命令模式

VARIables [(type)]name [:min[:max]][=value]...[/Color: n]

Declares one or more variables.

定义一个或多个变量。

VARIables [/Color: n] [/List[: pattern]]

Lists the names and values of all matching variables (screen only).

列出所有匹配变量的名字和值（仅屏幕显示）。

Note: This command may be abbreviated simply as "V" in addition to "VARI".

备注：这个命令可把缩写"VARI"进一步缩写为"V"。

参数说明

(type)

Type of variable: must be REal, STring, LEngth, ARea, VOlume, WEight, or Moment (same as MMT) or PRessure. If omitted, REAL is assumed. All types except REAL and STRING act like a unit-smart REAL type, and their values automatically are converted to the current unit setting (respectively length, length squared, length cubed, weight, and weight times length, and weight divided by length squared).

变量类型：必须为 REal, STring, LEngth, ARea, VOlume, WEight, Moment（与 MMT 一样）或者 PRessure。如果省略，默认为 REAL。除了 REAL 和 STRING，其他所有类型类似于一个有单位的 REAL 类型，它们的值自动匹配为当前的单位设置（分别为，长度单位，面积单位，体积单位，重量单位，和力矩单位以及单位重量）。

name

A name chosen for the variable, which should not contain separators or periods, nor begin with a digit.

变量名，不能以数字开头，中间不能包含分隔符或句号。

:min:max

The minimum and maximum values used for range checking variable input from INPUT and TEMPLATE command. For string variables this is the minimum and maximum number of characters. If omitted, the values are unrestricted. The colons are required and no other separators are allowed between name, min and max. The range for existing variables will not be contracted if system variable ERROR=-4.

用于从输入和模板命令检查变量输入的范围的最小值和最大值。对于串变量，这表示最大和最小字符数。如果省略，则变量值不受限制。冒号必须写入，并且在名字、最小值和最大值中间不能有其他分隔符。如果系统变量 ERROR=-4，那么已经存在的变量范围则不会缩小。

value

An optional initial value for the variable; should be either a number or a quoted string.

变量可选定义的初始值，为一个数字或引号引起的串符。

/COLOR: n

Assigns a color for the variable, using color number n from 1 to 15 as described for the MESSAGE COLOR command (0 is the default color). If the variable already exists, its value is not made undefined when a color is assigned. If the name contains wildcard (* and ?) characters, then the color is changed for all matching variables. If name is omitted, all variables are listed that match the specified color. Variable colors are shown in the VARIABLE list, in NOTE command output for {name}, and in TEMPLATE variable fields.

指定变量的颜色，颜色编码 n 为命令 MESSAGE COLOR 中定义的 1 到 15（默认为 0）。如果变量已经存在，当指定其颜色时，其值将不再是未指定状态。如果名字中含有通配符(* 和 ?)，那么颜色会指定给所有匹配的变量。如果名字省略，则列出所有该颜色的变量。变量颜色显示在 VARIABLE 列表中，或在命令 NOTE 中{name}输出时，或在 TEMPLATE 可变栏中。

/LIST: pattern

Restricts list to only names matching pattern, which may include wildcard (* and ?) characters.

只列出名称与 pattern 相匹配的变量名，pattern 可包含通配符(* 和 ?)。

Note: A variable is a place where a number or a string of characters can be stored. In order to make use of a variable it must first be declared with the VARIABLES command. This assigns it a name by which it will subsequently be known. See the CLEAR command for a means of clearing variable declarations.

注意：变量为储存数字或字符串的地方。如果要使用一个变量，必须先使用命令 VARIABLES 进行定义。这将给该变量指定一个名字。清除变量说明请查看命令 CLEAR。

Operation

操作

The VARIABLES command without a name lists all variables and their values on the screen. Note LATITUDE, LONGTUDE, MAXRRAH, RESMOMH, RESTMOMHS, and ROSTABH values are undefined if /LIST is omitted.

不带名称的 VARIABLES 命令会在屏幕上列出所有变量及其值。注意 LATITUDE、LONGTUDE、MAXRRAH、RESMOMH、RESTMOMHS 和 ROSTABH 值是未定义的，如果省略/LIST。

Otherwise the VARIABLES command declares one or more variables of the same type by specifying their names. If optional minimum and maximum values are specified, these are used for range checking when receiving values from commands like INPUT and TEMPLATE.

此外，通过定义变量名称，命令 VARIABLES 能够把一个或多个变量指定为同一类型。如果定义了可选项最大值与最小值，当变量从例如命令 INPUT 和 TEMPLATE 接收数据时，将检查这些数据是否在规定范围之内。

There are two ways to assign a value (or string of characters) to a variable: the SET command assigns a value directly, while INPUT and TEMPLATE allow value entry by the operator.

