	6.1	5.6	5.5	42.6
15	5.5	6.2	6.4	6.3	5.9	5.6	5.6	42.5
16	5.3	6.0	6.2	6.3	5.9	5.8	5.6	42.1
17	5.3	6.0	6.2	6.3	6.0	5.9	5.8	42.5
18	5.6	6.3	6.5	6.5	6.3	6.3	6.3	43.8
19	6.4	7.0	7.0	7.0	6.7	6.9	6.9	47.8
20	7.6	7.8	7.8	7.7	7.4	7.5	7.6	53.4
21	8.5	8.5	8.6	8.4	8.0	8.1	8.2	58.3
22	9.9	9.1	9.3	9.0	8.6	8.5	8.6	61.9
23	8.9	9.5	9.6	9.5	9.0	8.9	9.0	64.4
Sum	155.0	162.2	166.4	160.6	154.8	149.3	145.8	1142.9

Sum for — Divisor = (280 672; (280 696; (280 720; (314) 744. Mean for month =

Tabulated by B Date 6/18/68 Summed by B Date 6/18/68

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANOVERIE BAY), ANTARCTICA Year: 1968

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	FEB. 8	9	10	11	12	13	14	Mean monthly Mean
Day of Station								
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	9.2	8.9	8.6	8.5	8.1	8.0	8.0	59.3
1	9.2	8.7	8.4	8.3	7.9	7.6	7.6	57.7
2	9.0	8.4	8.1	8.0	7.5	7.1	7.0	55.1
3	8.8	8.2	7.9	7.7	7.2	6.8	6.6	53.2
4	8.5	8.1	7.9	7.5	7.0	6.6	6.4	52.0
5	8.0	7.9	7.8	7.4	7.1	6.7	6.4	51.3
6	7.6	7.6	7.8	7.6	7.4	7.0	6.6	51.6
7	7.2	7.3	7.8	7.8	7.7	7.4	7.0	52.2
8	6.9	7.1	7.6	7.9	8.0	7.8	7.6	52.9
9	6.5	6.8	7.4	7.8	8.1	8.1	8.1	52.8
10	6.2	6.3	6.9	7.4	7.9	8.1	8.3	51.1
11	5.8	5.8	6.4	6.8	7.4	7.6	8.0	47.8
Noon	5.6	5.5	5.8	6.1	6.7	7.0	7.5	44.2
12	5.5	5.2	5.4	5.5	5.9	6.5	7.1	41.1
14	5.5	5.1	5.1	5.1	5.4	6.1	6.7	39.0
15	5.5	5.0	5.0	4.9	5.1	5.5	6.2	37.2
16	5.5	5.0	5.0	5.0	5.0	5.3	5.8	36.6
17	5.8	5.4	5.4	5.3	5.3	5.4	5.8	38.4
18	6.2	5.8	5.9	5.7	5.9	5.9	6.3	41.7
19	6.9	6.5	6.4	6.3	6.5	6.6	6.9	46.1
20	7.4	7.1	7.1	6.9	7.1	7.2	7.6	50.4
21	7.9	7.7	7.7	7.4	7.6	7.7	8.0	54.0
22	8.4	8.2	8.1	7.8	7.9	8.0	8.3	56.7
23	8.8	8.5	8.4	8.1	8.0	8.1	8.4	58.3
Sum	173.9	166.1	167.9	166.8	167.7	169.1	172.2	1180.7

Sum for — Divisor = (280 672; (280 696; (280 720; (314) 744. Mean for month =

Tabulated by B Date 6/18/68 Summed by B Date 6/18/68

TIDES: HOURLY HEIGHTS

Station: PALMER PENINSULA, (HANOVERIE BAY), ANTARCTICA Year: 1968

Observer: Lat. Long.

Time Meridian: 60°W. Height datum is which is ft. below B. M.

Month and Day	FEB. 15	16	17	18				Mean monthly Mean
Day of Station								
Hour	Feet	Feet	Feet	Feet	Feet	Feet	Feet	Feet
0	8.2	8.4	8.6	8.7				
1	7.6	7.9	7.9	8.0				
2	7.0	7.2	7.2	7.1				
3	6.4	6.4	6.5	6.4				
4	6.1	6.0	5.9	5.7				
5	6.0	5.8	5.5	5.2				
6	6.2	5.9	5.4	5.1				
7	6.6	6.2	5.7	5.2				
8	7.1	6.7	6.2	5.6				
9	7.8	7.4	6.7	6.1				
10	8.1	7.9	7.3	6.6				
11	8.0	8.0	7.5	7.0				
Noon	7.7	7.8	7.6	7.1				
12	7.3	7.6	7.5	7.1				
14	6.9	7.3	7.2	7.1				
15	6.5	7.0	6.8	6.8				
16	6.2	6.6	6.6					
17	6.2	6.5	6.7					
18	6.6	6.8	6.9					
19	7.2	7.3	7.4					
20	7.8	8.0	8.0					
21	8.3	8.6	8.6					
22	8.6	8.9	9.0					
23	8.7	8.9	9.0					
Sum	173.1	175.2	172.7					

Sum for — Divisor = (280 672; (280 696; (280 720; (314) 744. Mean for month =

Tabulated by B Date 6/18/68 Summed by B Date 6/18/68

TIDES: HIGH AND LOW WATERS

DEPARTMENT OF COMMERCE — TIDES: HIGH AND LOW WATERS

Station: [illegible] (HARBOUR BAY), ANTARCTICA — Lat.
Observation begin: April 13, 1947 and Feb. 13, 1948 — Long.
Tide gauge: 60°s. — Height datum: 10 ft. on staff — which is [illegible] ft. below B. M.

