

2306

Diag. Chart No. ?

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*

Field No. Office No. *2306*

LOCALITY

State *N.C. S.C. Fla & Ga*

General locality *Approximate*

Locality *Limits of the*

Gulf Stream

~~194~~

1894

CHIEF OF PARTY

St. Comde J. F. Mason U.S.N.

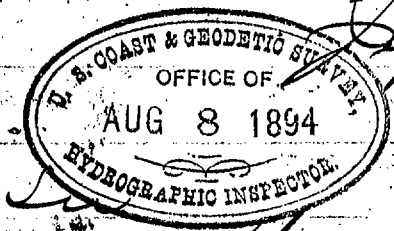
LIBRARY & ARCHIVES

DATE

2306

New York Aug 5th 1894.

Lieut Comdr J. J. Moore,
Inspector of the U. S. Survey.



Forms of the 19th & passages of
Charted Tides in answer to your
soundings in passing Cape
Canaveral are taken by me at
very short intervals. And while it is
frequently the case that the depths
obtained do not always agree
with chart soundings, I do not
think that this proves that your
soundings are incorrect.

To the contrary I believe the
difference exists only by reason
of perhaps less careful
sounding, no allowance for rise
and fall of tide, and, principally
by reason of the many more
soundings taken by the average
ship master as compared of the
depths shown on charts.

(2)
I cannot agree with you as to position of the whirling buoy off Helgel - this shoal. It would very seldom approach these shoals from the South and East, but does in from the westward to avoid the stream which sometimes I have seen running over the shoals faster than the breeze. I am of the opinion that this buoy should be placed not to the S.E. but to the N.E. of Helgel shoal and in about 10 fathoms of water. By looking at the chart my meaning I think will be clear to you.

The axis of the Gulf Stream as indicated on chart B has not from my experience been found to carry the maximum current.

The maximum current seems to me to follow a line between latitude 25.00° N. and 31.00° N. about 10 miles to the eastward of the 100 fathom curve. but from 31.00° N. to 35.00° approximately about

3

20 miles east of this curve.
My practice is to follow a due
north line from 25° to 30.45 on
or about 19.50 N. long, then to 32°
E. 19.40. thence to 33.40 and 76° long
and thence to 35° & 14.50 N. long.

The few times I have tried more
to the eastward I have found poor
current. And in fact in making a
straight course from 29° N. to 19.50
N. to Wateras. I have always run
out of the current part of the
time.

A line or lines drawn on the
chart showing "Steamer routes from
Wateras - both inside & outside
as you suggest, also the
approximate inside & outside edge
of the stream. is an excellent
idea. And while it is true such
lines might not be followed
closely yet they would be of
considerable benefit as bearing
approval of a government officer
In this connection I would

(4)

suggest that the 100 fathom curve
should not be followed as a fixed
western edge. for the current is
found frequently well to the west-
ward of it. for all practical
purposes, such lines would be
of great value especially to the
stranger. and in connection with the
above I desire to say that great
assistance is given the navigator
whenever it is possible to mark
on all charts the existence
of ocean currents with
approximate direction and velocity
I understand clearly that you
have not at your command
sufficient data to do this positively
but all aids however slight
greatly assist the coastal
navigator. any information in my
power is at all times cheerfully
at your disposal.

Yours very respectfully
John S. Kneen
Master. S/S Kneen

AUG 9 1894 010197

Hydrographic Inspector



New York Aug 8 1894

To the Hydrographic Inspector C & G Survey

Washington

Sir

Acknowledging the receipt of yours of July 19th together with 3 charts, for which please accept thanks. I would say, that in my experience the soundings from Mosquito inlet to and around the shoals off Cape Carnaveral agree with the chart, at least on the course which I follow viz. bet soundings in 12 to 13 fathoms & ran along the shore in not less than 12 1/2 fathoms until the water deepens to 16 fathoms when I haul up on my course for Jupiter Is. &

In relation to the axis of the Gulf stream I have never tried a course as far East as is marked on the chart sent. In coming North from the Gulf I aim to pass Lowry Rock bearing N 12° then I steer N to Lat 28° N then N 4 W to Lat

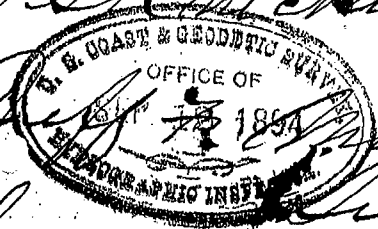
2
38° 30' N Lon 79.58 W Thru N N E to Lat 31° 25' N Lon
79° 23' W from that point I make a straight
course for Hatteras shoal leaving the edge
of the stream in Lat 33.05 Lon 77.40 W carrying
in Summer from 3 1/2 to 4 K stream and in the
Winter seldom less than 2 1/2 and with southerly
winds 3 1/2 K stream also on this course I have
the advantage of getting soundings off Cape
Lookout in 17 to 18 faths which is a valuable
departure in thick or bad weather.

