

# HYDROS模块介绍

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# 实现的功能

- 静水力计算
- 邦戎曲线
- 横截面积曲线
- 纵倾值曲线
- 载重量标尺图 (Deadweight Scale)
- 稳性横截曲线
- 干舷计算
- 可浸长度计算



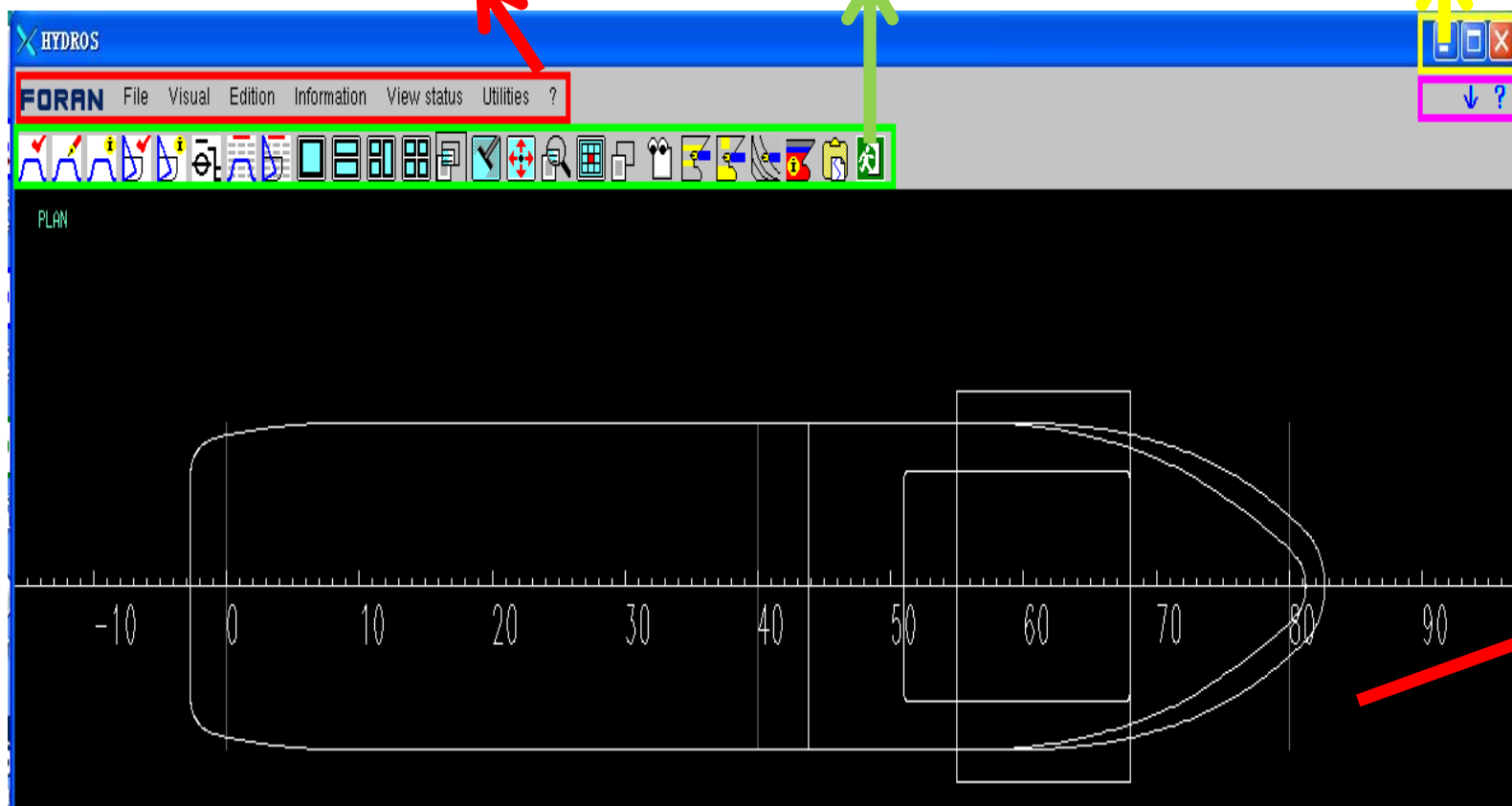
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# 界面（1）

