ESCUELA SUPERIOR POLITECNICA DEL LITORAL

DEPARTAMENTO DE INGENIERIA MARITIMA Y CIENCIAS DEL MAR

" CREACION ITERATIVA DE SERIES PARA EL DISEÑO DE PESQUEROS"

TESIS DE GRADO

PREVIA A LA OBTENCION DEL TITULO DE:

INGENIERO NAVAL

PRESENTADA POR:

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GUAYAQUIL - ECUADOR

1982

AGRADECIMIENTO

Al ING. CRISTOBAL MARISCAL D., por el invalorable apoyo en la dirección de este trabajo.

Al trabajo tesonero de la Srta. CATALINA HERRERA S., en la transcripción y acabado de la tesis.

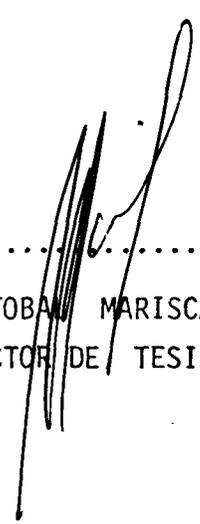A los personeros del Dique "RIO AMAZONAS", porque con su buena voluntad ha sido posible la culminación de mis estudios.

A todos mis amigos que por sus inquietudes y observaciones contribuyeron a salir adelante.

DEDICATORIA

A MIS PADRES

A MIS HERMANOS

A MI ABUELO DOCITEO

....

ING. CRISTOBAL MARISCAL DIAZ
      DIRECTOR DE TESIS

DECLARACION EXPRESA:

"La responsabilidad por los hechos, ideas y doctrinas expuestos en esta tesis, me corresponden exclusivamente;y, el patrimonio intelectual de la misma, a la ESCUELA SUPE RIOR POLITECNICA DEL LITORAL".

(Reglamento de Exámenes y Títulos Profesionales de la ES POL).

....

FRANKLIN JOHNNY DOMINGUEZ RUIZ

R E S U M E N

En este trabajo inicialmente se establecen las formulaciones matemá
ticas de las características principales de las embarcaciones   pes
queras de nuestro medio, con el objeto de proponer un procedimiento
de diseño con el uso de métodos polinómicos y la generación de fami
lias de curvas, llegando a plasmar la creación de las líneas de for
ma.   El diseñador deberá disponer de un ordenador para la utiliza-
ción del método, sin requerir para ésto, ser un experto en computa
doras, lo cual se demuestra con el ejemplo que se desarrolla. Pero
de no ser esto posible, se presentan los resultados de 228 diseños
diferentes en forma de parámetros adimensionales, generalizando así
a cualquier embarcación pesquera de formas redondas. El trabajo -
tradicional de 3 meses del proyectista naval, se lo hace en 5 minu
tos.

La metodología del procedimiento de diseño, está estructurada para
extender su aplicación a otros tipos de barcos, tales como embarca
ciones de apoyo, remolcadores, etc.

...

INDICE GENERAL

CREACION ITERATIVA DE SERIES PARA EL DISEÑO DE PESQUEROS

SIMBOLOGIA

B	Manga
BM	Radio metacéntrico transversal
C_B	Coeficiente block
C_P	Coeficiente prismático
C_X	Coeficiente de sección
C_W	Coeficiente de plano de flotación
D	Puntal
f	Francobordo
H	Calado
KB	Centro de boyantez vertical
KG	Centro de gravedad vertical
L	Eslora
LBP	Eslora entre perpendiculares
LCB	Centro de boyantez longitudinal medido de la sección media.
LCF	Centro de flotación
N4	Factor de variación de la manga -100% a 100%
N5	Factor de variación del puntal de -100% a 100%
V1	Volumen bodega + combustible + agua

V_3	Volumen a desplazar
V_2	Velocidad
Δ	Desplazamiento
Δo	Desplazamiento ligero

PARTE I

INTRODUCCION

La necesidad de la explotación de los recursos marinos, hace que ca
da día se investigue más en el mejoramiento de las embarcaciones de
dicadas a las faenas de la pesca. En nuestro país, se cuenta   con
una gran riqueza ictiológica, la que no ha sido posible aprovechar-
la en una manera suficiente, por lo que en la actualidad, el gobier
no se ha empeñado en la organización de empresas, cooperativas pes-
queras, y construcción de facilidades de embarque, para así consti-
tuir una infraestructura de explotación que supla las demandas   de
consumo interno; principalmente, con miras a conquistar un mercado
externo teniendo entonces presente estos objetivos, deberíamos   de
prepararnos para un auge de construcciones de barcos pesqueros   en
los que sin descuidar la optimización de su aprovechamiento, no de
bemos olvidar la comodidad y seguridad del personal, por lo que en
tonces el estudio del comportamiento en el mar llega a ser de   pri
mordial importancia. Esto para el proyectista significaría un   in
cremento a los requerimientos en la espiral de diseño, lo que hace
que su trabajo sea aún más tedioso. Aprovechando la innovación de
computadoras de gran capacidad de almacenamiento, se ha intentado -

de múltiples maneras aligerar esta tarea y uno de esos es la de ge
nerar las formas de casco que reunan las características deseadas -
para establecer un buen punto de partida en la búsqueda del diseño
definitivo.

De aquí, que entre los objetivos de este trabajo se presentarán las
etapas llevadas a efecto para poder obtener diferentes formas   de
casco de barcos pesqueros que sean útiles para los tipos de faena a
la que se destine. Inicialmente analizaremos los métodos y relacio
nes encontradas para seleccionar las dimensiones principales, tanto
los propuestos por la FAO, otros autores y los determinados a   par
tir de la Flota Nacional.

SELECCION DE LAS DIMENSIONES PRINCIPALES

1.1. CONSIDERACIONES SOBRE LOS METODOS TRADICIONALES

Numerosos estudios se han realizado para seleccionar las dimensio
nes principales de una embarcación pesquera, aunque muchos coinci
den en que la determinación no se debe realizar solo en las dimen
siones como eslora, manga, puntal, sino en combinación con   los
coeficientes del barco, para de esta manera asociar la forma espe
cífica de un casco con los requerimientos del proyectista.

Analizando cada uno de los reportes de investigación realizados,
acerca de la selección de las dimensiones principales, se aprecia
el ñefasis que cada autor dedica al considerar uno u otro paráme-
tro como inicial del proyecto, y también se observa la familiari-
dad con determinada relación empírica. Esto se justifica si tene
mos presente que el desarrollo de las diferentes formas de embar
caciones en los distintos medios han sido fruto de experimentacio
nes, pruebas y fracasos, lo que en la mayoría tienden a que   los
estudios que se realicen se circunscriban a un medio determinado.

Al escoger las dimensiones principales de una embarcación lo ideal
sería relacionar los parámetros de tal manera que en conjunto de-

terminen las formas óptimas. Llevar a efecto esto, significaría
relacionar de la mejor manera condiciones como las de ganancia -
por viaje, días de faena, velocidad, capacidad de bodega, etc.To
do esto conduce a que el diseñador deba contar en la etapa preli
minar con gráficos de comportamiento optimizados de un parámetro
en función de los demás, lo que hace, que un estudio así llevado
se haga casí imposible. Sin embargo existe otra posibilidad, la
cual consiste en subdividir el prediseño en la búsqueda de las
dimensiones principales basados en datos tomados en embarcaciones
con mejor aprovechamiento de su capacidad y una aceptable comodi
dad y seguridad del personal. Como segunda parte, estas formas
de cascos así determinadas son ajustados mediante un análisis -
tecno-económico, con el cual se decide la factibilidad del desa
rrollo del diseño final.

Muchas son las secuencias para conseguir lo mencionado anterior-
mente, pero en la actualidad organismos como la FAO entre otros,
han dedidcado sus estudios para buscar relaciones matemáticas -
que faciliten la selección de las dimensiones principales, los
cuales han sido clasificados en función del tipo de pesca que se
realicen. A continuación anotamos varias de ellas y sus referen
cias para que sirvan de base de comparación con las que posterior
mente, se presentan:

TABLA I

DIMENSIONES PRINCIPALES

RELACIONES   TIPO DE PESCA
==

$LBP \leq 164$ (ft) (50 mts.)   Palangre

B (ft) $= 0.11$ LBP $+ (10.17$ a $9.51)$

D (ft) $= 0.068$ LBP $+ (3.61$ a $2.95)$

$LBP > 164$ (ft)(50 mts)   Palangre

$B(ft) = 0.2$ LBP $- 3.61$

$D(ft) = 0.08$ LBP $+ (1.64$ a $1.31)$

$H = 0.85$ D

PORTE, PESO, BODEGA

$TRN = 0.0085 \times CN$ (ft^3)

$300 < TRN < 600$

LBP (ft) $= (18.37$ a $19.03) \sqrt[3]{TRN}$

$600 < TRN < 2000$

LBP (ft) $= (19.36$ a $19.52) \sqrt[3]{TRN}$

$TRN < 300$ Combinados

LBP (ft) $= (17.39$ a $18.37) \sqrt[3]{TRN}$

$CN \leq 63000$ (ft^3)

Δo (ton) $= (0.0102$ a $0.0093)$ CN   Palangre

$CN > 63000$ (ft^3)

Δo (ton) = (0.0093 a 0.0076) CN

V_1 (ft^3) = 0.5 CN - 1.766

COEFICIENTES Y OTROS PARAMETROS

KB = (0.55 a 0.56) H

KG/D $=$ 0.87 a 0.89

BM (condición ligera) = (0.085 a 0.09) B^2/H

BM (máxima carga) = (0.09 a 0.095) B^2/H

C_B = 0.66 a 0.7

1.2. ANALISIS ESTADISTICO DE LAS CARACTERISTICAS DE LA FLOTA PESQUERA NACIONAL

En el intento de buscar relaciones matemáticas entre las dimensiones principales de embarcaciones pesqueras de nuestro medio, se ha reunido información tomándola de los inventarios de la Flota Pesquera, proporcionados por la Marina Mercante (DIMERC) y el Instituto Nacional de Pesca (INP) clasificándolos en base al tipo de faena que realizan.

Dentro del análisis estadístico, se han determinado las comparaciones entre expresiones dadas por regresión lineal y en la forma exponencial para los que se han tenido presente el factor de correla-

ción con punto de aceptación. De los resultados obtenidos se han encontrado que las relaciones que más se ajustan es la exponencial de la forma:

$y = ax^b$; en la que para las expresiones de interés el factor de correlación ha sido de un valor superior al del 0.87, que lo podemos calificar de gran aceptación si tenemos presente que los datos son de embarcaciones realizadas con conocimientos empíricos, pero de buenos resultados.

Así:

TABLA II

DIMENSIONES PRINCIPALES:

RELACION	FACTOR DE CORRELACION	NUMERO EMBARC.	TIPO DE PESQUEROS
$B = 0.95 \ L^{0.718}$	0.93	120	Arrastreros
$D = 0.212 \ B^{1.268}$	0.88		
$B = 5.288 \ H^{0.633}$	0.87		
$B = 0.793 \ L^{0.665}$	0.91	35	Atuneros
$D = 0.448 \ B^{1.01}$	0.87		
$B = 0.479 \ L^{0.831}$	0.87	40	Pesca blanca
$D = 0.183 \ L^{0.896}$	0.8		
$B = 0.583 \ L^{0.757}$	0.73	20	Pinchahueros
$D = 0.115 \ L^{1.028}$	0.87		

PORTE, DESPLAZAMIENTO, NUMERO CUBICO:

$TRN = 3.2 \times 10^{-3} L^{2.119}$	0.86	120	Arrastreros
$TRN = 0.181 \, \Delta^{1025}$	0.92		
$TRN = 0.01815 \, CN^{0.7643}$	0.85		
$\Delta o = 0.03066 \, CN^{0.8169}$	0.96		
$TRN = 0.171 \, \Delta^{1.063}$	0.87	35	Atuneros
$\Delta o = 3.785 \times 10^{-3} L^{2.32}$	0.98		
$TRN = 0.282 \, \Delta^{0.929}$	0.85	40	Pesca blanca
$TRN = 0.075 \, \Delta^{1.238}$	0.91	20	Pichahueros

1.3. INFLUENCIA DE LA ESLORA EN LA SELECCION DE LAS DIMENSIONES

En el análisis efectuado anteriormente, se ha introducido un nue-
vo término como parámetro de aceptación de una expresión matemáti
ca determinada, y este es el factor de correlación, el cual viene
expresado entre los límites de -1 a 1, indicándonos la mayor o me
nor aproximación de los puntos que se analizan dependiendo   del
acercamiento a ($\pm$ 1), así diremos que en un determinado análisis
donde se tiene puntos, y se trata de ajustarlos mediante regresión
lineal, si el factor da un valor unitario significa entonces que
los puntos coinciden con la recta, de otra manera un valor inferior

indica el grado de acercamiento de estos a la recta ajustada. En tal virtud podemos establecer el factor de correlación como un por centaje de aproximación de los puntos a su medida, por lo tanto,en el caso cuando el F.C. sea menor de la unidad hablaríamos de una franja de trabajo, donde el límite superior corresponde a la orde-nada al 100 % y el límite inferior a la ordenada evaluada en la ex presión menos el porcentaje correspondiente a la diferencia de la unidad y el F.C. utilizando esta aproximación podemos citar el ca so de la manga:

$$B = 0.95 \; L^{0.718} \qquad F.C. = 0.933 \qquad (1)$$

Esto nos indica que para cualquier valor de L el valor obtenido de B representa el 93.3 % del acercamiento a la curva ajustada. Ha blar entonces de una franja de trabajo sería de considerar:

$$0.95 \; L^{0.718} \qquad 93.3 \; \% \qquad (2)$$

$$1.01789 \; L^{0.718} \qquad 100 \; \% \; \text{Curva límite superior} \qquad (3)$$

$$0.88211 \; L^{0.718} \qquad 86.6 \; \% \; \text{Curva límite inferior} \qquad (4)$$

Lo que en forma simplificada se puede escribir:

$$B = (0.95 + 0.06789 \ N_4 \ (\%)/100)L^{0.718} \ (ft) \qquad (5)$$

$$D = (0.283 + 0.043 \ N_5 \ (\%)/100)L^{0.829} \ (ft) \qquad (6)$$

Otro aspecto de interés al considerar la influencia de la eslora en la selección de las dimensiones principales se deduce del gráfico # 1 (frecuencia de las velocidades para distintas esloras). A partir de este análisis estadístico se aprecia que para un determinado rango de eslora existe una campana o un polígono de frecuencias de velocidades. De esta tabla se puede entonces - visualizar la franja de velocidades, como también las más frecuentes utilizados en los barcos pesqueros para un determinado rango de esloras, concluyendo entonces de que estos dos parámetros son factores limitantes de las formas del barco como veremos más adelante.

GRAFICO # 1

FRECUENCIAS DE VELOCIDADES PARA DISTINTAS ESLORAS

a)
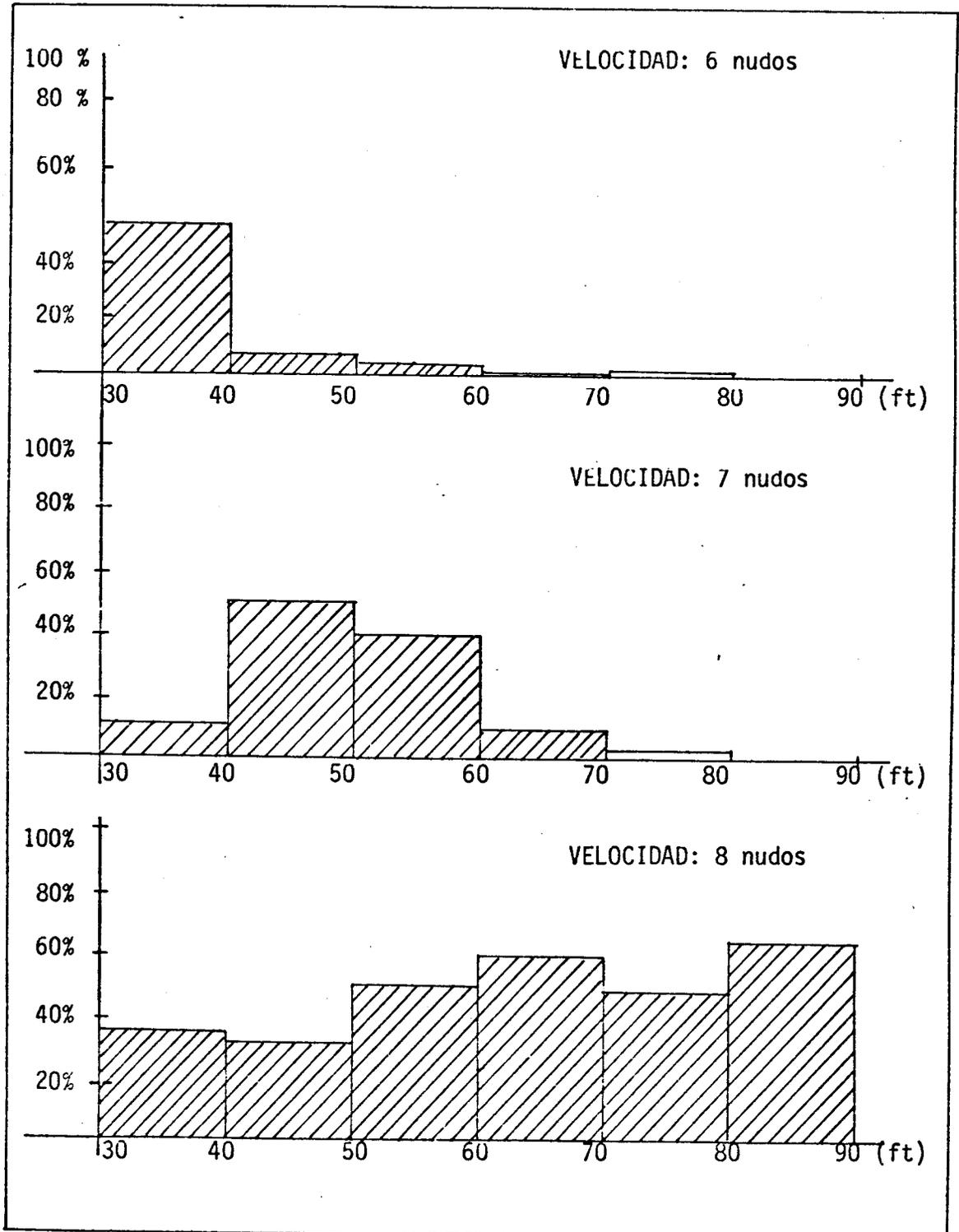
FRECUENCIAS DE VELOCIDADES PARA DISTINTAS
ESLORAS

b)
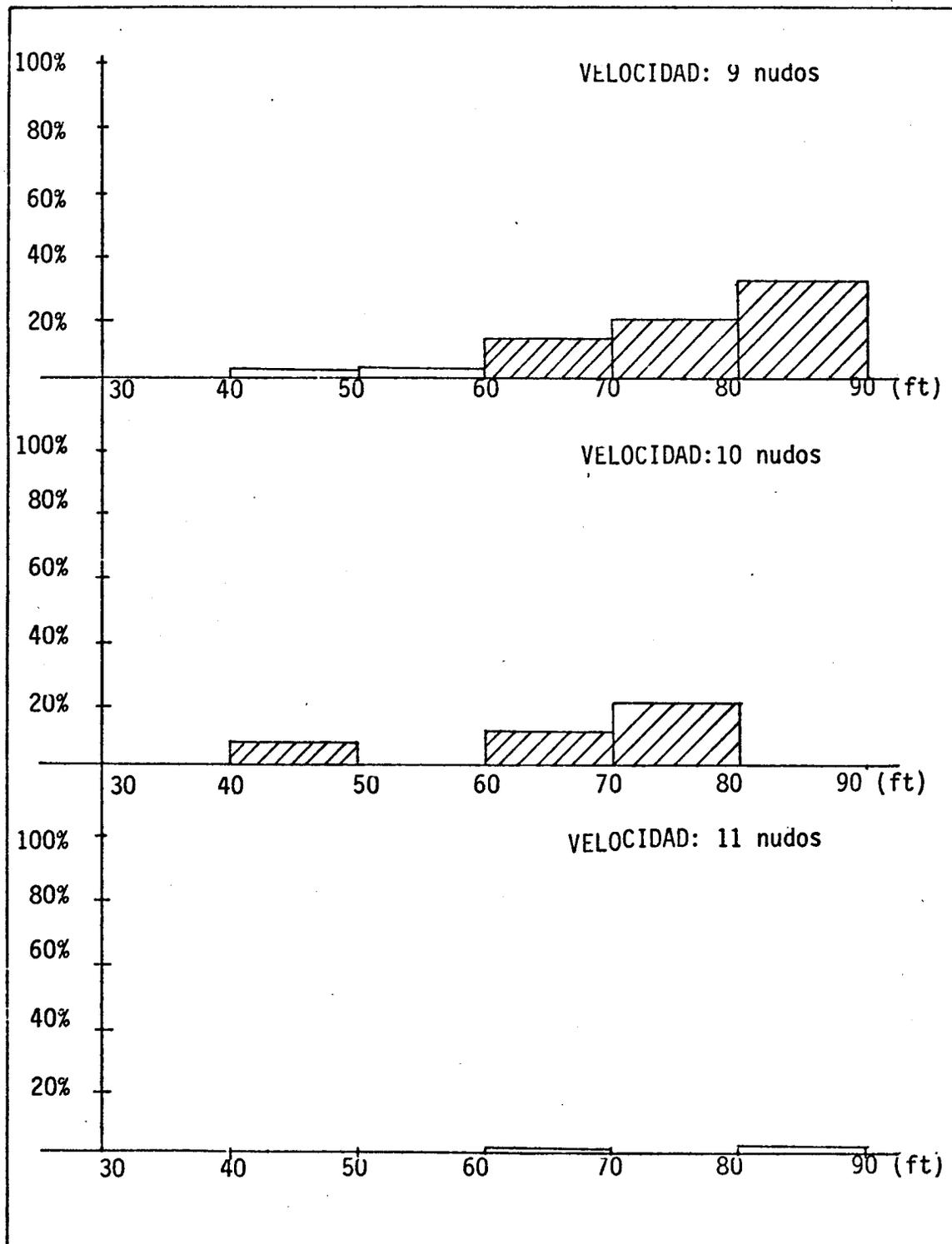
PARTE   II

INTRODUCCION

Los fundamentos matemáticos son tan amplios, que para representar -
las superficies de los cascos de las embarcaciones existen técnicas -
diversas, por lo que en la actualidad se piensa que generar las   for
mas de un barco no es sino un problema de adaptabilidad a uno u otro
método.

Mucho se ha estudiado acerca de la posibilidad de considerar las su-
perficies como parches cúbicos o utilizando el método del mapeo   con
forme como lo explica NOWACKI & REED, o sino representarlo en   base
una familia de curvas basadas ya sea en polinómios, cerchas B,   cer
chas cúbicas, etc.

Ante esta variedad de métodos, el factor de decisión será la disponi-
bilidad de un computador, cuya capacidad sea más o menos amplia,   la
velocidad del procesado y algo más importante la sensibilidad de   la
superficie a generarse, entendiéndose por esto, la posibilidad de po
der alcanzar las formas deseadas con el método escogido.

Al tratar de representar matematicamente las formas de un barco   pes

quero delineado tradicionalmente, sin objetar ningún método nos decidi
ríamos por configurar una familia de curvas polinómicas las que   nos
permitirían a más de cumplir con los requerimientos de diseño, evaluar
con facilidad la superficie del casco para determinar la tabla de pun
tos como un conjunto fundamental para la representación gráfica,   pu-
diendo además, establecer los atributos de carena, de tal manera de po
der conocer los parámetros hidrostáticos, las características de esta
bilidad y resistencia al avance.

2.1. METODOLOGIA PARA LA GENERACION DE LINEAS DE FORMA

ESTUDIOS REALIZADOS SOBRE LA REPRESENTACION DE SUPERFICIES:

Dentro de los estudios realizados sobre la formulación matemática de los cascos se pueden citar:

a. METODO DE LAS FUNCIONES DE INFLUENCIA POLINOMICA: El método fue primero aplicado a la creación de las líneas de formas por D.W. Taylor.   Después, sistematicamente desarrollado por THIEME y otros investigadores como LAWBWEBER, GERTHER, PIEN,   VON KERCZEK.

Consiste basicamente en la generación de funciones polinómicas y = f(x) que satisface ciertas restricciones paramétricas   especificadas, como la tabla de puntos de las líneas de agua   y contornos, pendientes, curvaturas, área, momentos y parámetros integrales similares. Obteniendo así, la curva deseada, por la superposición de los polinomios individuales, cada una responsable para cumplir con una de las restricciones sin afectar a las otras. Estos polinomios son computados y entonces   multiplicados correspondientemente por la restricción y sobrepuestos.

El n   · ·riccicnes, en principio, puede ser inde-

fini   ·ctica, el grado del polinomio está en re

laci   n número total de restricciones. Intro-

duci   es en la curva a medida que el orden va

sien   experiencia ha demostrado que resultados

sati   canzados con polinómios sobre el octavo

grad   siguiente dificultoso alcanzarlo.

La v   ción de las líneas de forma por este mé

todo   mplicidad y flexibilidad, pero su limita

ción   rango de la variación de los parámetros

debe

b. CERC   de los procedimientos matemáticos muy -

   útil   polación y busquedad de curvas suaves son

   las   paramétricas y cartesianas.

Sin   arías a la generación de líneas de formas

para   entan serias dificultades a causa de   la

rela   ceficientes de la cercha y los puntos de

la c   establecer correspondencia alguna; situa-

ción   circunstancias llega a no ser de tanta im

portancia si consideramos que con los polinomios tenemos fluc
tuaciones indeseables que son evitadas con las cerchas. Ade
más, tienen la propiedad de ofrecer al diseñador un fácil con
trol sobre la superficie y/o curva, simplificándole procedi-
mientos y su manipulación.

c. CURVAS BEZIER: En este método las curvas son diseñadas en ba
se a un polígono de puntos definidos, los que nos da una fle
xibilidad y ajuste por medio del control de los vértices.

Esta propiedad a hecho que se estudie la posibilidad de utili
zarlos para la creación de líneas. Pero nos encontramos con
la dificultad de satisfacer los requerimientos de los paráme-
tros integrales como son áreas, momentos, centroides, etc. -
Además, de esto se presenta la complejidad de relacionar los
coeficientes de la curva con los parámetros de forma.

d. CERCHA B: Comparando las cerchas B con la resolución de las
otras ya mencionadas y los polinomios, con este método es per
mitido:

1. Control local sobre cualquier sección de la línea, mante-
niendo los cambios locales separados del resto de las sec-

ciones.

2. Acepta un gran número de restricciones geométricas.

3. Asegura de la existencia de una sola equivalencia entre la variable dependiente a independiente.

4. Permite el cálculo de la componente del vector coordenada - de las curvas.

Desde el punto de vista práctico tiene la ventaja:

5. De ser un método sencillo de operación mediante el control de vértices por lo que no requiere complejidades matemáticas.

6. Facilidad de unión de curvas con condiciones de continuidad especificadas por las derivadas.

7. Provee una base para la definición de las superficies.

Las dificultades de este método aparece cuando se tiene restriccio nes de carácter integral: áreas, centroides, etc., complejidad - que limita su aplicación en todos los casos.

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nes de carácter integral: áreas, centroides, etc., complejidad -
que limita su aplicación en todos los casos.

e. MAPEO CONFORME: Las técnicas de representación de secciones -
bajo el agua), fueron establecidas por LEWIS al introducir el
cálculo de la masa añadida en la hidrodinámica de los buques.
Lewis usa las funciones de mapeo y correspondientemente tres
parámetros libres, los cuales le permiten el control del área
de sección, manga, calado.

Utilizando las funciones así definidas, se ha encontrado muy
buenas aproximaciones en los resultados de los cálculos hi_
drodinámicos, pero a esto se suma la limitación de las formas
cuando se tiene secciones finas y con bulbo.

Con un intento de generalizar la utilidad de este método THEO_
DORSEN, introduce funciones de mapeo definidas con un número
mayor de parámetros, reemplazando así las transformadas   de
Lewis.

Este método se basa en la correspondencia uno a uno entre los
puntos de dos planos distintos expresados por una función -
analítica simple, permitiendo resolver problemas, cuando las
formas cuyas propiedades y ecuaciones no son conocidas pudien_
do ser mapeadas dentro de formas cuyas ecuaciones y propieda-
des son conocidas en otro plano.

f. CURVATURA MINIMA: Un nuevo método para la generación de lí
neas de forma ha sido introducido por Pramila. Está desa-
rrolado según el criterio geométrico de la curvatura mínima.
El problema variacional resultante es calculado através del
método de los elementos finitos.

g. REPRESENTACION DE SUPERFICIES: Hay basicamente dos métodos
derivados a partir de la ecuación general para la representa-
ción de las superficies de las regiones principales de un cas
co. El primero, llamado también el método de los dos pasos,
genera inicialmente las ecuaciones de las líneas de agua y en
tonces, fija cada uno de los coeficientes de la ecuación   y
los altos del perfil diametral para derivar la ecuación de la
superficie, permitiendo de esta manera dada una altura conocer
la ecuación de la línea de agua correspondiente.

El segundo método, conocido como el de paso simple, expresa -
al conjunto de puntos, como una función de tanto la distancia
longitudinal, altos y entonces procede a evaluar los coeficien
tes de la ecuación de la superficie, satisfaciendo las condi-
ciones de contorno, dados como parámetros de diseño.

La ventaja de como se estructura esta metodología es que per

mite modificar las formas de la superficie, dependiendo del tipo de buque que se analice.

h. MÉTODO EXPONENCIAL: Es un método para generar líneas de for_ ma, el cual toma la geometría del casco como el desarrollo de una familia de curvas, cuya ecuación es:

$$Y = a + bx^{n} \qquad\qquad (7)$$

El procedimiento de este método sería:

a. Determinar las condiciones de contornos como parámetros de diseño.

b. Establecer los coeficientes del plano de agua y perfil dia_ metral, generados a partir de polinómios, cuyos grados es_ tán en correspondencia del número de contornos.

c. Determinar la familia de exponentes (n), basados en las ecuaciones dadas en (b).

La ventaja de este método, radica en la facilidad de los cálcu_ los, sensiblidad de las superficies generadas, y al llevar el

goritmo a un ordenador, requiere muy poca capacidad de memo-

ria lo que permitiría aplicarlos inclusive en las mini-compu

tadoras.

2.2. PROCEDIMIENTO DE DISEÑO

El proyecto de diseño de una embarcación se compone de varias -
etapas, las que en conjunto forman la llamada "Espiral del Dise-
ño", la primera de ellas podemos distinguirla como la selección
de las dimensiones principales, la cual consiste en agrupar embar
caciones de características y naturaleza similares, para estable
cer la ley de variación de sus formas.

En el diseño en mención, la naturaleza de los barcos son pesque-
ros (arrastreros, atuneros, pesca blanca, pinchahueros , palan-
gre, etc.). Del análisis efectuado en el capítulo anterior   se
había determinado que la franja de los arrastreros en nuestro me
dio incluían también a las embarcaciones destinadas a las otras
faenas de pesca, razón que se justificaba, puesto que las cons-
trucciones han sido realizadas en base a conocimientos empíricos.

Como punto de partida del proyecto, consideremos las necesidades
del armador como son:

La capacidad de la embarcación (V_1), entendiéndose por esta el
volumen de bodega + agua + combustible. Pero no sólo debemos -
de pensar en cuanto llevará la embarcación, sino también en que

tiempo se movilizará al caladero. De aquí que otro dato como pa rámetro inicial será la velocidad (V2).

Teniendo presente el tipo de embarcación pesquera deseada, podemos tener un criterio de sus necesidades al momento de operación. Estas condiciones en forma resumida las establecemos como:

a. Capacidad de la embarcación (V1).

b. Velocidad requerida (V2).

c. Condiciones específicas sobre la manga, puntal, que determinen el tipo de pesquero deseado (N4, N5).

En tal virtud, en base a la relación propuesta por la FAO, se - puede determinar el volumen a desplazar, correspondiente a V_1.

Así:

$$V_3 = 1.93*V_1 - 0.0000184* (V_1)^2 \quad (ft^3) \tag{8}$$

De las estadísticas sobre los coeficientes de los buques pesque ros se ha establecido, que aquellos tienen un rango de coeficien te block:

$$0.4 \leq C_B \leq 0.55 \qquad (9)$$

Entonces dentro de este rango y teniendo presente la fórmula bien conocida del volumen de desplazamiento tenemos que:

$$V_3 = C_B * L * B * H \qquad (10)$$

$$\therefore \quad C_B = V_3/L/B/H \qquad (11)$$

$$0.4 \leq V_3/L/B/H \leq 0.55 \qquad (12)$$

Si consideramos que:

$$H = D - f \qquad (13)$$

$$\therefore \quad 0.4 \leq V_3 / L / B / (D-f) \leq 0.55 \qquad (14)$$

Nos faltaría por determinar una expresión para f; recordando las relaciones (5) y (6).

Para esto, se va a tomar de la reglamentación de los japoneses - dada para buques de madera, la fórmula del franco bordo propuesta en función del puntal:

$$f = D/15 + 0.656 \quad (ft) \qquad (15)$$

$$o.4 \leq V3/\{L^{1.718}(0.95+0.6789*10^{-3}*N4)(14/15(0.283+0.43*10^{-3}*N5)L^{0.829}$$

$$- 0.656)\} \leq 0.55 \tag{16}$$

Evaluando (16), se puede establecer el rango L, permitido para - los pesqueros, esto nos da la facilidad de variación de la velo-cidad.

El siguiente paso será:

Determinar la función del coeficiente block en términos de la ve locidad, relativa. Para esto, haremos referencia de la relación propuesta por C. Ridgely para arrastreros:

$$C_B = 0.21378 + 0.1937*V2/(L)^{0.5} \tag{17}$$

Aceptando (17), con la ayuda de (11), se tiene dos ecuaciones y dos incógnitas (L, V2), pero como V2 se la propone como dato,nos queda una sola relación exponencial para L.

Con este valor conocido, se conoce el resto de las dimensiones - principales (B, D, f).

La función para el C_W, C_P, son tomadas de las que propone la -
FAO para embarcaciones pesqueras.

El C_X será dependiente de C_B y C_P.

En un diseño, el proyectista debe tener la libertad de poder de
cidir sobre la forma de la sección media, por tanto si el C_B ya
se estableció, una variación del C_X se produce si cambiamos C_P
por lo que deberíamos de hablar de un rango para este coeficien
te.

En el mismo artículo C. RIDGELY, busca establecer casco patro-
nes para arrastreros, considerando valores de C_P óptimos para -
las distintas condiciones de velocidad. Luego el rango queda
establecido entre:

$$C_P = 0.55 + (C_B - 0.4166)/0.756 \quad \text{(C.R.)} \tag{18}$$

$$C_P = 0.623 - 0.069 \{1-((C_B - 0.4)/ 0.2)^{2.65}\} \text{ (FAO)} \tag{19}$$

Para este valor de C_P, se determina C_W, propuesto por NPL (arras
treros).

$$C_W = 0.68 + 1.16 \ (C_p - 0.55) \hspace{3cm} (20)$$

Como un parámetro adicional al inicio del proyecto, debemos esta blecer el valor de los centroides principales tales como:

El centro de flotación (LCF) y el centro de boyantez longitudinal (LCB).

La importancia del último término mencionado, radica en la venta-ja aparente para disponer la bodega evitando así que en las con diciones críticas como las salidas y el retorno a los caladeros, la navegabilidad sea dificultosa, ya sea por las vibraciones exce sivas, por la falta de inmersión del propulsor o por encabuzamien to a gran escala que incremente la resistencia al avance. No ob-tante, la posición LCF nos da el carácter de la mayor o menor for mación de olas, que contribuyen a la resistencia, influyendo espe cíficamente en los ángulos de entrada y salida del plano de flo tación.

Conociendo entonces la naturaleza de cada uno, se puede pensar en determinar uno de ellos como condición inicial o asociarlos median te una expresión. En verdad, este último criterio conduciría a establecer una relación que involucre todas las circunstancias po

sibles que serían factibles en una etapa preliminar del diseño.
Sin embargo, esta complejidad, puede evitarse si evaluamos uno
de ellos y proponemos como otra condición el vínculo entre ca
da uno. De acuerdo a lo propuesto anteriormente, tomaremos co
mo término de evaluación en LCF en base a:

$$N8 = 0.5333 + (2/3)C_p \qquad\qquad (21)$$

$$LCF\% = N8 \; (-82.04699 + 442.3433*C_p - 730.8* \; C_p^2 +$$

$$390.6666* \; C_p^3 \;) \qquad\qquad (22)$$

Las expresiones (21) y (22) han sido estudiadas para permitir -
generalizar a todos los tipos de pesqueros que se proyecten.

