

命令模式

TC [(tanklist)] [loadlist] [/VOLUME [:volumeunit]] [/WEight [:weightunit]] [/FSM] [/FSML] [/NOREF] [/NOLOAD] [/NOCG] [/NOSURF] [/NOGraph] [/SOUND] [/INCH | /FId | /FIE] [/STOP: Full | Empty] [/LOC: "description"]

Displays Tank Characteristics table(s) at the current trim, heel and tank contents.

显示当前纵倾，横倾和舱容物下的舱室属性。

参数说明

(tanklist)

Names of the tanks enclosed in parentheses. Must be first parameter if used.

舱室名称用括号括起。如果使用此参数，此参数必须为第一个参数。

loadlist

Up to 10,001 load values (including those implied by ellipses) in one of the following forms:

可以多达 10,001 装载数据（包含星号代表的的数据）：

1. fraction,... for a series of loading fractions (e.g. 0.1 0.2 ... 1.0);
2. WEight:n,... for weights (e.g. WE:123.4);
3. VOlume:n,... for volumes (cubic units only; e.g. VO:1234.5);
4. HEight:n,... for Reference Point heights (synonyms: HT, REFpt);
5. SOunding: n,... for soundings (e.g. SO: 0 .25 ... 12; synonym: SNdg);
6. ULLage:n,... for ullages (e.g. UL: 12 11.5 ... 0);
7. INtermediate: fraction,... for intermediate load fraction (e.g. IN:0.2).

1. fraction, 分数表示装载量（例如：0.1 0.2 ... 1.0）
2. WEight:n, 重量（例如：WE:123.4）
3. VOlume:n, 容积（例如：VO:1234.5）
4. HEight:n, 参考点高度（同义词：HT, REFpt）
5. SOunding: n, 测深（例如：SO:0.25 ... 12; 同义词：SNdg）
6. ULLage:n, 余量（例如：UL:12 11.5 ... 0）
7. INtermediate, 中途装载分数（例如：IN:0.2）

/VOLUME

Calls for volume to be shown rather than weight. Cubic-length units.

显示容积而不是重量。长度单位的立方。

/VOLUME: volumeunit

Specifies the units to be used for the volume as a 2-letter code chosen from the following:

改变仓容报告中容积的单位。

GA - gallons; 加仑

IM - imperial gallons (synonyms: IG, GI); 英制加仑 (同义词: IG, GI)

CF - cubic feet; 立方英尺

CY - cubic yards (synonym: YD); 立方码 (同义词: YD)

CM - cubic meters; 立方米

LI - liters; 升

BB - 42-gallon barrels. 42 加仑桶

/WEIGHT

Causes weight to be included even when volume is shown. Current weight units are used.

即使显示容积，也要显示重量。使用当前的重量单位。

/WEIGHT: weightunit

Specifies the weight unit to use instead of the current units (see the UNITS command).

改变仓容报告中重量的单位。(查看命令 UNITS)。

/FSM

Forces Free Surface Moment to appear, replacing the GMT column.

显示横向自由液面力矩，代替 GMT 列。

/FSML

Forces longitudinal Free Surface Moment to appear, replacing the GML column (and causing the normal "FSM" column header to appear as "FSMT").

显示纵向自由液面力矩，代替 GML 列。(并使表头的 FSM 显示为 FSMT)。

/NOREF

Deletes the Reference Point height column when load list is fractional loads.

当装载用分数表示时，删除仓容表中的参考点高度列。

/NOLOAD

Deletes the fractional load column when load list is not fractional loads.

当装载不用分数表示时，删除仓容表中的用分数表示的装载列。

/NOCG

Deletes center of gravity information.

删除重心位置信息。

/NOSURF

Deletes surface information; however FSM can still be included by additionally giving the /FSM parameter.

删除自由液面信息，然而如果另外附加参数/FSM，还可以显示 FSM。

/NOGRAPH

Suppresses generation of the graph plot for the present TC command.

当前 TC 命令下，不显示仓容曲线图。

/SOUND

Calls for a sounding column to be shown when the loads are specified (load fraction, volume, or ullage).

当给定装载后（分数表示，容积表示或余量表示），显示舱室测深。

/INCH

Formats soundings and reference heights in inches and hundredths. This parameter (along with /FID and /FIE) has no effect in metric unit modes.

测深和参考点高度单位为英寸和百分比。当单位使用米制单位时，此参数（包括/FID 和 /FIE）无效。

/FID

Formats soundings and reference heights in feet and decimal inches (e.g. "2'08.4").