菜单

快捷命令图标

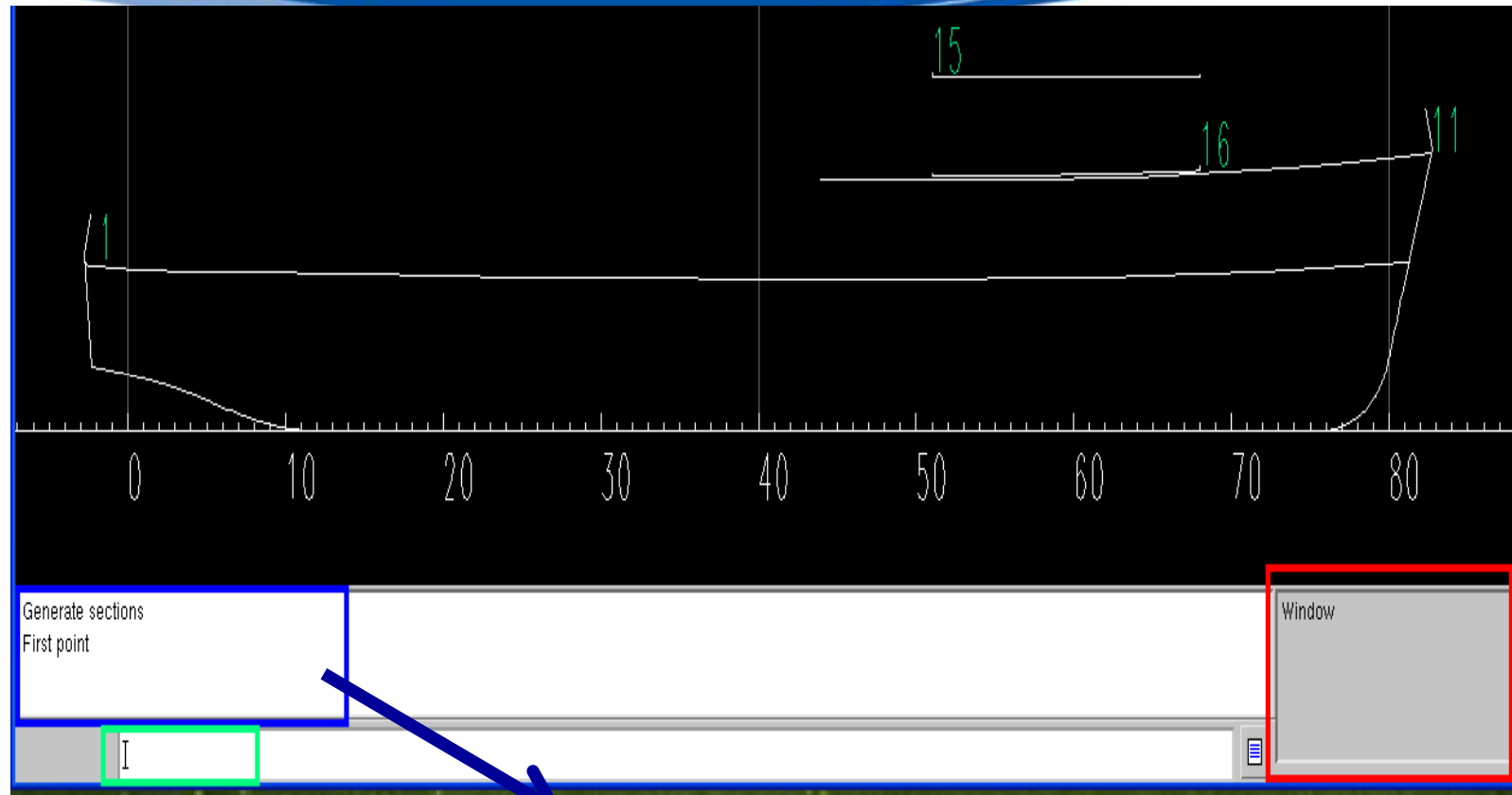
- 1) 最小化
- 2) 最大化
- 3) 退出



- 1) 添加快捷命令
- 2) 命令帮助

工作  
界面

## 界面（2）



命令输入栏

信息显示栏

命令显示栏

# 基本操作

## ■ 缩放:

➤ Shift+鼠标左键



## ■ 平移:

➤ Ctrl+鼠标左键



## ■ 窗口放大:



## ■ 全屏显示:



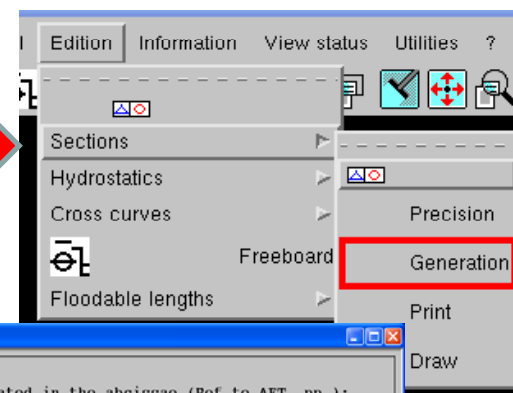
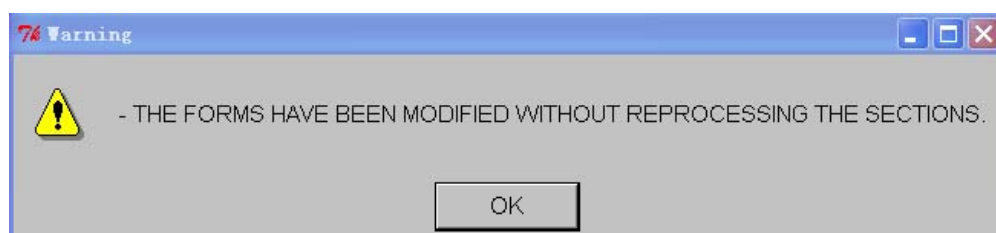
## ■ 刷新屏幕:



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# 计算横剖面

- 如果是第一次运行HYDROS模块，将会弹出下面对话框进行提醒，这时一直点击OK键进入程序。并最终弹出计算横剖面的窗口。

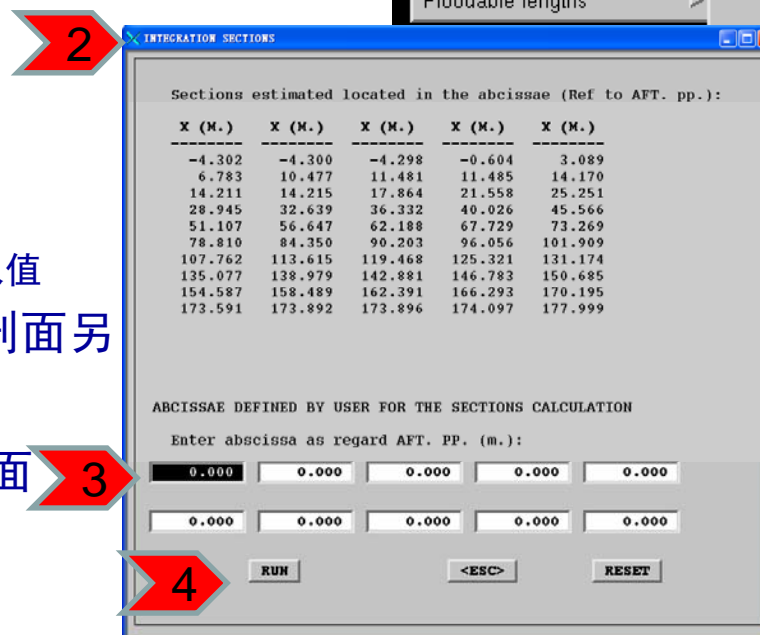


## ■ 计算横剖面

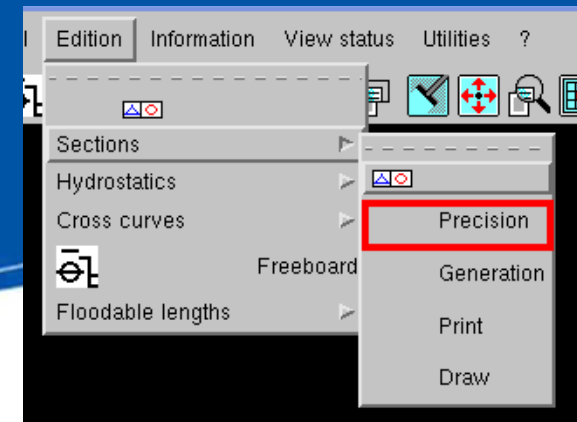
- 1) 执行Edition->Sections->Generation命令
- 2) 将会弹出一个INTEGRATION SECTIONS窗口
- 3) 输入用户需要额外添加的计算横剖面
- 4) 点击RUN运行程序，ESC退出或RESET重新输入值

- Edition->Sections->Print: 把计算横剖面另存为.lis的文档

- Edition->Sections->Draw: 在操作界面上显示计算横剖面



# 计算精度



## ■ 命令Edition->Sections->Precision

此精度分为2个等级，等级的高低决定了计算的精确度以及速度的快慢。精度高，计算的截面就多。



### A) Standard

Sections estimated located in the abscissae (Ref to AFT. pp.):

X (M.)	X (M.)	X (M.)	X (M.)	X (M.)
-3.502	-3.500	-3.498	1.908	7.314
12.720	18.126	23.533	28.939	34.345
39.751	48.401	55.642	55.646	57.051
59.893	59.897	65.700	74.350	83.000
91.854	109.707	109.560	118.414	127.267
132.801	138.334	143.868	149.401	154.935
160.468	165.996	166.002	168.211	171.535

ABCISSAE DEFINED BY USER FOR THE SECTIONS CALCULATION

Enter abscissa as regard AFT. PP. (m.):

0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000

RUN <ESC> RESET

### B) High

Sections estimated located in the abscissae (Ref to AFT. pp.):

X (M.)	X (M.)	X (M.)	X (M.)	X (M.)
-3.502	-3.500	-3.498	0.106	3.710
7.314	10.918	14.522	18.126	21.731
25.335	28.939	32.543	36.147	39.751
45.157	50.563	55.642	55.646	55.969
59.893	59.897	61.375	66.782	72.188
77.594	83.000	88.533	94.067	99.600
105.134	110.667	116.201	121.734	127.267
130.956	134.645	138.334	142.023	145.712
149.401	153.090	156.779	160.468	164.157
165.996	166.000	167.846	168.211	171.535

ABCISSAE DEFINED BY USER FOR THE SECTIONS CALCULATION

Enter abscissa as regard AFT. PP. (m.):

0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000

RUN <ESC> RESET

# 静水力计算 (1)

■ 命令: Edition->Hydrostatics

■ 步骤:

1) 执行Edition->Hydrostatics->Options

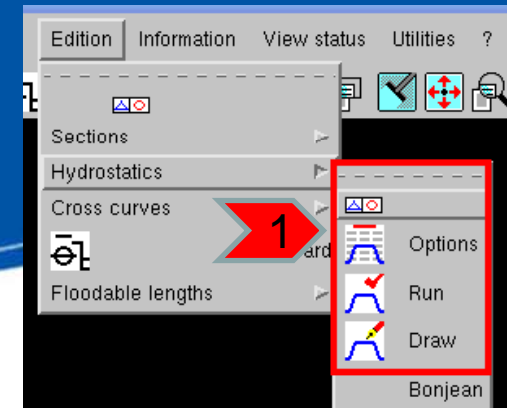
➤ 需要计算的静水力数据: 值为0时则不输出数据

➤ Reference: 坐标的参考位置

---参考艏部和艉部的吃水

---参考船中吃水和纵倾值

➤ 按钮: SAVE保存、ESC推出、RESET重新输入值



HYDROSTATIC VALUES TO BE DISPLAYED/PRINTED

( 0 means value not required)