2.3. REQUERIMIENTOS MATEMATICOS PARA GENERAR LAS FORMAS DEL CASCO

Para formular matematicamente formas de un casco, lo dividire
mos en dos bloques a saber:

El de proa y el de popa, subdividiendo a su vez de adelante ha
cía atrás, en estaciones numeradas desde el 0 al 10.

Al tratar las líneas del casco como un conjunto infinito de
puntos, debemos establecer para esto un sistema de referencia
orientado como se indica (Ver figura # 1), de tal manera que
el plano z - y este a una distancia H/3 sobre la flotación.
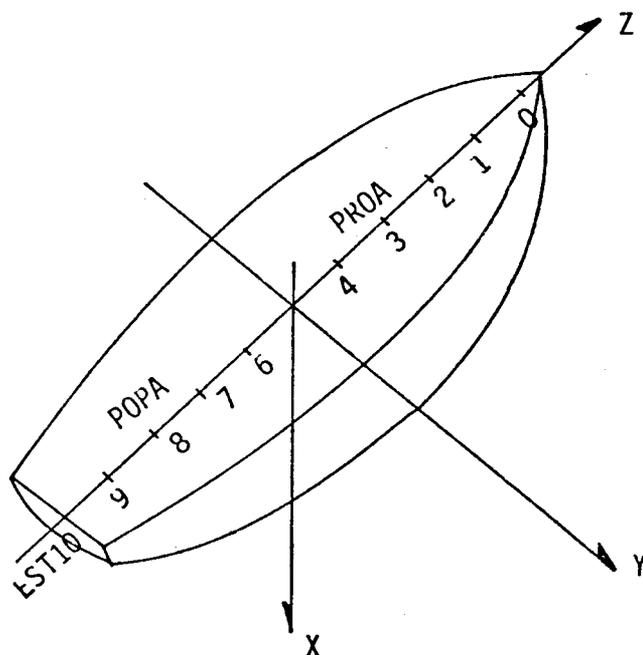
Figura # 1   SISTEMA DE EJES COORDENADOS

Para el análisis matemático del casco lo dividiremos en:

a. <u>Contornos</u>: Plano de flotación y perfil diametral.

b. <u>Condición Integral</u>: Curva de Semi-area.

c. <u>Secciones</u>

La literales a) y b) se fundamentan en una curva polinómica de la forma:

$$y = a_0 + a_1*Z + a_2*Z^2 + a_3*Z^3 + a_4*Z^4 \quad \text{(B. proa)} \qquad (23)$$

$$y = b_0 + b_1*Z + b_2*Z^2 + b_3*Z^3 + b_4*Z^4 \quad \text{(B.popa)} \qquad (24)$$

Siendo los coeficientes determinados para cada caso.

El tercer literal (c) se basa en la generación de una familia de curvas de la forma:

$$y = a + b*x^n \qquad (25)$$

Utilizando para esto, los contornos establecidos en (a) y (b).La evaluación de los coeficientes en este caso, será teniendo pre snete que la sección incluye la obra muerta, de tal manera que el "puntual" sea de:

4* H/3

2.4. FORMULACION DE LAS ENTRADAS

Tal como se describió en el procedimiento de diseño, los cálculos podemos iniciarlos si conocieramos:

- El volumen de bodega (V_1)

- La velocidad (V_2)

- El factor de variación de la manga -100% a 100% (N4)

- El factor de variación del puntal - 100% a 100% (N5)

Ya que las fórmulas anteriores expresadas están dadas en unidades inglesas, el volumen estará dado en pies cúbicos (ft^3); la velocidad en nudos y los otros factores (N4) y (N5), están da

dos en porcentajes cuyo criterio de la utilización está basado
en que tanto la manga como el puntal están formulados en térmi-
nos de la eslora. Pero como habíamos visto en II.3) estas ex
presiones son resultados de un análisis estadístico en que   no
se tenía un factor de correlación de $\pm$ 1, por lo que deberíamos
de hablar de una franja de valores dependientes para cada eslo
ra tomada como absisa. Esto permite, que exista una variada -
flexibilidad entre las dimensiones principales.

Para poder utilizar en una forma ordenada esta franja de valores,
distinguiremos inicialmente dos límites: El uno superior y   el
otro inferior, tal que numericamente los representamos como 100%
y -100% respectivamente.

Así por ejemplo, podemos empezar un pre-diseño para una embarca
ción pesquera cuya capacidad de bodega sea de 5000 pies^3(141.8m^3)
para que se movilice a 12 nudos; el armador está interesado que
su barco sea un atunero, pero por impedimentos de calado del va
radero, desearía que este sea lo más pequeño posible. Estas -
condiciones las podríamos plantear como:

V1 = 5000

V2 = 12

N4 = 0% O N4 = 100 %

N5 = -100%

De esta manera las condiciones de entrada quedan establecidas, permitiendo determinar los parámetros restantes en base al procedimiento de diseño mencionado anteriormente.

2.5. GENERACION DE LOS CONTORNOS

La generación de contornos iniciamos con el perfil diametral.

BLOQUE DE PROA:

Este sector del casco es generado en base a tres segmentos que los distinguiremos como: la roda (línea recta), el pie de la roda (arco de circunsferencia) y la quilla (línea recta).

Para poder entender el esquema matemático que a continuación - se detalla, definiremos varios términos como son:

R   Radio de la circunsferencia

m_2 Pendiente de la roda

m_1 Pendiente de la quilla

θ : ANGULO DE LA RODA
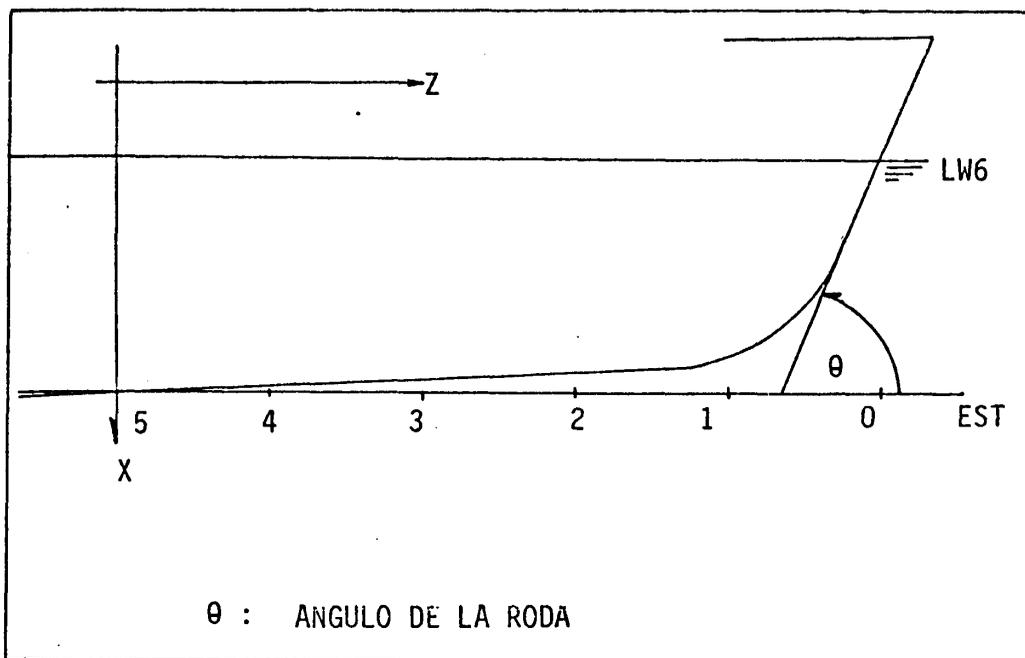
Fig. #2

b_1 Intersección de la línea de quilla

con la recta x = H/3

b_2 Intersección de la línea de roda

con la recta x = H/3

$(\underline{x},\underline{z})$ Ordenadas de la intersección de las líneas

de quilla y roda.

(h,k)   Ordenadas del centro de la circunsferencia

Por tanto:

$$\underline{x} = (b_1 - b_2)/(m_2 - m_1) \tag{26}$$

$$\underline{z} = m_1 \underline{x} + b_1 \tag{27}$$

$$\theta_2 = tg^{-1} (-m_2) \tag{28}$$

$$\theta_1 = tg^{-1} (-m_1) \tag{29}$$

$$\theta^1 = (\theta_1 - \theta_2)/2 \tag{30}$$

$$\bar{\theta} = (\theta_1 + \theta_2)/2 \tag{31}$$

$$h = \underline{x} - R* \text{ sen } (\bar{\theta})/COS(\theta^1) \tag{32}$$

$$k = \underline{z} - R* COS (\bar{\theta}/COS (\theta^1) \tag{33}$$

Utilizando las fórmulas mencionadas, podemos determinar los - intervalos de los segmentos como sigue:

QUILLA:

$$0 \leq z \leq R \text{ COS } (\theta_1) + k \tag{34}$$

$$x = (z - b_1)/m_1 \tag{35}$$

PIE DE LA RODA:

$$R \cos (\theta_1) + k \leq z \leq R \cos (\theta_2) + k \tag{36}$$

$$x = h + (R^2 - (z - k)^2)^{0.5} \tag{37}$$

RODA:

$$R \cos (\theta_2) + k \leq z \leq L/2 - H*m_2/3 \tag{38}$$

$$x = (z - b_2)/m_2 \tag{39}$$

Quedando con estas tres expresiones definido el perfil de proa - diametral.

BLOQUE DE POPA:

Este sector es definido utilizando un polinomio, cuyo grado está en relación con las condiciones de borde necesarios, tal que cumplan con las siguientes restricciones:

Para: z = 0

y (o) = H

$y^1(o) = m_1$

Para: z = -L/2

y (-L/2) = 0.192578* H

$y^1 (-L/2) = m_2$

Donde: m_1 = tg (3.1415 - tg^{-1} (0.03))

m_2 = tg (23* 3.1415/180)

Para: z = - L/10

$y^1 (-L/10) = o$

Con 5 restricciones, el polinomio será de cuarto grado, esto es:

$$y = b_0 + b_1 z + b_2 z^2 + b_3 z^3 + b_4 z^4 \tag{40}$$

Efectuando la evaluación de los coeficientes se concluye que:

$$b_0 = H \tag{41}$$

$$b_1 = -m_1 \tag{42}$$

Haciendo que c = L/10, d = L/2, se tiene los otros expresados en las siguientes ecuaciones:

$$- 2c\ b_2 + 3\ c^2 b_3 - 4c^3 b_4 = -\ m_1 \qquad\qquad (43)$$

$$- 2d\ b_2 + 3d^2 b_3 - 4d^3 b_4 = m_2 - m_1 \qquad\qquad (44)$$

$$d^2 b_2 - d^3 b_3 + d^4 b_4 = -0.8074\ H + m_1\ d \qquad\qquad (45)$$

Con los cuales se determina el polinomio (40) para el caso particular asignado.

CURVA DEL PLANO DE FLOTACION:

La curva del plano de flotación la describiremos utilizando dos - polinomios en cuyas uniones tanto la ordenada como su pendiente coinciden. Otra condición de vínculo que liga las dos curvas es que entre los límites de -L/2 y L/2, tanto el área del plano de flotación y su centroíde, deben satisfacer los requerimientos como se los había determinado en el procedimiento de diseño.

BLOQUE DE PROA:

La curva del plano de flotación correspondiente al bloque de proa, es determinada utilizando un polinomio de tercer grado como se indica:

$$y = a_0 + a_1 z + a_2 z^2 + a_3 z^3 \tag{46}$$

Donde los coeficientes son calculados, de tal manera que satisfagan las condiciones de borde que a continuación se indican:

Para : $z = 0$

$y(0) = B/2$

Para: $z = -L/2$

$y(-L/2) = B/2$

Para: $z = L/2$

$y(L/2) = 0$

BLOQUE DE POPA:

La curva de popa es descrita mediante un polinomio de segundo -

grado, como sigue:

$$y = b_0 + b_1 x + b_2 x^2 \qquad\qquad (47)$$

Donde las condiciones de borde son:

Para: $z = 0$

        $y\ (-L/2) = B/2$

Utilizando estas condiciones, se obtiene un sistema de ecuaciones con las que resulta determinada la curva del plano de flotación.

Haciendo: $f = L/2$

Tenemos:

$$- c^2/2b_1 + c^3/3b_2 + c^2/2a_1 + c^3/3a_2 + c^4/4a_3 = Aw/2 - Bc \qquad (48)$$

$$c^3/3b_1 - c^4/4b_2 + c^3/3a_1 + c^4/4a_2 + c^5/5a_3 = B_2\ Aw/2 \qquad\qquad (49)$$

$$- cb_1 + c^2/5\ b_2 = 0 \qquad\qquad (50)$$

$$-ca_1 + c^2a_2/2 - c^3a_3/25 = 0 \qquad\qquad (51)$$

$$ca_1 + c^2a_2 + c^3a_3 = -B/2 \qquad\qquad (52)$$

Donde B_2 = LCF* L/100

CURVA DE SEMI-AREAS:

En forma similar a la curva mencionada anteriormente, la función que representa la semi-área, debe cumplir con los parámetros inte grales de volumen y centroíde (LCB) determinados mediante el pro cedimiento de diseño.

BLOQUES DE PROA:

El polinomio del sector de proa de la curva de semi-áreas está - definido en base a las siguientes condiciones de borde:

Para: $z = 0$

$y(0) = Ax/2$

$y(0) = 0$

Para: $z = 2L/5$

$y(2L/5) = C_B + 0.1$

Para: $Z = L/2$

$y (L/2) = 0$

De donde se propone una función de tercer grado, con lo cual se satisfacen los requisitos propuestos.

Así:

$$y = a_0 + a_1 z + a_2 z^2 + a_3 z^3 \qquad (53)$$

Y luego de evaluar los coeficientes, resulta el siguiente sistema de ecuaciones, cuya solución particulariza el polinomio.

Haciendo: $c = L/2$ $d = 2L/5$

$$c^2 a_2 + c^3 a_3 = -Ax/2 \qquad (54)$$

$$d^2 a_2 + d^3 a_3 = C_B + 0.1 - Ax/2 \qquad (55)$$

$$a_1 = 0 \qquad a_0 = Ax/2$$

BLOQUE DE POPA:

Tal como el polinomio del bloque de proa es declarado, no involu cra las condiciones de los parámetros integrales, por lo   que

deberán ser satisfechos en este otro sector. Así tenemos que:

Para: $z = 0$

$y(0) = Ax/2$

$y^1(0) = 0$

Para: $z = -L/2$

$y(-L/2) = a/2$

Para: $z = -L/N1$

$y(-L/N1) = \emptyset$

Donde los términos siguientes se definen como:

$a/2$ = semiárea del espejo

$L/N1$ = factor de elongación del espejo.

Reuniendo las condiciones de borde que determinen la función, - concluímos que el grado del polinomio debe ser de cuarto grado.

$$y = b_0 + b_1 z + b_2 z^2 + b_3 z^3 + b_4 z^4 \qquad (56)$$

Y los coeficientes los calculamos a partir de las siguientes -

ecuaciones simultáneas.

$$c = L/2 \qquad f = L/N1$$

$$c^2/3b_2 - c^4/4b_3 + c^5/5b_4 = V3/2 - Ax/2 \; L - a_2 c^3/3 - a_3 c^4/4 \qquad (57)$$

$$c^2 b_2 - c^3 b_3 + c^4 b_4 = a/2 \quad - Ax/2 \qquad (58)$$

$$f^2 b_2 - f^3 b_3 + f^4 b_4 = -Ax/2 \qquad (59)$$

$$y \quad b_0 = Ax/2 \qquad (60)$$

$$b_1 = 0 \qquad (61)$$

2.6. GENERACION DE LAS SECCIONES

Las secciones del casco son generadas utilizando una familia de curvas, para lo cual distinguiremos tres parámetros de interes que son:

Un plano superior (y - z), que constituye la línea de agua ubicada a H/3 sobre la flotación, con lo cual tenemos: (B/2).

El otro parámetro es el plano de flotación propiamente dicho, con

la absisa (b/2). Por último, se tiene la curva de semi-áreas cu

ya ordenada nos indica el integral de la sección que se esté es-

pecificando comprendida bajo la línea de agua de diseño (LW 6).

ESQUEMA DE UNA SECCION

Fig.#3.-
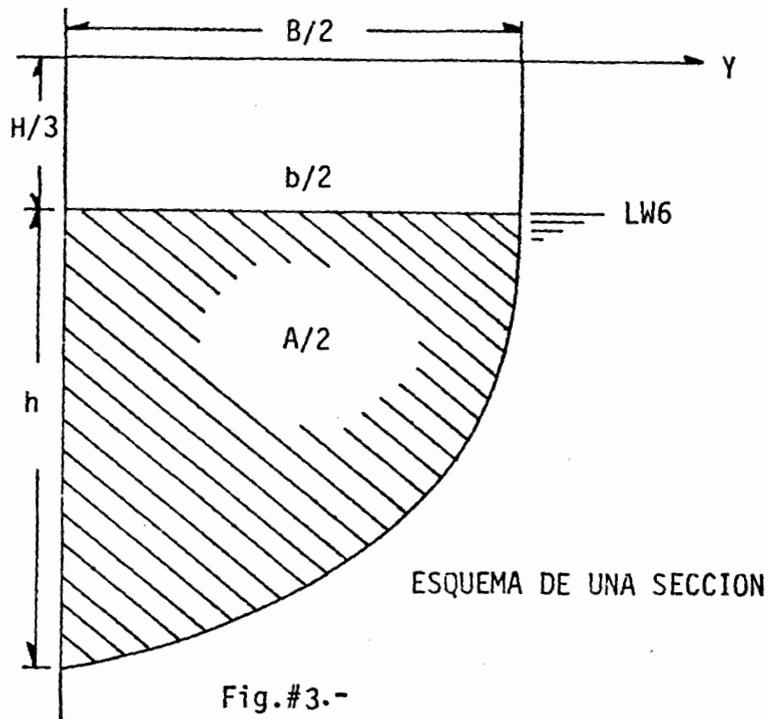
Como se propuso, la familia de curvas está dada en base a la

fórmula siguiente:

$$y = a + bx^n \qquad (62)$$

$$y = B/2 \, (1- \, (x/(H/3 + h)^n) \qquad (63)$$

Pero tal como se ha desarrollado la formulación matemática pa

ra generar las formas del casco, las ordenadas conocidas son A/2, b/2, H/3, h, entonces significa que, como se ha propuesto (63)no sería de utilidad, ya que aún no se conoce B/2. Efectuando la respectiva evaluación de (61) con los términos conocidos se tiene que:

$$b/2. \; 1/(a^n-(a+h)^n)\{((a+h)^{n+1} - a^{n+1})/(n+1) - (a+h)^n h\} = A/2$$

$$(64)$$

Siendo:

$$a = H/3$$

De donde la única incógnita de esta expresión exponencial sería (n).

Con este valor conocido, se nos facilita encontrar B/2, para po der utilizar la expresión (63).

$$B/2 = -b/2 \; (a + h)^n \; / \; (a^n -(a + h)^n) \qquad (65)$$

Con esta expresión completamos el conjunto de fórmulas para la creación de las líneas de forma de una embarcación.

PARTE III

PROCEDIMIENTO PARA LA CREACION DE LAS LINEAS DE FORMA

3.1. ALGORITMO DE SOLUCION

Teniendo completadas las bases de los requerimientos matemáticos para la generación de las líneas de forma, estamos listos para - organizar una secuencia de etapas que nos permita realizar   pro gramas de computadoras, con lo que simplificaríamos el trabajo, de la creación de las líneas.

Así:

Podemos establecer como algoritmo de solución lo siguiente:

a. Separación de memorias

b. Definición de funciones

c. Entrada de datos

d. Cálculo de: dimensiones principales, coeficientes, centroides.

e. Definición del perfil diametral: proa y popa.

f. Definición de la curva del plano de flotación.

g. Definición de la curva de áreas.

h. Definición de secciones

i. Definición de obra muerta

j. Definición de secciones de la obra muerta: pendientes de la curva de secciones en $x = H/3$ y determinación de la estación Ø.

k. Generación de archivos

l. Cálculo de las variables resultantes

m. Impresión de resultados

n. Salida en pantalla del diseño.

o. Subrutinas

3.2. ESQUEMA MATEMATICO

Sería redundante, repetir las expresiones matemáticas, que van a ser utilizadas en la programación del ordenador. Por lo que a continuación se va a explicar los detalles adicionales de cálculo, introducidos con el objeto de obtener las formas de superficie requerida. Así por ejemplo, hablando de la generación de las secciones, hubo la necesidad de dividir verticalmente el cas

co en dos secciones los que por familiaridad los llamaremos:obra
viva (bajo la flotación) y la obra muerta (sobre la flotación).
Esto nos permite tener una mayor flexibilidad y libertad   para
diseñar la línea de "cubierta" (x = 0) como se requiera. Para lo
cual, la división del casco longitudinal es mantenida, por lo que
la curva es definida por dos polinomios también.

Otro aspecto de interés en la creación de las líneas de forma,se
presenta al establecer las estaciones extremas de proa y popa (0
y 10 respectivamente). Esta situación fue solucionada, proponien
do el principio de la continuidad de los coeficientes de sección
a partir del"plano de cubierta" (x = 0), así por ejemplo: se
calculaba el coeficiente para la estación 5 que incluía las sec
ciones de obra viva y obra muerta; luego se asignaba un valor pa
ra el coeficiente de la estación 1 de igual forma, permitiéndonos
extrapolar el valor del coeficiente de la estación 0, con la ayu
da de un polinomio de segundo grado.

3.3. DIAGRAMA DE FLUJO

Antes de pasar a efectuar la diagramación del programa, definire
mos la simbología a utilizarse:

DIMENSIONES PRINCIPALES, COEFICIENTES Y CENTROIDES

UTILIZACION	SIMBOLO
Capacidad de la embarcación	V1
Velocidad	V2
Volumen de desplazamiento	V3
Eslora (flotación)	L
Manga (flotación)	L1
Calado	L2
Puntal	L3
Francobordo	L4
Velocidad relativa	V4
Coeficiente block	C1
Coeficiente del plano de agua	C2
Coeficiente prismático	C3

Coeficiente de sección   C4

Posición longitudinal del centro de carena B1

Posición longitudinal del centro de flota-

ción   B2

AREAS

Semi-área de flotación   A1

Semi-área de sección media   A2

ANGULOS PRINCIPALES (REF. AL SIST.COORDENADAS)

Astilla muerta   T1

Medio ángulo de entrada   T2

FACTORES

Factor de incremento de la manga   N4

Factor de incremento del puntal   N5

PERFIL DIAMETRAL DE POPA

m_1 Pendiente en la estación 5   X1

m_2 Pendiente en la estación 10   X2

SUBRUTINA NEWTON - RAPHSON

ε Aproximación   E

XO   Solución asumida   E1

X1 Solución encontrada   E2

YO Ordenada en XO   H1

m Pendiente en el punto (XO, YO)   H2

PARAMETROS

Centro Vertical de carena   K1

Radio metacéntrico   K2

KM   K3

$L/(V1)^{1/3}$ K4

L/V3)$^{1/3}$ K5

L/B   K7

B/H   K8

B/D   K9

ARREGLOS

*Arreglos para las ordenadas de las curvas   F1 (10,8)

S/áreas   F1 (I,1)

S. Manga de flotación   F1 (I,2)

Altos del perfil diámetral   F1 (I,3)

Semi-manga de "cubierta"   F1 (I,4)

Exponente de la sección   F1 (I,5)

Centroide de las secciones bajo la flota
ción   F1 (I,6)

Pendiente de las secciones en x=H/3   F1 (I,7)

S. manga de "cubierta" modificada   F1 (I,8)

* Arreglo para los coeficientes de las curvas:

Perfil diametral de proa   P1 (9)

Perfil diametral de popa   P2 (5)

Plano de agua   P3 (2,5)

Curva de S. áreas   P4 (2,3)

Conocida la simbología que se va a utilizar en el programa, esque
máticamente el algoritmo con el que se desarrolla la generación -
de las líneas de forma es el siguiente:

DIAGRAMA DE FLUJO

PROGRAMA PTSPQ:

```
              ┌──────────┐
             ( INICIO    )
              └──────────┘
                  │
          ┌ ─ ─SEPARACION ─ ┐
                  DE
          │    MEMORIAS     │
          └ ─ ─ ─ ┬ ─ ─ ─ ─ ┘
                  │
          ┌───────────────┐
          │  DEFINICION   │
          │      DE       │
          │  FUNCIONES    │
          └───────────────┘
                  │
          ╱───────────────╲
          │ ENTRADA DE    │
          │   DATOS       │
          ╲───────────────╱
                  │
          ┌───────────────┐
          │  DIMENSIONES  │
          │  PRINCIPALES  │
          │  L, B,H,D,f   │
          └───────────────┘
                  │
          ┌───────────────┐
          │ COEFICIENTES  │
          │      DE       │
          │   FINEZA      │
          │ C1, C2,C3,C4  │
          └───────────────┘
                  │
                ( a )
```

```
                    ( a )
                      │
          ┌───────────────────────┐
          │        AREAS          │
          │      CENTROIDES       │
          └───────────────────────┘
                      │
          ┌───────────────────────┐
          │      DEFINICION       │
          │      DEL PERFIL       │
          │      DE  PROA         │
          └───────────────────────┘
                      │                    PLANO DIAMETRAL
          ┌───────────────────────┐
          │       PERFIL          │
          │         DE            │
          │        POPA           │
          └───────────────────────┘
                      │
          ┌───────────────────────┐
          │      CURVA DEL        │
          │     PLANO  DE         │
          │     FLOTACION         │
          └───────────────────────┘
                      │
          ┌───────────────────────┐
          │     CALCULO DE        │
          │        L/N1           │
          └───────────────────────┘
                      │
          ┌───────────────────────┐
          │     S. AREA DE        │
          │     ESTACION 1        │         CURVA DE SEMIAREAS
          │     Y 10             │
          └───────────────────────┘
                      │
                      └──────────────→ ( b )
```
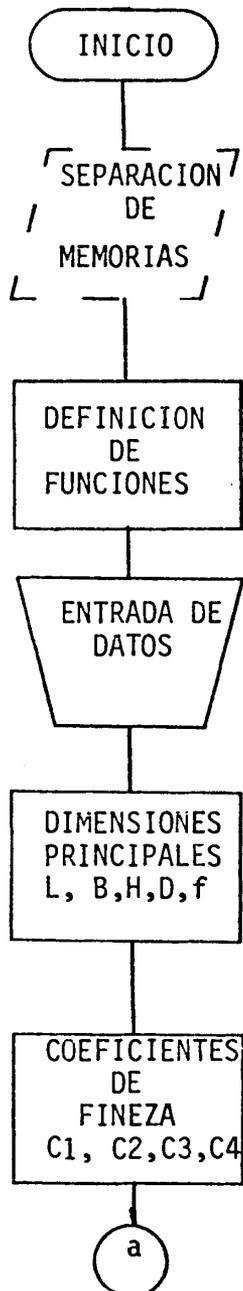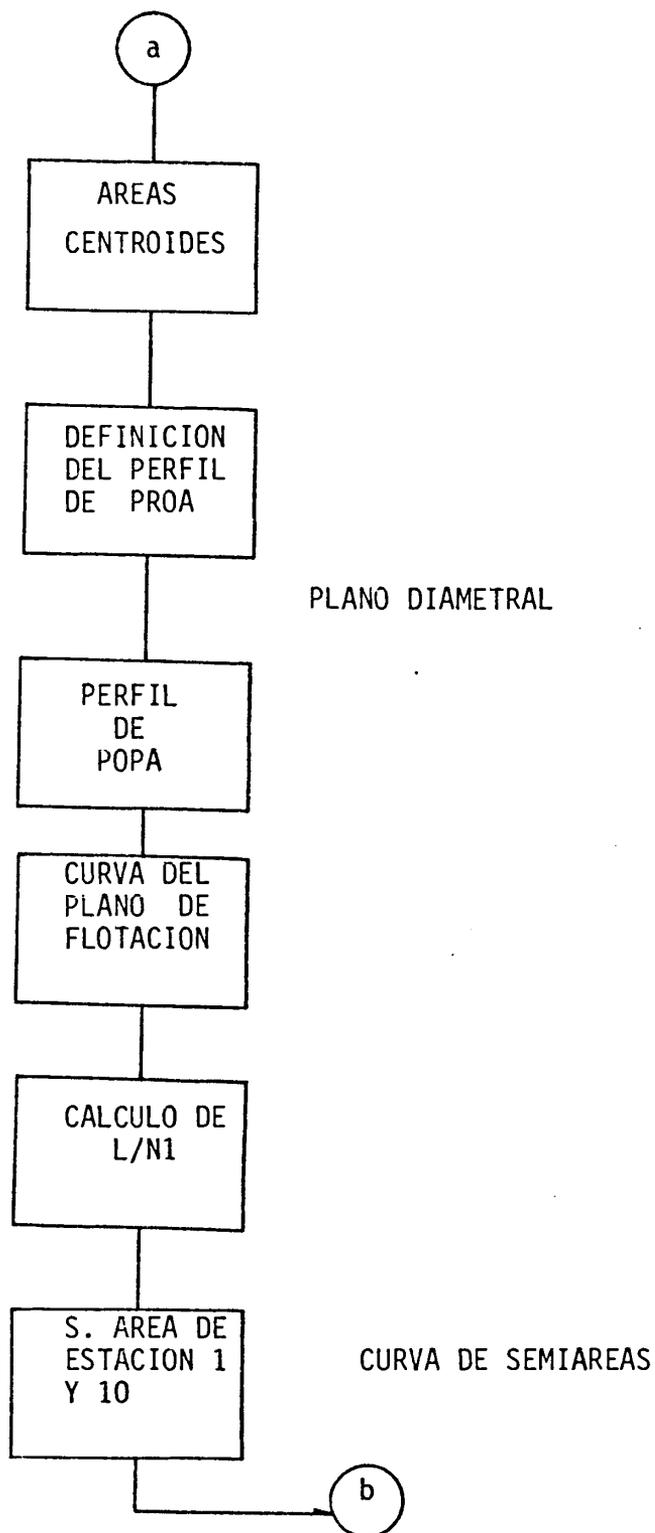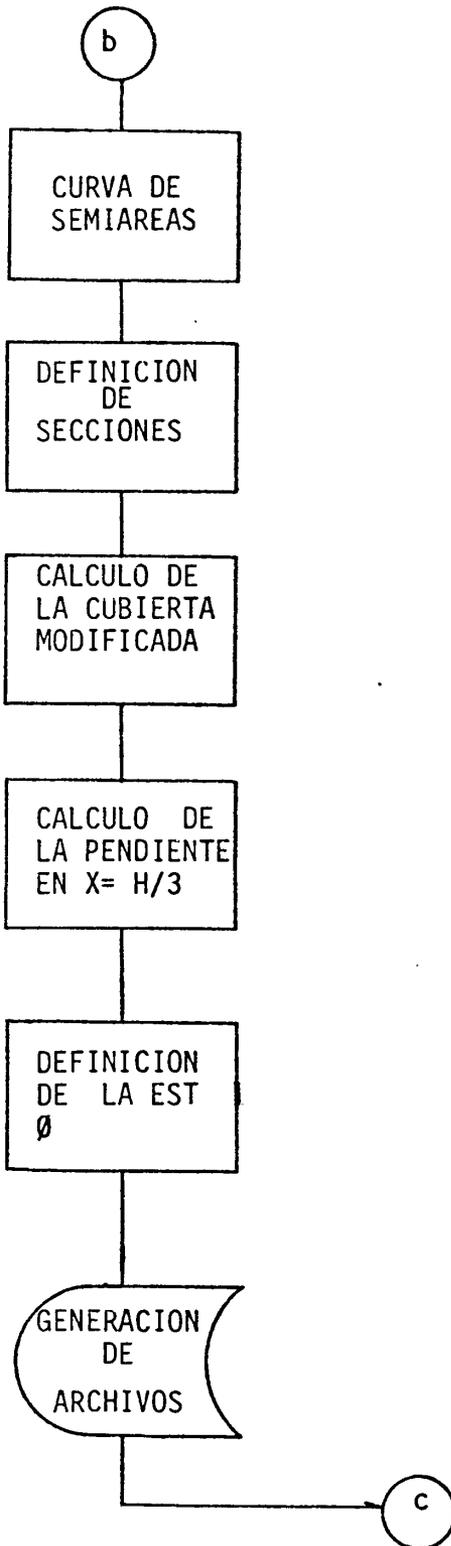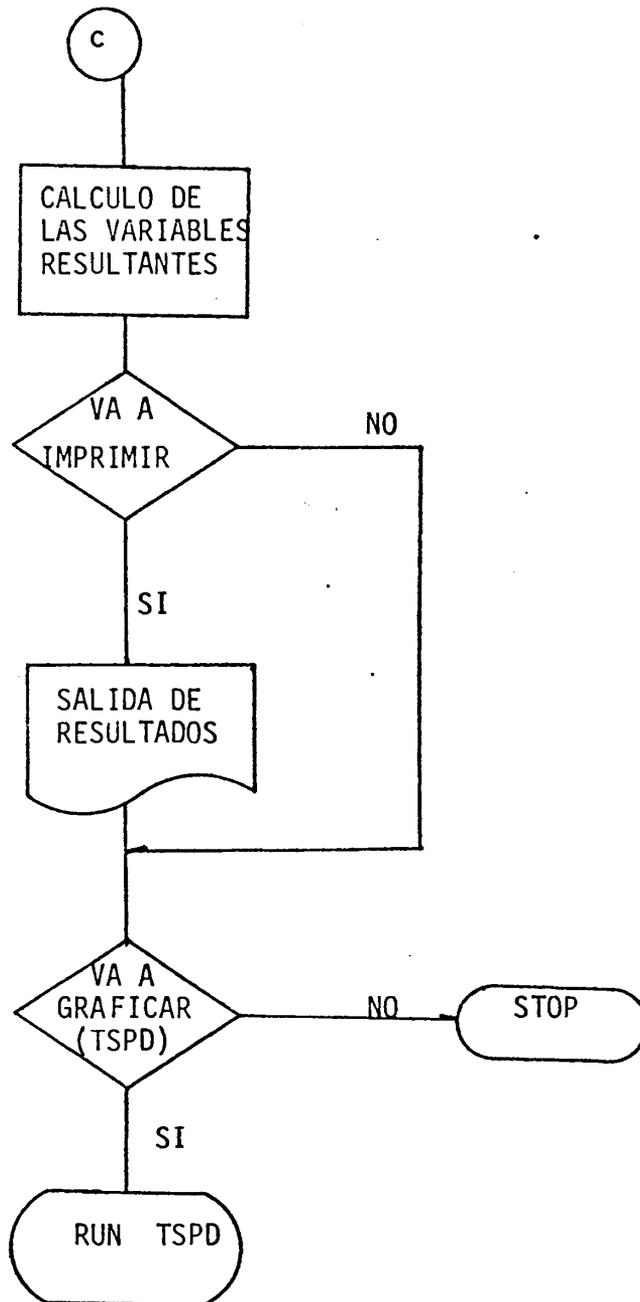
PROGRAMA PTSPQ:

El programa PTSPQ, ha sido proyectado para la creación de las líneas
de forma de embarcaciones pesqueras, utilizando el procedimiento -
de diseño , definición de curvas y secciones tal como se ha mencio
nado en el análisis efectuado anteriormente. Hablando algo del -
computador, el ordenador utilizado es un mini-computador APPLE   II
plus de 48 K; la codificación se ha realizado en base al lenguaje -
APPLESOFT BASIC disponible. El sistema se encuentra ubicado en la
oficina de PROYECTOS ESPECIALES DEL DEPARTAMENTO DE INGENIERIA MARI
TIMA Y CIENCIAS DEL MAR DE LA ESPOL.

De acuerdo·a la configuración analógica, la cargada del programa se
realiza de la siguiente manera:

PR # 6

LOAD PTSPQ

La ejecución será:

RUN

Inmediatamente comienza a copilarse y procesarse simultáneamente,don

de aparecerán preguntas acerca de los requerimientos del nuevo dise
ño.

Así tal como se propone en el ejemplo; (ver diagramas resultantes),
aparecerá:

NUMERO DE EJECUCION

?