DATE For 1947	Moon's Transits (Greenwich mean solar)	Time of— High Water	Time of— Low Water	Luni-solar Interval— High Water	Luni-solar Interval— Low Water	Height of— High Water	Height of— Low Water	Remarks
	h. m.	h. m.	h. m.	h. m.	h. m.	feet	feet	
APR. 1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16		22·6	15·5			9·1	7·2	
		11·5	6·7			7·1	6·1	
17		22·7	15·6			7·6	6·6	
		11·0	6·3			7·6	6·7	
		21·9	15·6			8·7	7·0	

Station: PARKER PENINSULA (HARBOURITE BAY), ANTARCTICA — Lat.
Observation begin: April 13, 1947 and Feb. 13, 1948 — Long.
Tide gauge: 60°s. — Height datum: 10 ft. on staff — which is [illegible] ft. below B. M.

DATE For 1947	Moon's Transits (Greenwich mean solar)	Time of— High Water	Time of— Low Water	Luni-solar Interval— High Water	Luni-solar Interval— Low Water	Height of— High Water	Height of— Low Water	Remarks
	h. m.	h. m.	h. m.	h. m.	h. m.	feet	feet	
Brought forward								
APR. 18		9·9	5·8			7·1	6·6	
		21·8	15·8			7·4	6·0	
19		10·[illegible]	3·9			7·5	6·2	
		21·9	15·3			7·[illegible]	6·4	
20		10·3	3·3			8·3	6·4	
		20·7	14·[illegible]			7·[illegible]	7·0	
21		10·6	3·3			9·5	5·7	
		19·5	15·5			7·8	7·4	
22		10·8	3·3			8·8	5·4	
		18·9	15·4			8·5	7·9	
23								Float stuck on LW
24								No record to May 4th
25								
26								
27								
28								
29								
30								
31								
Sums								MHW / LLW
		Correction to intervals						Sums / Means
		Local intervals						Mn. / MHW / MLW
		Greenwich intervals						Mn. / MTL

Tabulated by — Date — Checked by
Reduced by — Date — Checked by

Station: PARKER PENINSULA (HARBOURITE BAY), ANTARCTICA — Lat.
Observation begin: and — Long.
Tide gauge: 60°s. — Height datum: which is ft. below B. M.

DATE For 1947	Moon's Transits (Greenwich mean solar)	Time of— High Water	Time of— Low Water	Luni-solar Interval— High Water	Luni-solar Interval— Low Water	Height of— High Water	Height of— Low Water	Remarks
	h. m.	h. m.	h. m.	h. m.	h. m.	feet	feet	
APR. 1								
2								
3								
4		10·7				7·9		
		17·6	11·2			7·5	7·4	
5								
		18·5	11·1			7·7	7·1	
6								
		18·9	11·4			8·2	7·1	
7		10·9	2·8			8·6	4·6	
		19·3	11·9			9·1	7·9	
8		10·9	3·1			8·6	4·7	
		19·8	15·5			9·0	7·0	
9		11·3	3·8			8·3	4·3	
		20·3	15·5			8·9	7·5	
10		11·8	4·2			8·7	4·3	
		20·7	15·7			9·6	7·8	
11		11·7	4·7			8·5	5·1	
		21·4	15·6			9·5	8·1	
12		11·8	5·0			8·3	5·2	
		21·5	15·3			9·3	7·9	
13		11·7	5·7			7·6	5·3	
		21·5	15·3			8·8	7·2	
14								
15		10·8	5·5			6·9	5·4	
		20·8	15·8			7·0	6·2	
16			5·3				5·5	
17								
Sums								MHW / LLW
		Correction to intervals						Sums / Means
		Local intervals						Mn. / MHW / MLW
		Greenwich intervals						Mn. / MTL

Tabulated by — Date — Checked by
Reduced by — Date — Checked by

Station: PARKER PENINSULA (HARBOURITE BAY), ANTARCTICA — Lat.
Observation begin: and — Long.
Tide gauge: 60°s. — Height datum: which is ft. below B. M.