	Position
DISFA Displacement with appendages (TM)	1
DISV Ship moulded volume (M3)	2
XCBA L.C.B. with appendages (M)	0
XCB L.C.B. without appendages (M)	3
KB Centre of gravity above b/l (M)	11
AW Waterline area (M2)	8
AX Maximum section area (M2)	6
ZBM Transversal metacentre radius (M)	12
ZBML Longitudinal metacentre radius(M)	13
CX Maximum section coefficient (-)	7
CP Total prismatic coefficient (-)	4
CB Total block coefficient (-)	5
CW Waterline coefficient (-)	9
MTC Moment for trim 1 CM (TM)	14
S Wetted surface area (M2)	15
TCI Tons per CM immersion (TM/CM)	16
XCF L.C. of G. of Waterline (M)	10
KM Metacentre point height (M)	17
KML Long. metacentre point height (M)	18

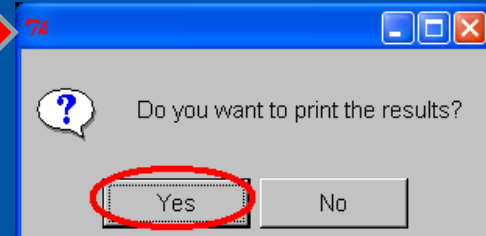
Reference : MIDDLE DRAFT AND TRIM

SAVE <ESC> RESET

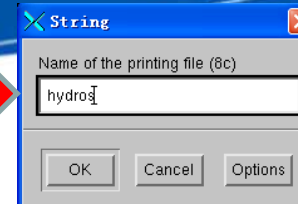


# 静水力计算 (2)

2.3



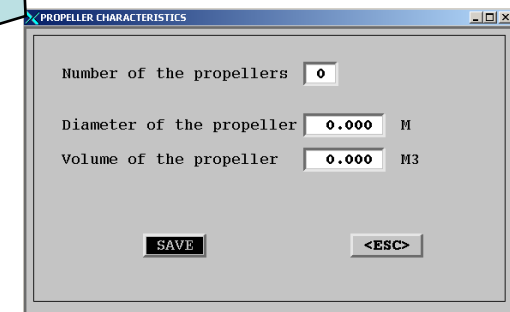
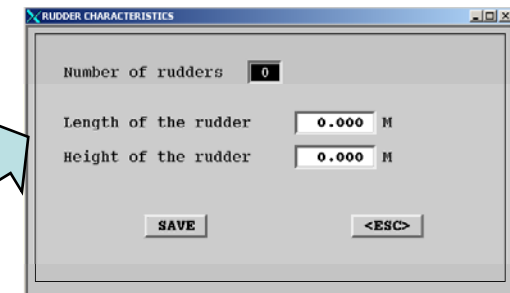
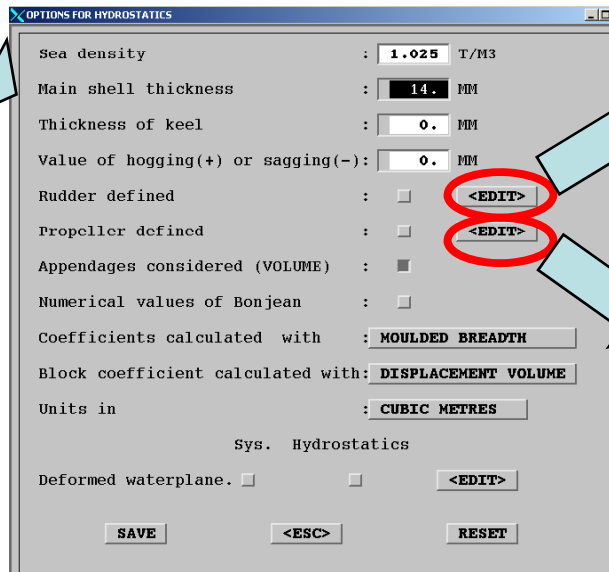
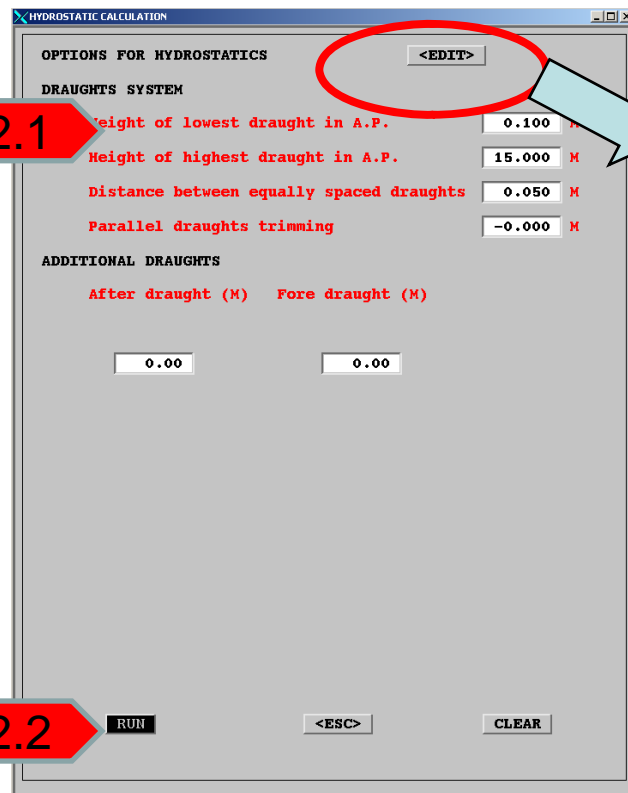
2.4