有两个方法可以给一个变量进行赋值（或字符串）：命令 SET 直接给变量赋值；命令 INPUT 和 TEMPLATE 则允许通过用户输入的方式来赋值。

The current value of a variable can be retrieved by inserting the variable name into any command by enclosing its name in braces ("{" and"}"). Note that operating system environment variables can be retrieved using the {%name%} format "{%PATH%}"). However, if {%name (param,...)%} includes parameters in parentheses, this instead represents a pass-through printing command (e.g. "{%IMAGE("LOGO")%}"); see the NOTE command and Print/Plot (PP) Manual for details.

在任何命令中插入变量名，就能够直接使用变量的当前数值。这通过把变量名用大括号围起来的形式("{" and"}")实现。另外操作系统环境变量可通过{%name%}形式引用，例如"{%PATH%}"。然而，如果{%name (param,...)%} 格式中包含圆括号，这表示一个打印命令，例如"{%IMAGE("LOGO")%}"。具体可查看命令 NOTE 和 Print/Plot (PP) 手册。

If no spaces are included within the braces, the replacement contains no spaces. However, if one or more spaces precede or follow the variable name and the value fits, the replacement preserves column positions by taking the same number of characters, with any adjoining parentheses migrated inwards (e.g. "*({ x})*" for x=23 becomes "* (23)*"). If spaces occur only on the left, a value is right-justified; if only on the right, it is left-justified; and if on both sides, it is centered.

如果大括号中没有空格，那么变量数值中也不会有空格。然而，如果变量名之前或之后有一个或多个空格，并且其值相当，那么变量数值保持其列的位置与字符数相同，而任何圆括号都向内移（例如，x=23 的 “*（{ x}）*”变为 “* （23）*”）。如果空格仅出现在左侧，则值为右对齐;如果只是在右边，它是左对齐的;如果在两侧，它是居中的。

If a colon and digit (default=2) follow the name of a numeric variable, the digit specifies the number of decimal places to include; if a comma precedes the digit (e.g. "{x:,2}"), then commas are inserted every three integer digits; if "FA" or "PS" follows, the corresponding "f" or "p" suffix is used for negative and "a" or "s" for positive.

如果数字变量之后出现冒号和数字（默认为 2），数字表示精确到小数点后几位；如果数字前出现逗号（例如："{x:,2}"），那么每三个整数间会插入一个逗号；如果出现"FA" 或 "PS"，那么后缀"f" 或 "p"表示负值，"a" 或 "s"表示正值。

Putting double braces ("{{" and "}}") around a variable inhibits replacement by its value during command processing, instead just stripping off one layer of braces, thereby allowing delayed or recursive variable replacement.

变量两边使用双大括号("{{" and "}}")可以阻止命令运行时引用变量的数值。如果只去掉一层大括号，则允许变量数值的引用。

Textual nesting of variables is allowed so that the value of one variable contributes to the name of another (e.g. "{ARRAY{INDEX}}"). Nested replacement sometimes requires space betweenbraces to circumvent delayed replacement within double braces (e.g. "{ {VARNAME}}").

变量的文字嵌套是允许的，这样一个变量数值可以嵌套给另一个变量（例如"{ARRAY{INDEX}}"）。嵌套替换有时需要在大括号之间留出空格，以规避双大括号内的延迟替换（例如“{{VARNAME}}”）。

Variables, functions, and numbers can be combined with "(", ")", "^", "*", "/", "+", and "-" operators into braced expressions evaluated using PEMDAS (Parentheses, Exponent, Multiply and Divide, Add and Subtract) order of operations. For example if variables A=1, B=2, and C=3 are already defined, then {A+B*C} is replaced by 7, since multiplication of B*C takes precedence over addition of A+B, unless overruled by parentheses as in {(A+B)*C}.

变量、函数和数字可以与“（”、“”）“、”^“、”*“、”/“、”+“和”-“运算符组合成使用 PEMDAS（括号、指数、乘除、加和减）运算顺序计算的大括号表达式。例如，如果已经定义了变量 A=1、B=2 和 C=3，则 {A+B*C} 将替换为 7，因为 B*C 的乘法优先于 A+B 的相加，除非像 {（A+B）*C} 那样被括号否决。

If a variable named A+B*C already exists, then {A+B*C} will fetch its value instead of evaluating any expression, but evaluation can be forced by wrapping braces as needed around inner variable names as in {{A}+{B}*{C}}. Likewise the sum of variables A and A-1 can be evaluated using {A+{A-1}}.

如果名为 A+B*C 的变量已经存在，则 {A+B*C} 将获取其值而不是计算任何表达式，但可以通过根据需要在内部变量名称周围括起大括号来强制求值，如 {{A}+{B}*{C}} 中的大括号。同样，变量 A 和 A-1 的总和可以使用 {A+{A-1}} 进行评估。

Since braces around one- or two-digit integers and "+" or "-" followed by a letter are used for NOTE colors and styled text (e.g. {4}, {+b}), these forms are kept from expression evaluation only within NOTE and SUBTITLE commands.