DATE For 1947	Moon's Transits (Greenwich mean solar)	Time of— High Water	Time of— Low Water	Luni-solar Interval— High Water	Luni-solar Interval— Low Water	Height of— High Water	Height of— Low Water	Remarks
	h. m.	h. m.	h. m.	h. m.	h. m.	feet	feet	
Brought forward								
APR. 18								
		17·6				6·1		
19		10·5	1·3			8·4	5·1	
20			1·4			8·2	5·0	
21		12·3				8·1		
		17·6	11·4			8·2	7·9	
22		11·4	2·6			8·3	4·5	Cut-off at 5.0
		18·2	13·6			8·7	8·1	
23								
24								
		19·5						
25		11·0						
		20·6	13·9					
26								
27								
28								
		22·5				7·2		
29		11·6	5·3			7·1	4·8	
		23·6	17·5			6·7	5·7	
30		12·3	4·8			7·6	5·5	
		23·9	20·3			6·0	5·7	
31		17·0	4·1			7·7	5·6	
							5·9	
Sums								MHW / LLW
		Correction to intervals						Sums / Means
		Local intervals						Mn. / MHW / MLW
		Greenwich intervals						Mn. / MTL

Tabulated by — Date — Checked by
Reduced by — Date — Checked by

TIDES: HIGH AND LOW WATERS

TIDES: HIGH AND LOW WATERS

Place: PALMER PENINSULA (HARPERITE BAY), ANTARCTICA

Lat. ____ Long. ____

Time meridian: 60° W. Height datum ____ above or below D. M.

Date 1947	Astron. Observed	High Water	Low Water	Lunitidal Interval High Water	Lunitidal Interval Low Water	Height High Water	Height Low Water
	h. m.	h. m.	h. m.	h. m.	h. m.	feet	feet
JULY 1							
		13·7				8·6	
2		11·2	1·3			7·9	5·7
		15·3	13·3			8·0	7·8
3		10·5	1·5			7·9	4·9
		17·2	15·4			7·6	7·4
4		10·8	1·5			7·7	4·1
		18·4	14·3			8·0	7·5
5		11·0	2·2			7·2	3·6
		18·4	14·5			7·6	6·8
6		11·0	2·7			7·5	3·7
		19·2	15·0			8·0	7·2
7		11·4	3·2			7·7	4·0
		19·7	15·4			8·2	7·3
8		11·0	3·8			7·6	4·0
		20·0	15·7			8·1	7·2
9		11·7	4·2			7·4	4·2
		20·9	15·8			7·9	6·9
10		11·6	4·5			7·1	4·3
		21·2	16·4			7·4	6·6
11		11·7	4·8			6·9	4·4
		21·9	16·2			7·1	6·5
12		12·3	5·2			7·1	4·9
		22·7	16·7			6·8	6·5
13		11·3	4·8			7·2	5·5
		20·2	17·3			6·7	6·5
14		11·4	3·6			7·8	6·0
15		11·4	0·5			8·3	6·1
16		11·2	1·2			8·4	5·5
17		13·0	1·3			8·6	4·8

TIDES: HIGH AND LOW WATERS

Place: PALMER PENINSULA (HARPERITE BAY), ANTARCTICA

Highest tide: Date 19 Height 10.0 ft. Lowest tide: Date 5 Height 3.6 ft.

Date 1947	Astron. Observed	High Water	Low Water	Lunitidal Interval High Water	Lunitidal Interval Low Water	Height High Water	Height Low Water
	h. m.	h. m.	h. m.	h. m.	h. m.	feet	feet
JULY 1							
			1·0				4·5
2		13·5				9·7	
			1·7				5·1
3		14·7				10·0	
			2·0				4·5
4		17·3				9·7	
			2·9				4·7
5		18·1				9·8	
			3·3				4·5
6		19·3				9·2	
		11·0	3·3			7·1	4·2
7		20·2	13·6			9·0	6·7
		10·7	3·7			8·0	5·3
8		21·2	15·5			8·5	6·8
		10·5	4·2			7·7	4·9
9		22·0	16·3			7·3	5·8
		11·2	4·4			7·8	4·8
10		23·4	17·0			7·6	6·0
		11·4	4·4			8·3	5·7
11		23·9	19·2			6·2	5·4
		12·1	4·4			8·0	5·4
12		-·-	20·4			-·-	5·0
		2·3	4·2			5·9	5·8
13		12·5	22·5			8·4	4·9
14		13·3	23·0			8·2	5·0
						48	48
Sum		11·31	3·06			378·7	264·9
		19·04	16·68			7·85	5·52
						5·52	
						2·37 ft.	
						6·70 mm.	

Tabulated by ____ Date ____ Checked by ____

Entered by ____ Date ____ Checked by ____

TIDES: HIGH AND LOW WATERS

Place: PALMER PENINSULA (HARPERITE BAY), ANTARCTICA

Lat. ____ Long. ____

Time meridian: 60° W. Height datum ____ above or below D. M.

Date 1947	Astron. Observed	High Water	Low Water	Lunitidal Interval High Water	Lunitidal Interval Low Water	Height High Water	Height Low Water
	h. m.	h. m.	h. m.	h. m.	h. m.	feet	feet
JULY 1							
		13·5				8·9	
2			0·4				5·3
		12·0				8·7	
3		12·5	1·0			9·0	4·7
		17·1	14·3			9·1	8·9
4		11·5	2·2			8·8	5·1
		17·9	15·0			8·9	8·6
5		11·0	2·8			8·7	5·0
		18·7	15·8			8·8	8·3
6		11·5	3·3			8·0	4·5
		19·4	15·7			8·3	7·6
7		12·2	3·7			8·0	4·6
		20·3	16·2			8·5	7·6
8		11·5	4·3			7·8	4·8
		20·8	16·3			7·7	6·9
9		11·8	4·6			7·5	4·7
		21·7	16·5			7·5	6·6
10		11·2	4·8			7·5	6·6
		22·6	17·6			6·6	6·0
11		11·0	5·0			7·0	4·8
		23·7	17·8			6·5	5·4
12		11·0	4·5			8·1	5·7
		-·-	19·0			-·-	5·6
13		1·0	3·8			6·2	6·0
		11·2	22·0			8·5	5·5
14							
		11·5	22·3			8·5	4·6
15							
		12·2	23·7			9·6	4·8
16							
		12·7				9·5	
17			0·3				4·7
		13·3				9·9	

TIDES: HIGH AND LOW WATERS

Place: PALMER PENINSULA (Harperite Bay), Antarctica

Highest tide: Date 18 Height 10.0 ft. Lowest tide: Date 28-30 Height 4.4 ft.

