



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D.C. 20350

IN REPLY REFER TO
OPNAVINST 3530.3B
OP-32

JUL 16 1973

OPNAV INSTRUCTION 3530.3B

From: Chief of Naval Operations

Subj: Navigation Workbook and Standard Bearing Book

- Encl: (1) Facsimile of the U.S. Navy Navigation Workbook
with instructions for usage
- (2) Facsimile of the U.S. Navy Standard Bearing Book
with instructions for usage.

1. Purpose. To promulgate changes to the Navigation Workbook (A
which is the standard to be used by all ships of the U.S. Navy,
except as noted in paragraph 5 below. Additionally, to inform
addressees that no changes were made to the Standard U.S. Navy
Bearing Book, which is currently used by all ships of the
U.S. Navy.

2. Cancellation. OPNAV Instruction 3530.3A and OPNAV Forms (R
3530/1, 3530/1A through 1L (Rev. 7-71) of 5 May 1970.

3. Background. (R

a. The President signed the 1973 Navy Regulations on
26 February 1973. Certain regulatory articles from the 1948
Navy Regulations do not appear, but will be promulgated at a
later date as CNO directives.

b. By OPNAVNOTE 5000., "Navy Regulations", CNO issued
policy guidance pertaining to the retention of certain pro-
visions of specified chapters and articles of the 1948 Navy
Regulations until the subject changes could be made. One
of the aforementioned articles is Article 0930, paragraph 1(d),
which requires the navigator to "Maintain record books of all
observations and computations made for the purpose of navi-
gating the ship, with the results and dates involved. Such
books shall form a part of the ship's official records."

c. To assist in providing standardized recording pro-
cedures and format to ensure the intent of the regulation,
a Navigation Workbook and a Standard Bearing Book were devel-
oped for use by all U.S. Navy ships in 1970. The workbook
and bearing book provided sufficient flexibility to permit
the recording of all present methods of determining ships
position. These books were developed by the U.S. Naval
Academy as the best compromise of recommendations submitted
by the fleets and training units.

- A) 4. Review. A review of the subject books by the fleets produced several changes to the computation strip forms which are used with the Navigation Workbook. Comments were also solicited concerning the concept of providing a set of longer, more complete strip forms to be used with a green record book in lieu of the Navigation Workbook. It was generally agreed that the workbook with revised forms be retained for use in the fleet, with the proviso that the green record book be authorized as a suitable substitute. The rationale is that the Navigation Workbook is considered a necessary guide for inexperienced navigators, while the experienced navigator might prefer a log with less format (green workbook). No changes to the Standard Bearing Book were noted.
- R) 5. Action. Enclosure (1) depicts the revised standard U.S. Navy Navigation Workbook format which is effective no later than 1 January 1974 with the proviso that commanding officers may authorize, in writing, the green record workbook as a substitute thereto. If so authorized, then the commanding officer will specifically cite in writing that the green workbook is the command's official Navigation Workbook. The U.S. Navy Standard Bearing Book depicted in enclosure (2) is to be used by all ships of the U.S. Navy.
- R) 6. Forms. "U.S. Navy Navigation Workbook," OPNAV 3530/1 and 30-44 and "U.S. Navy Standard Bearing Book," OPNAV Form 3530/2, will be requisitioned from the appropriate Cognizant "I" stock point as set forth in the current edition of NAVSUP Publication 2002.



R. F. HOFFMANN
By direction

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OPNAVINST 3530.3B

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Ops 09, 96, 97, 094, 095, 098, 099, 01, 02, 03, 04, 05, and 06

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U. S. NAVY NAVIGATION WORKBOOK

U.S.S. _____

PERIOD

_____ 19__ TO _____ 19__

OPNAV 3530/1 and 30 - 40 (Rev. 6-73)

Enclosure (/)

NAVIGATION WORKBOOK

U.S. Navy Regulations require the navigator to "Maintain record books of all observations and computations made for the purpose of navigating the ship, with results and dates involved. Such books shall form a part of the ship's official records." This publication has been printed to meet a recognized need for a standard computation book. In addition to providing a standard record, the format is intended to provide optimum utility, economy and flexibility, by providing strip inserts to assist the navigator in the below computations: (Strip inserts, marked to size for cut out, are printed on the back pages of this book. An envelope, suitable for stowing inserts when not in use, is attached to the inside back cover.)