Se refiere, al número identificador del proyecto, el cual se irá in
crementando cuando se trata de la generación iterativa de la serie.

A continuación se tiene:

CAPACIDAD DE LA EMBARCACION - PIES CUBICOS

?

FACTOR DE VARIACION DE LA MANGA   - 100 % A 100 %

?

FACTOR DE VARIACION DEL PUNTAL - 100 % A 100 %

?

RANGO DE VELOCIDAD V1 < V < V2

RANGO DE ESLORA $L_1 < L < L_2$

VELOCIDAD DE DISEÑO

?

COEFICIENTE PRISMATICO PARA LA VELOCIDAD DE DISEÑC C_p

VA A MODIFICARSE SI O NO

?

Y por último al completarse la ejecución pregunta:

VA A IMPRIMIR LOS RESULTADOS SI   O   NO

?

Dependiendo si la respuesta es si, y siempre que la unidad de im presión este en línea, se escribirá la tabla de resultados progra- mados en forma de números adimensionales.

Y para terminar:

VA A GRAFICAR SI O NO

?

De esta manera da la oportunidad al usuario de visualizar el diseño en la pantalla del monitor.

PROGRAMA TSPD:

El programa es de naturaleza similar al anterior, el cual nos permi te visualizar tanto en vista de secciones como en el plano del per fil diámetral los rasgos del diseño que se ha ejecutado.

En tal virtud, ha sido necesario utilizar archivos para el almacena miento común de los datos generados a partir del programa PTSPQ, pu diendo citar entre ellos:

TF1, TP1, TP2.

3.4. CREACION ITERATIVA

Analizando la formulación de la entrada de datos del programa -
PTSPQ, se encuentra que a más de los parámetros dados como con
diciones iniciales de diseño, es decir:

- Capacidad de la embarcación
- Factor de variación de la manga
- Factor de variación del puntal

Se debe tener en cuenta que la velocidad de diseño un rango de -
valores, que limitan a esta condición, cumpliendo de esta manera
con los requisitos del coeficiente block, dentro de las caracterís
ticas de las embarcaciones pesqueras.

Además se tiene la flexibilidad para variar el coeficiente prismá
tico. Con este último, se completan los cinco parámetros necesa-
rios para el proyecto.

Entonces sí se piensa en generar iterativamente las líneas de for
ma de barcos pesqueros, deberíamos de comenzar con elegir una ca
pacidad de bodega, en cuyas embarcaciones, su eslora, sea la más
frecuente de encontrarse. Utilizando el análisis estadístico,se

establece a partir de los datos de las dimensiones de los barcos -
ya conocidos, que el rango de mayor frecuencia de eslora es de 65
a 75 pies, esto equivaldría a elegir una capacidad promedio   de
5000 pies cúbicos, por lo que se utilizará en los diseños posterio
res.

En cuanto a los factores de variación de la manga y el puntal, ya
que el rango permisible es entre -100% a 100%, se va a tomar en   -
dos intervalos con lo que se consigue tres iteraciones: -100, o   ,
100 %.

Con el rango de velocidad se considerará, cinco intervalos, de es
ta manera, ya que está en correspondencia directa con el coeficien
te block, se obtendrán resultados cuya variación sea de 0.03, has
ta completar el límite máximo de Cb = 0.55.

Para el coeficiente prismático, la situación es un poco diferente,
puesto que no se tiene un rango fijo, para cada iteracción.   Por
tanto, se necesita introducir otro criterio de variación que   es
el siguiente: se analiza el rango para encontrar el número entero
de intervalos de 0.02 de longitud que existen. En caso de que sea
tan pequeño que nos de un valor de 0, le asignaremos la unidad, pa
ra evitar el riesgo de una división por cero. Conocido así (w2) -

iniciamos el lazo que empieze en un límite, P.E., el inferior, el cual irá incrementándose en una razón equivalente al rango dividido para el número de veces (w2), así hasta encontrar el límite.

De esta forma, se está en la posibilidad de generar una serie completa, ya que se ha considerado todos los intervalos disponibles - en el diseño. Esta modificación en el programa PTSPQ, se encuentra almacenado en otro, llamado PTSPS, en la misma unidad de diskette.

3.5. DIAGRAMAS RESULTANTES

Los cálculos de las iteraciones están disponibles en el Apéndice A., lo que a continuación se presenta es un ejemplo de diseño, junto con los resultados. Los datos utilizados han sido proporcionados a manera de explicación.

PROGRAMA PTSPS:

La impresión de la salida, tanto en el programa PTSPQ como en el PTSPS, es la misma, por lo que los comentarios de interpretación - son útiles en ambos casos.

Los datos propuestos como resultados están dados en forma adimen-
sional para permitir la versatilidad del usuario en la utilización
en una u otras unidades de medida.

La simbología que aparece en las características principales   es
la siguiente:

L	Eslora
V3	Volumen a desplazar
V1	Capacidad de bodega
B	Manga (flotación)
D	Puntal
H	Calado
LCB	Centro de boyantez longitudinal
LCF	Centro de flotación longitudinal
KB	Centro de boyantez vertical

La tabla de puntos está dada en porcentaje con respecto a la manga
(flotación).

T""

PTSPQ

E PTSPQ

RO DE EJECUCION

CIDAD DE LA EMBARCACION-PIES CUBICOS

0

OR DE VARIACION DE LA MANGA -100% A 100%

OR DE VARIACION DEL PUNTAL -100% A 100%

0 DE VELOCIDAD 9.32525289 < V < 15.8366916

0 DE ESLORA 94.0866128 > L > 83.2417253

OCIDAD DEL DISENO

ICIENTE PRISMATICO PARA LA VELOCIDAD DE DISENO   .637802083
MODIFICARSE SI O NO

IMPRIMIR LOS RESULTADOS SI O NO

```
********************CARACTERISTICAS   PRINCIPALES********************
```

L/V3^(1/3)	4.05303244
L/V1^(1/3)	4.95730664
L/B	3.71425122
B/H	2.33522218
B/D	2.04348507
ANGULO MEDIO DE ENTRADA	33.3126393
ASTILLA MUERTA	14.2648151
ANGULO DE LA RODA	62.5
% LCB/L	1.32687125
% LCF/L	3.98431637
KB/V3^(1/3)	.298282748
KM/V3^(1/3)	.559531423
COEF. BLOCK	.482978374
COEF. PRISMATICO	.637802083
COEF. DE FLOTACION	.781850416
COEF. DE SECCION	.757254307

```
********************TABLA DE PUNTOS(%)********************
```

ACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.09439526	13.004412	22.4339599	30.3480538
2	12.3176178	31.7930505	46.8216798	57.8314395
3	25.1016735	51.7847727	69.1499039	79.5239028
4	38.6676288	67.6517105	83.9132991	92.0496044
5	45.1245081	72.599789	88.0093805	95.2161262
6	41.4597043	66.3465978	82.6683313	92.5094896
7	28.6304095	53.876148	71.9989829	81.1740961
8	0	30.3010631	54.3497861	70.7233105
9	0	0	12.7981504	46.37757
10	0	0	0	0

ACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.1045468E-07	4.71766822	10.7287549
1	36.7026021	41.43846	46.2964131	53.0687815
2	65.2910073	69.7261521	73.7003673	79.38719
3	84.9765449	87.2946141	89.4760076	93.4827905
4	95.4817964	96.575384	97.4579728	99.1543641
5	98.9654045	100	100.275065	100.200712
6	97.7417658	100	100.200677	100.200712
7	91.5793224	95.3958421	96.3624145	96.3977733
8	80.850798	86.1875264	88.3736226	88.791895
9	64.4493869	72.3750527	75.9191458	77.3830780
10	13.0145726	53.9584211	61.6966498	62.1713233

```
********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)********************
```

1	2	3	4	5
13.7007397	7.79522672	5.19681783	2.59910889	0

6	7	8	9	10
-2.22752092	2.18492661	17.9110872	45.3982376	80.7123889

PARTE IV

CREACION DE LAS CURVAS DE ESTABILIDAD DE LOS DISEÑOS GENERADOS

4.1. USO DE LAS SERIES

Dada la generalidad con que se ha desarrollado la creación de las líneas de formas de las embarcaciones pesqueras, su aplicación no se restringuirá para ningún caso en que se trate de proyectar barcos cuyas superficies sean continuas.

Desde el punto de vista del diseñador, él complementaría las formas, trazando las cubiertas, cumpliendo con los requerimien tos del armador y la seguridad de la embarcación.

Mirando la utilización de las series, desde el punto de vista de los materiales para la construcción, citando el caso de la madera, se tendría que considerar la inclusión de la estructu ra de la quilla, roda, codaste, gambotas de codaste, de tal manera que en conjunto se mantenga la misma línea del alefriz. Esto sin duda traerá alteraciones del conjunto de líneas de forma, pero con un poco de experiencia se puede llevar adelan te.

En el caso de los otros materiales, los espesores de los es
tructurales centrales no son de tanta magnitud, lo que faci
lita la rápida modificación.

4.2. CALCULO DE LA ESTABILIDAD DE LOS MODELOS

Siendo de completa libertad para el proyectista, diseñar la
cubierta principal, con el fin de completar las formas del
casco, hablar del cálculo de la estabilidad de los modelos se
circunscribirá a determinar la posición del metacentro trans
versal hasta una condición en la que la línea de flotación to
que el punto más bajo de la cubierta. Esto no es sino un es
tudio de la estabilidad inicial, en el cual el criterio de
mérito se basa eb la altura metacéntrica (GM) o si mantenemos
el mismo centro de gravedad (KG), el radio metacéntrico (BM).
Este puede ser un parámetro para seleccionar uno u otro dise
ño, dependiendo de los requerimientos establecidos por el pro
yectista.

Como una guia para escoger los diseños más apropiados de la
serie, se propone una codificación de la siguiente manera:

DISEÑO: $a_1/ a_2/ N$

Donde:

a_1 es el porcentaje de variación de la manga

a_2 es el porcentaje de variación del puntal

N es el identificador del diseño

De esta manera se puede determinar, los diseños de características similares y utilizar los parámetros.

$$KB / (V3)^{1/3}$$

$$KM / (V3)^{1/3}$$

Para conocer BM, siempre que se conozca el volumen de desplaza miento (V3).

CRITERIOS DE ESTABILIDAD

La estabilidad de las embarcaciones ha sido un tema que por mu cho tiempo ha preocupado a los investigadores y diseñadores. El

efecto de la pérdida de estabilidad que se produce cuando el barco es sometido a un mar de popa, al corrimiento de las cargas de bodega, por la presencia de las superficies libres, etc. ha motivado para que se establezcan criterios tales como el que propone O'DOGHERTHY u organismos como la IMCO, etc.

CRITERIO DE ESTABILIDAD DE O'DOGHERTHY

Define la estabilidad de los barcos pesqueros de altura en base a un parámetro CE, el cual lo considera como satisfactorio si se verifica:

$$CE = E_1 + E_2 \geq CE \text{ mínimo} \tag{66}$$

Donde CE mínimo está definido en la figura 4 (de la siguiente sección) en función de la eslora y los valores de E_1, E_2, como se indica a continuación:

a. El término E_1 se refiere a las características de la estabilidad inicial de la embarcación y está dado:

$$E_1 = 50 \text{ GM/B} \tag{67}$$

Y $\quad E_1 = E_1$ límite $= 8 - 0.12 \, L + 0.0006 \, L^2$ $\qquad$ (68)

Para:

L (m)

o

$E_1 = E_1$ límite $= 8 - 0.03658 \, L + 0.0000557 L^2$ $\qquad$ (69)

Para:

L(ft)

Al evaluar la estabilidad tomando como referencia el término E_1 se pueden dar dos casos:

a.1) Cuando E_1 dado por (67) es menor que E_1 límite.

En este caso la estabilidad inicial del buque no es exce

siva. La estabilidad dinámica exigida por el criterio -

será tanto mayor cuanto menor sea GM, lo que resultará -

en una estabilidad suficiente y dará lugar a movimientos

normales de balance, según KEMPF ($8 < CK < 14$) en todos - los casos.

a.2) Cuando E_1 es igual o mayor que E_1 límite.

Aquí la estabilidad inicial del buque puede llegar a ser ex cesiva para la estabilidad dinámica requerida por el crite- rio. De todas maneras para utilizar (66) se considerá el valor de E_1 límite, por lo que la estabilidad dinámina que el criterio exige será siempre la misma para una eslora da da, garantizando un mínimo suficiente para la seguridad del buque.

b. El término E_2 está dado por la fórmula:

$$E_2 = 1000 \, e_k/L \tag{70}$$

Para:

L(m)

$$E_2 = 3285 \, e_k/L \tag{71}$$

Para:

L(ft).

Donde e_k, se refiere a la estabilidad dinámica hasta el ángulo de estabilidad nula. Este valor de e_k a ser utilizado en nin gún caso verá dado por el menor de los dos valores siguientes:

$$e_k = \int_0^{\theta_k} GZd\theta \tag{72}$$

$$e_k = \int_0^{60°} GZd\theta \tag{73}$$

CRITERIO DE LA ESTABILIDAD INICIAL EN BASE AL PERIODO DE ROLIDO PROPUESTO POR LA IMCO

Con el objeto de simplificar los cálculos de la estabilidad ini cial, se ha tomado el criterio de las pruebas del período de ro lido.

El estudio que se presenta a continuación se considera de mucha utilidad para determinar la estabilidad inicial de pequeños bar cos cuando no es practicable demostrar las condiciones de carga

u otra información sobre estabilidad.

En base a un gran número de pruebas de inclinación y períodos - de rolido se ha llegado a formular de una manera sencilla   lo siguiente:

$$GM_0 = (fB/T_b)^2 \qquad\qquad (74)$$

Siendo: f: factor de rolido cuyo valor depende de las unidades que se utilizan.

B: Manga

T_b: Período de balance en segundo, considerado el movimiento de banda a banda.

A continuación se propone valores de f para buques pesqueros.

TABLA III

BUQUE	ESTADO DE CARGA	U.METRICAS	U.INGLESAS
Pesqueros	Salida de caladero	0.76	0.423
P. de Altura	Salida de Puerto	0.802	0.4469
P. de Altura	A medio viaje de ida	0.792	0.44137
P. de Altura	En el caladero	0.782	0.4358
P. de Altura	En el viaje de regreso	0.776	0.4324
P. de Altura	Llegada al puerto	0.772	0.43
Atunero	En lastre	0.738	0.411
Atunero	Media carga	0.726	0.4045
Atunero	Plena carga	0.706	0.3934
P. de Madera	Rosca	0.814	0.4536
Arrastreros	Plena carga(llegada)	0.72	0.4
Arrastreros	Media carga	0.84	0.4681
Pesquero	Salida puerto	0.76	0.423
Camaroneros	Sin carga	0.95	0.555

Los gráficos están disponibles en las figuras 5 y 6.-

3. <u>DIAGRAMA RESULTANTE</u>
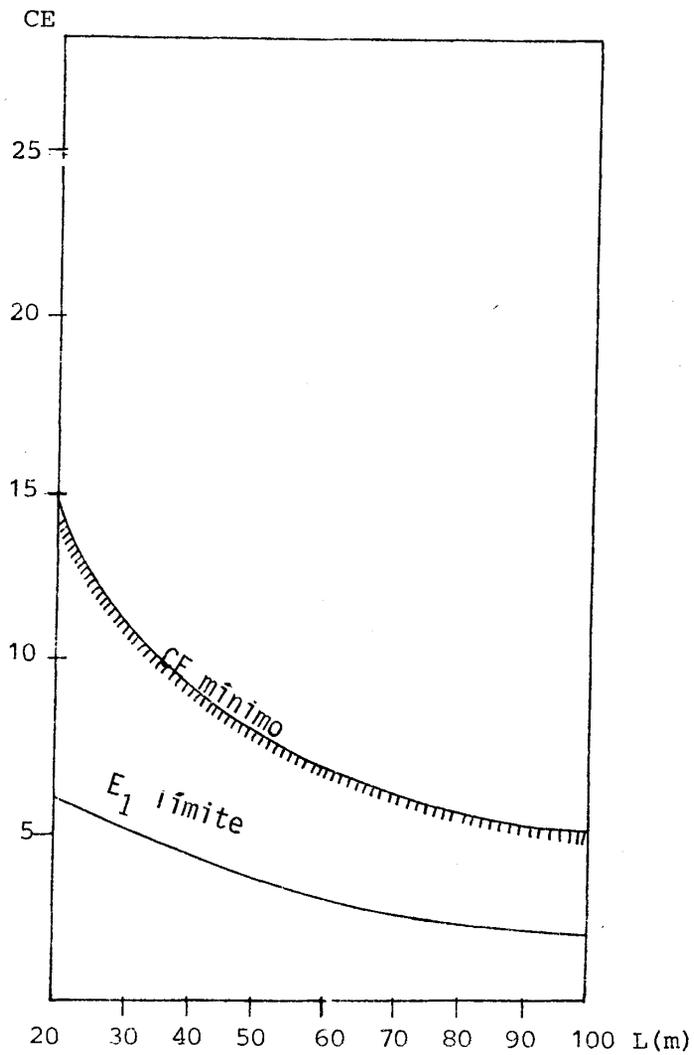
Fig. #4.- Criterio de estabilidad para   pesqueros.-

UNIDADES   METRICAS

Coeficiente de Rolido f

Manga B(m)

1.5   GM(m)

$$GM = (\frac{f \cdot B}{T})^2$$

Periodo de rolido
T(seg) 20 20

1.10   1.2

1.00   1.0

15 15

12

0.80
0.6   1   M

9

2

0.4

0.60

6

5 5

0.2

(2) GM y T y

(1) f y B
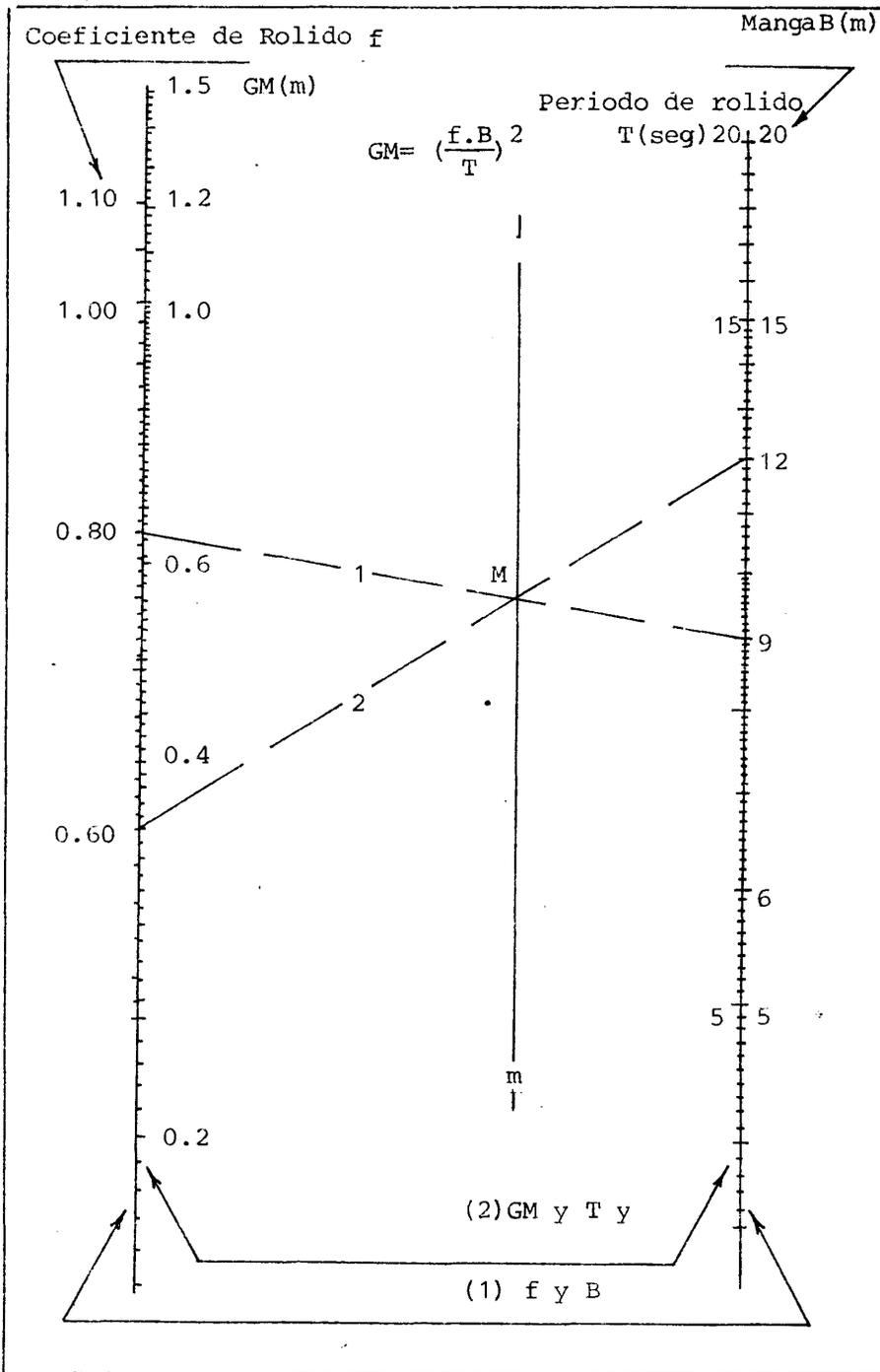
Fig. # 5

UNIDADES   INGLESAS
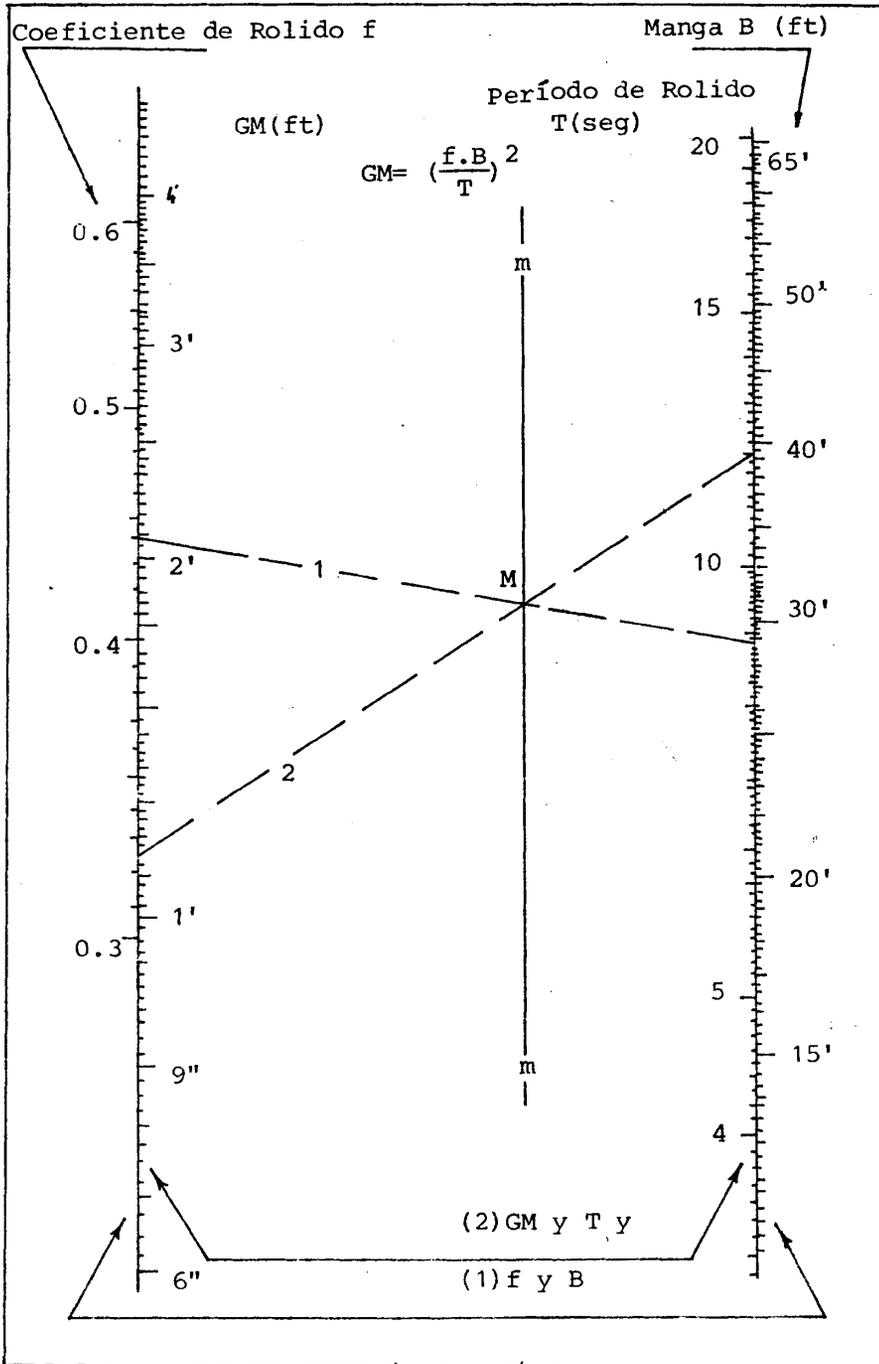
Fig. 6

CONCLUSIONES Y RECOMENDACIONES

1. El procedimiento de diseño mediante el cual se establecen las dimensiones principales, áreas, centroides, y coeficiente en general, han sido deducidas para el rango de embarcaciones - pesqueras de nuestro medio, con lo que se ha logrado incluir las dedicadas a la pesca artesanal.

2. En la creación de las líneas de forma no se ha tenido presente la disposición y la superficie del muerto de popa, por lo que permite al diseñador variar a discreción las condiciones de maniobrabilidad del proyecto, como además le facilita la posibilidad de disponer de dos propulsores.

3. La inclinación de la quilla, durante la generación de las series para el diseño de pesqueros se ha mantenido constante,dando aceptación a los buenos resultados que se han tenido con los proyectos de la FAO.

4. La utilización de las funciones polinómicas para el diseño de contornos tiene dos aspectos que cabe resaltar: el uno, que ha permitido con facilidad efectuar los cambios en las condi-

ciones de contornos, como también una rápida manipulación de los textos de los programas en que se emplean dichos métodos.

Por otro lado es necesario mencionar el riesgo de las oscilaciones que se han presentado con los polinomios cuyos grados pasan del tercero.

5. En el caso de la generación de las secciones la familia de - curvas utilizadas,ha permitido alcanzar los objetidos con - gran éxito.

6. Con el estudio que se ha presentado se ha cubierto una de las primeras etapas de trabajo en la espiral de diseño para el proyecto de pesqueros, sin embargo, el algoritmo de la creación de las líneas de formas se ha estructurado de tal manera que se pueda extender otras embarcaciones de naturale za diferentes como remolcadores, barcos de apoyo, etc. Una especial atención debe tenerse cuando se trata de cascos con cuerpos medio paralelo, en tales circusntancias el número - de bloques en el que se lo divida no será de dos, sino que hay que incluir un tercero: la sección media.

APENDICES

APENDICE A

EJEMPLOS DE APLICACION DE LAS SERIES ORIGINADAS

Tal como se han bosquejado los resultados de los diseños que en con-
junto forman la serie, dan una nueva orientación para su aplicación,
porque muchos son los parámetros adimensionales que se presentan, lo
que conlleva a que el criterio de su utilidad se base en un sentido
de selección por parte del proyectista. Así, el diseñador puede es
tar interesado en escoger modelos propuestos, que tengan un coeficien
te de sección de:

Cx = 0.757, el ángulo medio de entrada no pase de 35° y que para las
condiciones iniciales dadas, la eslora no sea mayor de 70 pies. Con
estos requerimientos planteados, la eliminación de los diseños, es
tal, que de los restantes se podrá hacer la selección en torno a -
otro parámetro con lo que en una etapa final, el modelo escogido cum
pla con todas las condiciones.

Con el fin de agilitar la búsqueda de los diseños requeridos, se -
propone al diseñador un conjunto de fórmulas que van a ser de utili-
dad en la orientación del trabajo:

$$L = ((0.1937 \ V2) / (C_B - 0.21378))^2 \qquad (75)$$

Siendo V2: velocidad de diseño (nudos)

$$C_B L^{1.718} \{$$

$$(0.95+ 0.6789 \times 10^{-3} N4)(14/15*(0.283 + 0.43 \times 10^{-3} \ N5)L^{0.829}$$

$$- 0.656)\}= V3 \qquad (76)$$

$$0.4 \leq C_B \leq 0.55 \qquad (77)$$

Siendo:

V3: volumen a desplazar (ft^3)

N4: factor de variación de la manga - 100% a 100%

N5: factor de variación del puntal - 100% a 100%

$$C_X= C_B/ C_P \qquad (78)$$

SERIES PARA EL DISEÑO DE PESQUEROS

DE EJECUCION

AD DE LA EMBARCACION-PIES CUBICOS

DE VARIACION DE LA MANGA -100% A 100%

✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲CARACTERISTICAS PRINCIPALES✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲

$^(1/3)$	4.77572215
$^(1/3)$	5.84987125
	4.15447063
	2.52823561
	2.20443031
LO MEDIO DE ENTRADA	16.9275326
LLA MUERTA	15.6642466
LO DE LA RODA	67.576982
B/L	-1.16609346
F/L	-4.64205277
$B^(1/3)$	.292358381
$B^(1/3)$	.578887709
BLOCK	.400010013
PRISMATICO	.554
DE FLOTACION	.68464
DE SECCION	.722039734

✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲TABLA DE PUNTOS(%)✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲✲

	LW 1	LW 2	LW 3	LW 4
	0	0	0	0
	1.20234127	6.1114587	11.0205109	15.9294848
	7.57680299	22.3911321	33.7655269	42.0481292
	20.5069668	44.1995183	58.9882416	67.3930585
	34.4276937	61.9003367	77.6118228	85.6546452
	39.5307685	66.2712393	83.2224492	93.0359496
	33.4649324	56.4795894	74.0227125	86.6869079
	19.623627	39.1581221	56.3488054	71.0921963
	1.09778164	17.7203277	33.8238518	49.3247853
	0	0	7.31412004	22.76836
	0	0	0	0

	LW 5	LW 6	LW 7	LW 8
	0	0	1.64751853	4.36636869
	20.8383603	25.7471035	30.6559137	35.5650262
	47.6178725	50.8965243	54.8343822	62.0711746
	71.5452453	73.1723932	75.9465904	82.5977033
	89.1448352	90.2988414	91.9471945	95.8575018
	97.9965724	100	100.667669	100.563459
	95.1114761	100	100.56332	100.563459
	83.2549159	92.6528242	94.7482436	94.7596346
	64.1016205	77.9584725	83.0026973	83.1519853
	38.8789214	55.916945	64.9268886	65.7405115
	4.63130968	26.5282416	38.4566504	42.5252131

✲✲✲✲✲✲✲✲✲✲✲✲✲ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)✲✲✲✲✲✲✲✲✲✲✲✲✲

2	3	4	5
16957 9.43852182	6.29231787	3.14617392	0
7	8	9	10
5328491.58712313	15.5824401	41.9087431	80.7123893

***********************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4,77572215
L/V1^(1/3)	5,84987125
L/B	4,15447063
B/H	2,53214929
B/D	2,20443031
ANGULO MEDIO DE ENTRADA	14,8296435
ASTILLA MUERTA	14,3342799
ANGULO DE LA RODA	67,576982
% LCB/L	-1,08320887
% LCF/L	-4,67359383
KB/V3^(1/3)	,289495702
KM/V3^(1/3)	,56727905
COEF. BLOCK	,400010013
COEF. PRISMATICO	,541027787
COEF. DE FLOTACION	,669592233
COEF. DE SECCION	,739352068

*******************************TABLA DE PUNTOS(%)***************************

CION	LW 1	LW 2	LW 3	LW 4
	0	0	0	0
	1,09494772	5,58701909	10,0790306	14,5709701
	7,80629781	22,6654804	33,5517375	41,0458376
	22,1308222	46,2390121	60,0381347	67,109198
	37,4380109	65,206832	79,6479955	86,2478243
	42,3538959	69,5502947	85,7766431	94,5140448
	34,9116201	58,3500725	75,7524806	87,925385
	19,7630708	39,3426967	56,4806204	71,0841106
	1,07413476	17,0912933	32,7266667	47,9150419
	0	0	6,63941554	20,8755206
	0	0	0	0

CION	LW 5	LW 6	LW 7	LW 8
	0	-1,79496502E-08	1,42243342	3,81834911
	19,0628191	23,5545467	28,0463357	32,538404
	45,7445499	48,265456	51,7240104	58,8105382
	70,1815603	71,1990921	73,7213746	80,3746171
	88,7366954	89,4218187	90,9409402	94,9704999
	98,5510089	100	100,431578	100,338047
	95,711219	100	100,338045	100,338047
	83,0344439	92,1691165	94,2002478	94,2115646
	62,560687	76,5073493	81,7833428	81,9585991
	36,1699213	53,0146987	62,5705271	63,5791509
	3,67686833	21,6911644	33,1789357	39,0732199

****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

2	3	4	5
2,6041767 9,45313255	6,30208835	3,1510442	0
7	8	9	10
2,2555761,58180797	15,5617358	41,8777174	80,7123889

xxxxxxxxxxxxxxxxxxxxxxxxCARACTERISTICAS PRINCIPALESxxxxxxxxxxxxxxxxxxxxxxxxxx

L/V3^(1/3)	1.77572215
L/V1^(1/3)	5.81987125
L/B	4.15447063
B/H	2.53606902
B/D	2.20443031
ANGULO MEDIO DE ENTRADA	12.7729411
ASTILLA MUERTA	13.0029996
ANGULO DE LA RODA	67.576982
% LCB/L	-.958624999
% LCF/L	-4.67484503
KB/V3^(1/3)	.286440305
KM/V3^(1/3)	.55607954
COEF. BLOCK	.400010013
COEF. PRISMATICO	.528055573
COEF. DE FLOTACION	.654544465
COEF. DE SECCION	.757514992

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxTABLA DE PUNTOS(%)xxxxxxxxxxxxxxxxxxxxxxxxxxxxx

TACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.992362164	5.08321946	9.17402281	13.2647612
2	8.11863564	23.071225	33.4175933	40.0690867
3	24.1653088	48.575154	61.074348	66.6820849
4	41.056224	68.7998068	81.5805826	86.6356152
5	45.5745278	73.0793151	88.3474841	95.8902364
6	36.4180899	60.2558795	77.4716449	89.1213134
7	19.8055489	39.3668462	56.4320568	70.915829
8	1.0382615	16.3162603	31.3978763	46.2467007
9	0	0	5.90776794	18.82907
10	0	0	0	0

TACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.74510706E-07	1.21038656	3.29122196
1	17.3554183	21.4459658	25.5365687	29.6274218
2	43.8990329	45.735159	48.7744455	55.6892561
3	68.7490638	69.3013693	71.6478247	78.2722712
4	88.2303098	88.5783864	90.0316956	94.1720129
5	99.0223458	100	100.255074	100.184028
6	96.2710375	100	100.184028	100.184028
7	82.7093378	91.6644147	93.7077868	93.72116
8	60.8085259	74.9932441	80.588333	80.7954396
9	33.2543043	49.9864883	60.1770687	61.4068514
10	2.71598791	16.644147	27.145678	35.5554004

xxxxxxxxxxxxxxxxxxALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)xxxxxxxxxxxxxx

1	2	3	4	5
12.6236879	9.46726588	6.31184391	3.15592197	0
6	7	8	9	10
-2.25582337	1.57648464	15.5409996	41.816644	80.7123891

xxxxxxxxxxxxxxxxxxxxxxxxxxxxCARACTERISTICAS PRINCIPALES xxxxxxxxxxxxxxxxxxxxxxxx

L/V3^(1/3)	4,64962005
L/V1^(1/3)	5,69540644
L/B	4,12323803
B/H	2,5396745
B/D	2,21098792
ANGULO MEDIO DE ENTRADA	17,1154529
ASTILLA MUERTA	12,0905804
ANGULO DE LA RODA	65,5619889
% LCB/L	-1,2315118
% LCF/L	-4,64060673
KB/V3^(1/3)	,279748366
KM/V3^(1/3)	,543349855
COEF, BLOCK	,428884977
COEF, PRISMATICO	,551409167
COEF, DE FLOTACION	,685114634
COEF, DE SECCION	,77358926

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxTABLA DE PUNTOS(%) xxxxxxxxxxxxxxxxxxxxxxxxxxxxx

TACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,36945856	6,86917553	12,109253	17,0533813
2	9,04938068	25,6197321	37,136598	44,5806852
3	25,3172661	50,9882244	64,2906748	70,3441812
4	42,8789673	71,1319095	83,7580456	88,5745195
5	48,0409969	75,6290101	90,0837808	96,7489453
6	39,7501978	64,3198498	80,9874093	91,4517624
7	23,3240079	45,0206904	62,6027439	76,2414067
8	1,28606671	20,8346244	38,4451724	53,9792568
9	0	0	8,60628623	25,6956793
10	0	0	0	0

ACION	LW 5	LW 6	LW 7	LW 8
0	0	-5,61338023E 08	1,77495303	4,67980944
1	21,6498615	25,8175726	30,1143539	35,1790346
2	48,8945342	50,9810071	54,220391	61,4182521
3	72,6150023	73,2350453	75,5335288	81,9511748
4	90,02767	90,327029	91,6230226	95,3315306
5	99,2903081	100	100,166606	100,113044
6	97,3021663	100	100,113044	100,113044
7	86,1715835	92,6677532	94,3160483	94,345611
8	67,2530888	78,0032597	82,4879791	82,8107454
9	41,5889928	56,0065193	64,1705095	65,5004469
10	4,9287335	26,6775321	38,0031484	42,4387156

xxxxxxxxxxxxxxxxxxxxxALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H) xxxxxxxxxxxxx

1	2	3	4	5
12,625408	9,40994771	6,2732911	3,13561722	0
6	7	8	9	10
-2,25484497	1,59751792	15,6229313	41,9694194	80,7123893

**************************CARACTERISTICAS   PRINCIPALES***************************

V3^(1/3)	1,61962005
V1^(1/3)	5,69510611
/B	1,12323803
/H	2,54360588
/D	2,21098792
NGULO MEDIO DE ENTRADA	19,0668075
STILLA MUERTA	13,0500984
NGULO DE LA RODA	65,5619889
LCB/L	-1,29536064
LCF/L	-4,58789922
B/V3^(1/3)	,281307804
H/V3^(1/3)	,552770105
OEF, BLOCK	,428884977
OEF, PRISMATICO	,56621997
OEF, DE FLOTACION	,698819966
OEF, DE SECCION	,757412803

***************************TABLA DE PUNTOS(%)************************************

CION	LW 1	LW 2	LW 3	LW 4
	0	0	0	0
	1,47351827	7,41608091	13,0780712	18,4202539
	8,83195544	25,4683395	37,5329709	45,7374449
	23,6960818	49,2402116	63,6849025	70,980293
	39,8565021	68,3080211	82,4045807	88,4853043
	45,3534574	72,8443017	88,1822308	95,8054084
	38,4693521	62,7827592	79,6822838	90,6054466
	23,2989724	45,0267109	62,673599	76,4193728
	1,36317809	21,5951641	39,6579523	55,4195248
	0	0	9,40746329	27,680178
	0	0	0	0

ION	LW 5	LW 6	LW 7	LW 8
	0	1,3849693E 07	2,0034452	5,22932573
	23,3867644	27,8899464	32,5325391	38,0047993
	50,8038897	53,4679358	57,0616192	64,4179755
	74,0992321	75,1009518	77,5324356	83,9396883
	90,6209021	91,1559786	92,4724917	96,0407712
	98,9947075	100	100,264728	100,1920580
	96,937384	100	100,192058	100,192058
	86,4737171	93,091511	94,6941382	94,716971
	68,7066408	79,274533	83,4955823	83,7667976
	44,1239943	58,519066	66,235853	67,341537
	5,87038525	30,91511	42,2570979	45,4411896

****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************

	2	3	4	5
,642299	9,42451423	6,28300947	3,14150476	0
	7	8	9	10
255091461,59221886		15,6022897	41,9384878	80,7123892

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xxxxxxxxxxxxxxxxxxxxxxxxxxCARACTERISTICAS   PRINCIPALES xxxxxxxxxxxxxxxxxxxxxxxxxx
```

L/V3^(1/3)	4.53257209	
L/V1^(1/3)	5.5520322	
L/B	4.09369886	
B/H	2.55070931	
B/D	2.21725399	
ANGULO MEDIO DE ENTRADA	12.5996718	
ASTILLA MUERTA	8.99606761	
ANGULO DE LA RODA	63.5469958	
% LCB/L	1.35261826	
% LCF/L	-4.63227625	
KB/V3^(1/3)	.267820421	
KM/V3^(1/3)	.512384468	
COEF. BLOCK	.458349452	
COEF. PRISMATICO	.556637042	
COEF. DE FLOTACION	.682698969	
COEF. DE SECCION	.82342602	

```
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxTABLA DE PUNTOS(%)xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

ACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.24824748	7.55158574	13.2534481	18.3079265
2	10.6732898	28.9397048	40.3839	46.9168721
3	31.312006	58.030748	68.8721925	72.4717046
4	53.8909447	80.2172158	88.199516	90.1197028
5	58.5889147	85.0380286	95.5169208	98.9805139
6	47.2012632	72.6359006	82.4962114	95.3000595
7	27.821782	51.685924	69.1599944	81.1813378
8	1.52803275	24.6840841	43.8208158	59.0391299
9	0	0	10.3185194	29.3326011
10	0	0	0	0

ACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.12819393E-07	1.93529156	4.95149263
1	22.653778	26.2026374	29.8786123	34.68788
2	50.1621704	51.4431649	54.0291804	60.2438251
3	73.4209689	73.5823737	75.5664992	81.1324828
4	90.4484308	90.481055	91.635009	95.0820224
5	99.8563943	100	100.029162	100.01061
6	98.7954217	100	100.01061	100.01061
7	88.7124846	92.2486986	94.1559384	94.3054566
8	70.4629535	78.2460957	82.1241958	82.89515
9	44.7911672	56.4921913	63.6102226	65.7796903
10	5.4081848	27.4069854	38.2342609	42.9590772

```
xxxxxxxxxxxxxxxxxxxxxxALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)xxxxxxxxxxxxxxxxx
```

	2	3	4	5
3.5355173	9.38312726	6.2554182	3.1227021	0
	7	8	9	10
-2.25439114	1.60727478	15.6609326	42.0263721	88.7123895

********************CARACTERISTICAS PRINCIPALES***********************

^(1/3)	4,53257209
^(1/3)	5,5520322
	4,09369886
	2,55465778
	2,21725399
ULO MEDIO DE ENTRADA	21,6394506
ILLA MUERTA	10,9768774
ULO DE LA RODA	63,5469958
CB/L	-1,45083927
CF/L	-1,49663193
V3^(1/3)	,271871171
V3^(1/3)	,532006587
F, BLOCK	,458319452
F, PRISMATICO	,580930593
F, DE FLOTACION	,715879488
F, DE SECCION	,788991762

***************************TABLA DE PUNTOS(%)***************************

DN	LW 1	LW 2	LW 3	LW 4
	0	0	0	0
	1,45007272	8,79874707	15,4461559	21,3387798
	10,0975742	28,5349794	41,3281209	49,5799808
	26,754443	53,8926032	67,9818223	74,4077613
	45,2436559	71,0106909	86,2920675	90,7288333
	51,2596876	78,7567022	92,0667208	97,6508578
	43,7190373	68,8020375	84,6779467	93,7149069
	27,5011316	51,3335864	69,0127157	81,3661317
	1,66844814	26,2571042	46,247359	61,836961
	0	0	12,149466	33,6524252
	0	0	0	0

N	LW 5	LW 6	LW 7	LW 8
	0	1,52632165E 07	2,46827295	6,17333181
	26,405223	30,5124713	31,8278456	40,1343446
	54,35111	56,6509657	59,8758898	66,7798118
	76,8249925	77,1082243	79,5893763	85,3832973
	91,9805747	92,2169885	93,3000697	96,4181636
	99,5454738	100	100,092322	100,057905
	98,2165759	100	100,057905	100,057905
	89,2570303	93,5961105	94,8770466	91,947247
	73,2568916	80,7883554	84,1965633	84,7259325
	50,0950456	61,5767108	67,8213335	69,3939597
	7,52390178	35,9611847	46,4308627	48,9513293

************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

2	3	4	5
165903 9,39765223	6,26510152	3,13255076	0

7	8	9	10
14636881,6019909	15,6403549	11,9955288	80,7123894

```
**********************CARACTERISTICAS   PRINCIPALES*********************
```

/V3^(1/3)	4:42359549
/V1^(1/3)	5:41851472
/B	4:06570015
/H	2:56136955
/D	2,22325173
NGULO MEDIO DE ENTRADA	18:5939338
STILLA MUERTA	6,39103383
NGULO DE LA RODA	61:5320027
LCB/L	1:52698319
LCF/L	4:6095157
(B/V3^(1/3)	:256759305
(H/V3^(1/3)	:486235352
COEF, BLOCK	:488375362
COEF, PRISMATICO	:561923139
COEF, DE FLOTACION	:693830842
COEF, DE SECCION	:869114168

```
**************************TABLA DE PUNTOS(%)************************
```

CION	LW 1	LW 2	LW 3	LW 4
	0	0	0	0
	,761038698	8,2375657	11:6255409	19,9132795
	12,3799682	32,2613555	43,5527214	49,2850997
	38,3600171	64,6345346	72:3239463	74,097620
	67,3069456	87,3105018	90:4737378	90:8259204
	71,0810284	93,0951326	98:7311931	99,84064
	55,918193	80,9024497	92,9863208	97,9532936
	33,3791544	59,2064355	75:8618743	85,7039016
	1,8545972	29,5951733	50:1784451	64,5651735
	0	0	12,7206786	34,0742334
0	0	0	0	0

CION	LW 5	LW 6	LW 7	LW 8
	0	2,67545013E 08	2:18161624	5,29461533
	24,0862652	27:125379	30,2216527	31,582500
	51,7472358	52,5504549	51,7157635	60:4993195
	74,3860449	74,4128412	76:1222123	81,2427491
	90,8494506	90,0501516	91:8902522	95,0104947
	99,9892333	100	100,000656	100,000255
	99,6108209	100	100,000255	100,000255
	90,807256	92,9384845	93,9175292	94,4282912
	,73,7580783	78,8154532	81,7087223	83,2843639
	48,7452654	57,6309065	63:22032	66,568473
	6,23952925	29,3840441	39:4874102	44,2806186

```
****************ALTOS DEL ALETRIZ SOBRE LA LINEA BASE(%H)***********
```

2	3	4	5
,0945867 9,35789859	6,23859907	3:11929955	0
7	8	9	10
,253964171,61645249	15,696688	42,0799449	80,712389

```
*************************CARACTERISTICAS  PRINCIPALES********************)
      L/V3^(1/3)
      L/V1^(1/3)                                      4:11311352
      L/B                                             5:03822956
      B/H                                             3:45179277
      B/D                                             2:51243514
      ANGULO MEDIO DE ENTRADA                         2:19330824
      ASTILLA MUERTA                                 22:4335526
      ANGULO DE LA RODA                              13:2064015
      % LCB/L                                        66:5395562
      % LCF/L                                          1:16622073
      KB/V3^(1/3)                                    -1:58791293
      KM/V3^(1/3)                                      :300919638
      COEF, BLOCK                                      :584254949
      COEF: PRISMATICO                                :428883032
      COEF, DE FLOTACION                              :566247397
      COEF, DE SECCION                                :69884698
                                                      :75741281
```

```
*************************TABLA DE PUNTOS(%)**********************)
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2:1639857	7:94368623	13:4535368	18,655614:
2	10:2904257	26:0518114	37:6470458	45,668965!
3	24:9660304	49:345001	63,4512417	70,773895:
4	40:3251521	68:1272801	82,1577039	88,344047,
5	45:3534392	72:8442821	88:182217	95,805401:
6	38:2859838	62:5846977	79:5195836	90,500968!
7	22,6151717	44,610375	62:4492172	76,320934:
8	0	20,2542583	39,4681458	55,801715!
9	0	0	6:51841904	27,78651
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2,79391846E-07	2,23742699	5,8370656:
1	23:4958848	27,8894893	32:4247835	37,774913(
2	50:7298439	53,4673871	56,9840235	63,940568:
3	74:0070417	75:1005403	77:4682771	83,572797(
4	90:5758747	91:1557958	92,4508013	83,572797(
5	98:9947052	100	100,264729	95,910371:
6	96:8922578	100	100,192059	100,19205(
7	86:4459074	93,0914207	94,6942863	100,19205(
8	69:1281151	79,2742622	83,4384661	94,71690
9	45:21016	58,5485242	65,8346016	83,766607·
10	5:8701539	30,914207	42,2562641	67,341156
				45,440554:

```
********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********)
```

EST 1	2	3	4	5
10,6029414	7,79310129	5:19540086	2,59770043	0

EST 6	7	8	9	10
-2,227484992	,18569986	17,9140991	45,4027511	80,712388(

************************CARACTERISTICAS   PRINCIPALES******************)

L/V3^(1/3)	4,00942063
L/V1^(1/3)	4,9112142
L/B	3,42702755
B/H	2,51921968
B/D	2,19953338
ANGULO MEDIO DE ENTRADA	20,7526893
ASTILLA MUERTA	9,1068941
ANGULO DE LA RODA	64,6447668
% LCB/L	-1,24625719
% LCF/L	-4,6322777
KB/V3^(1/3)	,286559503
KM/V3^(1/3)	,541791277
COEF, BLOCK	,458346593
COEF, PRISMATICO	,5566367
COEF, DE FLOTACION	,687698572
COEF, DE SECCION	,82342144

*****************************TABLA DE PUNTOS(%)************************)

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,92093517	8,04111248	13,5828953	18,501442
2	12,2701086	29,36861	40,3326966	46,767776
3	32,4982083	57,7947372	68,4961088	72,32021
4	54,055114	79,8443447	88,0016754	90,065021
5	58,588022	85,0373343	95,5165816	98,980400
6	47,0014217	72,4508668	87,3683935	95,232874
7	27,1041139	51,3480543	69,0416658	81,165964
8	0	23,3454541	43,8444589	59,603593
9	0	0	7,21749104	29,672233
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2,04275986E-08	2,15356181	5,5047872
1	22,7368573	26,2025779	29,8012165	34,51589
2	50,0765369	51,4430935	54,0357778	60,351155
3	73,3847263	73,5823203	75,4965784	81,131440
4	90,4406837	90,4810312	91,6084728	94,977632
5	99,8563722	100	100,020166	100,01061
6	98,772448	100	100,010612	100,01061
7	88,7242573	92,7486863	94,1532089	94,305450
8	70,9432099	78,2460588	81,9756229	82,895126
9	45,9321695	56,4921176	62,9257923	65,779640
10	5,40812104	27,4868626	38,234554	42,958992

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(XII)**********)

EST	1	2	3	4	5
	11,7236922	7,75808229	5,17205487	2,58602746	0
EST	6	7	8	9	10
	-2,22689237	2,19843923	17,963723	45,4771127	80,712388

************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.00942063
L/V1^(1/3)	4.9112142
L/B	3.42702755
B/H	2.5231194
B/D	2.19953338
ANGULO MEDIO DE ENTRADA	25.3559551
ASTILLA MUERTA	11.1108017
ANGULO DE LA RODA	64.6447668
% LCB/L	1.32589517
% LCF/L	-4.49664655
KB/V3^(1/3)	.290890933
KM/V3^(1/3)	.562368918
COEF. BLOCK	.458346593
COEF. PRISMATICO	.580928531
COEF. DE FLOTACION	.715877096
COEF. DE SECCION	.788989641

***************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.23671049	9.37111595	15.8312565	21.564860
2	11.7109343	29.1133717	41.3925433	49.473461
3	28.0839247	53.9186867	67.7063016	74.205051
4	45.6536794	73.7559826	86.0470315	90.616887
5	51.2594332	78.7565439	92.0665763	97.650795
6	43.5128918	68.6777253	84.5250554	93.627296
7	26.7464116	50.9329494	68.833978	81.308222
8	0	24.8112035	46.2314954	62.379704
9	0	0	8.54953678	34.07558
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	7.16153603E-08	2.75142012	6.8767347
1	26.5021076	30.5420929	34.7369892	40.232821
2	54.2639249	56.6505113	59.7996977	66.299908
3	76.751212	77.4878836	79.5156092	85.007068
4	91.9526992	92.2168372	93.2716432	96.283377
5	99.5454573	100	100.092326	100.057901
6	98.1834743	100	100.057908	100.05790
7	89.2491449	93.5960492	94.8766816	94.94720
8	73.7188519	80.7881474	84.0814081	84.725787
9	51.3381666	61.5762949	67.207225	69.393665
10	7.52368654	35.9604913	46.4302682	48.950837

******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	11.7292825	7.77009168	5.18006116	2.59003056	0
EST	6	7	8	9	10
	-2.22709563	2.19407036	17.946705	45.4516109	80.712388

***************************CARACTERISTICAS   PRINCIPALES*********************

L/V3^(1/3)	3.91287964
L/V1^(1/3)	4.79295934
L/B	3.40355356
B/H	2.52952091
B/D	2.2054921
ANGULO MEDIO DE ENTRADA	21.8935123
ASTILLA MUERTA	6.47109773
ANGULO DE LA RODA	62.7499775
% LCB/L	-1.42752543
% LCF/L	-4.60951896
KB/V3^(1/3)	.274791472
KM/V3^(1/3)	.514249392
COEF. BLOCK	.488372422
COEF. PRISMATICO	.561922441
COEF. DE FLOTACION	.693830032
COEF. DE SECCION	.869110016

********************************TABLA DE PUNTOS(%)***************************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	1.52053796	8.76127158	14.9568028	20.094217:
2	14.1202863	32.6050943	43.421656	49.112457:
3	39.3488844	64.1941172	72.0364107	74.015141
4	67.0175087	86.9476285	90.3910189	90.816665:
5	71.0796784	93.0944432	98.2309847	99.840601:
6	55.68571	80.8057775	92.8839866	97.911081:
7	32.6074298	58.9269583	75.8117717	85.727426:
8	0	28.2382458	50.4424841	65.277439:
9	0	0	9.05176181	34.755244:
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	0	2.41981719	5.8687167:
1	24.1574413	27.1252564	30.1599699	34.44211:
2	51.6672309	52.5503076	54.6516138	60.134703
3	74.3743062	74.1127307	76.0511062	80.953743:
4	90.84897	90.8501025	91.8642318	94.906504:
5	99.9892296	100	100.000656	100.00025:
6	99.5999797	100	100.000255	100.00025:
7	90.8293673	92.9304595	93.9074729	94.428273:
8	74.23867	78.8153785	81.4546989	83.284311:
9	50.0143687	57.6307572	62.2634076	66.568368:
10	6.23942983	29.3845953	39.4872233	44.280444:

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	13.4422859	7.73644793	5.15763196	2.57881598	0
EST	6	7	8	9	10
	-2.22652629	2.20630932	17.9943802	45.5230528	80.712388:

***********************CARACTERISTICAS   PRINCIPALES*********************

```
L/V3^(1/3)                                    3,91287964
L/V1^(1/3)                                    4,79295934
L/B                                           3,40355356
B/H                                           2,53343658
B/D                                           2,2054921
ANGULO MEDIO DE ENTRADA                      25,8383089
ASTILLA MUERTA                                8,12530586
ANGULO DE LA RODA                            62,7499775
% LCB/L                                       1,50165872
% LCF/L                                       1,18112044
KB/V3^(1/3)                                    ,278832201
KM/V3^(1/3)                                    ,53138019
COEF, BLOCK                                    ,488372422
COEF, PRISMATICO                               ,582676097
COEF, DE FLOTACION                             ,717904273
COEF, DE SECCION                               ,838154206
```

**************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,72944099	9,96824678	17,0177701	22,863317
2	13,4454554	32,2719507	44,4549709	51,684092
3	33,9008284	60,6210572	72,1360223	76,342586
4	56,7670881	82,5528424	90,2167984	92,017320
5	62,6259257	88,0027937	96,87294	99,399131
6	51,8654697	77,3141678	90,7175936	96,936504
7	32,2161687	58,5370421	75,6877085	85,948809
8	0	29,7798188	52,7602975	67,782225
9	0	0	10,4944999	39,037870
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5,51129727E-08	2,98652246	7,0932856
1	27,4866026	30,8634833	34,3164739	39,188825
2	55,4519621	57,0361799	59,4656441	65,034705
3	77,5458067	77,777135	79,3964131	84,123851
4	92,3167603	92,3453933	93,2484258	95,949191
5	99,931109	100	100,007647	100,00365
6	99,326002	100	100,003654	100,00365
7	91,3520562	93,6547079	94,609737	94,937500
8	76,613068	80,9641237	83,3369198	84,805194
9	54,7888384	61,9282475	65,9471381	69,606734
10	8,24530175	36,547079	46,3217883	49,342121

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	13,4435574	7,7484239	5,16561595	2,58280795	0
EST	6	7	8	9	10
	-2,22672888	2,20195276	17,9774097	45,4976223	80,712388

*****************************CARACTERISTICAS   PRINCIPALES********************