Date 1947	Astron. Observed	High Water	Low Water	Lunitidal Interval High Water	Lunitidal Interval Low Water	Height High Water	Height Low Water
	h. m.	h. m.	h. m.	h. m.	h. m.	feet	feet
JULY 1							
			1·3				4·9
2		15·0				10·0	
			2·4				5·1
3		16·5				9·5	
			2·2				5·2
4		18·3				9·4	
		10·5	2·5			7·7	5·3
5		19·3	12·5			9·2	7·5
		9·7	3·0			7·9	5·6
6		20·2	15·0			8·5	7·0
		10·3	3·5			8·0	5·3
7		21·3	15·7			7·6	6·0
		10·5	3·5			8·8	5·5
8		22·7	16·5			8·4	6·4
		10·5	4·3			9·5	6·6
9		23·5	17·8			7·2	5·7
		11·1	4·8			8·9	5·9
10		-·-	18·8			-·-	5·0
		0·5	4·3			6·4	5·8
11		11·7	19·5			8·8	4·7
		1·5	4·0			5·8	5·5
12		12·3	20·7			8·4	4·4
		2·4	3·7			5·3	5·2
13		12·5	22·0			8·1	4·4
14		12·0	23·5			8·2	4·4
		12·5				48·0	48
Sum		11·42	3·22			401·7	272·8
		20·99	18·01			8·20	5·68
						5·60	
						2·52 ft.	
						6·96 mm.	

Tabulated by ____ Date ____ Checked by ____

Entered by ____ Date ____ Checked by ____

TIDES: HIGH AND LOW WATERS

TIDES: HIGH AND LOW WATERS

Place: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA

Lat. ____ Long. ____

Time meridian: 60° W.

Date 1947	Day	Time of High Water	Time of Low Water	Lunitidal Interval High Water	Lunitidal Interval Low Water	Height of High Water	Height of Low Water	Remarks
		h. m.	h. m.	h. m.	h. m.	feet	feet	
AUG. 1		12.5	1.5			8.2	4.4	
2		12.4	2.3			8.2	4.7	
		17.6	15.6			7.8	7.6	
3		11.5	2.9			8.0	4.6	
		19.2	16.2			7.5	7.2	
4		11.7	3.4			8.0	4.5	
		19.6	15.8			8.1	7.4	
5		11.0	4.0			8.0	5.1	
		20.5	16.4			7.7	6.8	
6		10.8	4.2			7.5	4.9	
		21.5	16.5			7.3	6.0	
7		10.5	4.1			8.0	5.4	
		22.3	17.1			7.2	5.9	
8		10.8	4.5			7.9	5.5	
		22.6	17.5			7.2	5.6	
9		10.6	4.4			8.3	6.0	
		23.6	17.4			7.6	5.8	
10		10.7	4.4			--.-	6.9	
		--.-	19.0			--.-	5.8	
11		0.5	4.3			6.8	6.3	
		10.6	19.3			8.9	4.4	
12		1.5	2.7			5.6	5.5	
		11.2	20.2			9.5	5.2	
13		1.2	3.0			5.6	5.5	
		11.4	20.7			9.5	4.7	
14		1.4	3.0			5.1	5.0	
		12.3	22.6			9.7	5.1	
15		1.3	3.0			5.3	5.2	
		12.5				9.6		
16			3.2				4.9	
		12.8				8.8		
17			2.7				4.7	
		14.5				8.0		

Remarks: ____

TIDES: HIGH AND LOW WATERS

Place: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA

Highest tide: Date 14, 26 Height 97 ft. Lowest tide: Date ____ Height ____ ft.

Date 1947	Day	Time of High Water	Time of Low Water	Lunitidal Interval High Water	Lunitidal Interval Low Water	Height of High Water	Height of Low Water	Remarks
		h. m.	h. m.	h. m.	h. m.	feet	feet	
Brought forward								
AUG. 18			3.2				4.9	
		18.5				7.5		
19		9.7	2.7			6.9	5.1	
		19.8	14.5			7.4	6.0	
20		9.3	3.0			7.4	5.2	
		21.3	15.5			7.1	5.2	
21		9.5	3.3			7.7	5.0	
		22.4	16.2			7.3	4.6	
22		9.9	3.2			9.2	5.9	
		22.9	16.8			7.4	5.0	
23		10.5	3.6			9.6	6.1	
		23.6	17.7			7.5	5.6	
24		10.7	4.5			9.0	6.3	
		--.-	18.4			--.-	4.3	
25		0.2	3.5			6.3	5.8	
		11.4	18.9			9.6	5.3	
26		1.4	4.0			7.0	6.6	
		11.4	19.7			9.7	5.1	
27		1.0	3.2			6.0	5.7	
		11.4	20.4			8.8	5.3	
28		1.3	3.6			5.9	5.7	
		12.3				9.4		
29			2.8				5.8	
		11.0				8.9		
30			2.6				5.9	
		11.3				8.8		
31		11.0	2.8			8.5	5.8	
		18.5	16.4			7.8	7.5	
Sums		11.214	3.34			425.1	300.3	267.2 / 150.4
		22.49	17.77			7.87	5.56	
Correction to intervals								
Local intervals						2.33		
Greenwich intervals						6.72		