I would think that it might be
an improvement to mark courses of inside &
outside routes on the charts as it might tend
to get vessels to follow law routes and so
reduce the chances of collision

Very Respectfully
Jas Wilder
U.S. "Geona"

D. D. Buchanan to Mr. ...

New Orleans Sept 10. 94



Dear Sir - I have the honor to acknowledge the receipt of your letter of the 19th inst. in relation to the mandate of July 19th which has remained unexecuted until now on account of illness.

In reply - would say - I find the soundings in the immediate vicinity of Chin and Budget Shoals fairly correct - But in a line from the point of the Shoals N by W - between Lat 29° and 30° 30' - the soundings are much deeper than those laid down on the chart.

This error I have noted for many years - and has - and will lead to error in the approach to Canaveral. As it is liable to run over to the Westward - and the bad feature is - that the soundings which you find just before you raise Canaveral light are all alive - until you get in 16 or 17 fms - for you have 16 or 17 fms from the shore - and the same soundings 17 or 18 miles off - and are very liable to get in behind

The shoals - several instances of which
have occurred since I have been on
the route - and some have been
on the shoals

I was able to go less than 140 fms - until
I raised the light -

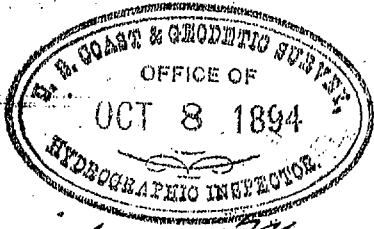
The stream runs much further to the
Northward than of Canada - than is
laid down on the chart - and we some-
times find a strong current - when leading
around the shoals -

I regret that I cannot say much with
reference to the axis of the stream - We do
not seem to go the greatest current - both
of 31° we seem to find it very uncertain
as to force both of the line

I do not think the amount to the full
require to be laid down on the chart -

and I do not see any improvements
in the chart - which I could suggest
more than ^{noticed above}

Yours, Respectfully
J. D. Alley



Boston October 6-94

My dear Mason -

I have received your letter and the charts showing the Gulf Stream axis, ~~and~~

of Captain Kist's Axis is a very good one but he has followed the irregularities of the 100 fathom curve instead of disregarding them.

Your axis in blue is, I think very near the truth except south of $30^{\circ} 31'$ Lat where it is too far to the eastward - Off Tovey Rocks it surely should be 11 or 12 miles from the light. Off Jupiter about 19 miles, and South East of Hattues about 38 miles - I feel confident that between Jupiter and Hattues it is not far from an average position of about 16 miles from the 100 fathom curve and your axis is just about that. I have drawn a green line south of $30^{\circ} 30'$ indicating my idea of the correct position -

Your approximate inner limit of our West Current is as near as

2
can be drawn except in the northern part. I have no evidence that it spreads much in that region. The Florida Stream maintains its integrity up to Cape Hatteras at any rate, and off that cape is about the same width as in the Straits of Florida - 40 miles -

For the outer limit of our Kuroshio current I can give no opinion that is definite. The Florida Overcurrent holds its own width and I believe does (not) spread at all - It is however joined by a gentle flow coming from the trade wind region outside the Bahamas. It is a filling up of the southern part of the girth between Hatteras and the West Indies, with warm water, and an outflowing in the northern part of the girth, South of the Gulf Stream. This is a very gentle flow, not regular in direction or force, and probably is rarely more than a Kuroshio although it may sometimes reach a Kuroshio in force.

The Annapolis marine ethnics is helped by sailing lines. The "Measies" course bound south is a good one but I should shorten the northernmost leg to about the point where I have placed a X. If the English were put a light on Mantawilla

Keef as I hope they will some day, then the track should be down the East side of the Straits as far as Macelle Shoal off Benini or to Gun Cay.

I rather think that a sailing line for a vessel bound north would be needless if the Axis is shown, for every man would follow it ^(the axis) as closely as circumstances would permit. Bound North in winter, if a Captain wished to leave the stream and run along shore, the course would depend so much upon the severity of the weather the direction of the wind and the qualities of the vessel, that no two cases would be alike.

I notice that the small part of C. joined to the lower end of B does not show the axis of the stream just right I think it should be a little farther to the westward, about as I have shown it in pencil.

I understand that you have seamed E. K. for the Pattinow. I am mighty sorry to hear that he is to leave ^{Boston} but I congratulate you all the same - Please remember me to all my friends at the office and also to Mrs Moser -

As ever sincerely,
 charts returned today. J. E. Pillsbury.