```
L/V3^(1/3)                            3,91287964
L/V1^(1/3)                            4,79295934
L/B                                   3,40355356
B/H                                   2,53735831
B/D                                   2,2054921
ANGULO MEDIO DE ENTRADA               29,6874716
ASTILLA MUERTA                        9,72999799
ANGULO DE LA RODA                     62,7499775
% LCB/L                              -1,5029465
% LCF/L                              -4,31425505
KB/V3^(1/3)                           ,282279356
KM/V3^(1/3)                           ,549395638
COEF, BLOCK                           ,488372422
COEF, PRISMATICO                      ,603429754
COEF, DE FLOTACION                    ,741978514
COEF, DE SECCION                      ,809327712
```

************************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,9469884	11,2260546	19,1656661	25,749276
2	13,0562975	32,2568937	45,6158263	54,260696
3	30,2186189	57,4916568	71,6781814	78,16337
4	49,2467027	77,5712665	88,9393799	92,7551810
5	55,882354	82,8510973	91,4023558	98,588656
6	48,4037333	73,9006052	88,4052145	95,7834640
7	31,5474658	57,759464	75,209326	85,920654
8	0	30,8508478	54,4644585	69,768609
9	0	0	11,7654182	42,784916
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3,29650511E-08	3,59344998	8,3662097
1	30,9562905	34,7595226	38,6484627	44,13595
2	59,2793202	61,7114271	64,5555401	70,145930
3	80,6098319	81,2835703	82,9515991	87,4364462
4	93,7385823	93,903809	94,7104295	97,047876
5	99,7747523	100	100,036518	100,02049
6	98,9603	100	100,020497	100,02049
7	91,7436475	94,3315033	95,2628492	95,440288
8	78,6699796	82,9945097	85,1925171	86,279869
9	59,0732026	65,9890192	69,596895	72,539242
10	10,1980616	43,315032	52,4589984	54,218405

*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
13,4448957	7,76041833	5,17361226	2,58680611	0
EST 6	7	8	9	10
-2,22693186	2,19758932	17,9604127	45,4721524	80,712388

**********************CARACTERISTICAS   PRINCIPALES********************

L/V3^(1/3)	3.91287961
L/V1^(1/3)	4.79295934
L/B	3.40355356
B/H	2.54128611
B/D	2.2054921
ANGULO MEDIO DE ENTRADA	33.3641025
ASTILLA MUERTA	11.2924129
ANGULO DE LA RODA	62.7499775
% LCB/L	1.4350774
% LCF/L	1.11808139
KB/V3^(1/3)	.285261328
KM/V3^(1/3)	.568544115
COEF. BLOCK	.488372422
COEF. PRISMATICO	.62418341
COEF. DE FLOTACION	.766052756
COEF. DE SECCION	.782418139

***************************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.17073259	12.5206925	21.3766008	28.720002(
2	12.8559338	32.4821227	46.9029905	56.865199
3	27.5948347	54.9038092	71.0329016	79.613325!
4	43.6238129	72.8064669	86.9914731	92.972469;
5	50.429923	77.9720826	91.5849436	97.440015(
6	45.2665752	70.6039294	86.0021706	94.478206(
7	30.6807035	56.6859361	74.4418987	85.676248(
8	0	31.5024382	55.6362027	71.319789;
9	0	0	12.8389628	46.01182
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	9.14923691E-08	4.23501419	9.6725012(
1	34.5279302	38.7700619	43.1077793	49.228509(
2	63.1387395	66.5240742	69.8560603	75.416204!
3	83.5186401	84.8930557	86.7102256	90.865552!
4	95.0142589	95.5080248	96.2678001	98.206519(
5	99.4885304	100	100.10793	100.069072;
6	98.5028069	100	100.069072	100.069072;
7	92.0179265	94.9796735	95.8776031	95.96152
8	80.4725705	84.9390204	87.0119894	87.746434;
9	62.9480457	69.8780409	73.2145458	75.423796(
10	12.0647747	49.7967347	58.0938724	58.993613;

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
13.4462998	7.77243141	5.18162095	2.59081046	0

EST 6	7	8	9	10
-2.22713513	2.19321924	17.9433895	45.4166428	80.712388(

****************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3.91287964
L/V1^(1/3)	1.79295934
L/B	3.40355356
B/H	2.54521999
B/D	2.2054921
ANGULO MEDIO DE ENTRADA	36.8035226
ASTILLA MUERTA	12.82078
ANGULO DE LA RODA	62.7499775
% LCB/L	-1.31590744
% LCF/L	-3.91494719
KB/V3^(1/3)	.28787751
KM/V3^(1/3)	.589055211
COEF. BLOCK	.488372422
COEF. PRISMATICO	.644937066
COEF. DE FLOTACION	.790126997
COEF. DE SECCION	.757240431

********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.39762457	13.8346757	23.6207381	31.735421:
2	12.7841865	32.8832276	48.2906573	59.4886455
3	25.6450486	52.7910463	70.3717278	80.81359
4	39.284226	68.4964478	84.727469	92.754766
5	45.9381522	73.4635553	88.6157972	96.026851:
6	42.4194048	67.4463099	83.5534857	93.0488515
7	29.6797032	55.3921215	73.4407908	85.244949:
8	0	31.7977506	56.3595387	72.511697:
9	0	0	13.7124324	48.769001(
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-5.17288428E-08	4.90395837	10.993596
1	38.1533462	42.8410112	47.6342851	54.39781
2	67.0009805	71.4092134	75.2868503	80.780146(
3	86.2623877	88.5569101	90.6355243	94.3781576
4	96.0926526	97.1364045	97.9331882	99.429415
5	99.0664348	100	100.239869	100.17148(
6	97.95789	100	100.171462	100.17148(
7	92.1886238	95.6127413	96.4937614	96.532725:
8	82.0780829	86.8382238	88.8066961	89.255203(
9	66.5051906	73.6764475	76.8212246	78.338921:
10	13.8444847	56.1274126	63.4079497	63.783870:

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
13.4477698	7.78446304	5.18964204	2.594821	0

EST 6	7	8	9	10
-2.22733877	2.18884229	17.92634	45.4210941	80.712388(

**********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.82274393
L/V1^(1/3)	4.68255043
L/B	3.3812586
B/H	2.53948141
B/D	2.2112048
ANGULO MEDIO DE ENTRADA	23.8415568
ASTILLA MUERTA	4.36691719
ANGULO DE LA RODA	60.8551881
% LCB/L	-1.64670032
% LCF/L	-4.55885537
KB/V3^(1/3)	.264261979
KM/V3^(1/3)	.492144044
COEF. BLOCK	.518934787
COEF. PRISMATICO	.571405568
COEF. DE FLOTACION	.704830459
COEF. DE SECCION	.908172438

************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.714645076	9.6347623	16.798426	22.303625
2	15.9320938	35.787925	46.6042533	51.828820
3	46.2396637	69.5447295	74.8933188	75.818309
4	79.8934343	90.8088919	91.4981307	91.524120
5	84.0403039	98.0814021	99.843395	99.992706
6	65.4853983	88.4275097	96.8246806	99.350720
7	39.531802	67.3517021	82.3763123	89.559299
8	0	34.7354097	58.2603805	71.270732
9	0	0	11.8416717	41.49825
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.66746184E-07	2.85883487	6.4109536
1	26.2630975	28.8114697	31.3128628	35.025690
2	53.9387099	54.5737638	56.2110976	60.595958
3	75.9240646	75.9303228	77.2524617	81.217763
4	91.5245853	91.524588	92.3902181	94.987108
5	99.9998606	100	100.000002	100.00000
6	99.91966	100.000001	100.000001	100.00000
7	92.4233739	93.2712211	93.6779552	94.66199
8	77.484396	79.8136635	81.1435267	83.985997
9	54.9303214	59.6273268	62.1852634	67.971994
10	7.64690743	32.7122114	41.9806329	46.619990

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
15.4629351	7.71603468	5.14402309	2.57201155	0

EST 6	7	8	9	10
-2.22618088	2.21373546	18.0233072	45.5664002	80.712389

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.8227493
L/V1^(1/3)	4.68255013
L/B	3.3812586
B/H	2.54341249
B/D	2.2112048
ANGULO MEDIO DE ENTRADA	28.1484164
ASTILLA MUERTA	6.13216065
ANGULO DE LA RODA	60.8551881
% LCB/L	1.71207373
% LCF/L	-4.39418158
KB/V3^(1/3)	.269027091
KM/V3^(1/3)	.511015386
COEF. BLOCK	.518934787
COEF. PRISMATICO	.594197149
COEF. DE FLOTACION	.731268693
COEF. DE SECCION	.873337726

*****************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.820170985	11.0394738	19.2465226	25.553572
2	15.0488892	35.3941868	47.9215593	54.926065
3	38.5942271	65.8072444	75.8563132	78.91129
4	66.2043347	88.1465978	92.5063097	93.142043
5	72.8171625	93.9573094	98.9795763	99.884391
6	60.1243553	84.4967271	94.9363308	98.722593
7	38.7601104	66.6613925	82.1698239	89.843179
8	0	36.5925032	60.8315986	73.893102
9	0	0	13.8046368	46.569111
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-6.89168401E-08	3.57778833	7.8207359
1	30.0897712	33.0093483	35.8751224	40.12881
2	58.3171549	59.611218	61.4912259	65.829484
3	79.6083292	79.7084135	80.9406097	84.594052
4	93.2010628	93.2037393	93.9263524	96.093832
5	99.9931398	100	100.00036	100.00013
6	99.7959945	100	100.090134	100.00013
7	93.0356553	94.0346591	94.5003337	95.206322
8	79.933377	82.1039772	83.2873576	85.618699
9	60.0501499	64.2079544	66.2701734	71.237265
10	10.0924763	40.3465907	49.078693	52.062019

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	15.4608304	7.72797901	5.15198602	2.57599299	0
EST	6	7	8	9	10
	-2.22638303	2.20939026	18.0063813	45.5410367	80.712388

**********************CARACTERISTICAS PRINCIPALES*******************

L/V3^(1/3)	3.82274393
L/V1^(1/3)	4.68255043
L/B	3.3812586
B/H	2.54734967
B/D	2.2112048
ANGULO MEDIO DE ENTRADA	32.2831893
ASTILLA MUERTA	7.84076086
ANGULO DE LA RODA	60.8551881
% LCB/L	-1.69151386
% LCF/L	4.18788177
KB/V3^(1/3)	.27304064
KM/V3^(1/3)	.530864924
COEF. BLOCK	.518934787
COEF. PRISMATICO	.616988731
COEF. DE FLOTACION	.757706928
COEF. DE SECCION	.841076605

*************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.930051099	12.4987929	21.7895896	28.929511
2	14.5623286	35.3970736	49.3521459	57.981065
3	33.7288761	62.236257	75.794262	81.364290
4	55.948378	83.2405579	92.1284994	94.455756
5	63.7522676	88.7679143	97.1917923	99.486966
6	55.3799931	80.5370187	92.7747366	97.843299
7	37.6202861	65.4975098	81.571733	89.881277
8	0	37.775911	62.6493202	75.975418
9	0	0	15.4967044	50.94445
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-7.01765772E-08	4.35051103	9.2816848
1	34.0647545	37.3699029	40.6141641	45.429664
2	62.7147988	64.8438836	67.0582388	71.267591
3	83.2057632	83.6329128	84.8216436	88.103625
4	94.8978231	94.9479612	95.5267658	97.245927
5	99.9447242	100	100.005717	100.00265
6	99.5821542	100	100.002659	100.00265
7	93.5312627	94.7574279	95.2910374	95.73414
8	82.0940636	84.2722838	85.4076739	87.197111
9	64.6482165	68.5445675	70.3352205	74.391563
10	12.4793176	47.5742793	55.5685483	57.317499

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
15.4587931	7.73994183	5.15996123	2.57998064	0

EST 6	7	8	9	10
-2.226585392	.2050384	17.9894293	45.515634	80.712388

***************************CARACTERISTICAS   PRINCIPALES**********************

L/V3^(1/3)	3.82274393
L/V1^(1/3)	4.68255043
L/B	3.3812586
B/H	2.55129293
B/D	2.2112048
ANGULO MEDIO DE ENTRADA	36.153226
ASTILLA MUERTA	9.49646123
ANGULO DE LA RODA	60.8551881
% LCB/L	-1.60312742
% LCF/L	3.96497299
KB/V3^(1/3)	.276471637
KM/V3^(1/3)	.552017446
COEF. BLOCK	.518934787
COEF. PRISMATICO	.639780313
COEF. DE FLOTACION	.789145163
COEF. DE SECCION	.811114029

************************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.04264488	13.9906713	24.3891896	32.380412
2	14.3228193	35.6880237	50.9017763	61.024134
3	30.429255	59.2576976	75.3138727	83.27742
4	48.5581793	77.9773558	90.5962268	95.180451
5	56.5788015	83.4311898	94.7060239	98.699312
6	51.1857318	76.6625308	90.2905583	96.731821
7	36.2407876	63.9821771	80.648042	89.696244
8	0	38.3748081	63.8323943	77.622668
9	0	0	16.8785999	54.681576
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.60693301E-07	5.16700245	10.771072
1	38.1279565	41.8272125	45.4583441	50.84809
2	67.107108	70.1926551	72.8176612	76.830605
3	86.6005421	87.6444914	88.8826011	91.699230
4	96.4827271	96.7308851	97.1915086	98.434607
5	99.7987924	100	100.031464	100.01737
6	99.2640831	100	100.01737	100.01737
7	93.9196802	95.4560081	96.0394049	96.266445
8	84.0415968	86.368024	87.5130818	88.764596
9	68.8604363	72.736048	74.4075121	77.511822
10	14.7832306	54.5600801	61.638874	62.508124

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
15.4568229	7.75192317	5.16794875	2.58397438	0

EST 6	7	8	9	10
-2.22678815	2.20067982	17.972451	45.490192	80.712388

**********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,82274393
L/V1^(1/3)	4,68255043
L/B	3,3812586
B/H	2,55524231
B/D	2,2112078
ANGULO MEDIO DE ENTRADA	39,6870627
ASTILLA MUERTA	11,1068062
ANGULO DE LA RODA	60,8551881
% LCB/L	-1,46815798
% LCF/L	-3,75214084
KB/V3^(1/3)	,279451154
KM/V3^(1/3)	,574769312
COEF. BLOCK	,518934787
COEF. PRISMATICO	,662571894
COEF. DE FLOTACION	,810583398
COEF. DE SECCION	,783212798

*************************TABLA DE PUNTOS(%)***********************

ESTACION	LH 1	LH 2	LH 3	LH 4
0	0	0	0	0
1	1,15589535	15,4876293	26,9974256	35,842686
2	14,2415074	36,1750026	52,5327511	64,036169
3	28,0664713	56,8454618	74,7139868	84,804888
4	43,0794738	73,0796938	88,4298323	95,310417
5	50,8306986	78,3529658	91,8201312	97,543634
6	47,4677737	72,9371893	87,719716	95,421634
7	34,7233856	62,2202202	79,4616074	89,313636
8	0	38,499431	64,5009776	78,927781
9	0	0	17,9564705	57,88452
10	0	0	0	0

ESTACION	LH 5	LH 6	LH 7	LH 8
0	0	-4,57192412E-08	6,01412067	12,260520
1	42,204504	46,2991403	50,3183954	56,284264
2	71,4429088	75,5589684	78,652125	82,420922
3	89,7509277	91,6692263	93,072065	95,326001
4	97,8437286	98,5196562	98,9302857	99,655009
5	99,5167363	100	100,100123	100,06345
6	98,8377309	100	100,063454	100,06345
7	94,2136675	96,1509337	96,7467973	96,83764
8	85,8457628	88,452801	89,6240362	90,386037
9	72,830774	76,9056018	78,5525658	80,708620
10	17,0310531	61,5093364	67,4808123	67,805397

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	15,4549193	7,76392306	5,17594872	2,58797438	0
EST	6	7	8	9	10
	-2,22699121	2,19631448	17,9554166	15,4617106	80,712389

***********************CARACTERISTICAS   PRINCIPALES*********************

L/V3^(1/3)	3.73836866
L/V1^(1/3)	4.57919759
L/B	3.3600438
B/H	2.5491243
B/D	2.21668969
ANGULO MEDIO DE ENTRADA	26.7961288
ASTILLA MUERTA	2.83414684
ANGULO DE LA RODA	58.9603987
% LCB/L	-1.89102984
% LCF/L	-4.45794384
KB/V3^(1/3)	.255320494
KM/V3^(1/3)	.476069444
COEF. BLOCK	.550010066
COEF. PRISMATICO	.586198725
COEF. DE FLOTACION	.721990521
COEF. DE SECCION	.938265545

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10.7631441	19.3606528	25.4201903
2	17.5448195	38.863405	50.074664	55.2671147
3	51.5337135	73.7120123	77.7778721	78.316941
4	88.5637738	92.5471081	92.6054925	92.6058861
5	94.0341197	99.7696997	99.9950952	99.9999559
6	75.6720514	94.3038241	98.9772182	99.8751129
7	48.3536119	76.3414753	88.1650847	92.3832942
8	0	43.634111	67.2963054	77.1832173
9	0	0	16.3898736	50.3436073
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2.58515181E-08	3.61050164	7.2279493E
1	29.3325646	31.5147175	33.4850576	36.46674E
2	57.2577839	57.8176611	58.9537977	61.923028E
3	78.3615034	78.3632458	79.2817633	82.0371160
4	92.605887	92.605887	93.2667185	95.249333
5	99.9999999	100	100	100
6	99.9918562	100	100	100
7	93.5551487	93.7720993	93.8513964	95.0178349
8	80.5208234	81.3162976	81.6736387	85.0535047
9	60.5431997	62.632595	63.4484721	70.107009E
10	9.94480959	37.7209919	45.8233484	50.178348E

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*********

EST	1	2	3	4	5
	17.6209056	7.69673791	5.13115861	2.5655793	0
EST	6	7	8	9	10
	-2.2258543	22.22075532	18.050652	45.6073767	80.712389E

************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.73836866
L/V1^(1/3)	4.57919759
L/B	3.3600438
B/H	2.55307032
B/D	2.21668969
ANGULO MEDIO DE ENTRADA	30.5179802
ASTILLA MUERTA	4.31880365
ANGULO DE LA RODA	58.9603987
% LCB/L	-1.92756425
% LCF/L	-4.28883949
KB/V3^(1/3)	.259578279
KM/V3^(1/3)	.492704843
COEF. BLOCK	.550010066
COEF. PRISMATICO	.606237241
COEF. DE FLOTACION	.7452352
COEF. DE SECCION	.907252192

**************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	12.0573268	21.6853632	28.471249:
2	16.7022612	38.5588753	51.4095526	58.209126:
3	43.6553603	70.8356083	79.2721549	81.358853:
4	76.676095	92.3307328	93.9977229	94.114107(
5	84.2091158	98.1248564	99.8491481	99.993097(
6	69.9160762	91.2397058	97.9647373	99.659869:
7	47.2003048	75.5131321	88.0277154	92.739555;
8	0	45.4087876	69.5018036	79.316206!
9	0	0	18.6471416	55.02768??
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4.04944673E-08	4.36274774	8.5155625<
1	32.852648	35.2964418	37.5030751	40.842374;
2	61.283269	62.3557303	63.6133933	66.382069:
3	81.7284745	81.7667978	82.5548185	84.906801:
4	94.1185133	94.1185768	94.6361148	96.188726(
5	99.9998711	100	100.000002	100.00000:
6	99.967175	100	100	100
7	94.1383828	94.4205889	94.5296992	95.48544??
8	82.5270475	83.2617668	83.5796742	86.456346:
9	64.7938793	66.5235336	67.1212008	72.912691;
10	12.3504442	44.2058893	51.7363638	54.854485!

******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
17.6159627	7.70865237	5.13910158	2.56955079	0

EST 6	7	8	9	10
-2.22605598	2.21642102	18.0337684	45.5820765	80.712389

*******************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	3.73836866
L/V1^(1/3)	4.57919759
L/B	3.3600438
B/H	2.55702244
B/D	2.21668969
ANGULO MEDIO DE ENTRADA	34.0637911
ASTILLA MUERTA	5.76382777
ANGULO DE LA RODA	58.9603987
% LCB/L	-1.90573876
% LCF/L	-4.0975854
KB/V3^(1/3)	.26324573
KM/V3^(1/3)	.510054194
COEF. BLOCK	.550010066
COEF. PRISMATICO	.626275758
COEF. DE FLOTACION	.768479879
COEF. DE SECCION	.878223465

************************************TABLA DE PUNTOS(%)******************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	13.386505	24.0721611	31.603574:
2	16.1981076	38.5608974	52.7982093	61.083117
3	38.4031285	67.6792307	79.7534012	83.93956
4	65.6566151	89.407956	94.6899487	95.569994:
5	74.8176418	94.8748128	99.2202613	99.922228:
6	64.7246615	87.9048908	96.5926202	99.280704:
7	45.7324875	74.3157622	87.6242579	92.955182:
8	0	46.5497816	71.1480535	81.136133(
9	0	0	20.6248336	59.159988(
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.78587782E 08	5.16226699	9.8343448
1	36.4663912	39.1787468	41.627932	45.33432
2	65.2979173	67.0144963	68.4554124	70.960762
3	85.062272	85.2600722	85.9350587	87.853785
4	95.6661313	95.6714988	96.042227	97.153511
5	99.9960715	100	100.000172	100.00006:
6	99.9074593	100.000061	100.000061	100.00006:
7	94.6634274	95.0439336	95.1983232	95.942872
8	84.3908626	85.1318008	85.4478728	87.828497:
9	68.7305744	70.2636016	70.7477122	75.656934:
10	14.7222753	50.439336	57.3394323	59.428183:

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
17.6110902	7.72058528	5.14705685	2.57352842	0

EST 6	7	8	9	10
-2.22625786	2.21208	18.0168588	45.5567375	80.712389:

****************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3,73836866
L/V1^(1/3)	4,57919759
L/B	3,3600438
B/H	2,56098068
B/D	2,21668969
ANGULO MEDIO DE ENTRADA	37,37708
ASTILLA MUERTA	7,16909607
ANGULO DE LA RODA	58,9603987
% LCB/L	-1,83855284
% LCF/L	-3,90171396
KB/V3^(1/3)	,266436564
KM/V3^(1/3)	,528333165
COEF, BLOCK	,550010066
COEF, PRISMATICO	,646314275
COEF, DE FLOTACION	,791724559
COEF, DE SECCION	,850994768

*****************************TABLA DE PUNTOS(%)*************************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	0	14,7334984	26,4904128	34,776944:
2	15,9132292	38,7914665	54,2500391	63,909305
3	34,7412046	64,8444258	79,6786173	86,036262
4	57,2168156	85,1916753	94,3314725	96,73389
5	66,8806999	90,7523628	97,9554502	99,6783071
6	60,0862742	84,4666854	94,9206648	98,716866:
7	44,0628674	72,8281709	86,9788988	93,031298
8	0	47,1355234	72,3201216	82,707471:
9	0	0	22,2767006	62,81250
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	0	6,0002593	11,167088:
1	40,1273824	43,1117677	45,806646	49,884887:
2	69,2777566	71,7341214	73,4119473	75,600591:
3	88,2508245	88,800591	89,4076128	90,840791
4	97,1923894	97,2447072	97,4710768	98,132077:
5	99,9711933	100	100,002415	100,00104:
6	99,7947378	100	100,001042	100,00104:
7	95,1342445	95,6545992	95,8696811	96,40001
8	86,1582822	86,9637976	87,3077822	89,197959:
9	72,4636419	73,9275953	74,3651522	78,394876:
10	17,0587665	56,5459921	62,7391027	63,990766:

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%II)***********

EST	1	2	3	4	5
	17,6062865	7,73253668	5,15502447	2,57751226	0
EST	6	7	8	9	10
	-2,226460072	,20773235	17,999923	45,531359	80,712389

***************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.73836866
L/V1^(1/3)	4.57919759
L/B	3.3600438
B/H	2.56494505
B/D	2.21668969
ANGULO MEDIO DE ENTRADA	40.414952
ASTILLA MUERTA	8.53619133
ANGULO DE LA RODA	58.9603987
% LCB/L	-1.74085262
% LCF/L	-3.71976567
KB/V3^(1/3)	.26924186
KM/V3^(1/3)	.54773908
COEF. BLOCK	.550010066
COEF. PRISMATICO	.666352791
COEF. DE FLOTACION	.814969238
COEF. DE SECCION	.82540371

*********************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	16.0779226	28.9033862	37.943139
2	15.7745602	39.1836132	55.744558	66.677683
3	32.0706429	62.4366734	79.3475543	87.73403
4	50.8264107	80.7533627	93.1362616	97.446145
5	60.3346747	86.3629443	96.146004	99.183294
6	55.9508704	81.0372256	93.0200628	97.968477
7	42.2816191	71.1231523	86.1200969	92.972791
8	0	47.2616876	73.0990553	84.084668
9	0	0	23.5998481	66.080028
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-7.04360203E-08	6.86539316	12.493189
1	43.7799848	47.0357304	49.975707	54.42490
2	73.1844243	76.4420766	78.4000915	80.232064
3	91.233134	92.3321575	92.9115267	93.824724
4	98.6075711	98.8142922	98.9161265	99.112943
5	99.8944333	100	100.013433	100.00678
6	99.6149136	100	100.006781	100.00678
7	95.5564917	96.2675295	96.5494567	96.872318
8	87.8738633	88.8025883	89.200168	90.603394
9	76.1025962	77.6051766	78.0435614	81.200007
10	19.3936861	62.6752944	68.0399586	68.662159

*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
17.6015526	7.74450652	5.16300435	2.58150217	0
EST 6	7	8	9	10
-2.22666266	2.20337786	17.9829609	45.5059412	80.712389

**************************CARACTERISTICAS PRINCIPALES**************************

L/V3^(1/3)	3.73836866
L/V1^(1/3)	4.57919759
L/B	3.3600438
B/H	2.56891555
B/D	2.21668969
ANGULO MEDIO DE ENTRADA	43.1475645
ASTILLA MUERTA	9.86846864
ANGULO DE LA RODA	58.9603987
% LCB/L	1.629399
% LCF/L	-3.57128853
KB/V3^(1/3)	.27173444
KM/V3^(1/3)	.568455488
COEF. BLOCK	.550010066
COEF. PRISMATICO	.686391308
COEF. DE FLOTACION	.838213918
COEF. DE SECCION	.801306863

*********************************TABLA DE PUNTOS(%)*********************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	17.3957773	31.2679596	41.04556
2	15.7312136	39.6759051	57.2120231	69.353995(
3	30.0458345	60.4135664	78.9082922	89.114768(
4	45.8862338	76.5433584	91.4300425	97.699351(
5	54.9192978	82.0387744	93.9624072	98.423457:
6	52.2587965	77.686915	90.9586946	97.050314:
7	40.4583329	69.2672628	85.0843146	92.790018:
8	0	47.0328342	73.5662104	85.319739(
9	0	0	24.6323102	69.07455(
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-8.91690043E-08	7.74373246	13.788442(
1	47.3588966	50.8804786	54.0605745	58.873202(
2	76.9632832	81.0565745	83.3238458	84.774544:
3	93.976358	95.7924309	96.4826967	96.757228(
4	99.8363883	100.352192	100.374451	100.08601(
5	99.7375509	100	100.044682	100.02566(
6	99.3598184	100	100.025664	100.02565(
7	95.9385075	96.9002633	97.2316838	97.38286(
8	89.5843718	90.7007898	91.1696778	92.097273(
9	79.7600845	81.4015796	81.8776835	84.168883(
10	21.7935264	69.0026327	73.3763048	73.597696(

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(ZH)***********

EST	1	2	3	4	5
	17.5968877	7.75649493	5.17099662	2.58549831	0
EST	6	7	8	9	10
	-2.22686555	2.19901672	17.9659727	45.4804811	80.712389:

***************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.73836866
L/V1^(1/3)	4.57919759
L/B	3.3600438
B/H	2.57289221
B/D	2.21668969
ANGULO MEDIO DE ENTRADA	45.5557674
ASTILLA MUERTA	11.1707285
ANGULO DE LA RODA	58.9603987
% LCB/L	-1.52297514
% LCF/L	-3.47683849
KB/V3^(1/3)	.273972416
KM/V3^(1/3)	.59066396
COEF. BLOCK	.550010066
COEF. PRISMATICO	.706429825
COEF. DE FLOTACION	.861458597
COEF. DE SECCION	.778577074

*********************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	18.6593299	33.5343289	44.018845
2	15.7452431	40.2119154	58.6916866	71.886312
3	28.4579458	58.6991523	78.4187416	90.22714
4	41.9658815	72.6985705	89.4563661	97.560265
5	50.3866677	77.9307649	91.5592797	97.428629
6	48.9506267	74.4554408	88.7935197	95.984506
7	38.6450381	67.320158	83.900132	92.499411
8	0	46.5558543	73.8068785	86.468284
9	0	0	25.4457518	71.926161
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	8.61860009	15.024943
1	50.7887096	54.5649997	57.9751746	63.13604
2	80.5443604	85.1779998	88.0741135	89.135448
3	96.4519373	99.1084998	99.9564712	99.583781
4	100.837674	101.826	101.835331	101.04166
5	99.4854056	100	100.108804	100.06970
6	99.0268788	100	100.069689	100.06970
7	96.2921178	97.5730539	97.9137828	97.962413
8	91.3415161	92.7191617	93.2527571	93.747831
9	83.5571068	85.4383232	85.9768138	87.425958
10	24.355816	75.7305387	78.9566953	78.996793

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	17.592292	7.76850193	5.1790013	2.58950063	0
EST	6	7	8	9	10
	-2.22706867	2.19464876	17.9489581	45.4549876	80.712389

**********************CARACTERISTICAS PRINCIPALES*******************

L/V3^(1/3)	3.98761381
L/V1^(1/3)	4.88450263
L/B	3.42176099
B/H	2.16955991
B/D	1.91056712
ANGULO MEDIO DE ENTRADA	20.2802439
ASTILLA MUERTA	18.0963569
ANGULO DE LA RODA	68.8206763
% LCB/L	-.947841096
% LCF/L	-4.64205277
KB/V3^(1/3)	.345261225
KM/V3^(1/3)	.594527376
COEF. BLOCK	.400009996
COEF. PRISMATICO	.554
COEF. DE FLOTACION	.68464
COEF. DE SECCION	.722039704

************************************TABLA DE PUNTOS(%)************************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.19650299	6.90677065	11.61698	16.327119:
2	9.68486068	23.3209962	34.0065267	41.9800971
3	22.4417348	44.4792023	58.6691692	67.039098:
4	35.2487068	61.7228374	77.2173761	85.371205.
5	39.5307534	66.2712212	83.2224347	93.035940.
6	33.1998541	56.1729525	73.7489509	86.492952:
7	18.5988268	38.4733011	55.93457	70.880629:
8	0	15.5811385	33.3124504	49.766562.
9	0	0	2.76297378	22.55635
10	0	0	0	0.

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5.72309178E-09	2.04699445	5.4250843
1	21.0371706	25.7471036	30.4571001	35.167374.
2	47.5080728	50.8965243	54.7004208	61.242679:
3	71.3693649	73.1723932	75.8549803	81.960676.
4	89.0327378	90.2988414	91.9261941	95.631041:
5	97.9965691	100	100.667671	100.56346:
6	95.0173529	100	100.563348	100.56345:
7	83.1802703	92.6528242	94.7485792	94.75963
8	64.7483598	77.9584725	82.9507248	83.151986:
9	40.3973814	55.916945	64.4124151	65.740512.
10	4.63132208	26.5282417	38.4566265	42.525213(

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	8.89468968	6.67101723	4.44734484	2.22367242	0
EST	6	7	8	9	10
	-2.20849723	2.59389548	19.5041592	47.7851678	80.712389:

**************************CARACTERISTICAS PRINCIPALES*******************

L/V3^(1/3)	3.98761381
L/V1^(1/3)	4.88450263
L/B	3.42176099
B/H	2.17291836
B/D	1.91056712
ANGULO MEDIO DE ENTRADA	17.8205146
ASTILLA MUERTA	16.582836
ANGULO DE LA RODA	68.8206763
% LCB/L	-.884294862
% LCF/L	-4.67359374
KB/V3^(1/3)	.341876977
KM/V3^(1/3)	.583534559
COEF. BLOCK	.400009996
COEF. PRISMATICO	.541027776
COEF. DE FLOTACION	.66959222
COEF. DE SECCION	.739352052

************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.00619953	6.31600729	10.6257603	14.935447
2	9.91884624	23.4948156	33.6887949	40.916330
3	24.052725	46.3495605	59.6207624	66.74644
4	38.2006394	64.9210696	79.2223084	85.986259
5	42.3538815	69.5502784	85.7766308	94.5140379
6	34.6523329	58.0586398	75.499327	87.7512911
7	18.7603674	38.7051081	56.1215909	70.92059
8	0	15.0477264	32.2685631	48.3892128
9	0	0	2.51750706	20.666931
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.10050286E-07	1.76282963	4.7320989
1	19.2450519	23.5545452	27.8640982	32.17391
2	45.6175041	48.2654544	51.612004	58.071536
3	70.0270524	71.1990908	73.6312142	79.8088499
4	88.6475678	89.4218181	90.9149892	94.769728
5	98.5510064	100	100.431579	100.33804
6	95.6295667	100	100.338046	100.33804
7	82.9882045	92.1691159	94.2003562	94.211565
8	63.2289823	76.5073479	81.7233507	81.9585988
9	37.596204	53.0146958	62.0069707	63.579149
10	3.67686566	21.6911596	33.178934	39.073217

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	8.90845856	6.68134388	4.45422928	2.22711461	0
EST	6	7	8	9	10
	-2.20867197	2.59013882	19.4895258	47.7635395	80.712309

**********************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	3.98761381
L/V1^(1/3)	4.88450263
L/B	3.42176099
B/H	2.17628201
B/D	1.91056712
ANGULO MEDIO DE ENTRADA	15.3891
ASTILLA MUERTA	15.0618971
ANGULO DE LA RODA	68.8206763
% LCB/L	-.778249555
% LCF/L	-4.67484195
KB/V3^(1/3)	.33826484
KM/V3^(1/3)	.572837446
COEF. BLOCK	.400009996
COEF. PRISMATICO	.528055551
COEF. DE FLOTACION	.65454444
COEF. DE SECCION	.757514992

************************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.82363478	5.74822514	9.67276618	13.5972479
2	10.242173	23.7875084	33.4470292	39.885209
3	26.0397463	48.4808969	60.571942	66.336125:
4	41.7190698	68.3914158	81.1416133	86.411737(
5	45.5745151	73.0793015	88.3474746	95.890231(
6	36.1651592	59.9802571	77.2391638	88.966452
7	18.8280251	38.7757247	56.1253263	70.796951(
8	0	14.3763124	30.9822485	46.738569!
9	0	0	2.24488428	18.61154
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-3.26693156E-08	1.49511605	4.06544149
1	17.5216553	21.4459626	25.3703236	29.2949194
2	43.762659	45.7351552	48.6790392	55.036472:
3	68.6264528	69.3013664	71.5574257	77.775144
4	88.1671964	88.5783851	90.0017639	93.9959815
5	99.0223443	100	100.255075	100.18402(
6	96.2009989	100	100.184028	100.18402(
7	82.6891397	91.6644138	93.7076592	93.72116
8	61.4904811	74.9932415	80.5199782	80.795438:
9	34.5671641	49.9864829	59.5771366	61.406848
10	2.71596513	16.6441382	27.1457495	35.555394!

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
8.92224874	6.69168652	4.46112437	2.23056215	0

EST 6	7	8	9	10
-2.20884697	2.58637636	19.4748696	47.7415771	80.712389:

********************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3,88198263
L/V1^(1/3)	4,75511302
L/B	3,39595315
B/H	2,17888964
B/D	1,91626913
ANGULO MEDIO DE ENTRADA	20,4999263
ASTILLA MUERTA	14,0199013
ANGULO DE LA RODA	66,9804103
% LCB/L	-1,04815703
% LCF/L	-4,64060745
KB/V3^(1/3)	,330511898
KM/V3^(1/3)	,559768743
COEF, BLOCK	,428880391
COEF, PRISMATICO	,554108995
COEF, DE FLOTACION	,685114434
COEF, DE SECCION	,773581220

*****************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,33790972	7,60943013	12,6362978	17,384040
2	11,3724557	26,3911426	37,1510841	44,362604
3	27,2917873	50,9205491	63,7791913	69,98278
4	43,5363125	70,70376	83,3218104	88,361302
5	48,0395115	75,6275527	90,0827934	96,748474
6	39,4721299	64,030478	80,7567681	91,308099
7	22,2287839	44,4337195	62,3395202	76,167723
8	0	18,5753837	38,2249598	54,750708
9	0	0	3,29841611	25,846443
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-3,33051627E-08	2,19614779	5,7858434
1	21,8035229	25,8175427	29,9637611	34,85701
2	48,7359089	50,9810512	54,1090897	60,657806
3	72,4843159	73,2357884	75,4214701	81,3557424
4	89,9703031	90,3270171	91,5818843	95,1183291
5	99,2901675	100	100,16665	100,113078
6	97,2421541	100	100,113078	100,113078
7	86,1745006	92,667747	94,3153279	94,345638
8	68,0542481	78,0032411	82,3607048	82,810760
9	43,4197712	56,0064821	63,3277305	65,508443
10	4,92865961	26,67747	38,0032117	42,438686

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************

EST	1	2	3	4	5
	9,49217517	6,64917358	4,4327824	2,21639122	0
EST	6	7	8	9	10
	-2,20812753	2,60184189	19,5351131	47,8318524	80,712389

**********************CARACTERISTICAS. PRINCIPALES*********************

L/V3^(1/3)	3.88198263
L/V1^(1/3)	4.75511302
L/B	3.39595315
B/H	2.18226254
B/D	1.91626913
ANGULO MEDIO DE ENTRADA	22.7644041
ASTILLA MUERTA	15.1190114
ANGULO DE LA RODA	66.9804103
% LCB/L	-1.09624136
% LCF/L	-4.58793127
KB/V3^(1/3)	.332354769
KM/V3^(1/3)	.568444727
COEF. BLOCK	.428880391
COEF. PRISMATICO	.566243903
COEF. DE FLOTACION	.698842928
COEF. DE SECCION	.757412818

*************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.52363722	8.21852172	13.649097	18.778121
2	11.1747731	26.3437316	37.6362177	45.560432
3	25.7281242	49.3440651	63.2423435	70.603348
4	40.6130951	67.9818118	81.9732331	88.238233
5	45.3534682	72.8443132	88.1822388	95.805412
6	38.184866	62.4787423	79.4395887	90.446055
7	22.1753294	44.3860563	62.3633911	76.309019
8	0	19.2421763	39.4044548	56.176532
9	0	0	3.64157517	27.87732
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-3.33051627E-08	2.48372455	6.4778831
1	23.5525136	27.888869	32.3680237	37.654183
2	50.6489234	53.4666428	56.9341526	63.574051
3	73.9355542	75.0999821	77.4172582	83.2771871
4	90.5419204	91.1555476	92.4324242	95.80329
5	98.9947088	100	100.264728	100.19205
6	96.8685956	100	100.192057	100.19205
7	86.4572363	93.0912978	94.6937527	94.71682
8	69.4945598	79.2738935	83.3827203	83.766346
9	46.1021037	58.5477871	65.4206228	67.340636
10	5.86983975	30.9129783	42.2551261	45.439688

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)***********

EST 1	2	3	4	5
9.49791059	6.65946643	4.4396443	2.21982216	0

EST 6	7	8	9	10
-2.20830175	2.59809753	19.5205276	47.8099959	80.712389

****************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3.78392511
L/V1^(1/3)	1.63500053
L/B	3.37154044
B/H	2.18788152
B/D	1.92171877
ANGULO MEDIO DE ENTRADA	21.0643927
ASTILLA MUERTA	10.4583472
ANGULO DE LA RODA	65.1401443
% LCB/L	-1.20425873
% LCF/L	-4.63227942
KB/V3^(1/3)	.31658188
KM/V3^(1/3)	.529222166
COEF. BLOCK	.45834262
COEF. PRISMATICO	.556636224
COEF. DE FLOTACION	.68769802
COEF. DE SECCION	.823415006

*********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.17724893	8.22771024	13.7085228	18.575256
2	13.1684856	29.4773227	40.152673	46.574543
3	33.1115417	57.5119831	68.20162	72.18389
4	54.1048238	79.5519759	87.8463888	90.020511
5	58.5866282	85.0362503	95.516052	98.980224
6	46.9194002	72.3815634	87.3224389	95.209250
7	26.684182	51.2413008	69.0893602	81.243952
8	0	22.3697104	44.016862	60.173046
9	0	0	4.04203193	30.016478
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.25909845E-07	2.3848533	6.09443
1	22.7685358	26.2024958	29.7715284	34.44993
2	49.9791167	51.4429949	54.0025943	60.064674
3	73.3507848	73.5822462	75.4435489	80.893283
4	90.4340216	90.4809983	91.5873932	94.890387
5	99.8563378	100	100.020173	100.01061
6	98.7644735	100	100.010616	100.01061
7	88.7743718	92.7486689	94.1463672	94.305441
8	71.3765376	78.2460068	81.828453	82.895093
9	46.9393888	56.4920137	62.2426914	65.779570
10	5.40806849	27.4866893	38.2343982	42.958873

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
11.0083295	6.62861688	4.41907793	2.20953895	0

EST 6	7	8	9	10
-2.20777968	2.60932009	19.5642431	47.875504	80.712388

*************************CARACTERISTICAS PRINCIPALES*****************