Sums: 267.2 / 150.4 — Means: GIP = 3.51; MHWI = 6.86

Tabulated by ____ Date ____ Checked by ____

Reduced by ____ Date ____ Checked by ____

TIDES: HIGH AND LOW WATERS

Place: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA

Time meridian: 60° W.

Date 1947	Day	Time of High Water	Time of Low Water	Lunitidal Interval High Water	Lunitidal Interval Low Water	Height of High Water	Height of Low Water	Remarks
		h. m.	h. m.	h. m.	h. m.	feet	feet	
SEPT. 1		10.7	2.7			8.0	5.3	
		19.3	16.2			7.5	6.9	
2		10.4	3.3			7.9	4.9	
		20.7	15.6			7.3	5.9	
3		10.0	3.5			7.1	4.9	
		21.3	15.4			7.5	5.7	
4		9.8	3.4			7.5	5.3	
		22.3	16.0			7.6	5.2	
5		10.1	3.7			8.5	6.1	
		22.6	16.5			8.5	5.8	
6		9.4	4.0			8.8	7.0	
		23.7	17.0			7.4	4.6	
7		10.3	4.0			9.4	6.7	
		23.7	17.2			7.6	5.1	
8		10.1	3.8			9.5	6.9	
		24.4	17.9			6.6	4.4	
9		10.4	3.5			9.6	6.3	
		24.5	18.0			6.0	4.4	
10		10.7	3.2			9.5	5.8	
		24.5	18.9			5.5	4.4	
11		11.0	3.2			9.1	5.1	
		23.5	19.7			5.1	4.6	
12		11.5	3.5			8.8	4.6	
		23.5	20.6			5.3	5.0	
13		12.4	4.0			8.9	4.7	
		22.8	20.6			6.8	6.6	
14		11.0	3.2			8.8	6.4	
		21.4	18.5			7.4	7.2	
15		9.0	3.0			7.7	5.9	
		20.0	15.0			7.0	6.6	
16		8.3	3.0			6.9	6.2	
		20.4	14.5			6.9	5.5	
17		8.4	2.4			7.7	5.9	
		21.0	14.8			7.6	5.5	

Remarks: ____

TIDES: HIGH AND LOW WATERS

Place: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA

Highest tide: Date 22 Height 98 ft. Lowest tide: Date 8-30 Height 4.4 ft.

Date 1947	Day	Time of High Water	Time of Low Water	Lunitidal Interval High Water	Lunitidal Interval Low Water	Height of High Water	Height of Low Water	Remarks
		h. m.	h. m.	h. m.	h. m.	feet	feet	
Brought forward								
SEPT. 18		8.5	2.9			8.1	6.2	
		21.5	15.5			7.6	4.7	
19		9.0	3.1			8.7	6.2	
		22.5	16.0			7.7	4.5	
20		9.4	3.2			9.4	6.5	
		22.8	16.5			7.9	4.5	
21		9.9	3.6			9.5	6.6	
		23.3	16.9			7.8	4.6	
22		10.3	3.9			9.8	6.9	
		23.6	17.5			7.5	5.0	
23		10.5	3.5			9.6	6.9	
		24.1	18.1			7.2	5.2	
24		10.7	3.5			9.2	6.7	
		24.5	18.2			6.6	5.2	
25		10.7	3.5			8.9	6.2	
		24.6	18.6			6.6	5.7	
26		11.2	3.0			9.2	6.4	
		22.0	18.0			7.1	6.7	
27		11.0	3.0			8.7	6.2	
		18.7	17.6			7.2	7.1	
28		10.5	2.5			8.3	6.2	
		19.6	16.2			7.3	7.1	
29		10.0	2.7			7.7	6.0	
		20.5	15.3			7.3	6.4	
30		10.0	3.0			7.4	5.7	
		21.0	14.6			8.3	6.2	
31								
Sums		10.17	3.25			472.2	367.0	259.0 / 156.1
		22.26	17.05			7.85	5.98	
Correction to intervals						5.78		
Local intervals						2.07		
Greenwich intervals						6.88		

Sums: 259.0 / 156.1 — Means: GIP = 3.43; MHWI = 6.92; 0.78 / 0.58

Tabulated by ____ Date ____ Checked by ____

Reduced by ____ Date ____ Checked by ____

TIDES: HIGH AND LOW WATERS

TIDES: HIGH AND LOW WATERS

Station: PALMER PENINSULA (HANKOW'S BAY), ANTARCTICA — Lat. — Longitude Logs — and — Long. — Time meridian: 60° W. — Height datum — added to — A. Admir. H. M.