测深和参考点高度单位为英尺和英寸（例如：“2'08.4”）。

/FIE

Formats soundings and reference heights in feet, inches, and eighths of inches (e.g. "2'083+" is 2 feet, 8 inches, 3 eighths, plus 1 additional sixteenth inch).

测深和参考点高度单位为英尺，英寸和 8 分制英寸（例如：“2'083+”表示 2 英尺，8 英寸，8 分之 3，加 1 又 16 分之 1 寸）。

/STOP: FULL

Stops before the load list has been exhausted if the tank is full, interpolating to find the sounding at which the tank just becomes full. Note that stopping when full or empty happens by default when the load list ends with ellipses ("...").

在达到定义的最大装载（满载）前，如果舱室已满那么就停止测深，然后通过内插法求的舱室满载时的测深。当载荷定义以"..."结束时，默认当舱室满载或空载时就停止测深。

/STOP: EMPTY

Stops before the load list has been exhausted if the tank is empty.

在定义的载荷结束前，如果舱室已空载那么就停止测深。

/LOC: "description"

Puts location description in the display output header (but not on the screen).

在报告输出顶部显示位置信息（不是在屏幕上显示）。

Operation

操作

Tank characteristics are computed at one or more levels of loading and presented in tabular form. Executing the TC command does not permanently change the type of the tank (see the TYPE command) or its load setting.

在不同装载下计算舱室属性并以表格形式显示,运行TC命令并不表示永久的改变舱室的类型(查看TYPE命令)或它的装载设置。

If the tanklist parameter is given, it must be enclosed in parentheses. It is one or more tank names specifying which tanks are to be involved. If omitted, the default tank selection is used (see the TANK command). If there is no default selection and no tanklist parameter is given, all tanks are assumed.

如果给定选定的舱室,该舱室名称必须要用括号括起,可以选定单个或多个舱室。如果省略,默认当前选定的舱室(查看命令TANK)。如果当前没有选定的舱室且没有给定选定的舱室,那么默认选定了所有的舱室。

Levels of loading may be specified by any of the following means:

舱室装载可以通过下面几种方式设定:

1) Load fractions. A list of fractions may be given (e.g. 0.1 0.2 ... 1.0); or the percent sign may be used to give percentages (e.g. 10% 20% ... 100%). Alternatively, the keyword PERcent may precede the list, in which case the percent signs must not appear (eg. PERCENT: 10 20 ... 100). The keyword FRaction may be used to introduce the list, but it has the same effect as no keyword at all. If both the keyword and the list are omitted, the default fraction list is used, which is: 0.05 0.1 0.2 ... 0.9 0.95 0.98 1.0. If a single asterisk is given, the current load is used.

1) 装载荷分数或百分比表示:用分数或用百分数来设定载荷,如:0.1 0.2 ...1.0 和 10% 20% ... 100%。百分号也可以提前,如 PERCENT: 10 20 ... 100。关键词 Fraction 也可以用在列表中,但是和没有关键词 Fraction 效果是一样的。如果关键词和列表都省略,会使用默认的分数字列表,如 0.05 0.1 0.2 ... 0.9 0.95 0.98 1.0。如果给定一个单星号,默认使用当前的装载量。

2) Weights. A list of weights may be given in the same manner as load fractions, the units being the same as the current weight units. For example, WEIGHT: 5 6 ... 10.

2) 重量:重量列表可以像装载列表形式给定,单位为当前使用的重量单位。例如:WEIGHT: 5 6 ... 10。

3) Volumes. A list of volumes may be given in the current weight units (e.g. VO: 1 2 ... 9).

3) 容积:可以使用当前重量单位给定容积列表。如 VO: 1 2 ... 9。

4) Reference Point heights. These define the loads in terms of surface levels relative to the tank's Reference Point (see the REFPT command). If the Reference Point is above the surface of the fluid in the tank, the Reference Point height is positive. The

height is always taken perpendicular to the tank's surface plane. HEight, HT, or REfpt (synonymous keywords) introduce the list of heights; for example, HEIGHT: 6 6.5 ... 0.

4) 参考点高度: 通过定义液面距参考点的高度来定义载荷 (查看命令 REFPT)。如果参考点位于液面以上。那么参考点的高度为正的。参考点高度总是垂直于液面量取。HEight, HT, 或 REfpt (类似的关键词)都可以生成高度列表, 例如: HEIGHT: 6 6.5 ... 0.