CELESTIAL SIGHTS and LORAN

Place proper Computation Strip beside a blank column, and align so that entries will correspond with information on strip. Insure name of celestial body or "LORAN" is entered at top, and that the Fix is entered for appropriate celestial sights or LORAN LOPs.

AZIMUTH, LAN, SUNRISE/SUNSET, TIDES, CURRENTS, etc.

Place proper Computation Strip beside a blank column. Insure top of column is labeled to identify the type of computation.

MODIFICATION OF COMPUTATION STRIPS

This workbook is to serve navigators, and strip forms may be used to suit individual preference. Note: Any modified strip form is to become an official part of this record.

NAVIGATOR'S SIGNATURE

Space is provided at the bottom of each page for required signature of the navigator.

OPNAVINST 3530.3B

| OPNAV 3530/30 (4-73) H.O. 229 NAUT ALM | OPNAV 3530/31 (4-73) H.O. 229 AIR ALM | OPNAV 3530/32 (4-73) H.O. 249 VOL. I NAUT ALM | OPNAV 3530/33 (4-73) H.O. 249 VOL. I AIR ALM | OPNAV 3530/34 (4-73) LAT. BY POLARIS NAUT ALM |
|-------------------------------------------|------------------------------------------|--------------------------------------------------|-------------------------------------------------|--------------------------------------------------|
| Body | Body | Body | Body | Body POLARIS |
| GMT | GMT | GMT | GMT | GMT |
| IC | IC | IC | IC | IC |
| D | D | D | D | D |
| Sum | R | Sum | R | Sum |
| hs | SD | hs | SD | hs |
| ha | P. in A. | ha | | ha |
| Alt Corr | Total Corr | Alt Corr | Total Corr | Alt Corr |
| Add'l Corr Moon HP/Corr | hs | Add'l Corr | hs | Add'l Corr |
| Ho | Ho | Ho | Ho | Ho |
| GHA (h) | GHA (h, 10's of min) | GHA γ (h) | GHA γ (h, 10m) | GHA γ (h) |
| Incr. (m/s) | Incr. (m/s) | Incr. (m/s) | Incr. (m/s) | Incr. (m/s) |
| v/v Corr SHA | SHA | Total GHA γ | Total GHA γ | Total GHA γ |
| Total GHA | Total GHA | $\pm 360^\circ$ | $\pm 360^\circ$ | $\pm 360^\circ$ |
| $\pm 360^\circ$ | $\pm 360^\circ$ | a λ (+E, -W) | a λ (+E, -W) | DR λ (+E, -W) |
| a λ (+E, -W) | a λ (+E, -W) | LHA γ | LHA γ | LHA γ |
| LHA | LHA | a LAT | a LAT | a0 |
| Tab Dec | Tab Dec | Hc | Hc | a1 |
| d# / d Corr | d# / d Corr | Ho | Ho | a2 |
| True Dec | True Dec | a | a | Sum |
| a LAT Same Contrary | a LAT Same Contrary | Zn | Zn | 1° 00' (-) |
| Dec Inc / d | Dec Inc / d | P and N Corr | P and N Corr | Total Corr |
| Tens / DSD | Tens / DSD | | | Ho |
| Units / DSD Corr | Units / DSD Corr | Fix Lat | Fix Lat | LAT |
| Total Corr | Total Corr | Long | Long | Time |
| Hc (Tab) | Hc (Tab) | Fix Time | Fix Time | |
| Hc (Comp) | Hc (Comp) | | | |
| Ho | Ho | | | |
| a | a | | | |
| Z | Z | | | |
| Zn | Zn | | | |
| Fix Lat | Fix Lat | | | |
| Long | Long | | | |
| Fix Time | Fix Time | | | |
| Sounding | Sounding | Sounding | Sounding | Sounding |
| Signature | Signature | Signature | Signature | Signature |

Enclosure (1)