Date 1947	Observed Sunset	Time of High Water	Time of Low Water	Longitude Sunrise High Water	Longitude Sunrise Low Water	Height of High Water	Height of Low Water	Remarks
OCT. 1		9·0	3·2			7·9	6·4	
2		21·3	15·7			7·5	5·5	
		8·6	3·3			7·3	5·9	
3		22·5	15·0			8·6	5·0	
		8·4	3·5			8·8	7·4	
4		22·6	16·0			8·5	4·9	
		8·3	3·7			8·8	7·1	
5		22·7	16·1			7·6	4·3	
		8·7	3·4			8·4	6·4	
6		23·6	16·2			7·3	3·8	
		9.3	3.1			9.5	6·8	
7		23·5	16·7			7·1	4·1	
		9·5	3·2			9·5	6·5	
8		23·4	17·1			6·2	3·9	
		10·1	3·3			9·0	5·6	
9		23·7	17·6			5·9	3·9	
		10·4	3·0			8·0	5·4	
10		23·8	18·0			6·2	4·6	
		10·7	3·1			9·1	5·7	
11		23·4	18·3			6·4	5·3	
		11·3	3·6			8·8	5·6	
12		23·6	18·4			7·1	6·3	
		11·0	4·3			8·1	6·5	
13		23·1	17·5			7·2	6·5	
		10·6	5·0			7·1	6·4	
14		21·4	16·0			7·1	6·5	
		7·5	9·6			6·9	6·5	
15		22·3	14·5			7·5	5·7	
		7·0	2·3			7·4	6·9	
16		21·6	14·5			7·6	5·1	
		7·3	2·5			7·8	6·7	
17		22·1	14·7			7·4	4·8	
		7·8	2·5			8·4	6·6	
		22·1	15·0			7·8	4·1	

TIDES: HIGH AND LOW WATERS

Station: PALMER PENINSULA (HANKOW'S BAY), ANTARCTICA

Higher tide Date 67,20 Height 9.5 ft. Lower tide Date 5 Height 3·8 ft.

Date 1947	Observed Sunset	Time of High Water	Time of Low Water	Longitude Sunrise High Water	Longitude Sunrise Low Water	Height of High Water	Height of Low Water	Remarks
OCT. 18		8·0	3·0			9·1	7·0	
		22·7	15·5			7·9	4·2	
19		8·9	2·9			9·1	6·8	
		23·0	16·1			7·9	4·2	
20		9·2	3·1			9·5	7·1	
		23·5	16·7			7·6	4·3	
21		9·8	3·0			9·4	6·8	
		23·5	17·0			7·4	4·6	
22		10·0	3·5			9·0	6·7	
		24·0	17·3			7·3	4·7	
23		10·2	3·0			8·9	6·8	
		24·0	17·7			6·9	5·1	
24		10·2	2·9			8·5	6·5	
		23·5	17·6			6·9	5·7	
25		9·6	3·0			8·2	6·5	
		23·3	17·7			6·9	5·9	
26		9·8	2·4			8·2	6·6	
		21·7	15·8			7·7	6·9	
27		9·5	3·5			7·5	6·5	
		22·0	15·5			7·6	6·3	
28		8·4	2·5			8·0	6·9	
		22·4	14·9			8·1	5·8	
29		7·0	3·5			7·2	6·9	
		22·3	14·5			7·9	5·0	
30		7·4	3·0			7·6	7·1	
		23·2	14·8			8·4	4·6	
31		6·6	2·8			8·3	7·7	
		23·7	15·0			8·7	4·6	
Sum		204·1	3·15			190·4	300·1	304·4 / 154·7
		22·59	16·21			7·91	9·2	8·53 / 4·99
Correction to Admiralty								
Local Intervals						2·10		
Greenwich Intervals						6·86		

Sum: TT= 3.54 / TT= 4.73

Observed: 0·62 / 0·82

Published by — Date — Checked by

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TIDES: HIGH AND LOW WATERS

Station: PALMER PENINSULA (HANKOW'S BAY), ANTARCTICA — Lat. — Longitude Logs — and — Long. — Time meridian: 60° W. — Height datum — added to — A. Admir. H. M.

Date 1947	Observed Sunset	Time of High Water	Time of Low Water	Longitude Sunrise High Water	Longitude Sunrise Low Water	Height of High Water	Height of Low Water	Remarks
NOV. 1		7·2	2·0			9·6	8·4	
		22·6	15·4			8·1	4·9	
2		7·6	2·6			8·8	7·5	
		23·4	15·6			7·8	4·0	
3		8·0	2·1			9·4	7·4	
		23·5	15·5			7·6	3·9	
4		8·6	2·3			9·7	7·2	
		23·3	16·4			7·5	4·2	
5		9·2	2·5			10·0	7·0	
		23·1	16·6			7·9	5·1	
6		9·5	3·3			9·5	7·0	
		23·4	17·2			7·0	4·7	
7		10·0	3·5			9·7	6·0	
		23·5	17·1			7·3	4·9	
8		10·1	4·0			8·3	6·3	
		23·2	17·2			7·5	5·6	
9		10·1	4·8			7·1	6·1	
		23·3	17·0			7·1	5·4	
10		10·0	5·6			6·7	6·0	
		23·2	15·6			7·5	6·4	
11		5·3	4·5			6·6	6·6	
		23·4	13·2			9·0	5·2	
12		4·3	2·4			7·8	7·6	
		22·8	13·7			7·9	5·3	
13		4·7	2·6			7·7	7·5	
		23·2	14·0			8·1	4·4	
14		6·6	2·0			8·7	7·7	
		22·7	14·4			8·4	4·5	
15		7·0	2·4			8·7	7·7	
		23·3	14·9			8·3	4·2	
16		8·0	2·6			9·2	7·7	
		23·2	15·4			8·4	4·3	
17		8·2	3·0			9·2	7·7	
		23·3	15·7			8·4	4·4	