Navy Yard
Boston Oct 16 - 1894



Meser -

I think the ~~act~~ and limit of the Gulf Stream on chart B is ~~about~~ correct as you have ~~them~~ drawn in blue - I should not carry the "approximate limit of one knot current" into the Straits of Florida but stop it abreast Mantouilla Shoal. The "approximate outer limit of current" we do not have but I should make it in the faintest sort of a line. I doubt very much if there is any of the water of the Gulf Stream flowing off on a side track. Off Hatteras the width of a current may be at times as far out as the dotted line and in fact I believe generally is in an intermittent sort of a way. S. E. of Charleston I think the line is wrong but cannot bring evidence of the fact.

Steamer Routes to the Straits of Florida would seem to be best.

Sincerely yours

J. E. Pillsbury.

I send the chart to you by mail today - J. E. P.

1

U. S. Coast & Geodetic Survey
JAN 1 1896
OFFICE OF HYDROGRAPHIC SURVEYS

The Gulf Stream off Cape Hatteras

In studying the Gulf Stream we should endeavor to treat it as the result of the conflict of the warm waters of the ocean with the light and cold waters which descend from the continental bank, rather than as a river seeking a lower level.

It is supposed that about August these cold waters, coming from the north and west, have exhausted their strength on reaching Cape Hatteras, and that at this time the Gulf Stream approaches the cape to within 30 miles. For the month of January, Prof. Pelormann who made a study of the temperatures of the Gulf Stream in 1870, puts its axis of about 70 miles from the cape. The distance of 35 miles proposed by Comdr. Moser is a very fair mean and agrees with St. Hillebrand's observations. North of Cape Hatteras the stream takes a turn to the eastward, not, as some people suppose, in consequence of the rotation of the earth, but for the reason that in this latitude evaporation is less effective. I might be well to indicate this deflection on the charts, instead of keeping up the N. E. direction. It will be a very difficult matter to lay down the track of the Gulf Stream north of Cape Hatteras, according to Murray there is a distance

2

of at least 45 miles between the summer and winter position.

The Gulf Stream off the Carolina's.

There is but little doubt that Prof. Baehre as well as Comdr. Bartlett put the Gulf Stream at less great a distance from Cape Hatteras & Cape Lookout. It does not appear that strong currents from the northward pass Cape Hatteras and Hatteras and Ocracoke Inlets do not discharge large quantities of fresh water, on the contrary the ocean water shows a high degree of salinity. Hence there is no apparent reason why the warm waters should not approach closely to the slope of the continental shelf, and the deep sea temperatures show this to be the case.

The location of the stream off Cape Lookout and Cape Fear is quite satisfactory.

Off Charleston Comdr. Bartlett put the Gulf Stream at a greater distance from the coast than anybody else ever attempted to do. According to his chart he did not encounter a strong current on the line off Charleston until he reached the depth of 503 fathoms in lat. $32^{\circ}05'$ and long $77^{\circ}30'$ but his records contain the remark that at the sounding 377 a strong ^{N.E.} current was observed. Again, when running

the line commencing with the sounding 299 in Lat. 31.° 58' and long 78.° 17' and going N. E., Comdr B. distinctly states that he followed the axis of the Gulfstream. From these two contradictory statements it appears that the distance of the Gulfstream off Charleston is variable. That at times, it is the greatest attained off the southern coast, but at other times, it runs much closer to the coast over depths less than 250 fathoms, in the latter case it scrapes the bottom and exposes a hard coral rock. Considering Comdr. Bartlett & Moser's lines as extremes, I would propose the compromise pencil line passing through the sounding 317 as ~~at once~~ consistent with the observations and at the same time correcting the distortion noticeable on Chart B.

The Gulfstream off the Florida Coast.

There is no great difference between the course of the Gulfstream as shown on the early sailing charts and that according to Bartlett's observations if properly plotted. Bartlett does not claim great precision and accuracy in his current compilations, they were not the results of current observations like Pillsbury's but obtained by dividing the stations in

groups and ~~applying~~ comparing the results of dead reckoning with the ships positions. The mistake was also made to consider the middle of the group showing the strongest current as its axis whereas Pillsbury's observations show that, on the surface currents the axis is ~~usually~~ on the western edge of the stream. After these corrections have been made it will appear that Bartlett's observations show the Gulf stream to be located almost exactly where Prof Beebe put it excepting off Cape Florida where Pillsbury's observations put it at 15 miles from the land - the nearest distance it ever attains - instead of 30 miles.

I do not think we are justified to move the axis of the stream so far in shore off Cape Canaveral as Capt. Moser indicated, at least not as long as the position is considered a matter of observation and not of opinion ^{un}supported by observation.

J. R.

Jan 6/95