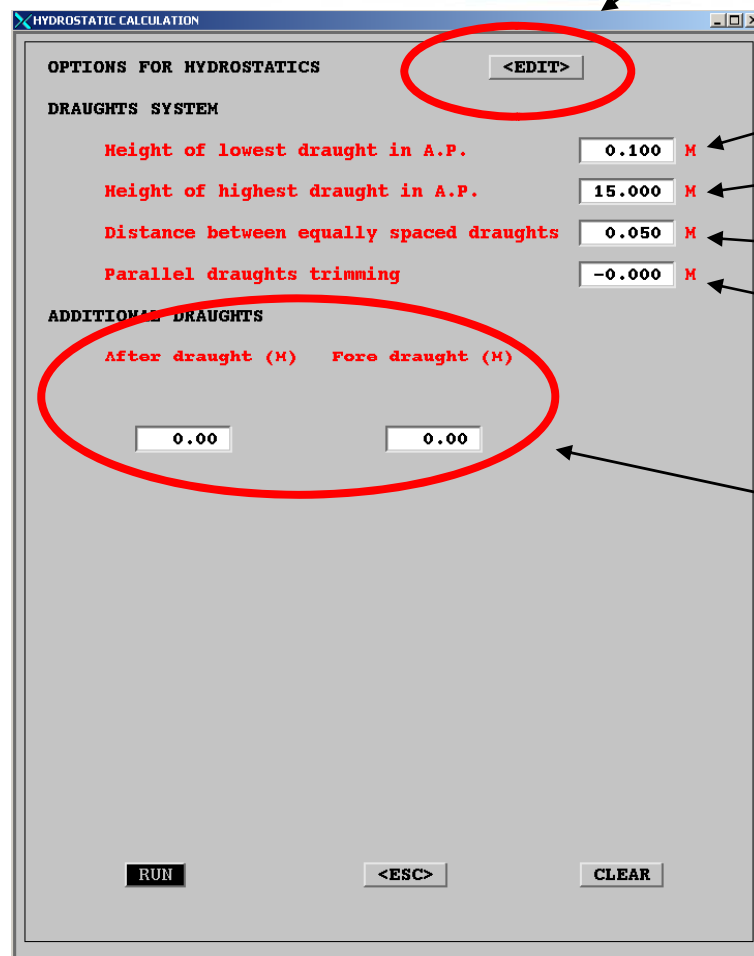
## 2) 执行Edition->Hydrostatics->Run

点击RUN后，将会弹出提示对话框询问是否保存结果，点击Yes后出现新的对话框输入报告的文件名，然后点OK键保存一个格式为.lis的文件

2.1



其它设置值



计算的初始吃水值

计算的终止吃水值

计算的吃水步长

纵倾值

额外需要添加的吃水值

选择按钮：

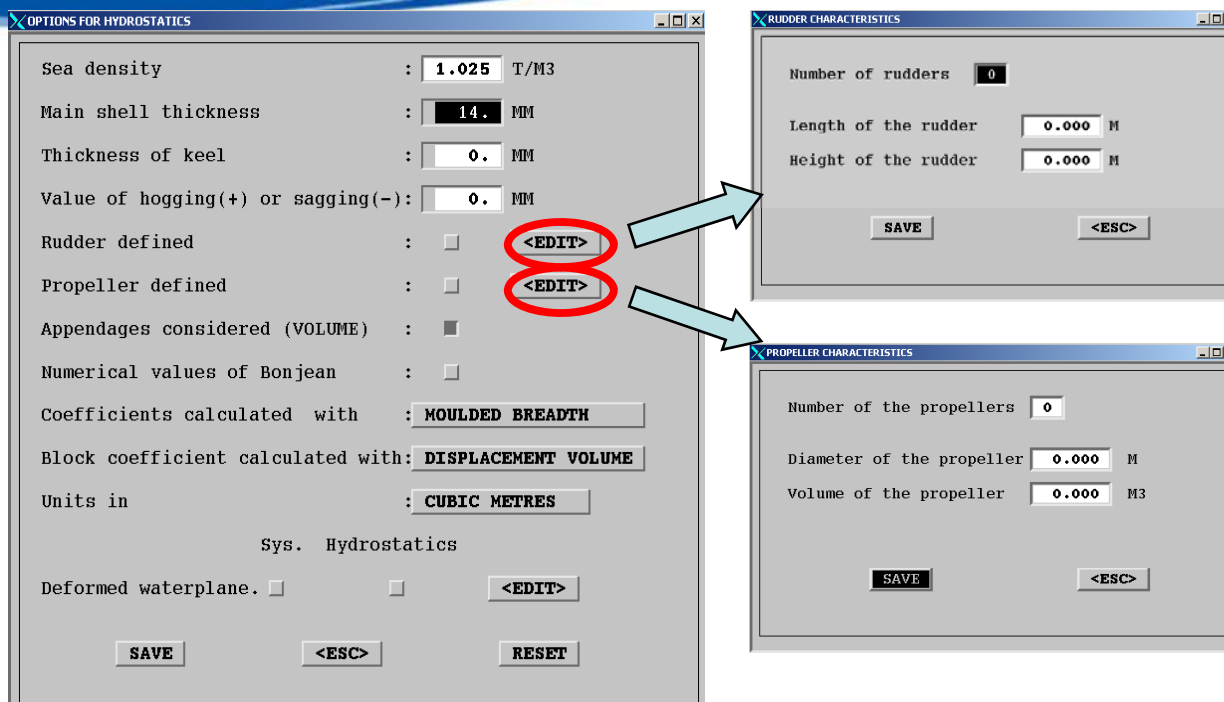
- 1) RUN: 运行静水力结果，保存为一个格式为lis的文档，文件名不超过8个字符数；
- 2) ESC: 退出该对话框；
- 3) CLEAR: 清除设置定义的值。



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## 其它设置值详解

- A) 海水密度
- B) 船壳板的厚度
- C) 龙骨板的厚度
- D) 中拱或中垂值
- E) 舵的简要定义
- F) 螺旋桨的定义
- G) 是否加上附体体积
- H) 是否加上邦戎曲线值
- I) 船型系数是根据型宽还是水线宽计算
- J) 方型系数是根据排水量还是根据排水体积计算
- K) 单位是立方米还是升
- L) DEFORMED WATERPLANE

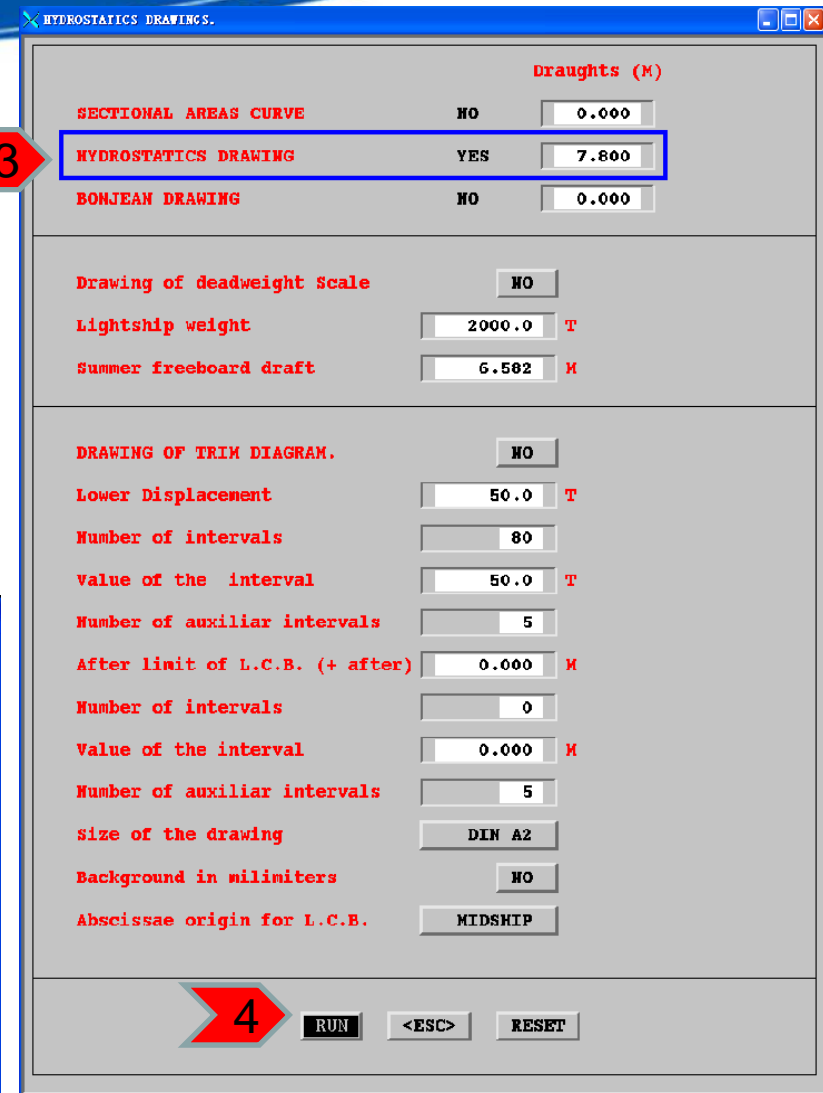
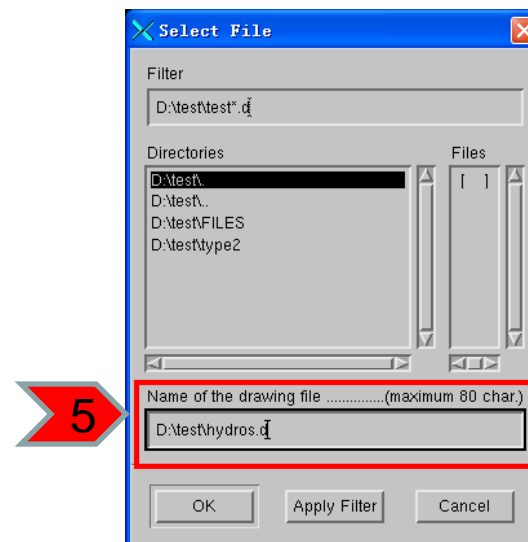