TIDES: HIGH AND LOW WATERS

Station: PALMER PENINSULA (HANKOW'S BAY), ANTARCTICA

Higher tide Date 5 Height 10.0 ft. Lower tide Date 3 Height 3.9 ft.

Date 1947	Observed Sunset	Time of High Water	Time of Low Water	Longitude Sunrise High Water	Longitude Sunrise Low Water	Height of High Water	Height of Low Water	Remarks
NOV. 18		8·6	2·8			9·4	7·7	
		23·5	16·2			8·2	4·5	
19		9·1	3·5			9·1	7·4	
		23·6	16·7			7·7	4·6	
20		9·5	3·5			9·1	7·1	
		23·5	16·9			7·2	4·6	
21		9·8	3·6			7·9	6·7	
		24·3	17·4			7·0	4·8	
22		10·2	3·4			7·6	6·5	
		23·5	17·2			7·3	5·6	
23		9·6	3·5			7·4	6·6	
		23·2	16·7			7·6	6·1	
24		9·2	4·5			7·2	6·8	
		23·9	15·5			7·6	6·2	
25		7·3	4·6			6·8	6·8	
		22·3	14·3			8·0	5·7	
26		4·3	4·3			6·9	6·9	
		22·6	13·4			8·5	5·0	
27		5·3	4·8			7·6	7·6	
		23·2	13·8			8·8	4·9	
28		3·5	3·0			8·2	5·2	
		24·0	14·0			9·0	4·4	
29		3·8	2·0			8·9	8·8	
		24·7	14·4			8·6	4·1	
30		5·5	1·7			9·0	8·5	
		24·7	14·7			8·5	4·0	
31								
Sum		7·76	3·22			186·9	362·8	359·2 / 145·4
		23·37	15·53			8·18	6·05	9·63 / 4·85
Correction to Admiralty								
Local Intervals						2·37		
Greenwich Intervals						7·08		

Sum: TT= 3.76 / TT= 4.73

Observed: 0·48 / 1·80

Published by — Date — Checked by

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TIDE: HIGH AND LOW WATERS

DEPARTMENT OF COMMERCE — TIDES: HIGH AND LOW WATERS

Station: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA

DATE For 1947	Moon's transit	Time of High Water	Time of Low Water	Luni-Tidal Interval High Water	Luni-Tidal Interval Low Water	Height of High Water	Height of Low Water	Remarks
Dec. 1		6.5	1.6			9.7	9.5	
		21.0	15.3			7.2	4.1	
2		7.4	1.0			9.8	7.0	
		21.9	15.5			7.5	4.1	
3		8.0	1.3			9.7	7.3	
		22.6	15.7			7.7	4.5	
4		8.6	2.1			9.5	7.1	
		22.6	16.3			7.5	4.6	
5		9.3	3.2			9.6	6.5	
		23.0	16.5			7.7	4.9	
6		10.3	4.5			9.0	6.2	
		23.3	17.0			8.0	5.3	
7		11.0	5.5			8.2	5.5	
		23.5	16.6			8.3	5.7	
8		11.3	7.2			8.3	6.0	
		23.7	16.7			8.3	5.8	
9								
		24.5	12.0			8.5	5.6	
10								
			12.7				5.0	
11		1.5				8.4		
			13.0				4.5	
12		2.0				8.1		
		23.7	13.5			8.1	4.1	
13		5.0	2.7			8.3	7.9	
		23.6	14.1			8.1	4.0	
14		6.2	2.7			8.3	7.3	
		23.4	14.5			8.0	3.9	
15		7.0	2.9			8.5	7.7	
		23.6	15.1			8.1	4.0	
16		8.0	3.3			8.6	7.6	
		23.5	15.8			8.0	4.1	
17		8.5	3.4			8.5	7.4	
		23.7	16.3			7.9	4.2	

Station: PALMER PENINSULA (MARGUERITE BAY), ANTARCTICA

Higher tide: Date 2, Height 9.5 ft. Lower tide: Date 14, Height 3.9 ft.

$(K_1+O_1)+M_2$ or $2(DHQ)+DLQ+M_2=$ ..... $F(M_2)=$ ..... $F_1=$ .....