```
L/V3^(1/3)                          3,78392511
L/V1^(1/3)                          4,63500053
L/B                                 3,37154044
B/H                                 2,19126833
B/D                                 1,92171877
ANGULO MEDIO DE ENTRADA             25,7192174
ASTILLA MUERTA                      12,742499
ANGULO DE LA RODA                   65,1401443
% LCB/L                              1,27631511
% LCF/L                              1,1966668
KB/V3^(1/3)                          ,321362145
KM/V3^(1/3)                          ,547536139
COEF, BLOCK                          ,45834262
COEF, PRISMATICO                     ,580925665
COEF, DE FLOTACION                   ,715873772
COEF, DE SECCION                     ,788986694
```

***************************TABLA DE PUNTOS(%)**********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,53785297	9,59024089	15,9786495	21,651291:
2	12,6344815	29,3087901	41,2627252	49,280784
3	28,8172816	53,7950955	67,4210588	74,013994(
4	45,872432	73,5362833	85,8510982	90,527073!
5	51,258961	78,7561017	92,0663078	97,650679:
6	43,4277525	68,5997049	84,4689453	93,595753:
7	26,3108453	50,7977203	68,8495398	81,369438(
8	0	23,7747901	46,4040462	62,956377
9	0	0	4,8353756	34,52870
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,16655409E-07	3,05249178	7,62720877
1	26,5389583	30,5415668	34,7016161	40,154745:
2	54,1479613	56,6498802	59,7635659	65,941903:
3	76,6821168	77,4874101	79,4601434	84,708363:
4	91,9297906	92,2166267	93,248631	96,173806:
5	99,5454264	100	100,092334	100,05791'
6	98,1716853	100	100,057914	100,05791'
7	89,2925413	93,5959528	94,8732743	94,94713
8	74,1497215	80,7878582	83,9616609	84,725586
9	52,4423195	61,5757163	66,567262	69,393257(
10	7,52337395	35,9595272	46,4294521	48,9501533

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	11,0081921	6,6388779	4,42591861	2,21295929	0

EST	6	7	8	9	10
	-2,2079533	42,60558724	19,5497025	47,8537148	80,712389(

******************************CARACTERISTICAS   PRINCIPALES********************

L/V3^(1/3)	3.78392511
L/V1^(1/3)	4.63500053
L/B	3.37154044
B/H	2.19466039
B/D	1.92171877
ANGULO MEDIO DE ENTRADA	30.2466253
ASTILLA MUERTA	14.9557442
ANGULO DE LA RODA	65.1401443
% LCB/L	-1.23661509
% LCF/L	-4.29814563
KB/V3^(1/3)	.32539552
KM/V3^(1/3)	.566912632
COEF. BLOCK	.45834262
COEF. PRISMATICO	.605215106
COEF. DE FLOTACION	.744049523
COEF. DE SECCION	.757321844

**********************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.91672799	11.0218682	18.3639131	24.8833447
2	12.3840336	29.4931932	42.5808049	52.068569
3	25.9135281	50.8326004	66.4597497	75.390810
4	39.967658	68.0326009	83.1437133	90.341989
5	45.54141	73.0441764	88.3228308	95.877614
6	40.2636756	64.9688317	81.5417926	91.808340
7	25.6373941	49.887071	68.1401688	81.119443
8	0	24.647567	47.9989631	65.002011
9	0	0	5.51103899	38.324483
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	6.89439967E-08	3.77518289	9.2315722
1	30.5006238	35.1007266	39.8817727	46.14892
2	58.4133874	62.1208719	65.9120699	72.137699
3	79.8336726	81.5906539	83.8382329	88.763161
4	93.1993525	94.0402906	95.0991178	97.590576
5	99.018246	100	100.256501	100.18521
6	97.4533707	100	100.185208	100.18521
7	89.5926185	94.3882144	95.6047718	95.638716
8	76.4351246	83.1646429	86.0528555	86.545728
9	57.2434775	66.3292858	70.8246056	72.906245
10	9.53748642	43.8821429	53.5399921	54.720268

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
11.0081261	6.6491548	4.43276988	2.21638493	0

EST 6	7	8	9	10
-2.20812726	2.60184868	19.5351396	47.8318922	80.712389

*************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3,69262913
L/V1^(1/3)	4,52317038
L/B	3,34839931
B/H	2,19655957
B/D	1,92693556
ANGULO MEDIO DE ENTRADA	22,2191121
ASTILLA MUERTA	7,44247812
ANGULO DE LA RODA	63,2998783
% LCB/L	-1,40173963
% LCF/L	-4,60952347
KB/V3^(1/3)	,303659336
KM/V3^(1/3)	,503126314
COEF. BLOCK	,488368368
COEF. PRISMATICO	,561921478
COEF. DE FLOTACION	,693828915
COEF. DE SECCION	,869104291

**********************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,71096884	8,8925959	15,0398581	20,139542
2	15,0300538	32,5703407	43,1296122	48,876609
3	39,7185408	63,722141	71,757447	73,931394
4	66,7229337	86,6524106	90,3195245	90,807854
5	71,0779088	93,0935329	98,7307115	99,840550
6	55,6240309	80,7667063	92,8641359	97,903376
7	32,214459	58,9365729	75,9496541	85,850100
8	0	27,3070356	50,8891266	66,005307
9	0	0	5,13966387	35,48002
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-9,04016488E-08	2,6745249	6,4853800
1	24,1751962	27,1250871	30,1442938	34,406573
2	51,567369	52,5501046	54,619439	59,872717
3	74,3612457	74,4125785	75,9965141	80,729753
4	90,8484372	90,8500348	91,843477	94,823619
5	99,9892248	100	100,000656	100,00025
6	99,5980756	100	100,000255	100,00025
7	90,8869525	92,9384253	93,8859258	94,42825
8	74,6775975	78,8152757	81,2093002	83,284239
9	51,1350193	57,6305514	61,3656256	66,568224
10	6,23929835	29,3842523	39,4869519	44,280204

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	13,0140425	6,60923169	4,40615445	2,20307724	0

EST	6	7	8	9	10
	-2,2074517	12,61637207	19,5917132	47,9166681	80,712389

***************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.69262913
L/V1^(1/3)	4.52317038
L/B	3.34839931
B/H	2.19995981
B/D	1.92693556
ANGULO MEDIO DE ENTRADA	26.2069629
ASTILLA MUERTA	9.33731274
ANGULO DE LA RODA	63.2998783
% LCB/L	1.47480812
% LCF/L	-4.48414301
KB/V3^(1/3)	.308114723
KM/V3^(1/3)	.518485258
COEF. BLOCK	.488368368
COEF. PRISMATICO	.582674034
COEF. DE FLOTACION	.71790188
COEF. DE SECCION	.838150216

********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.9490658	10.1196512	17.1134608	22.915457
2	14.3877199	32.3226108	44.1915022	51.425433
3	34.5076254	60.2829234	71.7942997	76.18211
4	56.7645741	82.235511	90.0635636	91.977129
5	62.624883	88.0020729	96.8726394	99.399044
6	51.8006588	77.268331	90.6915399	96.925053
7	31.8094866	58.5254647	75.8108631	86.065437
8	0	28.814564	53.2325332	68.525249
9	0	0	6.03007962	39.930804
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3.03963732E-08	3.30627418	7.8513921
1	27.5069158	30.8631033	34.2981877	39.14759
2	55.3234184	57.035724	59.4362006	64.715401
3	77.5046751	77.776793	79.3359185	83.850333
4	92.3112353	92.3452413	93.2235403	95.847911
5	99.9310953	100	100.007649	100.003655
6	99.3227418	100	100.003655	100.003655
7	91.4087845	93.6546389	94.5936189	94.937452
8	77.0490527	80.9639166	83.1141902	84.805047
9	55.9802698	61.9278332	65.0761951	69.606439
10	8.24501772	36.5463886	46.3212477	49.341629

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	13.0094377	6.61946267	4.41297513	2.20648755	0
EST	6	7	8	9	10
	-2.20762488	2.61265019	19.5772152	47.8949428	80.712389

**********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,69262913
L/V1^(1/3)	4,52317038
L/B	3,34839931
B/H	2,20336533
B/D	1,92693556
ANGULO MEDIO DE ENTRADA	30,09132
ASTILLA MUERTA	11,1707116
ANGULO DE LA RODA	63,2998783
% LCB/L	-1,46877154
% LCF/L	-4,31428345
KB/V3^(1/3)	,31191647
KM/V3^(1/3)	,53442129
COEF, BLOCK	,488368368
COEF, PRISMATICO	,603426591
COEF, DE FLOTACION	,741974846
COEF, DE SECCION	,809325236

************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,19766032	11,3988165	19,2747981	25,8086650
2	14,026562	32,3764121	45,3835737	53,990696
3	30,9353493	57,2840985	71,332996	77,947582
4	49,4112129	77,3047752	88,7388812	92,674496
5	55,8817991	82,8536334	94,402109	98,588565
6	48,3365423	73,8485372	88,3727544	95,767669
7	31,1289135	57,7246886	75,3158533	86,030658
8	0	29,8482173	54,9416727	70,519137
9	0	0	6,82445118	43,81371
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-5,21305676E-09	3,98293049	9,2713703
1	30,9793268	34,7589189	38,6273993	44,088671
2	59,1280808	61,7107026	64,5275022	69,766880
3	80,5355845	81,283027	82,8899767	87,111350
4	93,7206346	93,9035675	94,6831958	96,927438
5	99,7747323	100	100,036522	100,0205
6	98,9552518	100	100,0205	100,0205
7	91,7997694	94,3314026	95,2523284	95,44021
8	79,1067498	82,9942078	84,9990095	86,279653
9	60,3241965	65,9884155	68,7737175	72,538805
10	10,1976501	43,3140259	52,4581951	54,217676

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)***********

EST	1	2	3	4	5
	13,0049044	6,62970956	4,41980636	2,2099032	0
EST	6	7	8	9	10
	-2,20779824	2,60892257	19,5626948	47,8731838	80,712389

***************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3.69262913
L/V1^(1/3)	4.52317038
L/B	3.34839931
B/H	2.20677611
B/D	1.92693556
ANGULO MEDIO DE ENTRADA	33.7947055
ASTILLA MUERTA	12.9505134
ANGULO DE LA RODA	63.2998783
% LCB/L	-1.39635147
% LCF/L	-4.11812309
KB/V3^(1/3)	.315208163
KM/V3^(1/3)	.551178643
COEF. BLOCK	.488368368
COEF. PRISMATICO	.624179147
COEF. DE FLOTACION	.766047811
COEF. DE SECCION	.782416987

***********************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.45403184	12.7159002	21.4998609	28.787016
2	13.8534575	32.6585659	46.7005223	56.589998
3	28.3638889	54.8017571	70.710742	79.36506
4	43.8800015	72.6050171	86.7761191	92.857792
5	50.4297059	77.9718754	91.5848149	97.439958
6	45.1976254	70.5462284	85.9633127	94.457626
7	30.2508411	56.6246974	74.5280943	85.777288
8	0	30.4585098	56.0999319	72.071589
9	0	0	7.49974544	47.139228
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	8.50468474E-09	4.69825842	10.728592
1	34.5538337	38.7692299	43.0838055	49.17487
2	62.969312	66.5230759	69.8278119	74.975676
3	83.414533	84.8923069	86.6497565	90.487381
4	94.9797658	95.507692	96.2406581	98.066383
5	99.4885148	100	100.107934	100.06907
6	98.4955669	100	100.069075	100.06907
7	92.0727069	94.9795425	95.8717369	95.961432
8	80.9136871	84.9386273	86.8539373	87.746146
9	64.254969	69.8772545	72.4597862	75.423217
10	12.0642503	49.7954242	58.0928238	58.992646

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
13.0004126	6.63997227	4.42664817	2.2133241	0
EST 6	7	8	9	10
-2.20797189	2.60518914	19.5481519	47.8513911	80.712388

********************CARACTERISTICAS   PRINCIPALES********************

L/V3^(1/3)	3,69262913
L/V1^(1/3)	4,52317038
L/B	3,34839931
B/H	2,21019217
B/D	1,92693556
ANGULO MEDIO DE ENTRADA	37,2527042
ASTILLA MUERTA	14,6857431
ANGULO DE LA RODA	63,2998783
% LCB/L	-1,27244845
% LCF/L	-3,9149989
KB/V3^(1/3)	,318096448
KM/V3^(1/3)	,568972181
COEF. BLOCK	,488360368
COEF. PRISMATICO	,644931704
COEF. DE FLOTACION	,790120776
COEF. DE SECCION	,757240441

************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,71476419	14,0531711	23,758664	31,810356:
2	13,8100269	33,1090201	48,1163612	59,212244!
3	26,4396205	52,7719214	70,0826033	80,549692:
4	39,5901376	68,3543243	84,516336	92,617057(
5	45,938159	73,4635624	88,6158022	96,026853(
6	42,3492579	67,3836456	83,508441	93,023228!
7	29,2415759	55,3050875	73,5058706	85,336073(
8	0	30,7096577	56,7941687	73,259224:
9	0	0	8,04848491	49,95591
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-6,46986016E-08	5,44415462	12,202341:
1	38,1822389	42,8399567	47,6073065	54,337612:
2	66,8170232	71,4079481	75,2567478	80,277270!
3	86,1344079	88,5559611	90,5763648	93,946207:
4	96,0416915	97,1359827	97,9078683	99,269314:
5	99,0664356	100	100,239869	100,17148(
6	97,9481159	100	100,171463	100,17149(
7	92,2416804	95,6125784	96,4906888	96,53260
8	82,5263899	86,837735	88,687912	89,254834(
9	67,8687165	73,6754701	76,1611445	78,338184:
10	13,8438469	56,1257835	63,4066559	63,782649:

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	12,9960528	6,65025083	4,43350056	2,2167503	0
EST	6	7	8	9	10
	-2,20814586	2,60144994	19,5335865	47,8295648	80,712388(

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.60738625
L/V1^(1/3)	4.11875479
L/B	3.32641864
B/H	2.20494627
B/D	1.93193748
ANGULO MEDIO DE ENTRADA	24.1896408
ASTILLA MUERTA	5.02687834
ANGULO DE LA RODA	61.4596124
% LCB/L	1.63470551
% LCF/L	-4.5588617
KB/V3^(1/3)	.29208565
KM/V3^(1/3)	.48187995
COEF. BLOCK	.51893204
COEF. PRISMATICO	.571404502
COEF. DE FLOTACION	.704829223
COEF. DE SECCION	.908169323

*****************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.824018319	9.70572204	16.8402278	22.3245791
2	16.837507	35.6108815	46.2136416	51.560686
3	46.2626937	68.9596001	74.6733965	75.77592
4	79.2316588	90.6533396	91.4864507	91.5236861
5	84.0392151	98.0811201	99.8433574	99.992703
6	65.4566584	88.4198136	96.8231963	99.3505723
7	39.2160166	67.5097354	82.5926797	89.6924417
8	0	33.9839417	59.0620703	72.096406
9	0	0	6.89402094	42.790487
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2.26526708E-07	3.15336078	7.0710567
1	26.2704568	28.8112784	31.3067814	35.011910
2	53.8384403	54.573534	56.1774132	60.342821
3	75.9200299	75.9301505	77.1972007	80.996196
4	91.5245055	91.5245114	92.3694964	94.904451
5	99.9998606	100	100.000002	100.00000
6	99.9196651	100.000001	100.000001	100.00000
7	92.4694585	93.2711843	93.6524217	94.661973
8	77.860231	79.8135529	80.8851962	83.985919
9	56.0649881	59.6271058	61.2956604	67.971838
10	7.6467397	32.7118431	41.9803647	46.619730

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)***********

EST 1	2	3	4	5
15.2740251	6.59091426	4.39394284	2.19697139	0

EST 6	7	8	9	10
-2.20714178	2.62303564	19.6176699	47.9555644	80.712388

************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3,60738625
L/V1^(1/3)	4,41875479
L/B	3,32641864
B/H	2,2083595
B/D	1,93193748
ANGULO MEDIO DE ENTRADA	28,5395947
ASTILLA MUERTA	7,05430756
ANGULO DE LA RODA	61,4596124
% LCB/L	-1,69783153
% LCF/L	-4,39419465
KB/V3^(1/3)	,297334812
KM/V3^(1/3)	,49887734
COEF, BLOCK	,51893204
COEF, PRISMATICO	,59419557
COEF, DE FLOTACION	,731266862
COEF, DE SECCION	,873335423

************************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,949545908	11,1233917	19,2959336	25,5783077
2	16,0049791	35,318625	47,5446908	54,610820;
3	39,0487211	65,3110953	75,4955823	78,7772275
4	65,9477051	87,8174635	92,4122342	93,127976'
5	72,8164258	93,9569566	98,9791789	99,884375;
6	60,090239	84,4835653	94,9320711	98,7215305
7	38,4257689	66,7979193	82,3794155	89,978953
8	0	35,8383531	61,6810568	74,7325068
9	0	0	8,17067528	48,12726
10	0	0	0,	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,95043756E-07	3,9531712	8,64081095
1	30,0984147	33,0090514	35,8678491	40,1124245
2	58,1752448	59,6108616	61,4637917	65,5158174
3	79,581505	79,7081462	80,8758186	84,3193355
4	93,2000001	93,2036205	93,9006824	95,9913255
5	99,9931385	100	100,00036	100,000134
6	99,7958271	100	100,000134	100,000134
7	93,0849765	94,0346078	94,4757428	95,20628
8	80,3021475	82,1038232	83,048295	85,6185884
9	61,2105313	64,2076463	65,4501963	71,2370433
10	10,0922497	40,3460772	49,0782833	52,0616495

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	15,2657524	6,60111692	4,40074461	2,20037227	0
EST	6	7	8	9	10
	-2,20731442	2,61932407	19,6032122	47,9338993	80,7123889

************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,60738625
L/V1^(1/3)	4,41875479
L/B	3,32641864
B/H	2,21177802
B/D	1,93193748
ANGULO MEDIO DE ENTRADA	32,7073406
ASTILLA MUERTA	9,01258593
ANGULO DE LA RODA	61,4596124
% LCB/L	-1,67482949
% LCF/L	-4,18790494
KB/V3^(1/3)	,301759166
KM/V3^(1/3)	,516490503
COEF, BLOCK	,51893204
COEF, PRISMATICO	,616986638
COEF, DE FLOTACION	,7577045
COEF, DE SECCION	,841075005

***************************TABLA DE PUNTOS(%)********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,08111303	12,596763	21,8472545	28,9583527
2	15,5560439	35,3986211	48,9952163	57,6346891
3	34,3739746	61,8834793	75,3863097	81,14627
4	55,9742288	82,9077333	91,9483679	94,4022113
5	63,7518342	88,7676251	97,1916743	99,486935
6	55,3419577	80,5185393	92,7170028	97,8407147
7	37,2670929	65,6077713	81,7719619	90,0198785
8	0	36,9975586	63,5175004	76,8289564
9	0	0	9,28737369	52,7142610
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,55512891E-07	4,81290369	10,2675860
1	34,0747954	37,3694967	40,6056037	45,4104414
2	62,5375398	64,8433961	67,037023	70,8910452
3	83,1410577	83,632547	84,753974	87,7737220
4	94,8893301	94,9477987	95,496866	97,122815
5	99,9447195	100	100,005718	100,00266
6	99,5815863	100	100,00266	100,00266
7	93,5847942	94,757363	95,2694623	95,7340960
8	82,4664968	84,272089	85,1843811	87,1969680
9	65,8358314	68,544178	69,5695485	74,3912770
10	12,4790028	47,57363	55,5680385	57,317023

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
15,2575546	6,61133537	4,40755691	2,20377842	0

EST 6	7	8	9	10
-2,20748734	2,61560677	19,588732	47,9122007	80,7123886

**************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3,60738625
L/V1^(1/3)	4,41875479
L/B	3,32641864
B/H	2,21520183
B/D	1,93193748
ANGULO MEDIO DE ENTRADA	36,6001843
ASTILLA MUERTA	10,9053687
ANGULO DE LA RODA	61,1596124
% LCB/I	1,5838278
% LCF/L	3,96479838
KB/V3^(1/3)	,305544972
KM/V3^(1/3)	,535035432
COEF. BLOCK	,51893204
COEF. PRISMATICO	,639777706
COEF. DE FLOTACION	,784142139
COEF. DE SECCION	,81111304

**********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,21606287	14,1036501	24,4556753	32,4136463
2	15,3502021	35,7505343	50,5619556	60,6558765
3	31,1624103	59,0282676	74,9080023	83,0024793
4	48,7383581	77,7036872	90,3718542	95,081772
5	56,5785701	83,4309999	94,7059251	98,6992768
6	51,1448976	76,6391405	90,2789522	96,7271695
7	35,8704789	64,0634318	80,8361688	89,8368774
8	0	37,5518686	64,6941353	78,4915725
9	0	0	10,1996932	56,60609
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,06792993E-07	5,72142235	11,9260777
1	38,1394999	41,0267005	45,4484203	50,825871
2	66,8999344	70,1920406	72,8016056	76,389799
3	86,4966396	87,6440304	88,8170295	91,3129597
4	96,4584713	96,7306802	97,1599584	98,2904509
5	99,7987847	100	100,031466	100,017371
6	99,2628377	100	100,017371	100,017371
7	93,9778582	95,4559288	96,0236819	96,266308
8	84,4273039	86,3677862	87,3087482	88,7644187
9	70,0899662	72,7355723	73,6803132	77,5114666
10	14,7828664	54,5592872	61,6382362	62,5075305

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	15,2494307	6,62156964	4,41437976	2,20718988	0

EST	6	7	8	9	10
	-2,207660532	,61188368	19,5742294	47,8904685	80,7123887

****************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	3,60738625
L/V1^(1/3)	4,41875479
L/B	3,32641864
B/H	2,21863093
B/D	1,93193748
ANGULO MEDIO DE ENTRADA	40,147699
ASTILLA MUERTA	12,7407956
ANGULO DE LA RODA	61,4596124
% LCB/L	-1,44609896
% LCF/L	-3,75216798
KB/V3^(1/3)	,308835602
KM/V3^(1/3)	,55479315
COEF, BLOCK	,51893204
COEF, PRISMATICO	,662568774
COEF, DE FLOTACION	,810579778
COEF, DE SECCION	,78321234

**********************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,35441955	15,6163677	27,0731796	35,880543:
2	15,3017958	36,2881063	52,2149384	63,651943:
3	28,8420183	56,7121258	74,3302045	84,49580
4	43,3416129	72,8723467	88,1937451	95,176253:
5	50,8306008	78,3528734	91,8200743	97,543609:
6	47,4250664	72,9094842	87,7041436	95,414516
7	34,3389925	62,271543	79,6351519	89,454856:
8	0	37,6166352	65,335242	79,812176(
9	0	0	10,8994571	59,910693:
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,15185244E-07	6,66408692	13,584680:
1	42,2176383	46,2985314	50,3070556	56,25889
2	71,2103447	75,5582377	78,6398731	81,915686:
3	89,613166	91,6686783	93,0105245	94,883245:
4	97,8003264	98,5194126	98,8999678	99,489769:
5	99,5167296	100	100,100125	100,06345(
6	98,835534	100	100,063456	100,06345(
7	94,2764643	96,1508377	96,7380139	96,837576:
8	86,252612	88,452513	89,4505322	90,385817:
9	74,1234832	76,9050259	77,8634205	80,708179(
10	17,0305902	61,5083765	67,4800481	67,804662:

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)************

EST 1	2	3	4	5
15,2413807	6,63181975	4,4212132	2,21060658	0

EST 6	7	8	9	10
-2,20783395	2,60815487	19,5597044	47,8687026	80,712388(

****************************CARACTERISTICAS PRINCIPALES*************************

$L/V3^{(1/3)}$	3,52758938
$L/V1^{(1/3)}$	4,32100889
L/B	3,30550141
B/H	2,21306144
B/D	1,93674037
ANGULO MEDIO DE ENTRADA	27,1752869
ASTILLA MUERTA	3,26405895
ANGULO DE LA RODA	59,6193464
% LCB/L	-1,89309041
% LCF/L	-4,45794414
$KB/V3^{(1/3)}$	,282235193
$KM/V3^{(1/3)}$	,466060155
COEF, BLOCK	,550010002
COEF, PRISMATICO	,586198688
COEF, DE FLOTACION	,721990478
COEF, DE SECCION	,938265494

**********************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10,7482353	19,3527818	25,416569(
2	18,4363329	38,5408019	49,5818965	54,955882
3	51,2347302	73,0658563	77,5958034	78,291139
4	87,8419872	92,5104885	92,6049495	92,605881
5	94,0341029	99,7696983	99,9950952	99,999955(
6	75,6974369	94,3235816	98,98369	99,876337.
7	48,2276226	76,681841	88,4180486	92,487449:
8	0	43,4057474	68,5198816	77,958238!
9	0	0	10,0403874	52,44015
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,05039178E-07	3,97483239	7,9573102(
1	29,3314003	31,5147108	33,4858348	36,468527(
2	57,1486745	57,8176529	58,9192402	61,662462:
3	78,3598635	78,3632397	79,2238174	81,805056(
4	92,6058843	92,6058843	93,2449769	95,162254:
5	100	100	100	100
6	99,9919715	100	100	100
7	93,5789818	93,772098	93,8401618	95,01783
8	80,7539266	81,3162941	81,538228	85,053502:
9	61,4516606	62,632588	62,9493343	70,107004:
10	9,94483537	37,7209799	45,8233011	50,178340.

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	17,6507564	6,57357412	4,38238275	2,19119138	0
EST	6	7	8	9	10
	-2,20684827	2,62934371	19,642242	47,9923859	80,712389.

****************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.52758838
L/V1^(1/3)	4.32100889
L/B	3.30550141
B/H	2.21648724
B/D	1.93674037
ANGULO MEDIO DE ENTRADA	30.9297979
ASTILLA MUERTA	4.97196086
ANGULO DE LA RODA	59.6193464
% LCB/L	-1.92937131
% LCF/L	4.28883994
KB/V3^(1/3)	.286919591
KM/V3^(1/3)	.481051797
COEF. BLOCK	.550010002
COEF. PRISMATICO	.606237198
COEF. DE FLOTACION	.74523515
COEF. DE SECCION	.907252151

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	12.0447797	21.6784803	28.468081
2	17.6526044	38.3354471	50.9115452	57.838422
3	43.8812395	70.1867085	78.9179483	81.25642
4	76.0950546	92.078968	93.9635784	94.111959
5	84.2091008	98.1248527	99.8491477	99.9930971
6	69.9336576	91.2601818	97.9736992	99.662218
7	47.0456616	75.8392523	88.2886397	92.854418
8	0	45.2273528	70.773962	80.091673
9	0	0	11.6767921	57.387742
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.19589073E 07	4.8098254	9.3882103
1	32.8516275	35.2964335	37.5037523	40.84393
2	61.1299858	62.3557203	63.5865449	66.069667
3	81.7131152	81.7667902	82.4870526	84.628721
4	94.1184604	94.1185734	94.6190309	96.084398
5	99.9998711	100	100.000002	100.00000
6	99.9675034	100.000001	100.000001	100.00000
7	94.1667081	94.4205876	94.5158107	95.485448
8	82.7516534	83.2617628	83.4545565	86.456343
9	65.6454511	66.5235256	66.7171845	72.912686
10	12.3504444	44.205876	51.7363469	54.854476

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
17.6392687	6.58374994	4.38916663	2.19458331	0
EST 6	7	8	9	10
-2.207020492	.62564193	19.6278223	47.9707779	80.712389

**************************CARACTERISTICAS   PRINCIPALES*******************

L/V3^(1/3)	3,52758938
L/V1^(1/3)	4,32100889
L/B	3,30550141
B/H	2,21991833
B/D	1,93674037
ANGULO MEDIO DE ENTRADA	34,5001986
ASTILLA MUERTA	6,63220456
ANGULO DE LA RODA	59,6193464
% LCB/L	-1,90718593
% LCF/L	-4,09758586
KB/V3^(1/3)	,290958195
KM/V3^(1/3)	,496484066
COEF, BLOCK	,550010002
COEF, PRISMATICO	,626275708
COEF, DE FLOTACION	,768479821
COEF, DE SECCION	,878223433

*****************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	13,3764452	24,0666625	31,601041
2	17,1911925	38,4082423	52,3033871	60,667200
3	38,8950054	67,1376969	79,3042135	83,746820
4	65,418897	89,0423749	94,5709042	95,549364
5	74,8175872	94,8747888	99,2202553	99,922227
6	64,7353594	87,9244352	96,6033893	99,284317
7	45,5451868	74,6212757	87,8916371	93,082355
8	0	46,3705353	72,4502229	81,926137
9	0	0	13,1358714	61,72920
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1,26424594E-07	5,69739676	10,853796
1	36,4655731	39,1787371	41,6284701	45,335563
2	65,1046251	67,0144846	68,4372912	70,595156
3	85,0168616	85,2608634	85,8621338	87,528492
4	95,6644349	95,6714948	96,0118198	97,031488
5	99,9960714	100	100,000172	100,00006
6	99,9081344	100,000061	100,000061	100,00006
7	94,6975812	95,043932	95,1813392	95,94287
8	84,6185912	85,1317961	85,3236056	87,828493
9	69,5471388	70,2635921	70,400335	75,656927
10	14,7222616	50,4393201	57,339423	59,428171

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	17,6278599	6,59394148	4,39596101	2,1979805	0
EST	6	7	8	9	10
	-2,20719297	2,62193438	19,6133802	47,9491363	80,712389

************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,52758838
L/V1^(1/3)	4,32100889
L/B	3,30550141
B/H	2,22335474
B/D	1,93674037
ANGULO MEDIO DE ENTRADA	37,8303816
ASTILLA MUERTA	8,24414763
ANGULO DE LA RODA	59,6193464
% LCB/L	-1,83952809
% LCF/L	-3,90171454
KB/V3^(1/3)	,294476253
KM/V3^(1/3)	,512566209
COEF, BLOCK	,550010002
COEF, PRISMATICO	,646314217
COEF, DE FLOTACION	,791724493
COEF, DE SECCION	,850994744

********************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	14,7267363	26,4867138	34,775237
2	16,9422033	38,6953142	53,7613092	63,457780
3	35,3720764	64,4191883	79,1929521	85,76807
4	57,2110685	84,8269743	94,136371	96,676019
5	66,8806979	90,7523616	97,9554497	99,678307
6	60,0911842	84,4842726	94,9324325	98,721661
7	43,8438059	73,1094287	87,2509423	93,171745
8	0	46,9171043	73,6363926	83,525261
9	0	0	14,351151	65,550922
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4,06225267E-08	6,62777146	12,334957
1	40,1268278	43,1117566	45,8070036	49,88571
2	69,0487903	71,7341079	73,4024521	75,181093
3	88,1676495	88,8005809	89,334931	90,467696
4	97,1833218	97,2447027	97,4371833	97,992140
5	99,9711933	100	100,002415	100,00104
6	99,7958555	100	100,001042	100,00104
7	95,1754805	95,6545975	95,8501877	96,4000120
8	86,3995808	86,9637925	87,1774623	89,197955
9	73,2756369	73,9275851	74,0421273	78,394868
10	17,0587538	56,5459751	62,7390904	63,990753

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
17,6165294	6,60414882	4,40276587	2,20138291	0

EST 6	7	8	9	10
-2,2073657	52,6182211	19,5989157	47,9274612	80,712389

****************************CARACTERISTICAS PRINCIPALES************************

L/V3^(1/3)	3.52758838
L/V1^(1/3)	4.32100889
L/B	3.30550141
B/H	2.22679647
B/D	1.93674037
ANGULO MEDIO DE ENTRADA	40.878392
ASTILLA MUERTA	9.80926793
ANGULO DE LA RODA	59.6193464
% LCB/L	-1.74124062
% LCF/L	-3.71976617
KB/V3^(1/3)	.297573396
KM/V3^(1/3)	.529487231
COEF. BLOCK	.550010002
COEF. PRISMATICO	.666352727
COEF. DE FLOTACION	.814969164
COEF. DE SECCION	.825403693

**********************************TABLA DE PUNTOS(%)******************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	16.0752356	28.9019114	37.9424535
2	16.8360917	39.1335507	55.2622591	66.196932
3	32.7769788	62.1110209	78.856699	87.410424
4	50.9607912	80.4345027	92.8964034	97.346830
5	60.3346689	86.36294	96.1460019	99.183293
6	55.9510108	81.0522931	93.0320711	97.974212
7	42.033088	71.3770622	86.3938888	93.126388
8	0	46.9705956	74.4144653	84.940815
9	0	0	15.2973154	68.96044
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.39835236E-07	7.58835813	13.808797
1	43.7797563	47.0357181	49.975842	54.42523
2	72.9236228	76.4428618	78.3986532	79.758810
3	91.1123955	92.3321463	92.87275	93.403972
4	98.5847383	98.8142873	98.8808161	98.955151
5	99.8944333	100	100.013433	100.00678
6	99.616506	100	100.006781	100.00679
7	95.6057783	96.2675275	96.5300261	96.87231
8	88.1381349	88.8025823	89.0604114	90.603389
9	76.9431758	77.6051645	77.7189653	81.199998
10	19.3936679	62.6752741	68.0399442	68.662143

*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
17.6052776	6.614372	4.40958133	2.20479067	0

EST 6	7	8	9	10
-2.20753866	2.6145021	19.5844289	47.9057525	80.712388

************************CARACTERISTICAS PRINCIPALES********************

```
L/V3^(1/3)                        3.52758838
L/V1^(1/3)                        1.32100889
L/B                               3.30550141
B/H                               2.23024352
B/D                               1.93674037
ANGULO MEDIO DE ENTRADA          43.6156614
ASTILLA MUERTA                   11.3311116
ANGULO DE LA RODA                59.6193464
% LCB/L                          -1.62908477
% LCF/L                           3.57128896
KB/V3^(1/3)                        .300329339
KM/V3^(1/3)                        .54741875
COEF. BLOCK                        .550010002
COEF. PRISMATICO                   .686391237
COEF. DE FLOTACION                 .838213835
COEF. DE SECCION                   .801306853
```

*****************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	17.3979338	31.2691282	41.046088
2	16.8234945	39.6647565	56.7661555	68.848934?
3	30.7944639	60.168486	78.427191	88.75245?
4	46.1038344	76.2793381	91.1710923	97.564637?
5	54.9192944	82.0387716	93.9624056	98.423456?
6	52.2550463	77.6992182	90.9703174	97.056668?
7	40.1838643	69.4920048	85.3536518	92.955846?
8	0	46.6455245	74.8663123	86.221247?
9	0	0	15.9929111	72.077258?
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-6.0282788E-08	8.56366735	15.248418?
1	47.3590559	50.8804653	54.0604155	58.87292?
2	76.6742032	81.0565584	83.3296648	84.248640?
3	93.821901	95.7924188	96.4195939	96.289828?
4	99.7965466	100.352186	100.340073	99.910748?
5	99.7375507	100	100.044682	100.02566?
6	99.3618533	100	100.025664	100.02566?
7	95.9964922	96.9002609	97.2167138	97.382865?
8	89.8799598	90.7007829	91.0240631	92.097268?
9	80.6632543	81.4015658	81.5322838	84.168872?
10	21.7935146	69.0026095	73.3762859	73.597678?

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
17.594104	6.62461097	4.41640731	2.20820366	0

EST 6	7	8	9	10
-2.20771196	2.61077735	19.5699197	47.8840104	80.712388?

```
*************************CARACTERISTICAS   PRINCIPALES********************
```

L/V3^(1/3)	3.52758838
L/V1^(1/3)	4.32100889
L/B	3.30550141
B/H	2.23369591
B/D	1.93674037
ANGULO MEDIO DE ENTRADA	46.024436
ASTILLA MUERTA	12.8149349
ANGULO DE LA RODA	59.6193464
% LCB/L	-1.52184746
% LCF/L	-3.47683876
KB/V3^(1/3)	.302807993
KM/V3^(1/3)	.566527488
COEF. BLOCK	.550010002
COEF. PRISMATICO	.706429747
COEF. DE FLOTACION	.861458506
COEF. DE SECCION	.77857707

```
***************************TABLA DE PUNTOS(%)************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	18.6670628	33.538542	44.020771(
2	16.8665528	40.2342962	58.2221512	71.360953(
3	29.2300009	58.5177549	77.9532288	89.838035(
4	42.2326463	72.4852568	89.1941333	97.398984:
5	50.3866726	77.9307696	91.5592825	97.428631
6	48.9437218	74.4649411	88.804285	95.991143(
7	38.3487305	67.5151103	84.1679335	92.675971:
8	0	46.0587093	75.0782435	87.418438:
9	0	0	16.4930358	75.034798(
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-4.24453323E-08	9.53515933	16.622800:
1	50.7893162	54.5649857	57.9747415	63.135072:
2	80.2303218	85.4779829	88.086352	88.559128:
3	96.2684463	99.1084872	99.8996661	99.071739(
4	100.78068	101.825994	101.803662	100.84967:
5	99.4854059	100	100.108804	100.06970(
6	99.0292764	100	100.069689	100.06970(
7	96.3591043	97.5730511	97.9060527	97.96241(
8	91.6755328	92.7191534	93.1181513	93.747824(
9	84.5539694	85.4383069	85.6042709	87.425944(
10	24.3557985	75.7305114	78.956673	78.996771(

```
*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**********
```

EST	1	2	3	4	5
	17.5830085	6.63486579	4.42324386	2.21162193	0
EST	6	7	8	9	10
	-2.20788545	2.60704684	19.5553881	47.8622316	80.712389:

********************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,52758838
L/V1^(1/3)	4,32100889
L/B	3,30550141
B/H	2,23715365
B/D	1,93674037
ANGULO MEDIO DE ENTRADA	48,0941665
ASTILLA MUERTA	14,26626
ANGULO DE LA RODA	59,6193464
% LCB/L	-1,44056129
% LCF/L	-3,45797949
KB/V3^(1/3)	,305059114
KM/V3^(1/3)	,586997217
COEF, BLOCK	,550010002
COEF, PRISMATICO	,726468256
COEF, DE FLOTACION	,884703178
COEF, DE SECCION	,757101218

*****************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	19,8509188	35,6533315	46,791976
2	16,9335185	40,7883375	59,5702726	73,665304
3	27,9585853	57,0870316	77,4410028	90,68076
4	39,0719897	69,0589601	87,1063043	96,925616
5	46,5407749	74,0939935	89,0509601	96,245435
6	45,9625923	71,3686348	86,5783838	94,801694
7	36,5635077	65,4971557	82,8752494	92,307520
8	0	45,3231297	75,1136607	88,592892
9	0	0	16,8799929	77,993364
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	10,4809461	17,896736
1	53,9845749	57,9969368	61,6206238	67,10484
2	83,5067714	89,5963242	92,5462544	92,585937
3	98,4164507	102,197243	103,220726	101,68855
4	101,521217	103,198775	103,246647	101,76120
5	99,1358653	100	100,216426	100,15241
6	98,6203086	100	100,152051	100,15241
7	96,7087147	98,3089838	98,6345343	98,648986
8	93,5824279	94,9269511	95,3753158	95,642133
9	88,748123	89,8539022	90,0723869	91,131855
10	27,2101658	83,089837	85,1167714	85,118150

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	17,5719912	6,64513645	4,43009095	2,21504549	0
EST	6	7	8	9	10
	-2,208059	33,2,60331045	19,5408338	47,840425	80,712389

APENDICE B

En este anexo se han reunido los programas con los cuales se ha ob
tenido.