5) Soundings. This uses the sounding line (or tube) which must be defined within the Geometry File (this is done with the Part Maker program). If no sounding line is defined, the tank's Reference Point is assumed to be at the bottom point, while the line is assumed to run vertically up from the Reference Point. When the tank's liquid-surface plane contains the sounding line's bottom point, the sounding is zero. Increasing soundings are measured along the sounding line. The SOunding or SNdg keyword introduces the list of soundings; for example, SOUNDING: 0 0.1 ... 10. (When in English units, feet and inches can be used; e.g. SOUNDING 0 0'01 ... 7'06.) Output shows soundings in feet when in English units, and millimeters when in metric units.

5) 测深: 测深使用定义在几何模型文件中的测深线 (或测深管) (需要在 Part Maker 中定义)。如果没有定义测深线, 舱室的参考点默认在舱室底部, 测深线默认从参考点竖直向上。当液面位置位于测深线的底部端点时, 测深为 0。测深沿着测深线向上测定。关键词 Sounding 或 SNdg 引出测深高度数列, 如 SOUNDING: 0 0.1 ... 10 (当使用英制单位时, 使用英尺和英寸, 如 SOUNDING 0 0'01 ... 7'06)。测深输出显示中当使用英制单位时, 单位使用英尺, 当用米制单位时, 单位用毫米。

6) Ullages. The complement of soundings, ullages are measured from the top of the sounding line. The ULLage keyword introduces the list of ullages; for example, ULLAGE: 10 9.75 ... 0. If no sounding line is defined, the tank's Reference Point is assumed to be at the top of the sounding line while the line itself is assumed to run vertically down from the Reference Point.

6) 余量: 相对于舱室总量的测深余量, 从测深线的顶端量起。关键词 ULLage 引出余量数值列表。如 ULLAGE: 10 9.75 ... 0。如果无测深线定义, 舱室的参考点默认在测深线的顶端, 从顶端竖直向下量取。

7) Intermediate load fractions. This applies to the load interval between the current load setting for the tank and a hypothetical "flooded load" which would occur if the waterplane inside the tank were equal to that outside the tank (which it may or may not be at present). The fraction given refers to this interval. Thus INTERMEDIATE: 0 would be the same as the current load setting and INTERMEDIATE: 1 would be the load which would give a waterplane inside the tank coplanar with the waterplane (ignoring any waves) outside the ship.

7) 中途装载: 这适用于舱室当前装载与舱室进水 (当舱室内液面与船舶外液面平齐时的装载, 可以是或不是当前装载), 根据两载荷差值设定装载分数。INTERMEDIATE:0 表示为当前载荷。INTERMEDIATE:1 表示当舱室内液面和船舶外液面平齐时的装载 (不考虑波浪)。

译者注: IACS 要求校核散货船在装载密度较大 ($1.78t/m^3$) 货物后货舱进水的稳性。中途装载可以实现该功能。

Display Output

显示输出

The tank characteristics table shows the weight and/or volume, center of gravity and (optionally) its surface characteristics in the form of GM and Free Surface Moment (GMT x weight). On the left, the independent variable is shown (load, sounding, etc.).

舱室属性表格显示重量，容积，重心位置和液面属性，如 GM，自由液面力矩（横向 GM 值乘以重量）。在左侧，会显示自由变量如载荷，测深等。

When volumes are being shown, weights are not shown unless the /WEIGHT parameter is included. If volumes are not shown, weights are always shown.

当显示容积时，如果不包含参数/WEIGHT，不会显示重量。如果不显示容积信息，总会显示重量信息。

When both weight and volume columns are included, there is not room enough for both the load column and the Free Surface Moment column. In this case the FSM column is normally omitted. However, the /FSM parameter may be included to force showing FSM at the slight expense of omitting the GMT column.

当重量数据列和容积数据列都显示时，没有足够的页面空间去显示载荷数据列和自由液面力矩数据列，这种情况下，常省略自由液面力矩数据列。然而，如果包含参数/FSM，会显示自由液面力矩数据列而省略 GMT 数据列。

The left most column shows Reference Point heights when the independent variable is the same or when it is load fractions. In the case of soundings and ullages the left most column shows these variables instead. The /NOREF parameter will turn off the left most column only in the case where the independent variable is load fractions. In all other cases, the /NOLOAD parameter may be used to omit the load column.

当自由变量相同或为装载分数时，最左端数据列显示参考点高度。当自由变量为舱室测深时，最左端数据列会显示舱室测深。当自由变量为装载分数时，参数/NOREF 会关闭显示最左端数据列。其它情况下，参数/NOLOAD 会省略载荷数据列。

The /NOSURF parameter omits the GM and FSM columns (unless the /FSM parameter is also given). Likewise, the /NOCG parameter omits the center of gravity columns.