# 静水力计算 (3)

3) 执行Edition->Hydrostatics->Draw  
在HYDROSTATICS DRAWING选项中  
输入吃水值

4) 点击RUN运行, ESC退出, 或RESET  
清除定义的值。

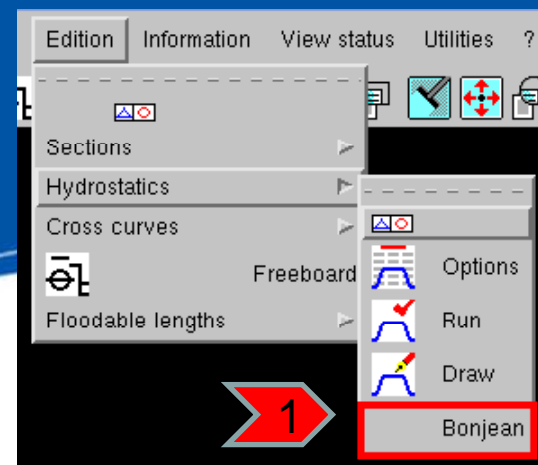
5) 点击RUN后, 将会弹出一个新的对话框  
输入图纸的文件名, 然后点OK键保存一个  
格式为.d的文件。



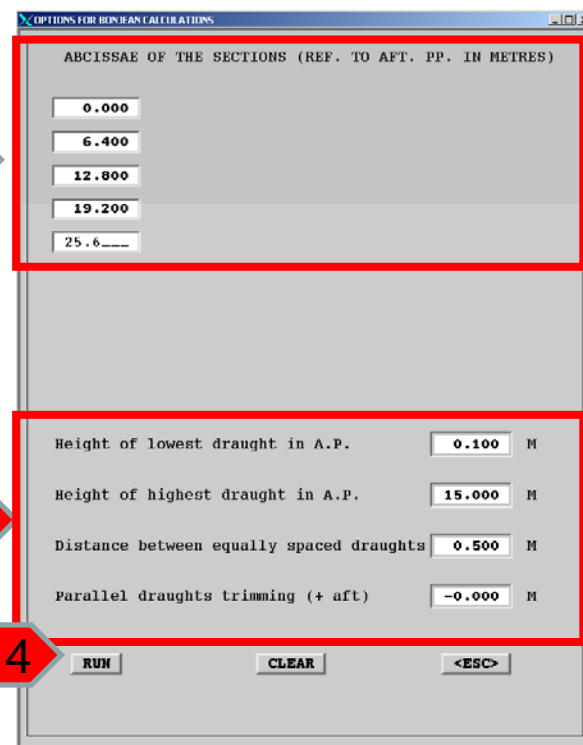
# 邦戎曲线 (1)

## ■ 邦戎曲线计算

- 1) 执行Edition->Hydrostatics->Bonjean
- 2) 输入需要计算的横剖面的横坐标值
- 3) 吃水的定义
- 4) 点击RUN运行后，弹出提示对话框询问是否保存结果，如果需要保存点击Yes
- 5) 则弹出输入文件名的对话框，格式为.lis文件



2



ABCISSAE OF THE SECTIONS (REF. TO AFT. PP. IN METRES)

0.000
6.400
12.800
19.200
25.600

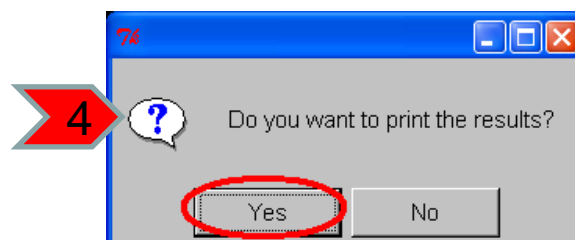
Height of lowest draught in A.P. 0.100 M

Height of highest draught in A.P. 15.000 M

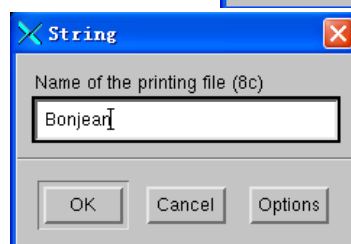
Distance between equally spaced draughts 0.500 M

Parallel draughts trimming (+ aft) -0.000 M

RUN CLEAR <ESC>



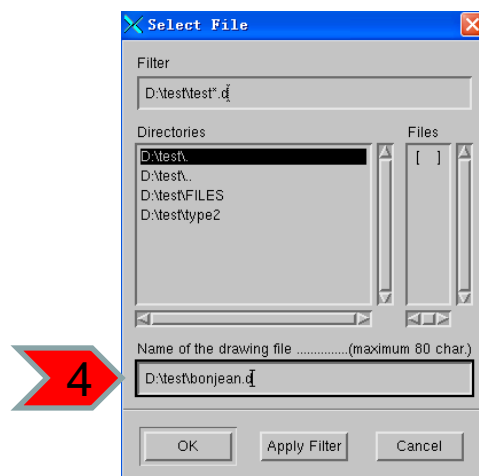
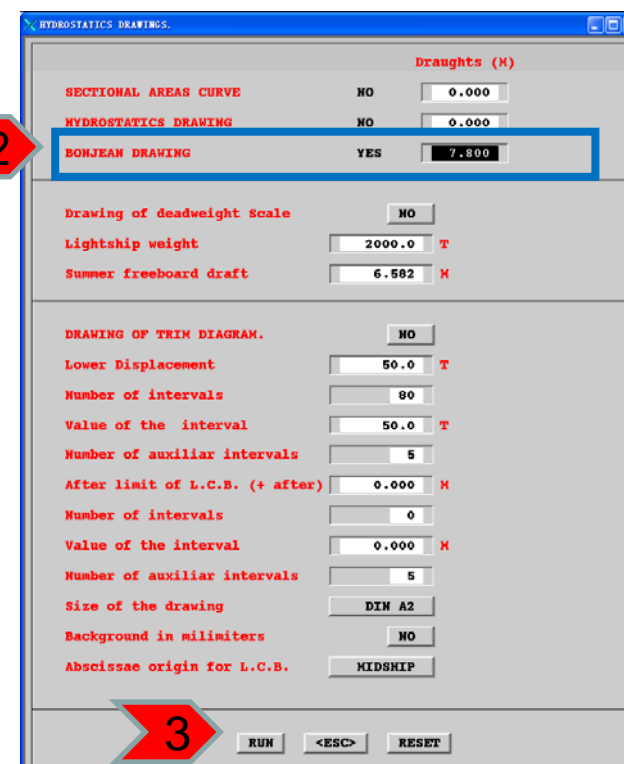
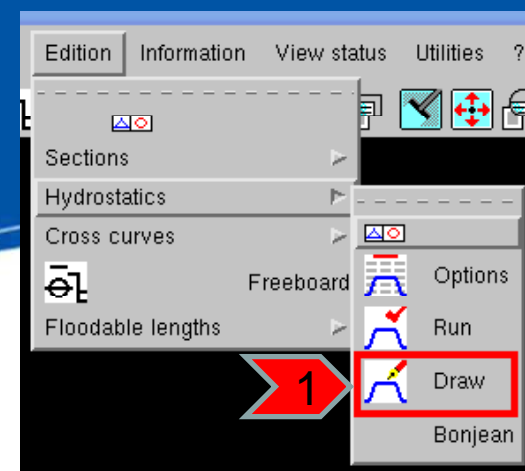
5



# 邦戎曲线 (2)

## ■ 邦戎曲线出图

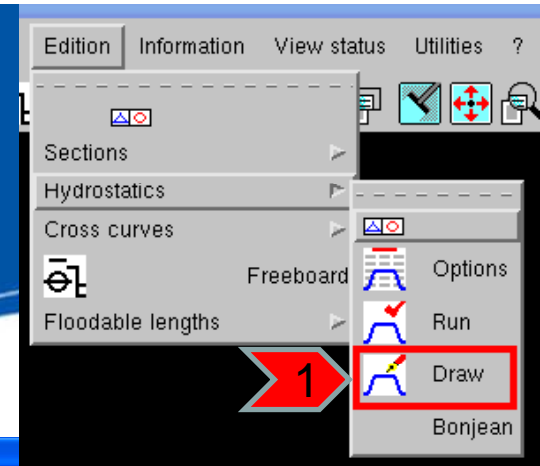
- 1) 执行Edition->Hydrostatics->Draw
- 2) 在BONJEAN DRAWING选项中输入吃水值
- 3) 点击RUN运行, ESC退出, 或RESET清除定义的值
- 4) 点击RUN后, 将会弹出一个新的对话框输入图形的文件名, 然后点OK键保存一个格式为.d的文件



# 横截面积曲线

## ■ 与邦戎曲线出图类似

- 1) 参照于邦戎曲线
- 2) 在SECTIONAL AREAS CURVES选项中输入吃水值
- 3) 参照于邦戎曲线
- 4) 参照于邦戎曲线



2

HYDROSTATIC DRAWINGS.