- CREACION DE LAS LINEAS DE FORMA   PTSPQ
- DISEÑO EN PANTALLA DEL MONITOR   TSPD
- GENERACION DE LA SERIE   PTSPS

PROGRAMA--------------------PTSPQ

OBJETIVO: CREACION DE LAS LINEAS DE FORMA

```
LIST :REM PTSPQ

50   HOME
100   REM   PROGRAMA PRINCIPAL PARA GENERAR LINEAS
105   REM   DE FORMAS DE EMBARCACIONES PESQUERAS
110   REM
115   REM   GENERACION DE PUNTOS DE LA SUPERFICIE
120   REM   DEL CASCO POR EL METODO POLINOMICO
125   REM   == LOS CALCULOS SON EFECTUADOS EN UNIDADES INGLESAS ==
130   REM   ** SEPARACION DE MEMORIAS **
135   DIM F1(10,8),P1(9),P2(5),P3(2,5),P4(2,3),I(10,10)
136   REM   DEFINICION DE FUNCIONES
138   DEF   FN K(E) = F1(E,4) * (1 - ((L2 / 3 + F1(E,3) * .75) / (F1(E,3) +
      L2 / 3)) ^ F1(E,5))
140   REM   ** ENTRADA DE DATOS **
142   PRINT "NUMERO DE EJECUCION "; INPUT N1
145   PRINT "CAPACIDAD DE LA EMBARCACION PIES CUBICOS"; INPUT V1
146   LET V3 = 1.93 * V1 - .65E - 3 / 3.28 ^ 3 * V1 * V1: REM   VOLUMEN A
      SPLAZAR
147   PRINT "FACTOR DE VARIACION DE LA MANGA  100% A 100%"; INPUT N4
150   PRINT "FACTOR DE VARIACION DEL PUNTAL  100% A 100%"; INPUT N5
152   REM   RANGO DE TRABAJO ESLORAS  VELOCIDADES
154   LET C1 = .4: GOSUB 8000
156   LET P3(1,1) = E1:P3(1,2) = (C1 - .21378) * SQR (E1) / .1937
160   LET C1 = .55: GOSUB 8000
162   LET P3(2,1) = E1:P3(2,2) = (C1 - .21378) * SQR (E1) / .1937
165   PRINT "RANGO DE VELOCIDAD "P3(1,2);" < V < "P3(2,2); PRINT
166   PRINT "RANGO DE ESLORA "; P3(1,1);" > L > "; P3(2,1); PRINT
168   PRINT " VELOCIDAD DEL DISENO "; INPUT V2
175   REM   CALCULO DE LAS CARACTERISTICAS PRINCIPALES
180   REM   VOLUMEN A DESPLAZAR
185   LET V3 = 1.93 * V1 - .65E - 3 / 3.28 ^ 3 * V1 * V1
190   REM   ESLORA
195   GOSUB 5500: REM   SUBRUTINA NEWTON RAPHSON F(L)=0
200   LET L = E1
205   REM   VELOCIDAD RELATIVA
210   LET V4 = V2 / SQR (L)
215   REM   MANGA
220   LET L1 = (.95 + .6789E - 3 * N4) * L ^ .718
225   REM   PUNTAL
230   LET L3 = (.283 + .43E - 3 * N5) * L ^ .829
235   LET L4 = L3 / 15 + .656: REM   FRANCOBORDO
240   LET L2 = L3 - L4: REM   CALADO
245   REM   *COEFICIENTES DE FINEZA*
250   LET C1 = .21379 + .1937 * V4: GOTO 254: REM   COEF, BLOCK
252   IF C1 < .4 OR C1 > .55 THEN 2003
254   LET P2(1) = .55 + (C1 - .4166) / .756: REM   RANGO DEL COEFICIENTE PRI
      SMATICO
255   LET C3 = P2(1): PRINT "COEFICIENTE PRISMATICO PARA LA VELOCIDAD DE DI
      SENO",C3: PRINT "VA A MODIFICARSE SI O NO"; INPUT A$: IF A$ = "NO" TH
      263
256   LET P2(2) = .623 - .069 * (1 - ((C1 - .4) / .2) ^ 2.65)
257   PRINT "RANGO DEL COEFICIENTE PRISMATICO "; IF P2(1) > P2(2) THEN 259
258   PRINT P2(1);" < C3 < "P2(2); INPUT C3: GOTO 260
259   PRINT P2(2);" < C3 < "P2(1); INPUT C3
260   LET V2 = SQR (L) * (.756 * C3 - .21298) / .1937:V4 = V2 / SQR (L):
      "LA VELOCIDAD DE DISENO SE A MODIFICADO A ";V2;" NUDOS"
263   REM   COEFICIENTE DEL PLANO DE FLOTACION
265   LET C2 = .68 + 1.16 * (C3 - .55)
```

```
267    REM   PROPOSICION OPCIONAL
270    LET C4 = C1 / C3: REM   COEFICIENTE DE LA SECCION MEDIA
275    LET A2 = V3 / (2 * L * C3): REM   SEMI-AREA DE LA SECCION MEDIA
280    LET M3 =   - A2 * L1 / (L1 * L2 ^ 2   2 * A2 * L2): REM   PENDIENTE
290    LET C4 = C1 / C3: REM   COEF. DE SEC. MEDIA
295    REM   POSICIONES DE CENTROIDES
305    LET B2 =      82.04699 + 442.3433 * C3   730.8 * C3 ^ 2 + 390.6666 * C3
       ^ 3: REM   POSICION DEL LCF
306    LET N8 = .5333333 + C3 * 2 / 3
307    LET B2 =      B2 * 1 * N8 / 100
320    REM   SEMI AREA DEL PLANO DE FLOTACION
325    LET A1 = C2 * L1 * 1 / 2
335    REM   SEMIMANGA DE LA SECCION MEDIA EN CUBIERTA
340    LET Y3 = L1 / 2:Y1 = L2:Y2 = A2
345    GOSUB 5600: REM   SUBRUTINA   NEWTON RAPHSON   F(N)=0
350    LET P1(5,5) = E1
355    LET P1(5,4) =     L1 / 2 / (.25 ^ P1(5,5)   1)
390    REM   CALADO EN LA SECCION DEL ESPEJO
393    LET P1(1) =   TAN (3.1415 / 2 +   AIN (.03))
395    REM   INTERSECCION DE LA RECTA L1
396    LET P1(10,3) = .192578 * L2
402    LET P1(3) = 100 / 3 * L2
500    REM *DEFINICION DEL PERFIL DIAMETRAL DE PROA*
505    REM
510    REM   RADIO DEL PIE DE LA RODA
515    LET P1(5) = L * (.069 + .013 * (V2   8))
520    REM   RECTAS L1 Y L2
525    LET P1(2) =   TAN ((172   1.5 * V2) * 3.1415 / 180)
530    LET P1(4) = L / 2
535    REM   INTERSECCION DE RECTAS
540    LET X1 = (P1(3)   P1(4)) / (P1(2)   P1(1))
545    LET X2 = P1(1) * X1 + P1(3)
550    REM   ANGULOS TETA1 Y TETA2 DE INTERSECCION
555    LET T4 =   AIN (   P1(2)):T3 =   AIN (   P1(1))
560    LET T5 = (T3   T4) / 2:T6 = (T3 + T4) / 2
565    REM   COORDENADAS DEL CENTRO DE LA CIRCUNFERENCIA
570    LET P1(6) = X1   P1(5) *   SIN (T6) /   COS (T5)
580    LET P1(7) = X2   P1(5) *   COS (T6) /   COS (T5)
585    REM   LIMITES DE TRABAJO DE LAS RECTAS
590    LET P1(8) = P1(5) *   COS (T3) + P1(7)
595    LET P1(9) = P1(5) *   COS (T4) + P1(7)
600    LET Q1 = 6: REM   CALADOS DE LAS SECCIONES DE PROA
605    FOR Z = 0 TO L / 2 STEP L / 10
610    LET Q1 = Q1   1
615    IF Z > P1(8) THEN 625
620    LET P1(Q1,3) = (Z   P1(3)) / P1(1): GOTO 640
625    IF Z > P1(9) THEN 635
630    LET P1(Q1,3) = P1(6) +   SQR (P1(5) ^ 2   (Z   P1(7)) ^ 2): GOTO 640
635    LET P1(Q1,3) = (Z   P1(4)) / P1(2)
640    NEXT Z
645    REM
650    REM *DEFINICION DEL PERFIL DE POPA*
655    REM
660    REM   PENDIENTES M1 Y M2
665    LET M1 =   TAN (3.1415   AIN (.03))
670    LET M2 =   TAN (23 * 3.1415 / 180)
675    LET C5 = L / 10:C6 = L / 2: REM   SOLUCION DE LA ECUACION CUADRATICA
```

```
680    LET A(1,1) =  - 2 * C5!A(1,2) = 3 * C5 ^ 2!A(1,3) =   - 4 * C5 ^ 3
685  A(2,1) =   - 2 * C6!A(2,2) = 3 * C6 ^ 2!A(2,3) =   4 * C6 ^ 3
690  LET A(3,1) = C6 ^ 2!A(3,2) =    C6 ^ 3!A(3,3) = C6 ^ 4
695  LET B(1) =   M1!B(2) = M2   M1!B(3) = F1(10,3)    L2 + M1 * C6
700  LET N = 3! GOSUB 6200! REM   SUBRUTINA DE EC. SIMULTANEAS
705  LET Q1 = 5! REM   CALADOS DE LA SECCION DE POPA
710  FOR Z = L / 10 TO L / 2 STEP L / 10
715  LET Q1 = Q1 + 1
720  LET F1(Q1,3) = L2 - M1 * Z + X(1) * Z ^ 2   X(2) * Z ^ 3 + X(3) * Z /
     4
725  NEXT Z
730  FOR Q1 = 1 TO 3! REM   COEF. DE LA ECUACION
735  LET P2(Q1 + 2) = X(Q1)! NEXT Q1
740  LET P2(1) = L2!P2(2) =    M1
741  LET Z1 = 0
745  REM   CURVA DEL PLANO DE FLOTACION
750  GOSUB 9100
755  LET Q1 = 6! REM   COORDENADAS DEL PLANO DE FLOTACION
760  FOR Z = 0 TO L / 2 STEP L / 10!Q1 = Q1   1
765  LET F1(Q1,2) = L1 / 2 + X(1) * Z + X(2) * Z ^ 2 + X(3) * Z ^ 3! NEXT
     Z
770  LET Q1 = 5! REM   COORDENADAS DE POPA
771  FOR Z = L / 10 TO 3 * L / 5 STEP L / 10!Q1 = Q1 + 1
772  IF Q1 > 10 THEN 775
774  LET F1(Q1,2) = L1 / 2   P3(2,2) * Z + P3(2,3) * Z ^ 2! NEXT Z
775  REM   SEMIAREA DEL ESPEJO UTILIZANDO EL POLINOMIO DE II GRADO PARA LA
     INTERPOLACION DE LOS COEFICIENTES DE LAS SECCIONES
790  LET F1(10,1) = C4 + (.5   C4) * (M1 / 2) ^ 2
795  LET F1(10,1) = F1(10,1) * F1(10,2) * F1(10,3)
810  LET F1(1,1) = (C1 + .1) * F1(1,2) * F1(1,3)! REM   SEMI AREA DE LA ES
     ACION 1
820  REM   CURVA DE AREAS
830  LET E1 =    L / 2
835  GOSUB 9000
840  LET Q1 = 6! REM   COORDENADAS DE LA CURVA DE AREAS
845  FOR Z = 0 TO L / 2 STEP L / 10!Q1 = Q1   1
850  LET F1(Q1,1) = A2 + P4(1,2) * Z ^ 2 + P4(1,3) * Z ^ 3! NEXT Z
855  LET Q1 = 5! REM   COORDENADAS DE LA CURVA DE AREAS
860  FOR Z = L / 10 TO 3 * L / 5 STEP L / 10!Q1 = Q1 + 1
865  IF Q1 > 10 THEN 930
870  LET F1(Q1,1) = A2 + X(1) * Z ^ 2   X(2) * Z ^ 3 + X(3) * Z ^ 4! NEXT
     Z
930  REM   DEFINICIONES DE SECCIONES
935  REM   EXPONENTES DE SECCIONES
940  FOR Q1 = 1 TO 10
945  LET L2 = F1(5,3)!Y1 = F1(Q1,3)!Y2 = F1(Q1,1)!Y3 = F1(Q1,2)
950  GOSUB 5600! REM   SUBRUTINA SOLUCION EC. F(N)=0
955  LET F1(Q1,5) = E1
960  REM   SEMIMANGA EN LA CUBIERTA
965  LET F1(Q1,4) = (F1(5,3) / 3) ^ E1   (F1(5,3) / 3 + F1(Q1,3)) ^ E1
970  LET N6 =   F1(Q1,2) * (F1(5,3) / 3 + F1(Q1,3)) ^ E1
975  LET F1(Q1,4) = N6 / F1(Q1,4)! NEXT Q1
2001   GOTO 2005
2003   PRINT ! PRINT "VELOCIDAD FUERA DEL RANGO ***COEFICIENTE BLOCK EXCEDE
       LOS LIMITES .4<C1<.55"
2004  'STOP
2005   REM   DEFINICION DE OBRA MUERTA
```

```
2010   REM
2020   REM   COEFICIENTES DE CUBIERTA
2030   REM   CUERPO POSTERIOR
2040   LET C5 = L / 10:C6 = L * (1 / N3 + 1 / 15)
2050   LET X(2) = F1(5,4) / (C5 * C6   C6 ^ 2):X(1) = X(2) * C5
2060   LET Q1 = 5: REM   COORDENADAS DE POPA
2080   FOR Z = - L / 10 TO - 3 * L / 5 STEP - L / 10:Q1 = Q1 + 1
2090   IF Q1 > 10 THEN 2110
2100   LET F1(Q1,8) = F1(5,4) + X(1) * Z + X(2) * Z ^ 2: NEXT Z
2110   REM   CUERPO DELANTERO
2115   REM   CUBIERTA PRINCIPAL
2155   LET F1(1,8) = F1(1,4) + (2.777   4.4444 * C1) * (F1(1,2) * (L2 / 3 /
       F1(1,3) + 1)   F1(1,4))
2160   REM   CUERPO DELANTERO
2170   LET C5 = 2 * L / 5:C6 =   F1(2) * L2 / 3 + L / 2
2175   LET A(1,1) = C5 ^ 2:A(2,1) = C6 ^ 2
2180   LET A(1,2) = C5 ^ 3:A(2,2) = C6 ^ 3
2190   LET B(1) = F1(1,8)   F1(5,4):B(2) =   F1(5,4)
2200   GOSUB 8560: REM   SOLUCION POR DETERMINANTE
2220   LET Q1 = 6: REM   COORDENADAS
2230   FOR Z = 0 TO .6 * L STEP L / 10:Q1 = Q1   1
2235   IF Q1 < 0 THEN 2260
2240   LET F1(Q1,8) = F1(5,4) + X(1) * Z ^ 2 + X(2) * Z ^ 3
2250   NEXT Z
2260   REM
2270   REM   DEFINICION DE LAS SECCIONES DE LA OBRA MUERTA
2280   REM
2290   FOR Q1 = 1 TO 10:F1(Q1,7) =   F1(Q1,5) * F1(Q1,4) / (L2 / 3) * ((L2
       / 3) / (F1(Q1,3) + L2 / 3)) ^ F1(Q1,5): NEXT Q1
2292   IF F1(5,2) < > F1(5,8) THEN 2295
2294   LET C5 = L2 / 3 * F1(5,8):C5 = (C5 + F1(5,1)) / (4 * L2 / 3 * F1(5,8
       )): GOTO 2300
2295   LET D7 = L2 / 3 * F1(5,7) / (F1(5,2)   F1(5,8)):C5 = (F1(5,8)   F1(
       5,8) - F1(5,2)) / (D7 + 1)) * L2 / 3:C5 = (C5 + F1(5,1)) / (4 * L2 /
       3 * F1(5,8))
2300   LET D7 = L2 / 3 * F1(1,7) / (F1(1,2)   F1(1,8)):C6 = (F1(1,8)   (F1(
       1,8) - F1(1,2)) / (D7 + 1)) * L2 / 3:C6 = (C6 + F1(1,1)) / ((L2 / 3
       F1(1,3)) * F1(1,8))
2305   LET D7 = C5 + (C6 - C5) * 25 / 16:D7 = D7 * L2 / 3 * F1(0,8)
2310   LET F1(0,7) =   (D7 * F1(0,8)) / (F1(0,8) * (L2 / 3) ^ 2   D7   L2
       3)
2350   REM
2400   REM   GENERACION DE ARCHIVOS
2410   REM
2420   LET A$ = "": REM   CONTROL D
2440   PRINT A$;"OPEN TF1"
2445   FOR Q1 = 0 TO 10
2450   PRINT A$;"WRITE TF1"
2460   FOR Q2 = 1 TO 8: PRINT F1(Q1,Q2): NEXT Q2
2470   NEXT Q1
2480   PRINT A$;"OPEN TP1"
2490   PRINT A$;"WRITE TP1"
2500   FOR Q1 = 1 TO 9: PRINT F1(Q1): NEXT
2510   PRINT A$;"OPEN TP2"
2520   PRINT A$;"WRITE TP2"
2530   PRINT L
2540   FOR Q1 = 1 TO 5: PRINT P2(Q1): NEXT
```

```
2600    PRINT A$;"CLOSE"
3000    REM
3010    REM   RESULTADOS
3020    REM
3030    LET C5 = L / 2! REM  ANGULO MEDIO DE ENTRADA
3040    LET T2 = P3(1,2) + 2 * P3(1,3) * C5 + 3 * P3(1,4) * C5 ^ 2!T2 =
        (T2) * 180 / 3.1415
3050    REM
3060    LET T1 = - P1(5,4) * P1(5,5) / (4 * L2 / 3)!T1 = 90 + ATN (T1) * 1
        80 / 3.1415! REM  ASTILLA MUERTA
3070    REM
3075    REM CENTRO DE BOYANTEZ VERTICAL (KB)
3080    REM
3085    DEF  FN P(E) = A2 + P4(1,2) * E ^ 2 + P4(1,3) * E ^ 3
3090    DEF  FN Q(E) = A2 + P4(2,1) * E ^ 2 + P4(2,2) * E ^ 3 + P4(2,3) * E ^
        4
3092    GOSUB 8700! REM  SUBRUTINA DE CENTROIDES
3095    LET C5 = 4 * ( FN P(.4 * L) * P1(1,6) + FN P(.2 * L) * P1(3,6) + F
        P(0) * P1(5,6) + FN Q(  .2 * L) * P1(7,6) + FN Q(  .4 * L) * P1(9
        ,6))
3100    LET C6 = 2 * ( FN P(.3 * L) * P1(2,6) + FN P(.1 * L) * P1(4,6) + F
        Q( - .1 * L) * P1(6,6) + FN Q(  .3 * L) * P1(8,6))
3105    LET D7 = L / 10 * (C5 + C6 + FN Q(  .5 * L) * P1(10,6)) / 3
3110    LET K1 = L2 - D7 / V3 * 2
3115    REM
3120    REM   RADIO METACENTRICO TRANSVERSAL (BM)
3125    REM
3130    DEF  FN R(E) = P3(1,1) + P3(1,2) * E + P3(1,3) * E ^ 2 + P3(1,4) * E
        ^ 3
3135    DEF  FN S(E) = P3(1,1) + P3(2,2) * E + P3(2,3) * E ^ 2
3140    LET C5 = 4 * ( FN R(.4 * L) ^ 3 + FN R(.2 * L) ^ 3 + FN R(0) ^ 3 +
        FN S( - .2 * L) ^ 3 + FN S(  .4 * L) ^ 3)
3145    LET C6 = 2 * ( FN R(.3 * L) ^ 3 + FN R(.1 * L) ^ 3 + FN S( - .1 *
        L) ^ 3 + FN S( - .3 * L) ^ 3)
3150    LET D7 = L / 5 * (C5 + C6 + FN S(  .5 * L) ^ 3) / 9
3155    LET K2 = D7 / V3!K3 = K2 + K1
3160    REM
3165    REM   CENTRO DE BOYANTEZ LONGITUDINAL (LCB)
3170    REM
3175    LET C5 = 4 * ( FN P(.4 * L) * 4 + FN P(.2 * L) * 2 - 2 * FN Q( -
        2 * L) - 4 * FN Q( - .4 * L))
3180    LET C6 = 2 * ( FN P(.3 * L) * 3 + FN P(.1 * L) - FN Q( - .1 * L) -
        3 * FN Q( - .3 * L))
3185    LET D7 = (L / 10) ^ 2 * (C5 + C6 + 5 * FN Q(  .5 * L)) / 3
3190    LET B1 = D7 * 2 / V3
3200    REM   SALIDA DE RESULTADOS
3205    REM
3210    PRINT "VA A IMPRIMIR LOS RESULTADOS SI O NO"! INPUT B$! IF B$ = "NO"
        THEN 5000
3250    REM   DEFINICION PARAMETRICA DEL DISENO
3260    LET K5 = L / V3 ^ (1 / 3)!K4 = L / V1 ^ (1 / 3)!K7 = L / L1!K8 = L /
        L2
3265    LET K9 = L1 / L3!B1 = B1 / L * 100!B2 = B2 / L * 100
3270    LET K1 = K1 / V3 ^ (1 / 3)!K3 = K3 / V3 ^ (1 / 3)
3290    REM
3300    REM    TABLA DE PUNTOS
3305    REM
```

```
3307    FOR Q1 = 0 TO 10: FOR C5 = 1 TO 8:T(Q1,C5) = 0: NEXT C5: NEXT Q1
3310    FOR Q1 = 0 TO 10
3315    LET C5 = 9
3320    FOR X =    L2 / 3 TO L2 STEP L2 / 6:C5 = C5 - 1
3330    IF X > F1(Q1,3) THEN 3395
3340    IF X < = 0 THEN 3360
3350    LET T(Q1,C5) = F1(Q1,4) * (1 - ((X + L2 / 3) / (F1(Q1,3) + L2 / 3)) ^
        F1(Q1,5)): GOTO 3390
3360    IF F1(Q1,2) < > F1(Q1,8) THEN 3370
3365    LET T(Q1,C5) = F1(Q1,8): GOTO 3390
3370    IF Q1 > 5 THEN 3383
3375    LET X2 = F1(Q1,8)   F1(Q1,2):T(Q1,C5) = F1(Q1,2) + F1(Q1,7) * X + ()
        2 + F1(Q1,7) * L2 / 3) * (X / (L2 / 3)) ^ 2
3380    GOTO 3390
3383    IF ABS (F1(Q1,2)   F1(Q1,8)) > 1E   5 THEN 3385
3384    LET T(Q1,C5) = F1(Q1,8): GOTO 3390
3385    LET X2 = F1(Q1,2)   F1(Q1,8):T(Q1,C5) = F1(Q1,8) + X2 * ( ABS (X + L
        2 / 3) / (L2 / 3)) ^ (F1(Q1,7) * (L2 / 3) / X2)
3390    NEXT X
3395    NEXT Q1
3420    FOR Q1 = 0 TO 10:T(Q1,9) = (L2   F1(Q1,3)) / L2 * 100:T(Q1,10) = F
        Q1,1) / A2 * 100: NEXT
3430    FOR Q1 = 0 TO 10: FOR C5 = 1 TO 8:T(Q1,C5) = T(Q1,C5) / L1 * 200: NE
        C5: NEXT Q1
3450    PRINT : PRINT : PRINT : PRINT : PRINT
3500    REM
3505    REM    ** IMPRESION **
3510    REM
3515    LET B$ = " * "
3530    PRINT  TAB( 55):"DISENO:":N4:"/":N5:"/":W1: PRINT
3540    PRINT "*******************************CARACTERISTICAS  PRINCIPALES*******
        ******************": PRINT
3550    PRINT  TAB( 6):"L/V3^(1/3)"; TAB( 60):K5: PRINT  TAB( 6):"L/V1^(1/3)
        "; TAB( 60):K4
3560    PRINT  TAB( 6):"L/B"; TAB( 60):K7: PRINT  TAB( 6):"B/H"; TAB( 60):K6
3565    PRINT  TAB( 6):"B/D"; TAB( 60):K9: PRINT  TAB( 6):"ANGULO MEDIO DE E
        NTRADA"; TAB( 44):12
3570    PRINT  TAB( 6):"ASTILLA MUERTA"; TAB( 44):11: PRINT  TAB( 6):"ANGULO
        DE LA RODA"; TAB( 44):82   1,5 * V2
3575    PRINT  TAB( 6):"% LCB/L"; TAB( 60):B1: PRINT  TAB( 6):"% LCF/L"; TAB(
        60):B2
3580    PRINT  TAB( 6):"KB/V3^(1/3)"; TAB( 60):K1: PRINT  TAB( 6):"KM/V3^(1/
        3)"; TAB( 60):K3
3585    PRINT  TAB( 6):"COEF. BLOCK"; TAB( 60):C1: PRINT  TAB( 6):"COEF. PRI
        SMATICO"; TAB( 44):C3: PRINT  TAB( 6):"COEF. DE FLOTACION"; TAB(
        C2: PRINT  TAB( 6):"COEF. DE SECCION"; TAB( 44):C4
3590    PRINT
3595    PRINT "************************************TABLA DE PUNTOS(%)*************
        *******************": PRINT
3600    PRINT  TAB( 3):"ESTACION": TAB( 12):"LH 1": TAB( 11):"LH 2":
        ):"LH 3": TAB( 14):"LH 4": PRINT
3605    FOR Q1 = 0 TO 10
3610    PRINT  TAB( 6):Q1: TAB( 13):T(Q1,1),T(Q1,2),T(Q1,3),T(Q1,4): NEXT Q
3615    PRINT : PRINT  TAB( 3):"ESTACION": TAB( 12):"LH 5": TAB( 11
        TAB( 12):"LH 7"; TAB( 14):"LH 8": PRINT
```

```
3620    FOR Q1 = 0 TO 10
3630    PRINT  TAB( 6)!Q1! TAB( 13)!T(Q1,5);T(Q1,6);T(Q1,7);T(Q1,8)! NEXT
3640    PRINT ! PRINT "************************ALTOS DEL ALEFRIZ SOBRE LA LINE
        BASE(ZH)********************"! PRINT
3650    PRINT " EST ";"1","2","3","4","5"
3660    PRINT  TAB( 6)!T(1,9);T(2,9);T(3,9);T(4,9);T(5,9)
3670    PRINT " EST ";"6","7","8","9","10"
3680    PRINT  TAB( 6)!T(6,9);T(7,9);T(8,9);T(9,9);T(10,9)
3700    PRINT ! PRINT ! PRINT ! PRINT
4700    LET W1 = W1 + 1! REM  CONTROL DE CORRIDAS
5000    PRINT "VA A GRAFICAR SI O NO"! INPUT B$
5010    IF B$ = "NO" THEN  END
5020    PRINT A$;"RUN TSPD"
5500    REM  SUBRUTINA NEWTON RAPHSON
5505    REM
5510    REM  SOLUCION DE LA ECUACION F(L)=0
5515    REM
5520    REM  VARIABLES UTILIZADAS:E,E1,E2,V2    ,N4,N5,V3
5525    REM
5530    DEF  FN H(E) = E * (.21378 + .1937 * V2 /  SQR (E))
5533    DEF  FN I(E) = E ^ .718 * (.95 + .6789E  3 * N4)
5535    DEF  FN J(E) = 14 / 15 * (.283 + .43E  3 * N5) * E ^ .829 - .656
5540    REM
5545    REM  CONDICIONES ASUMIDAS
5550    LET E7 = 1 / 10000!E1 = 10
5555    REM  INICIO DE LAS ITERACIONES
5560    LET H1 =  FN H(E1) *  FN I(E1) *  FN J(E1)    V3
5565    LET H5 = E1 + E7
5567    LET H3 =  FN H(H5) *  FN I(H5) *  FN J(H5)    V3
5570    LET H2 = (H3 - H1) / E7
5575    LET E2 = E1    H1 / H2
5580    IF  ABS (E2 - E1) < E7  THEN 5590
5585    LET E1 = E2! GOTO 5560
5590    RETURN
5600    REM  SUBRUTINA NEWTON RAPHSON
5605    REM
5610    REM  SOLUCION DE LA ECUACION F(N)=0
5620    REM  VARIABLES UTILIZADAS!Y3,L2,Y1,Y    2
5625    REM
5630    DEF  FN A(E) = Y3 / ((L2 / 3) ^ E   (L2 / 3 + Y1) ^ E)
5635    DEF  FN B(E) = ((L2 / 3 + Y1) ^ (E + 1)   (L2 / 3) ^ (E + 1))
5640    DEF  FN C(E) = Y1 * (L2 / 3 + Y1) ^ E
5645    REM
5650    REM  CONDICIONES ASUMIDAS
5655    LET E7 = 1 / 10000!E1 = 1.5
5660    REM  INICIO DE LAS ITERACIONES
5665    LET H1 =  FN A(E1) * ( FN B(E1) / (E1 + 1)    FN C(E1))   Y2
5670    LET H5 = E1 + E7
5675    LET H3 =  FN A(H5) * ( FN B(H5) / (H5 + 1)    FN C(H5))   Y2
5680    LET H2 = (H3 - H1) / E7
5685    LET E2 = E1 - H1 / H2
5690    IF  ABS (E2 - E1) < E7  THEN 5700
5695    LET E1 = E2! GOTO 5665
5700    RETURN
5705    REM  SUBRUTINA NEWTON RAPHSON
5707    REM
5710    REM  SUBRUTINA PARA ENCONTRAR LA INTERSECCION DEL PLANO DE FLOTACION
```

```
            CON LA LINEA DE CRUJIA EN POPA
5715    REM
5720    REM    SOLUCION DE LA ECUACION F(X)=0
5725    REM    LA FUNCION ES DEFINIDA PARA CADA CASO
5730    REM
5735    REM    CONDICIONES ASUMIDAS
5740    LET E7 = 1 / 10000
5745    REM    INICIO DE LAS ITERACIONES
5750    LET H1 =   FN D(E1)
5755    LET H5 = E1 + E7
5760    LET H2 = ( FN D(H5)    H1) / E7
5765    LET E2 = E1 - H1 / H2
5770    IF  ABS (E2   E1) < 1 / 100  THEN 5790
5775    PRINT "###";E1;E2
5780    LET E1 = E2! GOTO 5750
5790    RETURN
6000    REM    SUBRUTINA DE EVALUACION DE DETERMINANTE
6005    REM
6010    REM    VARIABLES UTILIZADAS R(10;10);A(10;10);D9;N
6012    LET D9 = 0
6015    FOR Q3 = 1 TO N    1
6020    FOR Q4 = 1 TO N
6025    LET P1 = N + Q3!R(P1;Q4) = R(Q3;Q4)! NEXT Q4
6030    NEXT Q3
6035    REM    MULTIPLICACION EN SENTIDO POSITIVO
6040    LET D1 = 1!D2 = 0
6045    FOR Q3 = 1 TO N
6050    FOR Q4 = 1 TO N!D5 = D2 + Q3
6055    LET D1 = D1 * R(D5;Q4)!D2 = D2 + 1! NEXT Q4
6060    LET D9 = D9 + D1!D1 = 1!D2 = 0! NEXT Q3
6065    REM    MULTIPLICACION EN SENTIDO NEGATIVO
6070    LET D1 = 1!D2 = 0
6075    FOR Q3 = 1 TO N
6080    FOR Q4 = N TO 1 STEP    1!D5 = D2 + Q3
6085    LET D1 = D1 * R(D5;Q4)!D2 = D2 + 1! NEXT Q4
6090    LET D9 = D9   D1!D1 = 1!D2 = 0! NEXT Q3
6100    RETURN
6200    REM    SUBRUTINA DE SOLUCION DE ECUACIONES SIMULTANEAS
6205    REM    POR DE DETERMINANTES
6210    REM
6215    FOR Q1 = 1 TO N
6220    FOR Q2 = 1 TO N!R(Q1;Q2) = A(Q1;Q2)! NEXT Q2
6225    NEXT Q1
6230    GOSUB 6000! REM    DETERMINANTE
6235    LET D4 = D9
6240    FOR Q1 = 1 TO N
6245    FOR Q2 = 1 TO N
6250    LET R(Q2;Q1) = B(Q2)! NEXT Q2
6255    GOSUB 6000
6260    LET X(Q1) = D9 / D4
6265    FOR Q2 = 1 TO N!R(Q2;Q1) = A(Q2;Q1)! NEXT Q2
6270    NEXT Q1
6275    LET S2 = 0
6280    FOR I = 1 TO N!S2 = S2 + R(N;I) * X(I)! NEXT I
```

```
6290    RETURN
8000    REM   SUBRUTINA NEWTON RAPHSON PARA DETERMINAR EL RANGO DE ESLORAS -
        VELOCIDADES
8010    REM
8020    REM   SOLUCION DE LA ECUACION F(L,C1)=0
8030    REM
8040    DEF   FN L(E) = C1 * E
8050    DEF   FN M(E) = E ^ .718 * (.95 + .6789E   03 * N4)
8060    DEF   FN N(E) = 14 / 15 * (.283 + .43E   03 * N5) * E ^ .829   .656
8070    REM
8080    REM   CONDICIONES ASUMIDAS
8090    LET E7 = 1 / 10000!E1 = 10
8095    REM   INICIO DE ITERACIONES
8100    LET H1 =  FN L(E1) *  FN M(E1) *  FN N(E1)   V3
8105    LET H5 = E1 + E7
8110    LET H3 =  FN L(H5) *  FN M(H5) *  FN N(H5)   V3
8120    LET H2 = (H3 - H1) / E7
8130    LET E2 = E1 - H1 / H2
8140    IF  ABS (E2 - E1) < E7 THEN 8160
8150    LET E1 = E2! GOTO 8100
8160    RETURN
8560    REM
8565    REM   SUBRUTINA DE SOLUCION DEL POLINOMIO DE 2 GRADO
8570    REM
8575    LET D4 = A(1,1) * A(2,2)   A(1,2) * A(2,1)
8580    LET X(1) = (B(1) * A(2,2)   B(2) * A(1,2)) / D4
8585    LET X(2) = (B(2) * A(1,1)   B(1) * A(2,1)) / D4
8590    RETURN
8700    REM   SUBRUTINA PARA ENCONTRAR LOS CENTROIDES DE LAS SECCIONES DESDE
        LA FLOTACION
8705    REM
8710    LET C5 = L2 / 3
8720    FOR Q1 = 1 TO 10!C6 = C5 + F1(Q1,3)!D7 = F1(Q1,5) + 2
8730    LET F1(Q1,6) = F1(Q1,4) / 2 * (C6 ^ 2   C5 ^ 2)   F1(Q1,4) / C6 ^ F1
        (Q1,5) / D7 * (C6 ^ D7   C5 ^ D7)
8740    LET F1(Q1,6) = F1(Q1,6) / F1(Q1,1)   C5! NEXT Q1
8750    RETURN
9000    REM   SUBRUTINA PARA CURVA DE SEMIAREAS
9005    LET C5 = L / 2!C6 = .4 * L! REM   SECCION DE PROA
9010    LET A(1,1) = C5 ^ 2!A(1,2) = C5 ^ 3!B(1) =   A2
9015    LET A(2,1) = C6 ^ 2!A(2,2) = C6 ^ 3!B(2) = F1(1,1)   A2
9020    GOSUB 8560
9022    LET F4(1,1) = A2!F4(1,2) = X(1)!F4(1,3) = X(2)
9025    LET C5 = L / 2!C6 = L / N1! REM   SECCION DE POPA
9030    LET A(1,1) = C5 ^ 3 / 3!A(1,2) =    (C5 ^ 4 / 4)!A(1,3) = C5 ^ 5 / 5
9035    A(2,1) = C5 ^ 2!A(2,2) =    C5 ^ 3!A(2,3) = C5 ^ 4
9040    LET A(3,1) = C6 ^ 2!A(3,2) =    C6 ^ 3!A(3,3) = C6 ^ 4
9045    LET B(1) = V3 / 2   A2 * L   X(1) * C5 ^ 3 / 3   X(2) * C5 ^ 4 / 4
9050    LET B(2) = F1(10,1) - A2!B(3) =    A2
9055    LET N = 3! GOSUB 6200
9060    LET F4(2,0) = A2!F4(2,1) = X(1)!F4(2,2) = X(2)!F4(2,3) = X(3)


9065    RETURN
9100    REM   SUBRUTINA DE CURVA DEL PLANO DE FLOTACION
9110    LET C5 = L / 2
9115    LET A(1,1) =   C5!A(1,2) = C5 ^ 2 / 5!A(1,3) =   C5 ^ 3 / 25!B(1)
```

```
0
9120  LET A(2,1) = C5!A(2,2) = C5 ^ 2!A(2,3) = C5 ^ 3!B(2) =  - L1 / 2
9125  LET A(3,1) = 61 * C5 ^ 3 / 12!A(3,2) = 43 * C5 ^ 4 / 12!A(3,3) = 11
      * C5 ^ 5 / 40!B(3) = 7 * B2 * A1 + 5.5 * C5 * (A1 - L1 * C5)
9130  LET N = 3! GOSUB 6200
9140  LET P3(1,1) = L1 / 2!P3(1,2) = X(1)!P3(1,3) = X(2)!P3(1,4) = X(3)
9150  LET P3(2,3) = 60 * (C5 ^ 3 / 3 * X(1) + C5 ^ 4 / 4 * X(2) + C5 ^ 5
      5 * X(3) - B2 * A1) / (11 * C5 ^ 4)! REM  COEF. DE POPA
9155  LET P3(2,2) = C5 * P3(2,3) / .5
9160  REM  CALCULO DE LA INTERSECCION N1
9165  LET N1 =  - L * 2 * P3(2,3) / ( - P3(2,2) +  SQR (P3(2,2) ^ 2 - 2 *
      P3(2,3) * L1))
9170  RETURN

]
```

```
]PRINT""

ARBNPTSPQ
]
```

```
 SAVE PTSPQ
]RUN
NUMERO DE EJECUCION
?1
CAPACIDAD DE LA EMBARCACION-PIES CUBICOS
?5500
FACTOR DE VARIACION DE LA MANGA -100% A 100%
?0
FACTOR DE VARIACION DEL PUNTAL -100% A 100%
?0
RANGO DE VELOCIDAD 9.32525289 < V < 15.8366916

RANGO DE ESLORA 94.0866128 > L > 83.2417253

 VELOCIDAD DEL DISENO
?13
COEFICIENTE PRISMATICO PARA LA VELOCIDAD DE DISENO          .63780208
VA A MODIFICARSE SI O NO
?NO
VA A IMPRIMIR LOS RESULTADOS SI O NO
?SI
```

****************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	1.05383244
L/V1^(1/3)	1.95730664
L/B	3.71475177
B/H	2.33522218
B/D	2.04348507
ANGULO MEDIO DE ENTRADA	33.3126393
ASTILLA MUERTA	14.2648151
ANGULO DE LA RODA	62.5
% LCB/L	-1.32687125
% LCF/L	-3.98431637
KB/V3^(1/3)	.298287748
KM/V3^(1/3)	.559531423
COEF. BLOCK	.482978374
COEF. PRISMATICO	.637802083
COEF. DE FLOTACION	.781850416
COEF. DE SECCION	.757254307

***********************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.09439526	13.004112	22.4339599	30.348053
2	12.3176178	31.7930505	46.8216798	57.831439
3	25.1016735	51.7817727	69.1499039	79.523908
4	38.6676288	67.6517105	83.9132991	92.049604
5	45.1245081	72.599789	88.0093805	95.716126
6	41.4597043	66.3465978	82.6683313	92.509489
7	28.6304095	53.876148	71.9989829	84.174096
8	0	30.3010631	54.3497861	70.723310
9	0	0	12.7981504	46.37757
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.1045468E-07	4.71766822	10.728754
1	36.7026024	41.43846	46.2964134	53.068781
2	65.2910073	69.7261521	73.7003673	79.38719
3	84.9765449	87.2946141	89.4760076	93.482790
4	95.4817964	96.575384	97.4579728	99.154364
5	98.9654045	100	100.275065	100.200712
6	97.7417658	100	100.200677	100.200712
7	91.5793224	95.3958421	96.3624145	96.397773
8	80.850798	86.1875264	88.3736226	88.791895
9	64.4493869	72.3750527	75.9191458	77.383078
10	13.0145726	53.9584211	61.6966498	62.171323

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)***********

EST 1	2	3	4	5
13.7007397	7.79522672	5.19681783	2.59840889	0
EST 6	7	8	9	10
-2.22752092	2.18492661	17.9110872	45.3982376	80.712388

PROGRAMA:.................TSPD

OBJETIVO: DISEÑO EN PANTALLA DEL MONITOR

```
LOAD TSPD
JLIST

100   REM   PROGRAMA DE GRAFICACION DE LINEAS DE FORMAS
110   REM
120   REM   DIMENSIONAMIENTO DE ARREGLOS
130   DIM F1(10,8),P1(9),P2(5),P3(2,5),P4(2,3)
140   REM  LECTURA DE ARCHIVOS
150   LET A$ = ""! REM   CONTROL D
170   PRINT A$!"OPEN IF1"
175   FOR Q1 = 0 TO 10
180   PRINT A$!"READ IF1"
190   FOR Q2 = 1 TO 8! INPUT F1(Q1,Q2)! NEXT Q2
200   NEXT Q1
210   PRINT A$!"OPEN IP1"
215   PRINT A$!"READ IP1"
220   FOR Q1 = 1 TO 9! INPUT P1(Q1)! NEXT
225   PRINT A$!"OPEN TP2"
230   PRINT A$!"READ TP2"
235   INPUT L
240   FOR Q1 = 1 TO 5! INPUT P2(Q1)! NEXT
400   PRINT A$!"CLOSE"
500   REM   TRAZADO DE PANTALLA
510   REM
520   SPEED= 255
530   HGR
535   HCOLOR= 5
540   FOR Q2 = 0 TO 159
550   FOR Q1 = 0 TO 279! HPLOT Q1,Q2! NEXT Q1
560   NEXT Q2
570   HCOLOR= 4
580   REM   TRAZADO DE LINEAS DE REFERENCIA
590   HPLOT 0,154 TO 279,154
600   HPLOT 139,75 TO 139,154
610   REM   ESCALA DE TRABAJO
620   LET P5 = 52.5 / F1(5,3)
625   REM   LINEA DE FLOTACION DE DISENO
640   REM   GENERACION DE ESTACIONES
645   HCOLOR= 6
650   REM   SECCION DE PROA Y POPA
660   FOR Q1 = 0 TO 10!P6 = F1(5,3) / 3
665   HPLOT 139 + F1(Q1,8) * P5,101.5 - P5 * P6
670   FOR X1 =   - F1(5,3) * P5 / 3 TO F1(Q1,3) * P5
675   LET X = X1 / P5
680   IF X <  = 0 THEN 695
690   LET Z = F1(Q1,4) * (1  - ((X + P6) / (F1(Q1,3) + P6)) ^ F1(Q1,5)) * P!
      ! GOTO 710
695   IF F1(Q1,2) <  > F1(Q1,8) THEN 698
696   LET Z = F1(Q1,8)! GOTO 708
698   IF Q1 > 5 THEN 704
700   LET X2 = F1(Q1,8)  - F1(Q1,2)!Z = F1(Q1,2) + F1(Q1,7) * X + (X2 + F1((
      1,7) * P6) * (X / P6) ^ 2
701   GOTO 708
704   LET X2 = F1(Q1,2) - F1(Q1,8)!Z = F1(Q1,8) + X2 * ( ABS (P6 + X) / P6
       ^ (F1(Q1,7) * P6 / X2)
708   LET Z = Z * P5
710   IF Q1 > 5 THEN Z =   - Z
715   HPLOT 139 + Z,101.5 + X * P5
725   NEXT X1
730   NEXT Q1
```

```basic
735    HCOLOR= 4
740    HPLOT 19,101 TO 259,101: REM   LINEA DE FLOTACION DE DISENO
750    PRINT  TAB( 11);"POPA"; TAB( 25);"PROA"
755    PRINT  TAB( 8);"** VISTA DE SECCIONES **"
800    REM
805    REM   VISTA LATERAL
810    REM
815    HPLOT 4,57 TO 275,57: REM   LINEAS DE REFERENCIAS
820    HPLOT 14,35 TO 265,35
825    REM   ESCALA DE TRABAJO
830    LET P5 = 22 / P1(5,3)
835    REM   PERFIL DE PROA
836    LET Z = .35 * L:X = (Z   P1(3)) / P1(1): HPLOT 139 + Z * P5,36   X *
       P5
840    LET Z =  - P1(2) * P1(5,3) + L / 2:X = (Z   P1(4)) / P1(2)
845    HPLOT  TO 139 + Z * P5,35   X * P5: REM   RODA
850    LET Z = P1(9):X = (Z   P1(4)) / P1(2)
855    HPLOT  TO 139 + Z * P5,35   X * P5
860    REM   PIE DE LA RODA
865    FOR Z1 = P1(8) * P5 TO P1(9) * P5
870    LET Z = Z1 / P5:X = P1(6) +  SQR (P1(5) ^ 2   (Z   P1(7)) ^ 2)
875    HPLOT 139 + Z1,35 + X * P5: NEXT Z1
880    LET Z = P1(8):X = (Z   P1(3)) / P1(1): REM   QUILLA
885    HPLOT 139 + Z * P5,35   X * P5
890    LET Z =  - .45 * L:X = (Z   P1(3)) / P1(1)
895    HPLOT  TO 139 + Z * P5,35   X * P5
900    REM   PERFIL DE POPA
910    FOR Z1 =  - L / 2 * P5 TO 0
920    LET Z = Z1 / P5
930    LET X = P2(1)   P2(2) * Z + P2(3) * Z ^ 2 + P2(4) * Z ^ 3 + P2(5) * Z
       ^ 4
935    HPLOT 139 + Z1,35 + X * P5: NEXT Z1
940    REM   ESPEJO
950    HPLOT 139 - L / 2 * P5,35 + P1(10,3) * P5
960    LET Z =  - L / 2 -  TAN (3.1415 / 18) * (P1(10,3) + P1(5,3) / 3)
970    HPLOT  TO 139 + Z * P5,35   P1(5,3) / 3 * P5
980    HPLOT  TO 139 - .35 * L * P5,35   P1(5,3) * P5 / 4
2000   END
```