参数/NOSURF 将省略 GM 和 FSM 数据列（除非附加参数/FSM）。参数/NOCG 将省略重心位置数据列。

Nondisplay Output

显示输出

The tank name and description are shown, marking the start of tank data.

显示舱室名称和说明，标记舱室开始数据。

If weight was indicated by the TC parameters, then the contents are shown next (the specific gravity, specific gravity scale and description).

如果 TC 附加参数显示重量，下面会显示舱室的舱容物（比重，比重标尺和说明）。

If load or reference height is the independent parameter, then the reference point is shown next.

如果装载或参考高度是自由变量，那么下面会显示参考点。

The heel and trim angles are shown, followed by a table definition consisting of:

显示下面定义的表格后，会显示横倾和纵倾角：

- Reference height, sounding or ullage;
- 显示参考高度，测深或余量。
- Load fraction (unless the /NOLOAD parameter is present);
- 如果不出现参数/NOLOAD，显示装载分数。
- Volume, if the /VOLUME parameter is present;
- 如果出现参数/VOLUME，显示容积。
- Weight, if /VOLUME is absent or if /WEIGHT, /FSM, or /FSML is present;
- 如果不出现参数/VOLUME 或出现参数 /WEIGHT, /FSM, 或 /FSML，显示重量。
- Center of gravity (unless the /NOCG parameter is present);
- 如果不出现参数/NOCG，显示重心位置。
- Longitudinal & transverse GMs (unless the /NOSURF parameter is present).
- 如果不出现参数/NOSURF，显示纵向和横向 GM 值。

Units are the same as in the display output, except soundings and ullages which are in feet or meters rather than inches or millimeters as shown in the display output.

在显示输出中单位保持一致，除非测深和余量的单位是英尺或米而不是英寸或毫米。

Examples

样例

Tank Characteristics tables for all tanks in the current selection:

显示当前选中舱室的舱室属性：

TC

Indicating that FSM is sufficient, therefore eliminating the GMT column:

显示 FSM 数据列，删除 GMT 数据列：

TC /FSM

Eliminating the GML and GMT columns but including FSM:

删除 GML 和 GMT 数据列，但包含 FSM 数据列：

TC /NOSURF /FSM

Showing the TC table for one tank, specifying loads by percent:

显示舱室 WT1.S 属性，通过百分数设定载荷：

TC (WT1.S) 5% 10% ... 100%

Getting a sounding table at 1° trim aft:

计算舰倾 1 度时的舱室测深：

TRIM = 1A

TC (FO-3-74-1) SNDG: 0 .25 ... 13.5 /VOL:GA /NOSURF 测深表的容积单位是加仑，无自由液面数据

Finding tank data at a level measured down from the reference point:

显示距参考点某高度位置处的舱室数据：

TANK FOWT1

CONTENTS DIESEL

REF = 67, 1.5, 19

TC REF: 5.43

Soundings from a point 0.0417 above the tank's lowest point (no sounding line):

参考点向上 0.0417 位置处为新的参考点，开始测深：

TANK NO1.S

REF = BOTTOM

REF = *, *, *+0.0417

TC SND: 0, 0.1667, ..., 3.5 /VOL:GA /NOSURF /NOCG 测深表的容积单位是加仑，无自由液面和重心位置数据

Stopping when the tank is full:

当舱室满后，停止测深：

TC SND: 0 .25 ... /STOP:FULL

Adding a location description to the output:

在输出中增加位置说明：

TC /LOC:"Frames 12-15, starboard - Port side similar"

Ullages in cubic yards from the tank top:

舱室顶部为参考点测量舱室余量：

TANK HOPPER

REF TOP

TC ULL: 0 .25 ... /STOP:E /VOL:CY /NOLOAD /NOCG/NOSURF 测深表的容积单位是立方码，无装载分数、重心位置和自由液面数据

Soundings vs. Gallons for all tanks; soundings from tank bottoms:

所有舱室底部为参考点进行测深，容积单位为 Gallons:

TANK *

REF BOT

TC SND: .25 .5 ... /STOP:F /VOL:GA /NOLOAD/NOCG/NOSURF 测深表的容积单位是加仑，无装载分数、重心位置和自由液面数据，测深表到满舱为止

Current loads only for all tanks:

所有舱室使用当前的装载:

TC(*) *