由于 NOTE 颜色和样式文本（例如 {4}、{+b}）使用一位或两位整数和字母后跟的“+”或“-”周围的大括号，因此这些形式仅在 NOTE 和 SUBTITLE 命令中不用于表达式计算。

When a variable is declared, it is set to a certain initial value. For string variables, this is an empty string. For real variables it is a special undefined value which also appears as an empty string when displayed or otherwise presented for evaluation. In order to test for an undefined real value it can be treated as a string. For example,

当指定一个变量时，会赋予其一定的初始数值。对于串变量，初始值为空字符串。对于实变量，初始值为一个特殊未定义的值，当显示或运用到计算时，该值也是空字符串。为了测试一个未定义的实变量，能将其视为一个字符串。例如，

IF "{GMT}"="" THEN MESSAGE GMT IS UNDEFINED.

如果 "{GMT}"=""，那么 GMT 未被定义。

In addition to names declared in VARIABLE commands, there are also names predeclared and automatically maintained as system variables. Most of them are read-only, so cannot be changed by SET commands (except BOOMAZ2, BOOMRAD, DRLOC8, EQUNOW, ERROR, ONLINE, PAGES, PNAME, SUBSDESC and TEMPLOK).The names and meanings of all system variables are listed below:

除了在命令 VARIABLE 中指定的变量之外，也有一些自动默认的系统变量。大多数系统变量是只读的，并且不能使用命令 SET 更改（除了 BOOMAZ2，BOOMRAD，DRLOC8，EQUNOW，ERROR，ONLINE，PAGES，PNAME，SUBSDESC 和 TEMPLOK）。所有系统变量名称和注释列举如下：

ERROR - Value associated with an error condition. The user may SET this variable with special codes to prevent an otherwise-fatal error from aborting the current macro or run file. See the ERROR command for details.

ERROR –发生错误时的值。用户可使用命令 SET 设置该变量为特殊代码，从而防止致命错误终止当前宏或运行文件。详情请参照命令 ERROR 。

PROGRAM - Program variant currently running (normally either GHS, BHS, or GLM).

PROGRAM –当前运行的程序模块（通常为 GHS, BHS, 或 GLM 其中之一）。

VERSION - Program version number.

VERSION –程序版本号。

CLPARS - Command line parameter string if any given when the program was executed.

CLPARS –当程序运行时，命令行的参数串。

PATHHERE - Absolute path to the current directory.

PATHHERE –当前目录的绝对路径。

DATE, TIME - Current date (in YYYY-MM-DD format) and time (in HH:MM:SS format).

DATE, TIME –当前日期（格式为 YYYY-MM-DD）和时间（格式为 HH:MM:SS）。

TITLE, PROJECT - Current title and project (see the TITLE and PROJECT commands).

TITLE, PROJECT –当前标题和项目（详见命令 TITLE 和 PROJECT）。

GF - Short file specification of the current geometry file (comma-separated if multiple).

GF –当前模型文件的简要文件说明（如有多个，用逗号分隔开）。

GFLONG - Long filespec of current geometry file in quotes (comma-separated if multiple).

GFLONG –用引号表示当前模型文件的详细文件说明（如有多个，用逗号分隔开）。

LUNIT, WUNIT - Names of the current length and weight units.

LUNIT, WUNIT – 当前长度和重量单位。

ORIGIN, BASE - Descriptions of the longitudinal and vertical origin obtained from the Geometry File.

ORIGIN, BASE –模型文件中纵向和垂向基准点的描述。

PAGES - Numeric variable which is incremented by one each time a new output page is started. Initially zero; reset to zero by the SUBTITLE command, but can be SET directly.

PAGES – 数字变量，每新增一页输出，页数加 1。初始为 0；通过命令 SUBTITLE 重置为 0，也可用命令 SET 直接定义。

PAGENUM - Current report page number.

PAGENUM – 当前报告的页码。

LINENUM, LINELEFT - Line number and lines remaining on the current page.

LINENUM – 当前页面的行数和剩余行数。

REPFILE - File specification of any current report file.

REPFILE – 所有当前报告文件的文件说明。

FP, MP, AP - Locations of the forward, mid and after perpendiculars (may be undefined). See the LBP command.

FP, MP, AP – 艏、舯、艉垂线位置（可以不定义）。详情参考命令 LBP 。

LOA, WOA - Actual overall length and width of the vessel.

LOA，WOA – 船舶总长度和总宽度。

WPA, WPLEN, WPBEAM - Waterplane area, length, and beam.

WPA, WPLEN, WPBEAM – 水线面面积、长度和宽度。

LPA1, LPA2, HCP2, LPAARM - Total underwater lateral plane area, above-water LP area, centroid height above waterplane, and vertical distance between above-water and below-water centroids. These values match STATUS LPLANE; see SPECIAL HMLPA for details.

LPA1，LPA2, HCP2，LPAARM –总水下侧向平面面积、水上 LP 面积、水平面上方质心高度以及水上和水下质心之间的垂直距离。这些值与状态平面匹配；有关详细信息，请参阅特殊 HMLPA。

LPAARM - Total arm difference between the heights of the above-water and below-water lateral plane centers.