Draughts (M)

SECTIONAL AREAS CURVE	YES	7.800
HYDROSTATICS DRAWING	NO	0.000
BONJEAN DRAWING	NO	0.000

Drawing of deadweight Scale

Lightship weight  T

Summer freeboard draft  M

DRAWING OF TRIM DIAGRAM.

Lower Displacement  T

Number of intervals

Value of the interval  T

Number of auxiliar intervals

After limit of L.C.B. (+ after)  M

Number of intervals

Value of the interval  M

Number of auxiliar intervals

Size of the drawing

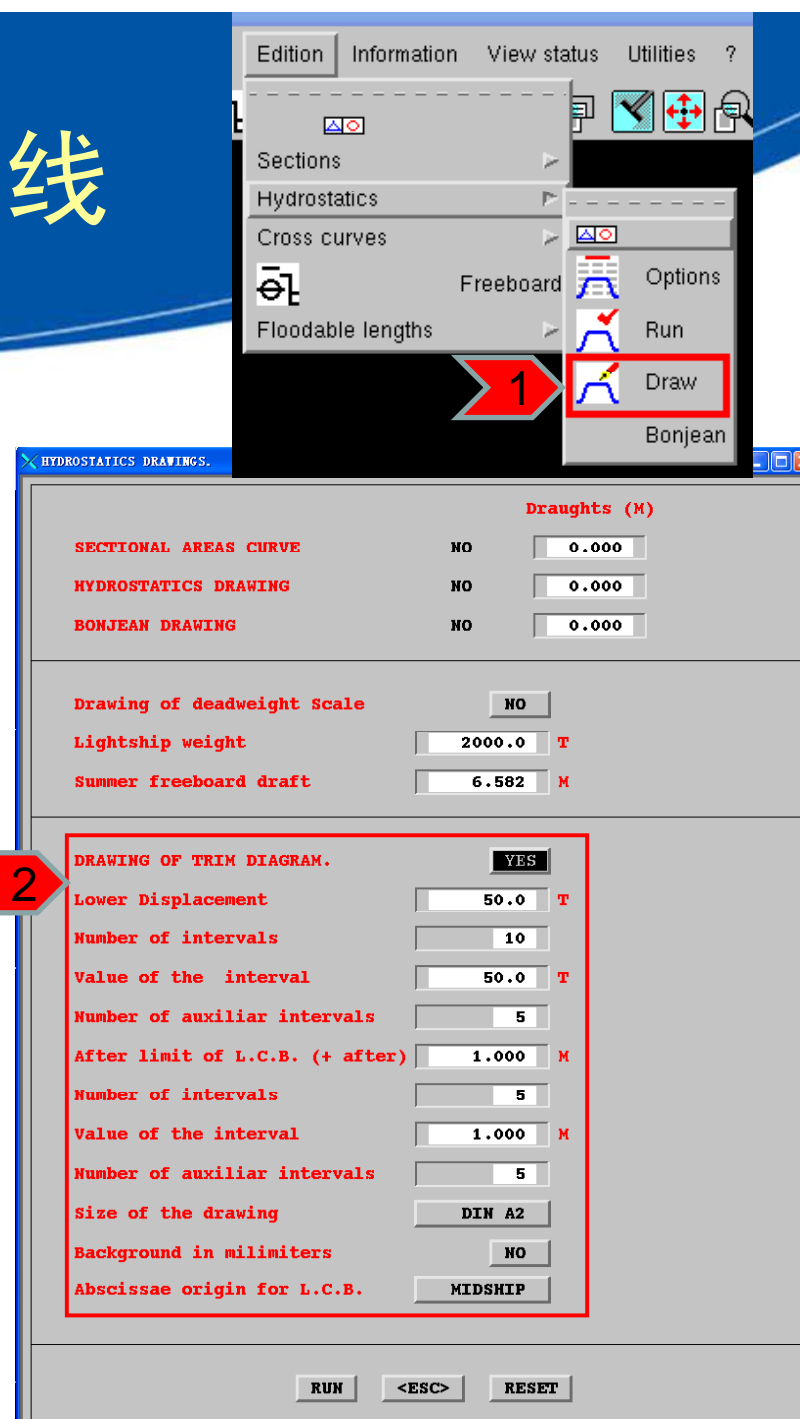
Background in millimeters

Abscissae origin for L.C.B.

# 纵倾值曲线

## ■ 与邦戎曲线出图类似

- 1) 执行Edition->Hydrostatics->Draw
- 2) 在DRAWING OF TRIM DIAGRAM选项中  
使用YES，然后定义相应的值。
- 3) 点击RUN运行，ESC退出，或RESET清除  
定义的值
- 4) 点击RUN后，将会弹出一个新的对话框输  
入图纸的文件名，然后点OK键保存一个格式为  
.d的文件

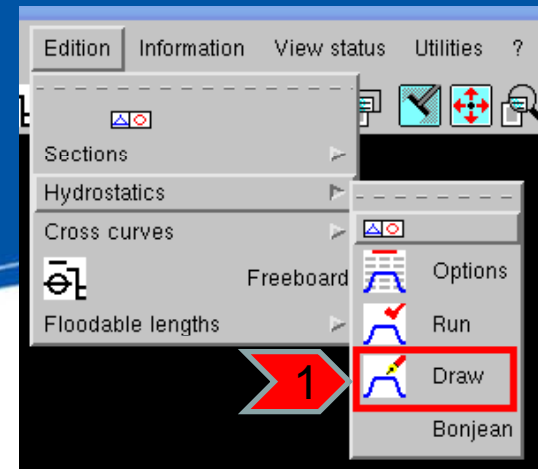




# 载重量标尺图

## ■ 与邦戎曲线出图类似

- 1) 执行Edition->Hydrostatics->Draw
- 2) 在Drawing of deadweight scale选项中使用YES，然后定义空船重量值和 夏季干舷吃水值。
- 3) 点击RUN运行，ESC退出，或RESET清除定义的值
- 4) 点击RUN后，将会弹出一个新的对话框输入图纸的文件名，然后点OK键保存一个格式为.d的文件



The screenshot shows the 'HYDROSTATIC DRAWINGS' dialog box. The 'Drawing of deadweight Scale' section is highlighted with a red box. The 'Drawing of deadweight Scale' option is set to 'YES'. The 'Lightship weight' is set to '200.0 T' and the 'Summer freeboard draft' is set to '3.303 M'. A red arrow labeled '2' points to this section.

Draughts (M)		
SECTIONAL AREAS CURVE	NO	0.000
HYDROSTATICS DRAWING	NO	0.000
BONJEAN DRAWING	NO	0.000

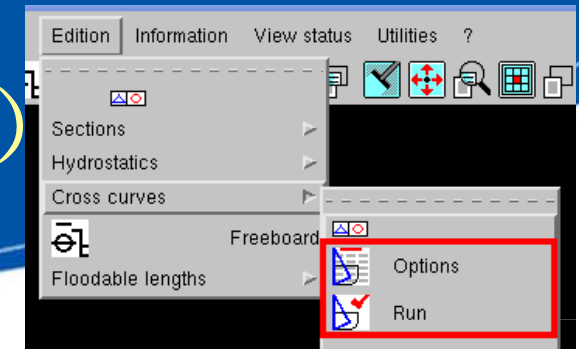
Drawing of deadweight Scale	YES
Lightship weight	200.0 T
Summer freeboard draft	3.303 M

DRAWING OF TRIM DIAGRAM.		
Lower Displacement	0.0 T	
Number of intervals	10	
Value of the interval	0.0 T	
Number of auxiliar intervals	5	
After limit of L.C.B. (+ after)	0.000 M	
Number of intervals	0	
Value of the interval	0.000 M	
Number of auxiliar intervals	5	
Size of the drawing	DIN A2	
Background in milimeters	NO	
Abscissae origin for L.C.B.	MIDSHIP	