OPNAVINST 3530.3B

| OPNAV 3530/35 (4-73) LAN | OPNAV 3530/36 (4-73) AZIM BY H.O. 229 | OPNAV 3530/37 (4-73) LORAN (A) | OPNAV 3530/38 (4-73) SUNSET/RISE TWILIGHT/LHA γ | OPNAV 3530/39 (4-73) MOONSET/RISE NAUT ALM |
|-----------------------------|------------------------------------------|-----------------------------------|-----------------------------------------------------------|-----------------------------------------------|
| DR λ | Body | Time | DR Lat | DR Lat |
| STD Meridian | GMT | Rate | Tab Interval | TABLE I: |
| d λ (arc) | GHA (h) | TG/TS | Lat Interval | Tab Interval |
| d λ (time) | Incr (m/s) | Sys Corr | Lat Diff | Lat Interval |
| LMT Mer Pass | Total GHA | Ts Corr | Corr Table I | Lat Diff |
| ZT LAN (1st. Est.) | $\pm 360^\circ$ | Tg | Tab LMT | Corr Table I |
| Rev DR λ | DR λ (+E, -W) | Tab T | Corr LMT | Tab LMT |
| STD Meridian | LHA | Tg - T | DR λ | LMT |
| d λ (arc) | Tab Dec | Δ | STD Mer | DR λ |
| d λ (time) | d# / d Corr | Δ Corr | d λ (arc) | TABLE II: |
| LMT Mer Pass | True Dec | Lat/Long | d λ (time) | Tab LMT Today |
| ZT LAN (2nd est) | DR Lat Same Contrary | Tab Lat/Long | LMT | LMT preceding following |
| LAT BY LAN: | Tab Z | Δ Corr | ZT (1st est) | Time Diff |
| ZT LAN (OBS) | Dec Inc/Z Diff | Corr Lat/Long | Rev DR | Time Corr |
| ZD | Dec Corr | Plot Lat | STD Mer | LMT |
| GMT | Lat Inc/Z Diff | Long | d λ (arc) | LMT Actual |
| Tab Dec | Lat Corr | | d λ (time) | λ arc to time |
| d# / d Corr | LHA Inc/Z Diff | Δ | LMT | GMT |
| True Dec | LHA Corr | Δ Corr | ZT (2nd est.) | ZD (Reversed) |
| IC | Dec Corr | Lat/Long | ZD | ZT (1st est) |
| D | Lat Corr | Tab Lat/Long | GMT | |
| Sum | Total Corr | Δ Corr | GHA γ (h) | Rev DR λ |
| hs | Tab Z | Corr Lat/Long | Incr (m/s) | λ arc to time |
| ha | Exact Z | Plot Lat | Total GHA γ | GMT |
| Alt Corr | Exact Zn | Long | DR λ (+E, -W) | ZD (Reversed) |
| Ho | Gyro Brg | | LHA γ | ZT (2nd est) |
| 89° 60' | Gyro Error | Fix Lat | $\pm 360^\circ$ | |
| HO (-) | | Long | Body/Alt/Zn | |
| Z Dist | | Time | | |
| True Dec | | | | |
| LAT | | | | |
| Time | | | | |
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| Sounding | | Sounding | | |
| Signature | Signature | Signature | Signature | Signature |

Enclosure (1)