LPAARM – 水上高度和水下侧面中心的总力臂差。

SEA - Specific gravity of the sea water environment.

SEA – 海水环境下的比重。

TRIM, HEEL - Trim and heel angles in degrees.

TRIM, HEEL –纵倾和横倾角度。

TFIX, HFIX - Whether trim and heel are fixed (1 if so, 0 if not).

TFIX, HFIX – 是否锁定横倾和纵倾（1 为锁定，0 为未锁定）。

DEPTH - Origin depth in current length units.

DEPTH –当前长度单位下的原点深度。

DEFLECT - Amount of parabolic deflection at midship.

DEFLECT –船中总偏移量。

AXIS - Axis angle in degrees for heel rotations.

AXIS – 倾斜旋转以角度为单位的轴线角。

INCLANGL, INCLAXIS - Absolute inclination angle and zero-trim axis angle in degrees (same as heel and axis after AXIS *).

INCLANGL, INCLAXIS – 以角度为单位的绝对倾斜角度和零纵倾轴线角（和 AXIS *之后的 heel and axis 类似）

EQUNOW - Whether in solving equilibrium (set to 1 by SOLVE with varying heel and trim; reset to 0 by any change which could affect equilibrium; can be SET directly).

EQUNOW – 是否求解平衡状态（通过命令 SOLVE，改变横倾和纵倾值，设定其值为 1；任何影响平衡的变化都会重置该值为 0；可用命令 SET 直接设定）。

FLDHT, FLDNUM - Height above present waterplane and critical point number of the lowest flooding point (including weathertight points if EQUNOW=1; undefined if none).

FLDHT, FLDNUM – 最低侵水点在当前水线面以上的高度和最低侵水点的临界点数量（如果 EQUNOW=1，则包含风雨密点；如果为空，则不定义）。

TGTHT, TGTNUM - Height above present waterplane and critical point number of the lowest weathertight point (undefined if none).

TGTHT, TGTNUM -最低风雨密点在当前水线面以上的高度和最低风雨密点的临界点数量（如果为空，则不定义）

FLDTANK, TGTTANK - Any tank name associated with the lowest flooding or weathertight critical point.

FLDTANK, TGTTANK – 所有和最低侵水临界点或最低风雨密临界点相连的舱室名。

FREEBD - Minimum freeboard, respecting any margin distance. Undefined if no deck edge marking is present or if origin depth is undefined.

FREEBD – 至任意限界线高度的最小干舷。如果没有甲板边缘标记或未定义基准点深度，则不定义最小干舷的值。

FREEBD0 - Like FREEBD but represents the freeboard to the deck edge, irrespective of margin.

FREEBD0 – 类似于命令 FREEBD，但表示的是到甲板边缘的干舷，并且不考虑限界线高度。

WIND - Current wind speed in knots at 10 meters above the waterplane (may be Undefined).

WIND – 水线面以上 10 米处的当前风速（单位为节）（可以不定义）。

WINDF - Wind force.

WINDF – 风力。

HMMT, TMMT - Heeling (transverse) and trimming (longitudinal) moments.

HMMT, TMMT – 横向和纵向倾斜力矩。

FPULL, FTHRUST - Total pull and thrust forces.

FPULL, FTHRUST – 总拉力和推力。

DISPL - Displacement weight.

DISPL – 排水量。

LCB, TCB, VCB - Centroid of the displacement volume, namely the Center of Buoyancy.

LCB, TCB, VCB – 排水体积的质心，也就是浮心。

LCF, TCF, VCF – Centroid of waterplane, i.e. Center of Flotation.

LCF, TCF – 纵向、横向和垂向飘心。

WINERTL, WINERTT, WINERTLT - Waterplane longitudinal, transverse and product of inertia through the Center of Flotation.

WINERTL，WINERTT，WINERTLT - 水平面纵向，横向和通过浮心的惯性乘积。

BML, BMT - Distances from Center of Buoyancy to longitudinal and transverse metacenter.

BML, BMT – 纵稳心半径和横稳心半径。

BGN - Waterplane-normal distance from Center of Buoyancy to Center of Gravity.

BGN – 浮心和重心的水平距离。

GMT - Transverse metacentric height above the CG, derived using true waterplane properties (if axis is nonzero, GMTRA is given instead). To compute GMT using formal FSM, use: GMT-((FSMMT1-FSMMT)/DISPL).

GMT – CG 上方的横向初稳性心高度，使用真实的水平面属性得出（如果轴不为零，则给出 GMTRA）。要使用正式的 FSM 计算 GMT，请使用：GMT-（（FSMMT1-FSMMT）/DISPL。

GMTRA - Similar to GMT but derived from the righting arm curve at the current axis.