RUN <ESC> RESET

# 稳性横截曲线 (1)



## 步骤

### 1) 执行Edition->Cross curves->Options命令

#### ➤ Output of the results:

---COMPLETE: 完整的报告

---SUMMARY: 简单的报告

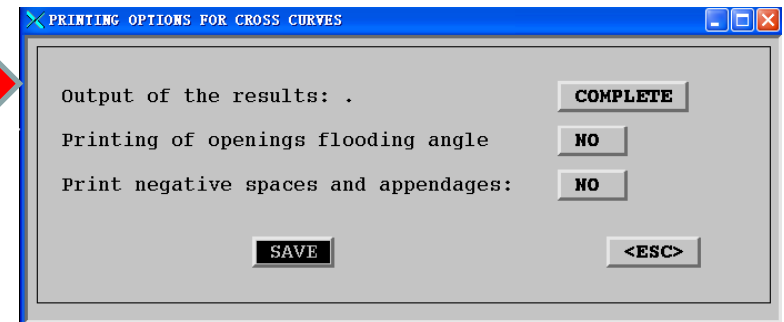
#### ➤ Printing of openings flooding angle:

是否输出入水角

#### ➤ Print negative and appendages:

是否输出扣除的舱室和附体

1



### 2) 执行Edition->Cross curves->Run命令

#### 2.1) General Options栏

#### ➤ Type of calculation: 计算的方法

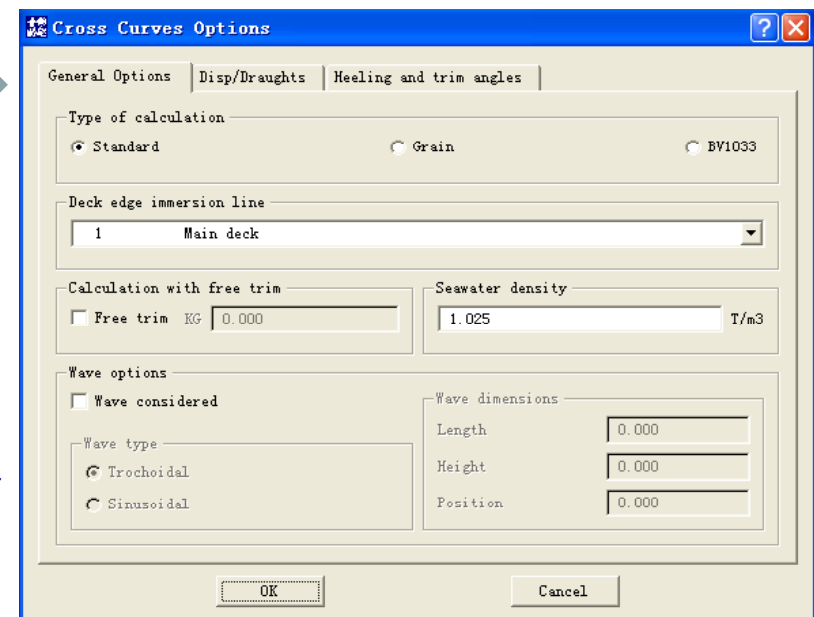
#### ➤ Deck edge immersion line: 可浸甲板

#### ➤ Calculation with free trim: 默认值是固定纵倾进行计算

#### ➤ Seawater density: 海水密度

#### ➤ Wave options: 波浪的定义

2.1



# 稳性横截曲线 (2)

## 步骤 (续)

### 2.2) Disp./Draughts栏

定义排水量或者定义吃水

### 2.3) Heeling and trim angles栏

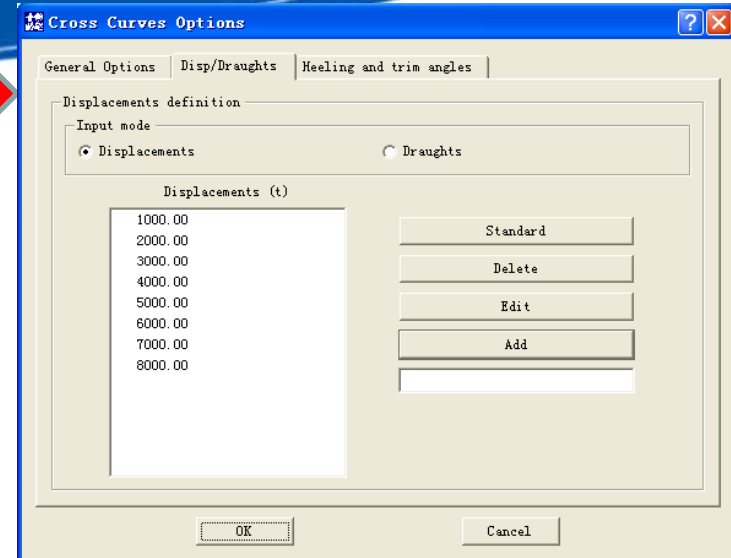
定义角度值和纵倾值

3) 点击OK键运行，或Cancel取消

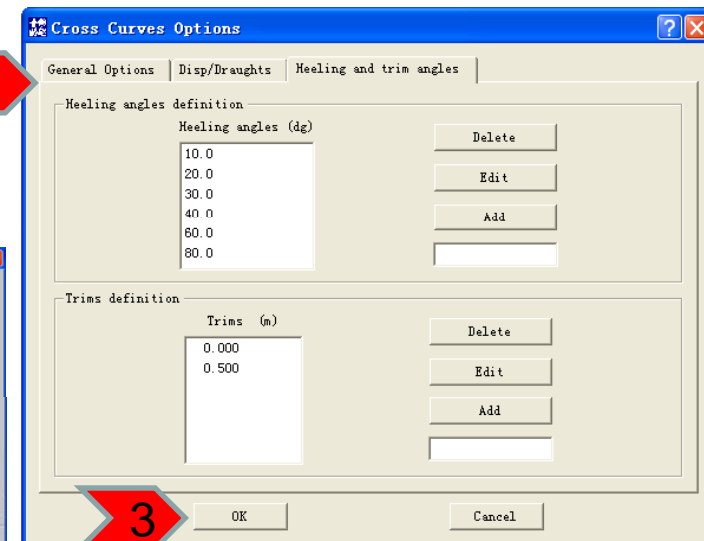
4) 如果点击OK键运行，将弹出对话框提示是否继续进行稳性横截曲线计算，点击Yes继续，或者No中断