OPNAVINST 3530.3B

| OPNAV 3530/40 (4-73) HT OF TIDE | OPNAV 3530/41 (4-73) VEL OF CURRENT | OPNAV 3530/42 (4-73) OMEGA | OPNAV 3530/43 (4-73) H.O. 214 NAUT ALM ALL BODIES | OPNAV 3530/44 (4-73) AZIMUTH BY H.O. 214 |
|------------------------------------|----------------------------------------|-------------------------------|------------------------------------------------------|---------------------------------------------|
| Date | Date | Date | Body | Body |
| Location | Location | ZT | GMT | GMT |
| Time | Time | ZD | IC | GHA (h) |
| Ref Sta | Ref Sta | GMT | D | Incre (m/s) |
| HW Time Diff | Time Diff Slack Water | Sta Pair | Sum | Total GHA |
| LW Time Diff | Time Diff Max Current | TS Corr | hs | ± 360° |
| HW Ht Diff | | Total Corr | ha | DRλ (+E, -W) |
| LW Ht Diff | Vel Ratio Max Flood | Lane Count | Alt Corr | LHA |
| | Vel Ratio Max Ebb | TG Plot | Add'l Corr Moon HP/Corr | t |
| Ref Sta HW/LW Time | | TAB | Ho | Tab Dec |
| HW/LW Time Diff | Flood Dir | Diff | GHA (h) | d# / d Corr |
| Sub Sta HW/LW Time | Ebb Dir | | Incre (m/s) | True Dec |
| | | Lat/Long | v# / v Corr SHA | DR Lat ^{Same} Contrary |
| Ref Sta HW/LW Ht | Ref Sta Slack Water Time | Tab Lat/Long | Total GHA | Tab Az |
| HW/LW Ht Diff | Time Diff | Corr | + 360° | Tab Lat |
| Sub Sta HW/LW Ht | Local Sta Slack Water Time | Plot Lat | aλ (+E, -W) | Lat Diff/Az Diff |
| | | Long | LHA | Lat Corr |
| Duration ^{Rise} Fall | Ref Sta Max Current Time | | t | Tab t |
| Time Fm ^{Near} Tide | Time Diff | Lat/Long | Tab Dec | t Diff/Az Diff |
| Range of Tide | Local Sta Max Current Time | Tab Lat/Long | d# / d Corr | t Corr |
| Ht of Near Tide | | Corr | True Dec | Tab Dec |
| Corr Table 3 | Ref Sta Max Current Vel | Plot Lat | 214 Tab Dec/a Lat | Dec Diff/Az Diff |
| Ht of Tide | Vel Ratio | Long | Dec Diff | Dec Corr |
| Charted Depth | Local Sta Max Current Vel | | Δd | Lat Corr |
| Depth of Water | | Fix Lat | (Dec Diff) x (Δd) | t Corr |
| Draft | Int Between Slack and Desired Time | Long | ht | Total Corr |
| Clearance | Int Between Slack and Max Current | Fix Time | Hc | Tab Az |
| | Max Current | | Ho | Exact Az |
| | Factor Table 3 | | a | () Az () |
| | Velocity | | () Az () | Zn |
| | Direction | | Zn | Gyro Brg |
| | | | Fix Lat | Gyro Error |
| | | | Long | |
| | | | Fix Time | |
| | | Sounding | Sounding | |
| | | Signature | Signature | Signature |

Enclosure (1)

U.S. NAVY STANDARD BEARING BOOK

U.S.S.

PERIOD

_____ **19** _____ **TO** _____ **19** _____

Enclosure (2)

5 MAY 1970

STANDARD BEARING BOOK

U.S. Navy Regulations require that ships of the Navy maintain a bearing book. This publication has been printed to meet a recognized need for a standard bearing book. In addition to providing a standard record, the format is intended to provide optimum utility, economy, and flexibility, if information is recorded according to the following recommended rules:

1. At the head of column (1) the appropriate *date* should be entered on a separate line; and, thereafter, within the column for any changes of date.

2. Under the date, *times* are entered in column (1) for bearings recorded in either of the columns (2) through (6).

3. In columns (2) through (6), the structure (lighthouse, tower, tank, etc.) should be clearly identified at the head of each column; and, thereafter, within the column when observation changes to a new structure. Bearings are recorded in the appropriate columns corresponding to the recorded time. All bearings are *visual by gyro compass*, unless otherwise indicated.

4. *Depths* recorded in column (7) are *depths under the keel by echo sounder*, unless otherwise indicated.

5. *Radar ranges and bearings*, corresponding to a time indicated in column (1), may be recorded in either of the columns (2) through (6) by suitable notation.

6. If *magnetic bearings* are used the notation should identify such bearings and should include the compass error of the magnetic compass in use, for the particular heading at the time of observation.

7. Each page should be used until filled. *Erasures are not permitted*; draw a line through any mistake and rewrite the correct bearing so that both entries are still legible.

8. Upon relief, or when secured, the bearing recorder should sign his name across columns (2) through (6) immediately below the last entry.

Enclosure (2)

RECORD GYRO BEARINGS

PLACE _____

GYRO ERROR _____

| DATE TIME | | | | | | DEPTH |
|--------------|--|--|--|--|--|-------|
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RECORD GYRO BEARINGS

PLACE _____

GYRO ERROR _____

| DATE TIME | | | | | | DEPTH |
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