GMTRA – 类似于 GMT，但是取自当前坐标系的回复力臂曲线。

GMMODU - GMT derived from the MODU method, looking at a wider range of heel angles to detect RA curves remaining close to zero, in which case a GM value is used that reflects the low point of the curve. MODU looks from the present heel in the direction of any heeling moment, or in both directions if none. This method is useful for detecting a negative-going absolute RA curve between absolute and residual equilibrium; it reverts to the GMTRA method when present heel is neither zero nor EQU0 (absolute RAH=0) or exceeds 10 degrees.

GMMODU – GMT 遵循 MODU 规范，通过更大幅度的倾斜角度来获得回复力臂曲线与零之间的剩余值，这种情况下 GM 值将被用来反映曲线的低点。MODU 从当前横倾向任何有横倾力矩的方向检查，如果没有倾斜力矩则两边都查。这个方法在探测绝对平衡和剩余平衡间的负向绝对

回复力臂曲线时很有用；如果当前倾斜既不是 0，也不是 EQU0（绝对 RAH=0），或者倾斜超过 10 度，那么将回到 GMTRA 方法。

WTPERIMM - Weight per immersion increment (inch or cm).

WTPERIMM - 每次浸入增量的重量（英寸或厘米）。

MMTTOTRM - Moment per trim increment (degree, inch or cm.).

MMTTOTRM - 每修剪增量的力矩（度、英寸或厘米）。

FSMMT - True free surface moment.

FSMMT – 真实自由液面矩。

FSMMT1 - Formal free surface moment as derived from the FSMMT command method.

FSMMT1 – 通过命令 FSMMT 得到的形式自由液面矩。

RESMOMH, RESMOMHS - Residual moment in heel and slope of residual moment versus heel in the present condition.

RESMOMH, RESMOMHS – 当前状态下横倾剩余力矩和剩余力矩对横倾的斜率。

FWEIGHT, FLCG, FTCG, FVCG - Total fixed weight and fixed Center of Gravity.

FWEIGHT, FLCG, FTCG, FVCG – 固体总重量及其重心。

WEIGHT, LCG, TCG, VCG - Total weight and Center of Gravity.

WEIGHT, LCG, TCG, VCG – 总重及重心。

REACT, LCR, TCR, VCR - Ground reaction force and center of ground reaction. (Undefined if there are no ground points, and the center is undefined if REACT is zero.)

REACT, LCR, TCR, VCR – 搁浅反力及中心。（如果没搁浅点则不定义搁坐反力，如果搁浅反力为零则不定义反力中心）。

REACT1 - Reaction force of last accessed ground point set by GROUND /ACCESS.

REACT1 – 由命令 GROUND /ACCESS 设定的最后一个搁浅点的反力。

GYRADL, GYRADT, GYRADV - Gyradius from all weights and tanks around CG axes. (Undefined unless all tanks are intact or frozen.)

GYRADL, GYRADT, GYRADV –所有固体重量和舱室对重心各个坐标轴的旋转惯性半径（不定义，除非所有舱室完整或冻结）。

RAH, RAT - Absolute righting arm in heel and trim (may be undefined if SOLVE is needed).

RAH, RAT – 横倾和纵倾绝对回复力臂（如果需要 SOLVE 求解，可以不定义）。

MAXRRAH - Maximum residual righting arm between present heel and the next negative-sloping occurrence of zero righting arm (in the direction of present heel).

MAXRRAH – 当前横倾和出现下一个零回复力臂的负斜率之间的最大剩余回复力臂（倾斜方向为当前倾斜方向）。

ROSTABH - Range of residual stability in degrees between present heel and the next negatively slopping occurrence of zero righting arm or downflooding (in the direction of present heel).

ROSTABH -当前横倾和出现下一个零回复力臂的负斜率或向下进水点之间的剩余稳性角度范围（倾斜方向为当前倾斜方向）。

ATTSDI - Latest attained subdivision index (may be undefined).

ATTSDI – 最新达到的分组索引（可以不定义）。

LIMMARG - Least of the limit margins in the Stability Criterion. This number is either percentage points or degrees, depending on the limit involved. If an evaluation has not been made (via the RA command) since the loading was changed, or if the evaluation was incomplete, this variable is undefined. Note that attained values can be accessed by declaring user variables named LIMATTn where n is a limit number (see the RA command for details).

LIMMARG – 稳性衡准中的最小限制余量。根据限制的不同，要么显示百分比数，要么显示角度。当配载变化时，如果没有通过命令 RA 进行计算，或者如果该计算未完成，那么该变量不定义。请注意，可以通过声明名为 LIMATTn 的用户变量来访问获得的值，其中 n 是限制数（有关详细信息，请参阅 RA 命令）

LIMNUM - Limit number corresponding to least limit margin (0 if LIMMARG is undefined).

LIMNUM – 最小限制余量的限制数（如果 LIMMARG 未定义，则为 0）。

SHRMARG, BMMTMARG, TORQMARG - Maximum shear, bending moment, and torque margins from the last LS or TORQUE command, in percentage points above (or negative if below) 100% of the limit defined in the LSLIMIT SHR, MMT, or TOR command.