5) 点击Yes后，系统会继续询问是否要保存报告和图纸。

2.2

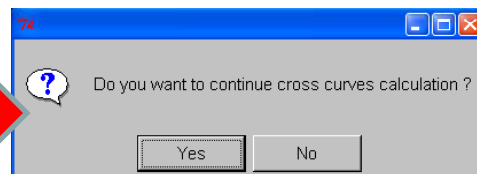


2.3

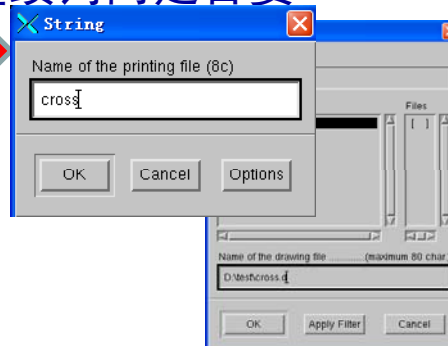


3

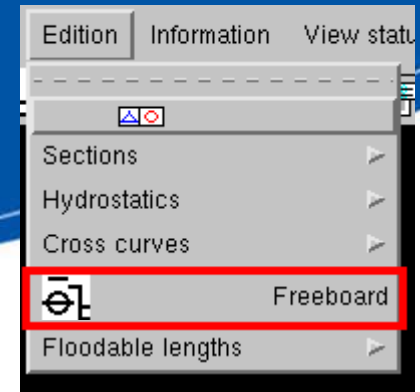
4



5



# 干舷计算



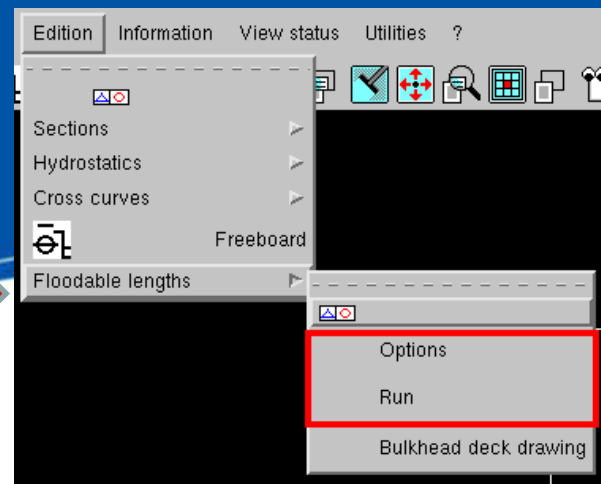
## 步骤

- 1) 执行Edition->Freeboard命令
- 2) 填写对话框中相应的值
  - Type of ship: A、B、B60、B100
  - Timber-carrier ship: 是否为运木船
  - Freeboard deck: 确定干舷甲板
  - Height of the superstructure: 上层建筑的高度
  - Depth correction: 型深修正
  - Limits of peaks: 根据rule 3.9
  - Thickness: 龙骨板的厚度等
  - Effective length of .....: 舱室的有效长度
  - Freeboard length: 根据rule 3.1
  - Freeboard depth: 根据rule 3.1
  - Navigation Zone: 仅对俄罗斯规则有效
- 3) 点击RUN运行, ESC退出, 或RESET清除定义的值
- 4) 点击RUN后, 将会弹出一个新的对话框输入图纸的文件名, 然后点OK键保存一个格式为.d的文件

A screenshot of the 'FREEBOARD OPTIONS' dialog box. It contains various input fields and buttons for configuring ship parameters. The 'Type of ship' is set to 'B'. 'Timber - carrier ship' is set to 'NO'. 'Freeboard deck' is '1 Main deck'. 'Height of the superstructure' is '0.000 M'. 'Depth correction' is 'Always'. 'Limits of the peaks (Frames)' are 'Aft : 0' and 'Fore : 0'. 'Thickness: Stringer strake' is '0.0 MM' and 'Sheating' is '0.0 MM'. 'Effective length of the castle', 'bridge', 'poop', 'Freeboard length', and 'Freeboard depth' are all set to 'Default' or '0.000 M'. 'Navigation Zone (Russian Register)' is 'Default'. At the bottom are 'RUN', '<ESC>', and 'RESET' buttons.

Type of ship	B
Timber - carrier ship	NO
Freeboard deck	1 Main deck
Height of the superstructure	0.000 M
Depth correction:	Always
Limits of the peaks (Frames)	Aft : 0 Fore : 0
Thickness: Stringer strake	0.0 MM
Sheating	0.0 MM
Effective length of the castle	Default 0.000 M
Effective length of the bridge	Default 0.000 M
Effective length of the poop	Default 0.000 M
Freeboard length	Default 0.000 M
Freeboard depth	Default 0.00 M
Navigation Zone (Russian Register)	Default

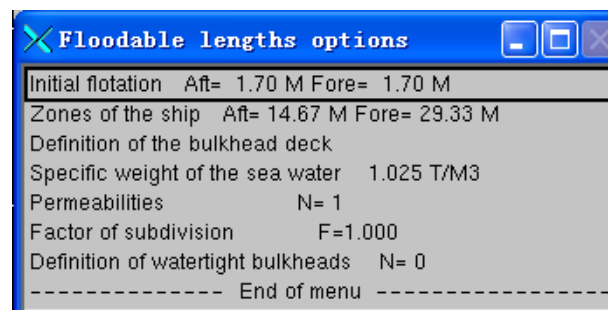
# 可浸长度计算



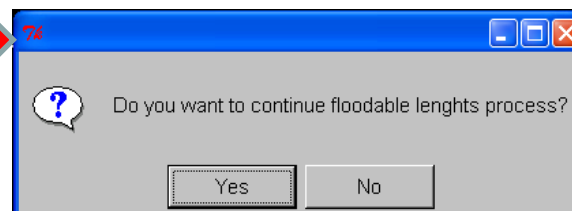
## 步骤

### 1) 执行Edition->Floodable lengths->Option命令

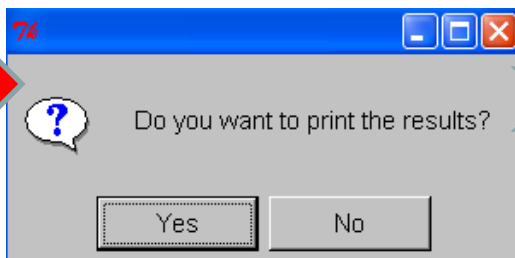
- Initial flotation: 初始的吃水值
- Zones of the ship: 中间区域的定义
- Definition of the bulkhead deck: 水密横舱壁所达到的最高一层甲板
- Specific weight of the sea water: 海水密度
- Permeabilities: 渗透率
- Factor of subdivision: 分舱因素
- Definition of watertight bulkheads: 定义水密舱壁



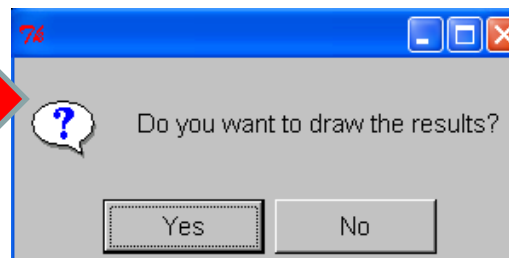
### 2) 执行Edition->Floodable lengths->Run命令，点击Yes运行后选择是否保存相应的报告和图纸。



2.2



2.3



# 入水点

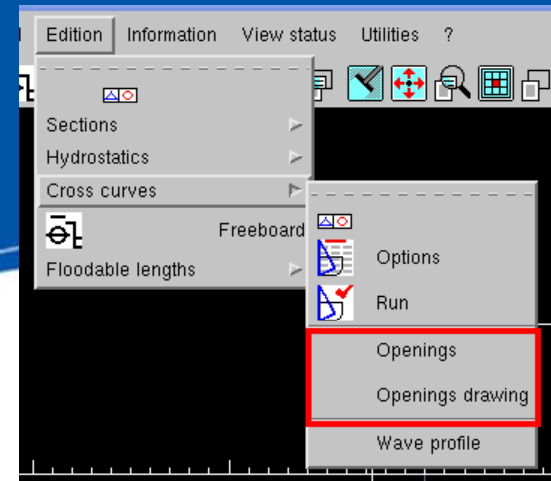
## ■ 入水点定义

执行Edition->Cross curves-> Openings命令

- 定义入水点的名称和描述;
- 定义入水点的位置;
- 定义入水点相关联的舱室;
- 定义入水点的类型。

## ■ 在操作窗口中显示入水点的位置

执行Edition->Cross curves ->Openings  
Drawing命令



The 'Openings definition' dialog box contains the following sections:

- Openings:** A table with columns: ID, Description, X (m), Y (m), Z (m), Type, DKOP, Spaces. Buttons: New, Edit, Delete.
- Opening edition:**
  - Identification: [text field]
  - Description: [text field]
  - Position:
    - Coordinates:
      - X (abscissa): Dist. [text field] m
      - Y (halfbreadth): Dist. [text field] m
      - Z (height): Dist. [text field] m
    - Reference point:
      - ☒ Ref. to frame no. -16
      - ☐ Referred to AP
      - ☐ Referred to FP
      - ☐ Referred to MS
    - Over deck/no:
      - ☐ Over deck no. 1
      - ☒ Over base line
  - Symmetry: Symmetric to [dropdown menu with '-None-']
- Related spaces: Space [table with 'F.W.']
- Opening type:
  - ☒ Reference point (REFE)
  - ☐ Weathertight opening (DOWN)
  - ☐ Not weathertight opening (FLUS)
  - ☐ Opening defined over deck
- Buttons: Add opening, Clear Fields, Cancel opening edition

- Bottom buttons: OK, Cancel

# 谢谢！



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