DATE For 1947	Moon's transit	Time of High Water	Time of Low Water	Luni-Tidal Interval High Water	Luni-Tidal Interval Low Water	Height of High Water	Height of Low Water	Remarks
Brought forward								
Dec. 18		8.7	3.8			8.4	7.2	
		23.4	16.3			7.9	4.4	
19		9.6	4.5			8.2	7.1	
		23.5	16.6			7.8	5.0	
20		10.3	4.9			7.8	6.9	
		23.5	17.0			7.6	5.4	
21		10.8	5.7			7.1	6.5	
		23.5	17.0			7.6	5.7	
22		11.4	7.0			6.4	6.1	
		23.4	16.5			7.8	5.8	
23		11.0	7.5			6.9	5.9	
		23.3	13.3			8.5	5.9	
24								
		23.4	12.3			8.9	5.5	
25								
		23.6	12.9			9.0	4.8	
26								
		24.5	12.9			9.2	4.4	
27								
		24.7	13.4			9.2	4.2	
28								
		25.0	13.8			9.8	4.0	
29		4.5	2.5			8.8	9.7	
		25.2	14.0			8.2	4.0	
30		6.0	2.0			8.8	8.2	
		24.7	14.7			7.5	4.0	
31		7.1	3.3			9.0	7.5	
		23.6	15.3			7.0	4.2	
Sums		9.50	3.72			432.4	303.6	267.1 / 115.6
		23.83	14.91			8.16	5.73	8.62 / 4.70

Correction to intervals

Local interval: 2.43 hr. Mean: 0.46 / 1.03

Greenwich interval: 6.94 hrs. Factor

Tabulated by — Date — Checked by

Reviewed by — Date — Checked by

Station: Palmer Peninsula (Marguerite Bay), Antarctica

Higher tide: Date 2, Height 10.2 ft. Lower tide: Date 13-15, Height 4.4 ft.

$(K_1+O_1)+M_2$ or $2(DHQ)+DLQ+M_2=$ ..... $F(M_2)=$ ..... $F_1=$ .....

DATE For 1948	Moon's transit	Time of High Water	Time of Low Water	Luni-Tidal Interval High Water	Luni-Tidal Interval Low Water	Height of High Water	Height of Low Water	Remarks
Brought forward								
JAN. 15		10.5	5.5			7.9	6.6	
		23.[illegible]	[illegible]					
16		12.[illegible]	6.2			7.6	6.4	
		23.1	17.0			8.6	6.3	
17		12.3	6.8			6.7	5.8	
		23.0	16.5			8.7	6.3	
18		13.2	[illegible]			[illegible]	5.3	
		23.5	16.[illegible]			9.8	6.0	
19			[illegible]				5.0	
		23.7				9.2		
20			12.[illegible]				4.7	
		24.7				9.5		
21								
		24.5	14.2			9.9	4.5	
22								
		25.3	14.6			9.9	4.6	
23								
		25.3	15.2			9.3	4.7	
24								
		25.7	14.[illegible]			8.2	4.5	
25		5.5	2.3			8.5	8.2	
		25.4	15.4			7.1	4.9	
26		7.0	2.7			8.2	7.3	
		22.6	15.4			7.1	5.0	
27		8.4	3.0			7.8	6.4	
		22.6	15.7			7.6	5.0	
28		9.5	4.0			7.4	5.5	
		22.2	16.0			8.2	5.1	
Sums		9.80	5.30			420.6	299.0	267.5 / 131.6
		23.72	15.62			8.05	5.56	8.63 / 4.89

Correction to intervals

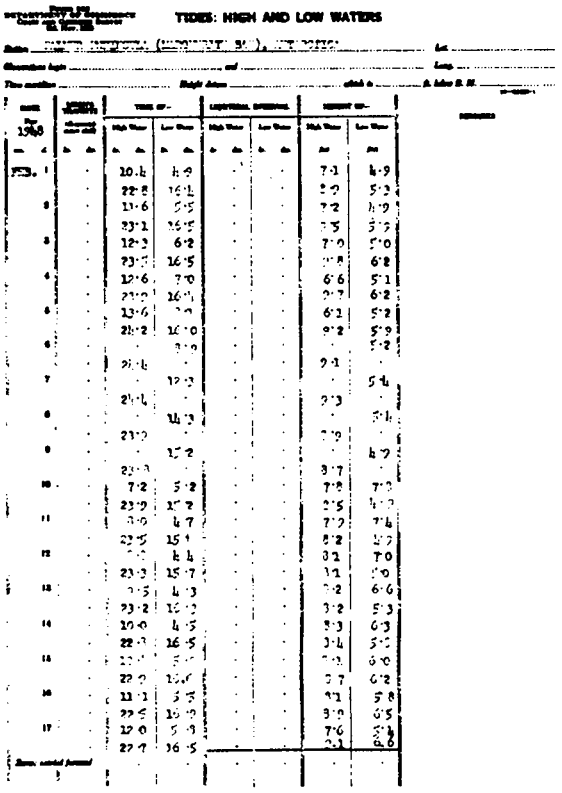
Local interval: 2.63 hr. Mean

Greenwich interval: 6.85 hrs. Factor

Tabulated by — Date — Checked by

Reviewed by — Date — Checked by

TIDES: HIGH AND LOW WATERS



TIDES: HIGH AND LOW WATERS

| Date 1948 | | |