SHRMARG, BMMTMARG, TORQMARG – 上一个命令 LS 或者 TORQUE 得到的最大剪力、弯矩和扭矩余量，以高出限制百分点（如果低于则为负值）的形式表示，该限制定义在命令 LSLIMIT SHR, MMT, 或 TOR 之中。

STRMARG - Maximum stress margin in percentage points about any /LIMSTRESS: limit specified in the last LS command.

STRMARG – 上一个命令 LS 中指定的/LIMSTRESS: limit 的最大压力余量，以百分比形式表示。

SHRMAX, BMMTMAX, TORQMAX - Maximum shear, bending moment, and torque from the last LS or TORQUE command.

SHRMAX, BMMTMAX, TORQMAX - 上一个命令 LS 或者 TORQUE 得到的最大剪力、弯矩和扭矩。

SHRLOC, BMMTLOC, TORLOC - Longitudinal locations of SHRMARG, BMMTMARG, and TORQMARG maximum margins if corresponding LSLIMIT limits have been defined, else the locations of SHRMAX, BMMTMAX, and TORQMAX maximums.

SHRLOC, BMMTLOC, TORLOC – 当定义了相关 LSLIMIT 限制值时，表示 SHRMARG, BMMTMARG, 和 TORQMARG 最大余量的纵向位置；否则，表示 SHRMARG, BMMTMARG, 和 TORQMARG 的最大值。

DEFLMAX, DEFLLOC - Maximum deflection and its location from last LS command.

DEFLMAX，DEFLLOC - 最大挠度及其从最后一个 LS 命令的位置。

MVCGMARG - Margin between Effective VCG and Maximum VCG.

MVCGMARG - 有效 VCG 和最大 VCG 之间的裕度。

SUBSLIST - Space-separated list of all quoted CONTENTS substance descriptions (excluding special names like "OIL", "cargo", and "unknown"); useful for TEMPLATE drop-down lists.

SUBLIST - 所有引用内容物质描述的空格分隔列表（不包括特殊名称，如“油”、“货物”和“未知”）;对模板下拉列表有用。

SUBSDESC - Current substance description for SUBSVOL/SUBSSPGR; can be SET directly.

SUBSDESC – SUBSVOL/SUBSSPGR 的当前物质描述；可直接设置。

SUBSVOL, SUBSSPGR - Total volume and specific gravity for all tanks having substance description equal to SUBSDESC ((or undefined if not in SUBSLIST).

SUBSVOL, SUBSSPGR – 物质描述等于 SUBSDESC 的所有舱室的总体积和比重（如果不在 SUBSLIST 中，则未定义）。

REQSDI - Latest required subdivision index from the DAMSTAB command.

REQSDI – 命令 DAMSTAB 中最新的需求分组索引。

DAMSTATE - Whether any FLOODED or DAMAGED tanks are present (1 if so, 0 if not).

DAMSTATE – 是否显示进水或破损舱室（1 为显示，0 为不显示）。

DRLOC8 - Current draft longitudinal location (default=0) used by DRVALU; can be SET.

DRLOC8 – 当前吃水纵向位置（默认为 0），可供 DRVALU 使用；可用命令 SET 设定。

DRVALU - Draft value at DRLOC8.

DRVALU - DRLOC8 处的吃水值。

RANDOM - Pseudo-random non-negative real number less than 1.

RANDOM - 伪随机非负实数小于 1。。

SCRTOP, SCRBOT - Whether the Display area is at the top or bottom of its scrollable collection (1 if so, 0 if not). Useful in conjunction with the TEMPLATE /GRAY field.

SCRTOP, SCRBOT – 显示区域在屏幕的顶部或是底部（1 为是，0 为否）。可与 TEMPLATE /GRAY 一起使用。

ONLINE - Whether tanks are being gauged on-line (0 if not). An "ONLINE" light is shown in the header with color from ONLINE (1=yellow, 8=orange, 16=red).Can be set directly using the SET command.

ONLINE – 舱室是否为即时测量（0 为否）。ONLINE 及其颜色会在台头显示（1=黄色，8=橙色，16=红色）。可使用命令 SET 直接定义。

MBSTATE, MBTIME - Current Multi-Body status (-2=not yet in equilibrium; -1=no other vessels connected; 0=MB inactive; 1=all vessels in mutual equilibrium) and the number of seconds it took to solve to MB equilibrium since any changes were last made.

MBSTATE, MBTIME – 当前多体状态（-2=还未达到平衡；-1=未连接其他船舶；0=多体为不可用状态；1=所有船舶彼此平衡）。任何改变之后，多体达到平衡时所耗费的秒数。

TEMPLOK - Template exit status; positive if not cancelled. See the TEMPLATE command.

TEMPLOK – 模板出口状态；如果未被取消则为正值。详情参考命令 TEMPLATE。

WTPREFN - Current weight prefix number (0=none, -1=non-prefixed items).

WTPREFN –当前重量的前缀数字（0=无，-1=无前缀项）。

LEMODE - Current Load Editor mode (either "WEIGHT", "GROUND", "THRUST", "PULL", or empty if LE is showing Tanks or not active).

LEMODE – 当前装载编辑器模式（为"WEIGHT", "GROUND", "THRUST", "PULL"其中之一，当装载编辑器显示舱室或者不可用时，为空）。

LETANK - Currently-selected tank name in Load Editor (empty if LE is not active).

LETANK – 装载编辑器中的当前选取的舱室名称（如果装载编辑器不可用，则为空）。

LEITEM - Current force item name, or current Weights item if Load Editor is showing Tanks.

LEITEM – 当前装载编辑器模式下的当前选取舱室的项目名称。

BOOMRAD - Boom radius calculated from BOOMEL and other crane user variables, or can be SET to change BOOMEL (see BOOM command for details).Requires CRANE module.

BOOMRAD – BOOMEL 和其他吊车用户变量计算出的吊臂半径，或者可用命令 SET 更改 BOOMEL（详情参考命令 BOOM）。需要 CRANE 模块。

BOOMAZ2 - Alternate boom azimuth (can be set; see BOOM command). Requires CRANE.

BOOMAZ2 –交替吊臂方位角（可以设置；请参见 BOOM 命令）。需要起重机模块。

SKCASES - Number of cases in the last SEAKEEPING command run.

SKCASES –上次 SEAKEEPING 命令运行中的案例数。

PNAME - Part list, or a space if empty. If not SET directly or SET to "", the current selection from the PART or TANK commands is given.

PNAME – 舱室部件列表，或空格（如果为空）。如果未直接设置或设置为“”，则给出从 PART 或 TANK 命令中选择的当前舱室。

The system variables in the following group all pertain to the PNAME part list. Multipart variables (such as TVOLUME) refer to plural selected "parts" or "tanks" below, while the others (such as HEIGHT) are undefined unless a single part is selected.

以下组中的系统变量都与 PNAME 部件列表有关。多部件变量（如 TVOLUME）是指下面选择的复数“部件”或“舱室”，而其他变量（如 HEIGHT）则未定义，除非选择单个部件。

PDESCR - Part description.

PDESCR – 子模型说明。

PTYPE - Part type of selected part in format shown by bare TYPE command.

PTYPE – 所选部件类型，格式由 TYPE 命令显示。

PDISPL - Total displacement weight of selected parts.

PDISPL –所选舱室的排水量。

HEIGHT - Reference point height relative to the waterplane (internal waterline for tanks, external for displacer parts; height is INFINITY if load=0, -INFINITY if load=1).

HEIGHT – 关于水线面的参考点高度（对于舱室是内部水线，对于排水类子模型是外部水线；如果 load=0 则高度为正无穷，如果 load=1 则高度为负无穷）。

LRP, TRP, VRP - Reference point coordinates of selected part.

LRP, TRP, VRP – 所选部件的参考点坐标。

RPINSIDE - Closest horizontal distance from reference points of selected parts to port or starboard hull shell for furthest displacer.

RPINSIDE –所选子模型参考点到最远排水类子模型左舷或右舷外板之间的最短水平距离。

RPUPBOT - Closest distance from reference points down to hull shell.

RPUPBOT – 参考点下至船壳板的最短距离。

TLENGTH, TBREADTH - Length and breadth of selected parts.

TLENGTH, TBREADTH – 所选部件的长度和宽度。

TENDF, TENDA - Locations of forward and aft ends of selected parts.

TENDF, TENDA – 所选部件的前端和后端的位置。

TINB - Centerline offset of innermost point to port of selected parts.

TINB – 所选部件的最内侧点到端口的中心线偏移。

TOUTB - Centerline offset of outermost point to stbd of selected parts.

TOUB – 所选部件的最外层点与右舷的中心线偏移。

TBOT, TTOP - Lowest and highest points above baseline of selected parts.

TBOT, TTOP – 所选部件基线之上的最低点和最高点。

SPGR - Average specific gravity of the contents of selected tanks.

SPGR – 选取舱室的平均液体比重。

TCONDESC - Tank contents description.

TCONDESC – 舱室成分描述。

TCONTEMP - Tank contents temperature and unit ("F" or "C") if petroleum.

TCONTEMP- 舱室成分的温度和温度单位，如果为石油，则单位为"F"或 "C"。

LOAD – Nominal tank load fraction (undefined if flooded or damaged).

LOAD – 指定舱室装载分数（如果进水或破损则不定义）。

LOAD2 - Actual volume divided by maximum of selected tanks (all types).

LOAD2 – 实际容积除以所选舱室（所有类型）的最大值。。

BPRESS - Tank pressure in atmospheres if TYPE BUBBLE.

BPRESS –如果舱室类型为 BUBBLE，则为大气下的舱室压力。

TSOUND - Tank sounding length (undefined if no sounding tube).

TSOUND – 舱室测深长度（如果没有测深管则不定义）。

TDAMPING - Tank damping factor (undefined for default damping).

TDAMPING – 舱室阻尼系数（默认阻尼未定义）。。

TPROTECT - Tank protection (0=none, 1=full, 2=online, -1=offline).

TPROTECT – 舱室保护（0=无，1=完全，2=在线，-1=离线）。

TWPA, TTRIM, THEEL - Part surface area, trim and heel angles in degrees.

TWPA, TTRIM, THEEL – 部件表面积、纵倾和横倾角度（以度为单位）。

TLCF, TTCF, TVCF - Part surface centroid, i.e. its Center of Flotation.

TLCF，TTCF，TVCF – 部件表面质心，即其浮选中心。

TLCG, TTCG, TVCG - Center of gravity of selected tanks, ignoring lost buoyancy tanks if mixed with positive weight tanks.

TLCG, TTCG, TVCG – 所选舱室的重心，如果混合了正重量的舱室，则忽略损失浮力的舱室。

TINERTL, TINERTT, TINERTV - Total rotational inertia of selected intact tanks around their own center axes.

TINERTL, TINERTT, TINERTV – 所选完整舱室围绕各自中心轴的总惯性矩。

TINERTLT, TINERTTV, TINERTVL - Total products of inertia of selected intact tanks for coupled axes around their own centers.

TINERTLT, TINERTTV, TINERTVL –所选完整舱室围绕各自中心的相邻轴的总惯量乘积。

TVOLUME - Total volume in cubic length units of selected tanks.

TVOLUME – 所选舱室的总立方容积。

TNVOLUME - Total temperature-adjusted net volume of selected tanks.

TNVOLUME – 所选舱室的温度修正后的总净容积。

TWEIGHT - Total weight of selected non-lost-buoyancy tanks.

TWEIGHT – 所选舱室中，未损失浮力的舱室总重。

TPERM - Average permeability of selected tanks.

TPERM – 所选舱室的平均渗透率。

TFSMMT, TFSMMT1 - True and formal free surface moment of selected tanks.

TFSMMT, TFSMMT1 – 所选舱室的真实和形式自由液面矩。

TFSMMTL - Longitudinal free surface moment of selected tanks.

TFSMMTL – 所选舱室的纵向自由液面矩。

Display Output

显示输出

Variable names and values are shown on the screen.

变量名称和值显示在屏幕上。

Nondisplay Output

无显示输出

none

无

Examples

样例

Declaring a variable to be called TANKLOAD, having min and max values:

定义一个名为 TANKLOAD 的变量，并定义其最大最小值：

VARIABLE(REAL) TANKLOAD:0:1

Declaring three real variables with limits:

定义三个附带限制的实变量：

VARIABLES X:-150:150, Y:-20:20, Z:0:60

Declaring a string variable which must contain between 2 and 3 characters, and illustrating its use in a macro command:

定义一个串变量，必须包含 2-3 个字符，并且说明其在一个宏命令中的作用：

```
VARIABLE(STRING) YESNO:2:3
INPUT "Do you want to continue? ",YESNO
IF "{YESNO}"="NO" THEN EXIT
```

Coloring all variables red whose names begin with "DECK":

所有以”DECK”开头的变量设为红色：

```
VARIABLE DECK* /COLOR:4
```

Listing all variables whose names begin with "TORQ":

列出所有以”TORQ”开头的变量：

```
V /L:TORQ*
```

Testing the contents of a tank by examining SPGR:

通过检测 SPGR 得到舱室成分：

```
IF {SPGR}>=1.0 THEN LOAD = 1.0 ELSE LOAD = 0.98
```

Using a unit-smart variable type such as LENGTH:

使用小单位变量形式，例如 LENGTH:

```
VARIABLE (LENGTH) X
UNITS M | SET X=1
UNITS F | ME {X}    `displays 3.28084 due to automatic conversion`自动转换后，显示 3.28084
```

Deferring Multi-Body evaluation of VAR2 using double braces in the sending session, so it can be properly evaluated in the receiving session:

延缓使用双大括弧内的发送格式进行 VAR2 的多体计算，从而使其能在接收格式下进行计算：

```
SOLVE SEND SET VAR1={{VAR2}}
```

Displaying values with commas every three integer places:

显示数值，每三个数字间隔一个逗号：

```
VARIABLE PRICE=10150
ME ${PRICE:,2}`displays $10,150.00`显示$10,150.00
```

Showing heel and trim with suffix characters instead of negative signs:

用后缀字符代替负号显示横倾和纵倾：

```
\Heel: {HEEL:2PS} degrees, Trim: {TRIM:2FA} degrees\
```

Showing the distance between points (X1,Y1,Z1) and (X2,Y2,Z2):

显示点（X1，Y1，Z1）和（X2，Y2，Z2）之间的距离：

\Distance: {((X2-X1)^2 + (Y2-Y1)^2 + (Z2-Z1)^2) ^0.5}