PROGRAMA: ....PTSPS

OBJETIVO: GENERACION DE LA SERIE

```
LIST

50   HOME
100  REM   PROGRAMA PRINCIPAL PARA GENERAR LINEAS
105  REM   DE FORMAS DE EMBARCACIONES PESQUERAS
110  REM
115  REM   GENERACION DE PUNTOS DE LA SUPERFICIE
120  REM   DEL CASCO POR EL METODO POLINOMICO
125  REM   == LOS CALCULOS SON EFECTUADOS EN UNIDADES INGLESAS ==
130  REM   ** SEPARACION DE MEMORIAS **
135  DIM F1(10,8),P1(9),P2(5),P3(2,5),P4(2,3),T(10,10)
136  REM   DEFINICION DE FUNCIONES
138  DEF  FN K(E) = F1(E,4) * (1 - ((L2 / 3 + F1(E,3) * .75) / (F1(E,3) +
     L2 / 3)) ^ F1(E,5))
140  REM   ** ENTRADA DE DATOS **
142  PRINT "NUMERO DE EJECUCION ": INPUT W1
145  PRINT "CAPACIDAD DE LA EMBARCACION-PIES CUBICOS": INPUT V1
146  LET V3 = 1.93 * V1 - .65E - 3 / 3.28 ^ 3 * V1 * V1: REM   VOLUMEN A DE
     SPLAZAR
147  PRINT "FACTOR DE VARIACION DE LA MANGA -100% A 100%": INPUT N4
148  FOR N5 =  - 100 TO 100 STEP 100: GOTO 152
150  PRINT "FACTOR DE VARIACION DEL PUNTAL -100% A 100%": INPUT N5
152  REM   RANGO DE TRABAJO ESLORAS-VELOCIDADES
154  LET C1 = .4: GOSUB 8000
156  LET P3(1,1) = E1:P3(1,2) = (C1 - .21378) *  SQR (E1) / .1937
160  LET C1 = .55: GOSUB 8000
162  LET P3(2,1) = E1:P3(2,2) = (C1 - .21378) *  SQR (E1) / .1937:W3 = 0
163  LET X2 = (P3(2,2) - P3(1,2)) / 5: FOR V2 = P3(1,2) TO P3(2,2) + X2 S
     X2:W3 = W3 + 1: IF W3 > 6 THEN 4800
164  GOTO 175
165  PRINT "RANGO DE VELOCIDAD "P3(1,2)!" < V < "!P3(2,2): PRINT
166  PRINT "RANGO DE ESLORA "!P3(1,1)!" > L > "!P3(2,1): PRINT
168  PRINT " VELOCIDAD DEL DISENO ": INPUT V2
175  REM   CALCULO DE LAS CARACTERISTICAS PRINCIPALES
180  REM   VOLUMEN A DESPLAZAR
185  LET V3 = 1.93 * V1 - .65E - 3 / 3.28 ^ 3 * V1 * V1
190  REM   ESLORA
195  GOSUB 5500: REM   SUBRUTINA NEWTON RAPHSON F(L)=0
200  LET L = E1
205  REM   VELOCIDAD RELATIVA
210  LET V4 = V2 /  SQR (L)
215  REM   MANGA
220  LET L1 = (.95 + .6789E - 3 * N4) * L ^ .718
225  REM   PUNTAL
230  LET L3 = (.283 + .43E - 3 * N5) * L ^ .829
235  LET L4 = L3 / 15 + .656: REM   FRANCOBORDO
240  LET L2 = L3 - L4: REM   CALADO
245  REM   *COEFICIENTES DE FINEZA*
250  LET C1 = .21379 + .1937 * V4: GOTO 254: REM   COEF. BLOCK
252  IF C1 < .4 OR C1 > .55 THEN 2003
254  LET P2(1) = .55 + (C1 - .4166) / .756: GOTO 256: REM   RANGO DEL COEFI
     CIENTE PRISMATICO
255  LET C3 = P2(1): PRINT "COEFICIENTE PRISMATICO PARA LA VELOCIDAD DE DI
     SENO",C3: PRINT "VA A MODIFICARSE SI O NO": INPUT A$: IF A$ = "NO" TH
     263
256  LET P2(2) = .623 - .069 * (1 - ((C1 - .4) / .2) ^ 2.65): GOTO 261
257  PRINT "RANGO DEL COEFICIENTE PRISMATICO ": IF P2(1) > P2(2) THEN 259
258  PRINT P2(1)!" < C3 < "!P2(2): INPUT C3: GOTO 260
259  PRINT P2(2)!" < C3 < "!P2(1): INPUT C3
260  LET V2 =  SQR (L) * (.756 * C3 - .21298) / .1937:V4 = V2 /  SQR (L):
```

```
         "LA VELOCIDAD DE DISENO SE A MODIFICADO A ",V2!" NUDOS"
261    LET W2 =  ABS ( INT ((P2(1) - P2(2)) / .02))! IF W2 = 0 THEN W2 = 1
262    FOR C3 = P2(2) TO P2(1) STEP (P2(1) - P2(2)) / W2
263    REM   COEFICIENTE DEL PLANO DE FLOTACION
265    LET C2 = .68 + 1.16 * (C3 - .55)
267    REM   PROPOSICION OPCIONAL
270    LET C4 = C1 / C3! REM   COEFICIENTE DE LA SECCION MEDIA
275    LET A2 = V3 / (2 * L * C3)! REM   SEMI-AREA DE LA SECCION MEDIA
280    LET M3 =  - A2 * L1 / (L1 * L2 ^ 2 - 2 * A2 * L2)! REM   PENDIENTE
290    LET C4 = C1 / C3! REM   COEF. DE SEC. MEDIA
295    REM   POSICIONES DE CENTROIDES
305    LET B2 =  - 82.04699 + 442.3133 * C3 - 730.8 * C3 ^ 2 + 390.6666 * C3
       ^ 3! REM   POSICION DEL LCF
306    LET N8 = .5333333 + C3 * 2 / 3
307    LET B2 =  - B2 * L * N8 / 100
320    REM   SEMI-AREA DEL PLANO DE FLOTACION
325    LET A1 = C2 * L1 * L / 2
335    REM   SEMIMANGA DE LA SECCION MEDIA EN CUBIERTA
340    LET Y3 = L1 / 2!Y1 = L2!Y2 = A2
345    GOSUB 5600! REM   SUBRUTINA  NEWTON RAPHSON  F(N)=0
350    LET F1(5,5) = E!
355    LET F1(5,4) =  - L1 / 2 / (.25 ^ F1(5,5) - 1)
390    REM   CALADO EN LA SECCION DEL ESPEJO
393    LET P1(1) =  - TAN (3.1415 / 2 +  ATN (.03))
395    REM   INTERSECCION DE LA RECTA L1
396    LET F1(10,3) = .192578 * L2
402    LET P1(3) = 100 / 3 * L2
500    REM *DEFINICION DEL PERFIL DIAMETRAL DE PROA*
505    REM
510    REM   RADIO DEL PIE DE LA RODA
515    LET P1(5) = L * (.069 + .013 * (V2 - 8))
520    REM   RECTAS L1 Y L2
525    LET P1(2) =  TAN ((172 - 1.5 * V2) * 3.1415 / 180)
530    LET P1(4) = L / 2
535    REM   INTERSECCION DE RECTAS
540    LET X1 = (P1(3) - P1(4)) / (P1(2) - P1(1))
545    LET X2 = P1(1) * X1 + P1(3)
550    REM   ANGULOS TETA1 Y TETA2 DE INTERSECCION
555    LET T4 =  ATN ( - P1(2))!T3 =  ATN ( - P1(1))
560    LET T5 = (T3 - T4) / 2!T6 = (T3 + T4) / 2
565    REM   COORDENADAS DEL CENTRO DE LA CIRCUNFERENCIA
570    LET P1(6) = X1 - P1(5) *  SIN (T6) /  COS (T5)
580    LET P1(7) = X2 - P1(5) *  COS (T6) /  COS (T5)
585    REM   LIMITES DE TRABAJO DE LAS RECTAS
590    LET P1(8) = P1(5) *  COS (T3) + P1(7)
595    LET P1(9) = P1(5) *  COS (T4) + P1(7)
600    LET Q1 = 6! REM   CALADOS DE LAS SECCIONES DE PROA
605    FOR Z = 0 TO L / 2 STEP L / 10
610    LET Q1 = Q1 - 1
615    IF Z > P1(8) THEN 625
620    LET F1(Q1,3) = (Z - P1(3)) / P1(1)! GOTO 640
625    IF Z > P1(9) THEN 635
630    LET F1(Q1,3) = P1(6) +  SQR (P1(5) ^ 2 - (Z - P1(7)) ^ 2)! GOTO 640
635    LET F1(Q1,3) = (Z - P1(4)) / P1(2)
640    NEXT Z
645    REM
650    REM *DEFINICION DEL PERFIL DE POPA*
```

```
655   REM
660   REM   PENDIENTES M1 Y M2
665   LET M1 =  TAN (3.1415 -  ATN (.03))
670   LET M2 =  TAN (23 * 3.1415 / 180)
675   LET C5 = L / 10:C6 = L / 2: REM   SOLUCION DE LA ECUACION SIMULTANEA
680   LET A(1,1) =  - 2 * C5:A(1,2) = 3 * C5 ^ 2:A(1,3) =  - 4 * C5 ^ 3
685 A(2,1) =  - 2 * C6:A(2,2) = 3 * C6 ^ 2:A(2,3) =  - 4 * C6 ^ 3
690   LET A(3,1) = C6 ^ 2:A(3,2) =  - C6 ^ 3:A(3,3) = C6 ^ 4
695   LET B(1) =  - M1:B(2) = M2 - M1:B(3) = F1(10,3) - L2 + M1 * C6
700   LET N = 3: GOSUB 6200: REM   SUBRUTINA DE EC. SIMULTANEAS
705   LET Q1 = 5: REM   CALADOS DE LA SECCION DE POPA
710   FOR Z = L / 10 TO L / 2 STEP L / 10
715   LET Q1 = Q1 + 1
720   LET F1(Q1,3) = L2    M1 * Z + X(1) * Z ^ 2 - X(2) * Z ^ 3 + X(3) * Z ^
      4
725   NEXT Z
730   FOR Q1 = 1 TO 3: REM   COEF. DE LA ECUACION
735   LET P2(Q1 + 2) = X(Q1): NEXT Q1
740   LET P2(1) = L2:P2(2) =      M1
741   LET Z1 = 0
745   REM   CURVA DEL PLANO DE FLOTACION
750   GOSUB 9100
755   LET Q1 = 6: REM   COORDENADAS DEL PLANO DE FLOTACION
760   FOR Z = 0 TO L / 2 STEP L / 10:Q1 = Q1   1
765   LET F1(Q1,2) = L1 / 2 + X(1) * Z + X(2) * Z ^ 2 + X(3) * Z ^ 3: NEXT
      Z
770   LET Q1 = 5: REM   COORDENADAS DE POPA
771   FOR Z = L / 10 TO 3 * L / 5 STEP L / 10:Q1 = Q1 + 1
772   IF Q1 > 10 THEN 775
774   LET F1(Q1,2) = L1 / 2    P3(2,2) * Z + P3(2,3) * Z ^ 2: NEXT Z
775   REM   SEMIAREA DEL ESPEJO UTILIZANDO EL POLINOMIO DE II GRADO PARA LA
      INTERPOLACION DE LOS COEFICIENTES DE LAS SECCIONES
790   LET F1(10,1) = C4 + (.5    C4) * (N1 / 2) ^ 2
795   LET F1(10,1) = F1(10,1) * F1(10,2) * F1(10,3)
810   LET F1(1,1) = (C1 + .1) * F1(1,2) * F1(1,3): REM   SEMI AREA DE LA ES
      ACION 1
820   REM   CURVA DE AREAS
830   LET E1 =     L / 2
835   GOSUB 9000
840   LET Q1 = 6: REM   COORDENADAS DE LA CURVA DE AREAS
845   FOR Z = 0 TO L / 2 STEP L / 10:Q1 = Q1   1
850   LET F1(Q1,1) = A2 + P4(1,2) * Z ^ 2 + P4(1,3) * Z ^ 3: NEXT Z
855   LET Q1 = 5: REM   COORDENADAS DE LA CURVA DE AREAS
860   FOR Z = L / 10 TO 3 * L / 5 STEP L / 10:Q1 = Q1 + 1
865   IF Q1 > 10 THEN 930
870   LET F1(Q1,1) = A2 + X(1) * Z ^ 2    X(2) * Z ^ 3 + X(3) * Z ^ 4: NEX
      Z
930   REM   DEFINICIONES DE SECCIONES
935   REM   EXPONENTES DE SECCIONES
940   FOR Q1 = 1 TO 10
945   LET L2 = F1(5,3):Y1 = F1(Q1,3):Y2 = F1(Q1,1):Y3 = F1(Q1,2)
950   GOSUB 5600: REM   SUBRUTINA SOLUCION EC. F(N)=0
955   LET F1(Q1,5) = E1
960   REM   SEMIMANGA EN LA CUBIERTA
965   LET F1(Q1,4) = (F1(5,3) / 3) ^ E1 - (F1(5,3) / 3 + F1(Q1,3)) ^ E1
970   LET N6 =  - F1(Q1,2) * (F1(5,3) / 3 + F1(Q1,3)) ^ E1
975   LET F1(Q1,4) = N6 / F1(Q1,4): NEXT Q1
2001   GOTO 2005
2003   PRINT : PRINT "VELOCIDAD FUERA DEL RANGO ***COEFICIENTE BLOCK EXCEDE
      LOS LIMITES .4<C1<.55"
```

```
2000  STOP
2005  REM   DEFINICION DE OBRA MUERTA
2010  REM
2020  REM   COEFICIENTES DE CUBIERTA
2030  REM   CUERPO POSTERIOR
2040  LET C5 = L / 10:C6 = L * (1 / N1 + 1 / 15)
2050  LET X(2) = F1(5,4) / (C5 * C6   C6 ^ 2):X(1) = X(2) * C5
2060  LET Q1 = 5: REM  COORDENADAS DE POPA
2080  FOR Z = - L / 10 TO   3 * L / 5 STEP   L / 10:Q1 = Q1 + 1
2090  IF Q1 > 10 THEN 2110
2100  LET F1(Q1,8) = F1(5,4) + X(1) * Z + X(2) * Z ^ 2: NEXT Z
2110  REM   CUERPO DELANTERO
2115  REM   CUBIERTA PRINCIPAL
2155  LET F1(1,8) = F1(1,4) + (2.777   1.1111 * C1) * (F1(1,2) * (L2 / 3 /
      F1(1,3) + 1) - F1(1,4))
2160  REM   CUERPO DELANTERO
2170  LET C5 = 2 * L / 5:C6 =    F1(2) * L2 / 3 + L / 2
2175  LET A(1,1) = C5 ^ 2:A(2,1) = C6 ^ 2
2180  LET A(1,2) = C5 ^ 3:A(2,2) = C6 ^ 3
2190  LET B(1) = F1(1,8)   F1(5,4):B(2) =    F1(5,4)
2200  GOSUB 8560: REM  SOLUCION POR DETERMINANTE
2220  LET Q1 = 6: REM  COORDENADAS
2230  FOR Z = 0 TO .6 * L STEP L / 10:Q1 = Q1   1
2235  IF Q1 < 0 THEN 2260
2240  LET F1(Q1,8) = F1(5,4) + X(1) * Z ^ 2 + X(2) * Z ^ 3
2250  NEXT Z
2260  REM
2270  REM   DEFINICION DE LAS SECCIONES DE LA OBRA MUERTA
2280  REM
2290  FOR Q1 = 1 TO 10:F1(Q1,7) =    F1(Q1,5) * F1(Q1,4) / (L2 / 3) * ((L
      / 3) / (F1(Q1,3) + L2 / 3)) ^ F1(Q1,5): NEXT Q1
2292  IF F1(5,2) < > F1(5,8) THEN 2295
2294  LET C5 = L2 / 3 * F1(5,8):C5 = (C5 + F1(5,1)) / (4 * L2 / 3 * F1(5,8
      )): GOTO 2300
2295  LET D7 = L2 / 3 * F1(5,7) / (F1(5,2)   F1(5,8)):C5 = (F1(5,8)   (F1(
      5,8) - F1(5,2)) / (D7 + 1)) * L2 / 3:C5 = (C5 + F1(5,1)) / (4 * L2 /
      3 * F1(5,8))
2300  LET D7 = L2 / 3 * F1(1,7) / (F1(1,2)   F1(1,8)):C6 = (F1(1,8)   (F1(
      1,8) - F1(1,2)) / (D7 + 1)) * L2 / 3:C6 = (C6 + F1(1,1)) / ((L2 / 3 +
      F1(1,3)) * F1(1,8))
2305  LET D7 = C5 + (C6   C5) * 25 / 16:D7 = D7 * L2 / 3 * F1(0,8)
2310  LET F1(0,7) =    (D7 * F1(0,8)) / (F1(0,8) * (L2 / 3) ^ 2   D7 * L2 /
      3)
2340  GOTO 3000
2350  REM
2400  REM   GENERACION DE ARCHIVOS
2410  REM
2420  LET A$ = "": REM  CONTROL D
2440  PRINT A$;"OPEN IF1"
2445  FOR Q1 = 0 TO 10
2450  PRINT A$;"WRITE IF1"
2460  FOR Q2 = 1 TO 8: PRINT F1(Q1,Q2): NEXT Q2
2470  NEXT Q1
2480  PRINT A$;"OPEN TP1"
2490  PRINT A$;"WRITE TP1"
2500  FOR Q1 = 1 TO 9: PRINT P1(Q1): NEXT
2510  PRINT A$;"OPEN TP2"
2520  PRINT A$;"WRITE TP2"
2530  PRINT L
2540  FOR Q1 = 1 TO 5: PRINT P2(Q1): NEXT
```

```
2600    PRINT A$:"CLOSE"
3000    REM
3010    REM    RESULTADOS
3020    REM
3030    LET C5 = L / 2: REM   ANGULO MEDIO DE ENTRADA
3040    LET T2 = P3(1,2) + 2 * P3(1,3) * C5 + 3 * P3(1,4) * C5 ^ 2:T2 = -
        (T2) * 180 / 3.1415
3050    REM
3060    LET T1 = - P1(5,4) * P1(5,5) / (4 * L2 / 3):T1 = 90 + ATN (T1) *
        80 / 3.1415: REM   ASTILLA MUERTA
3070    REM
3075    REM CENTRO DE BOYANTEZ VERTICAL (KB)
3080    REM
3085    DEF   FN P(E) = A2 + P4(1,2) * E ^ 2 + P4(1,3) * E ^ 3
3090    DEF   FN Q(E) = A2 + P4(2,1) * E ^ 2 + P4(2,2) * E ^ 3 + P4(2,3) * E
        4
3092    GOSUB 8700: REM   SUBRUTINA DE CENTROIDES
3095    LET C5 = 4 * ( FN P(,4 * L) * P1(1,6) + FN P(,2 * L) * P1(3,6) + F
        P(0) * P1(5,6) + FN Q(   ,2 * L) * P1(7,6) + FN Q(   ,4 * L) * P1(9
        ,6))
3100    LET C6 = 2 * ( FN P(,3 * L) * P1(2,6) + FN P(,1 * L) * P1(4,6) + F
        Q( - ,1 * L) * P1(6,6) + FN Q(   ,3 * L) * P1(8,6))
3105    LET D7 = L / 10 * (C5 + C6 + FN Q(   ,5 * L) * P1(10,6)) / 3
3110    LET K1 = L2 - D7 / V3 * 2
3115    REM
3120    REM    RADIO METACENTRICO TRANSVERSAL (BM)
3125    REM
3130    DEF   FN R(E) = P3(1,1) + P3(1,2) * E + P3(1,3) * E ^ 2 + P3(1,4) * E
        ^ 3
3135    DEF   FN S(E) = P3(1,1) + P3(2,2) * E + P3(2,3) * E ^ 2
3140    LET C5 = 4 * ( FN R(,4 * L) ^ 3 + FN R(,2 * L) ^ 3 + FN R(0) ^ 3 +
        FN S( - ,2 * L) ^ 3 + FN S(   ,4 * L) ^ 3)
3145    LET C6 = 2 * ( FN R(,3 * L) ^ 3 + FN R(,1 * L) ^ 3 + FN S( - ,1 *
        L) ^ 3 + FN S(   ,3 * L) ^ 3)
3150    LET D7 = L / 5 * (C5 + C6 + FN S(   ,5 * L) ^ 3) / 9
3155    LET K2 = D7 / V3:K3 = K2 + K1
3160    REM
3165    REM    CENTRO DE BOYANTEZ LONGITUDINAL (LCB)
3170    REM
3175    LET C5 = 4 * ( FN P(,4 * L) * 4 + FN P(,2 * L) * 2 - 2 * FN Q( -
        2 * L) - 4 * FN Q(   ,4 * L))
3180    LET C6 = 2 * ( FN P(,3 * L) * 3 + FN P(,1 * L) - FN Q( - ,1 * L) -
        3 * FN Q( - ,3 * L))
3185    LET D7 = (L / 10) ^ 2 * (C5 + C6 - 5 * FN Q( - ,5 * L)) / 3
3190    LET B1 = D7 * 2 / V3
3200    REM    SALIDA DE RESULTADOS
3205    REM
3207    GOTO 3250
3210    PRINT "VA A IMPRIMIR LOS RESULTADOS SI O NO": INPUT B$: IF B$ = "NO'
        THEN 5000
3250    REM   DEFINICION PARAMETRICA DEL DISENO
3260    LET K5 = L / V3 ^ (1 / 3):K6 = L / V1 ^ (1 / 3):K7 = L / L1:K8 = L1
        L2
3265    LET K9 = L1 / L3:B1 = B1 / L * 100:B2 = B2 / L * 100
3270    LET K1 = K1 / V3 ^ (1 / 3):K3 = K3 / V3 ^ (1 / 3)
3290    REM
3300    REM     TABLA DE PUNTOS
3305    REM
```

```
3307  FOR Q1 = 0 TO 10! FOR C5 = 1 TO 8!T(Q1,C5) = 0! NEXT C5! NEXT Q1
3310  FOR Q1 = 0 TO 10
3315  LET C5 = 9
3320  FOR X =  - L2 / 3 TO L2 STEP L2 / 6!C5 = C5   1
3330  IF X > F1(Q1,3) THEN 3395
3340  IF X <  = 0 THEN 3360
3350  LET T(Q1,C5) = F1(Q1,4) * (1   ((X + L2 / 3) / (F1(Q1,3) + L2 / 3))
      F1(Q1,5))! GOTO 3390
3360  IF F1(Q1,2) <  > F1(Q1,8) THEN 3370
3365  LET T(Q1,C5) = F1(Q1,8)! GOTO 3390
3370  IF Q1 > 5 THEN 3383
3375  LET X2 = F1(Q1,8)   F1(Q1,2)!T(Q1,C5) = F1(Q1,2) + F1(Q1,7) * X + ()
      2 + F1(Q1,7) * L2 / 3) * (X / (L2 / 3)) ^ 2
3380  GOTO 3390
3383  IF  ABS (F1(Q1,2)   F1(Q1,8)) > 1E   5 THEN 3385
3384  LET T(Q1,C5) = F1(Q1,8)! GOTO 3390
3385  LET X2 = F1(Q1,2)   F1(Q1,8)!T(Q1,C5) = F1(Q1,8) + X2 * ( ABS (X + L
      2 / 3) / (L2 / 3)) ^ (F1(Q1,7) * (L2 / 3) / X2)
3390  NEXT X
3395  NEXT Q1
3420  FOR Q1 = 0 TO 10!T(Q1,9) = (L2   F1(Q1,3)) / L2 * 100!T(Q1,10) = F1(
      Q1,1) / A2 * 100! NEXT
3430  FOR Q1 = 0 TO 10! FOR C5 = 1 TO 8!T(Q1,C5) = T(Q1,C5) / L1 * 200! NE
      C5! NEXT Q1/
3450  PRINT : PRINT : PRINT : PRINT : PRINT
3500  REM
3505  REM   ** IMPRESION **
3510  REM
3515  LET B$ = " * "
3530  PRINT  TAB( 55);"DISENO:";N1;"/";N5;"/";H1! PRINT
3540  PRINT "*********************************CARACTERISTICAS PRINCIPALES******
      ********************"! PRINT
3550  PRINT  TAB( 6);"L/V1^(1/3)"; TAB( 60);K5! PRINT  TAB( 6);"L/V1^(1/3)
      ", TAB( 60);K4
3560  PRINT  TAB( 6);"L/B"; TAB( 60);K7! PRINT  TAB( 6);"B/H"; TAB( 60);K8
3565  PRINT  TAB( 6);"B/D"; TAB( 60);K9! PRINT  TAB( 6);"ANGULO MEDIO DE E
      NTRADA", TAB( 44);T2! PRINT  TAB( 6);"ANGULO
3570  PRINT  TAB( 6);"ASTILLA MUERTA"; TAB( 44);T1! PRINT  TAB( 6);"ANGUL
      DE LA RODA", TAB( 44);B2   1.5 * V2
3575  PRINT  TAB( 6);"% LCB/L"; TAB( 60);B1! PRINT  TAB( 6);"% LCF/L"; TAB
      60);B2
3580  PRINT  TAB( 6);"KB/V3^(1/3)"; TAB( 60);K1! PRINT  TAB( 6);"KM/V3^(1/
      3)"; TAB( 60);K3
3585  PRINT  TAB( 6);"COEF. BLOCK"; TAB( 60);C1! PRINT  TAB( 6);"COEF. PRI
      SMATICO", TAB( 44);C3! PRINT  TAB( 6);"COEF. DE FLOTACION"; TAB( 44)
      C2! PRINT  TAB( 6);"COEF. DE SECCION"; TAB( 44);C4
3590  PRINT
3595  PRINT "***********************************TABLA DE PUNTOS(%)************
      *****************"! PRINT
3600  PRINT  TAB( 3);"ESTACION"; TAB( 12);"LW 1"; TAB( 11);"LW 2"; TAB(
      );"LW 3"; TAB( 14);"LW 4"! PRINT
3605  FOR Q1 = 0 TO 10
3610  PRINT  TAB( 6);Q1; TAB( 13);T(Q1,1);T(Q1,2);T(Q1,3);T(Q1,4)! NEXT Q
3615  PRINT : PRINT  TAB( 3);"ESTACION"; TAB( 12);"LW 5"; TAB( 11);"LW 6"
      TAB( 12);"LW 7"; TAB( 14);"LW 8"! PRINT
3620  FOR Q1 = 0 TO 10
```

```
3630   PRINT   TAB( 6)!Q1! TAB( 13)!T(Q1,5),T(Q1,6),T(Q1,7),T(Q1,8)! NEXT Q1

3640   PRINT ! PRINT "*************************ALTOS DEL ALEFRIZ SOBRE LA LINE
       BASE(%H)*********************"! PRINT
3650   PRINT " EST "!"1","2","3","4","5"
3660   PRINT   TAB( 6)!T(1,9),T(2,9),T(3,9),T(4,9),T(5,9)
3670   PRINT " EST "!"6","7","8","9","10"
3680   PRINT   TAB( 6)!T(6,9),T(7,9),T(8,9),T(9,9),T(10,9)
3700   PRINT ! PRINT ! PRINT ! PRINT
4700   LET W1 = W1 + 1! REM  CONTROL DE CORRIDAS
4750   NEXT C3! NEXT V2
4800   NEXT N5
4900   LET B$ = "NO"! GOTO 5010
5000   PRINT "VA A GRAFICAR SI O NO"! INPUT B$
5010   IF B$ = "NO" THEN  END
5020   PRINT A$!"RUN ISPD"
5500   REM   SUBRUTINA NEWTON RAPHSON
5505   REM
5510   REM   SOLUCION DE LA ECUACION F(I)=0
5515   REM
5520   REM   VARIABLES UTILIZADAS!E,E1,E2,V2     ,N4,N5,V3
5525   REM
5530   DEF   FN H(E) = E * (.21378 + .1937 * V2 / SQR (E))
5533   DEF   FN I(E) = E ^ .718 * (.95 + .6789E    3 * N4)
5535   DEF   FN J(E) = 14 / 15 * (.283 + .43E    3 * N5) * E ^ .829    .656
5540   REM
5545   REM   CONDICIONES ASUMIDAS
5550   LET E7 = 1 / 10000!E1 = 10
5555   REM   INICIO DE LAS ITERACIONES
5560   LET H1 =  FN H(E1) *  FN I(E1) *  FN J(E1)    V3
5565   LET H5 = E1 + E7
5567   LET H3 =  FN H(H5) *  FN I(H5) *  FN J(H5)    V3
5570   LET H2 = (H3    H1) / E7
5575   LET E2 = E1    H1 / H2
5580   IF  ABS (E2    E1) < E7 THEN 5590
5585   LET E1 = E2! GOTO 5560
5590   RETURN
5600   REM   SUBRUTINA NEWTON RAPHSON
5605   REM
5610   REM   SOLUCION DE LA ECUACION F(N)=0
5620   REM   VARIABLES UTILIZADAS!Y3,I2,Y1,Y    2
5625   REM
5630   DEF   FN A(E) = Y3 / ((I2 / 3) ^ E    (I2 / 3 + Y1) ^ E)
5635   DEF   FN B(E) = ((I2 / 3 + Y1) ^ (E + 1)    (I2 / 3) ^ (E + 1))
5640   DEF   FN C(E) = Y1 * (I2 / 3 + Y1) ^ E
5645   REM
5650   REM   CONDICIONES ASUMIDAS
5655   LET E7 = 1 / 10000!E1 = 1.5
5660   REM   INICIO DE LAS ITERACIONES
5665   LET H1 =  FN A(E1) * ( FN B(E1) / (E1 + 1)    FN C(E1)) - Y2
5670   LET H5 = E1 + E7
5675   LET H3 =  FN A(H5) * ( FN B(H5) / (H5 + 1) -  FN C(H5)) - Y2
5680   LET H2 = (H3 - H1) / E7
5685   LET E2 = E1 - H1 / H2
5690   IF  ABS (E2 - E1) < E7 THEN 5700
5695   LET E1 = E2! GOTO 5665
5700   RETURN
5705   REM  SUBRUTINA NEWTON RAPHSON
5707   REM
```

```
5710  REM   SUBRUTINA PARA ENCONTRAR LA INTERSECCION DEL PLANO DE FLOTACION
      CON LA LINEA DE CRUJIA EN POPA
5715  REM
5720  REM   SOLUCION DE LA ECUACION F(X)=0
5725  REM   LA FUNCION ES DEFINIDA PARA CADA CASO
5730  REM
5735  REM   CONDICIONES ASUMIDAS
5740  LET E7 = 1 / 10000
5745  REM   INICIO DE LAS ITERACIONES
5750  LET H1 =  FN D(E1)
5755  LET H5 = E1 + E7
5760  LET H2 = ( FN D(H5)    H1) / E7
5765  LET E2 = E1 - H1 / H2
5770  IF  ABS (E2 - E1) < 1 / 100  THEN 5790
5775  PRINT "###",E1,E2
5780  LET E1 = E2! GOTO 5750
5790  RETURN
6000  REM   SUBRUTINA DE EVALUACION DE DETERMINANTE
6005  REM
6010  REM   VARIABLES UTILIZADAS R(10,10),A(10,10),D9,N
6012  LET D9 = 0
6015  FOR Q3 = 1 TO N - 1
6020  FOR Q4 = 1 TO N
6025  LET P1 = N + Q3!R(P1,Q4) = R(Q3,Q4)! NEXT Q4
6030  NEXT Q3
6035  REM   MULTIPLICACION EN SENTIDO POSITIVO
6040  LET D1 = 1!D2 = 0
6045  FOR Q3 = 1 TO N
6050  FOR Q4 = 1 TO N!D5 = D2 + Q3
6055  LET D1 = D1 * R(D5,Q4)!D2 = D2 + 1! NEXT Q4
6060  LET D9 = D9 + D1!D1 = 1!D2 = 0! NEXT Q3
6065  REM   MULTIPLICACION EN SENTIDO NEGATIVO
6070  LET D1 = 1!D2 = 0
6075  FOR Q3 = 1 TO N
6080  FOR Q4 = N TO 1 STEP    1!D5 = D2 + Q3
6085  LET D1 = D1 * R(D5,Q4)!D2 = D2 + 1! NEXT Q4
6090  LET D9 = D9 - D1!D1 = 1!D2 = 0! NEXT Q3
6100  RETURN
6200  REM   SUBRUTINA DE SOLUCION DE ECUACIONES SIMULTANEAS
6205  REM   POR DE DETERMINANTES
6210  REM
6215  FOR Q1 = 1 TO N
6220  FOR Q2 = 1 TO N!R(Q1,Q2) = A(Q1,Q2)! NEXT Q2
6225  NEXT Q1
6230  GOSUB 6000! REM   DETERMINANTE
6235  LET D4 = D9
6240  FOR Q1 = 1 TO N
6245  FOR Q2 = 1 TO N
6250  LET R(Q2,Q1) = B(Q2)! NEXT Q2
6255  GOSUB 6000
6260  LET X(Q1) = D9 / D4
6265  FOR Q2 = 1 TO N!R(Q2,Q1) = A(Q2,Q1)! NEXT Q2
6270  NEXT Q1
6275  LET S2 = 0
6280  FOR I = 1 TO N!S2 = S2 + R(N,I) * X(I)! NEXT I
6290  RETURN
8000  REM   SUBRUTINA NEWTON RAPHSON PARA DETERMINAR EL RANGO DE ESLORAS -
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```
              VELOCIDADES
8010    REM
8020    REM     SOLUCION DE LA ECUACION F(L,C1)=0
8030    REM
8040    DEF  FN L(E) = C1 * E
8050    DEF  FN M(E) = E ^ .718 * (.95 + .6789E  03 * N4)
8060    DEF  FN N(E) = 11 / 15 * (.283 + .43E   03 * N5) * E ^ .829 - .656
8070    REM
8080    REM   CONDICIONES ASUMIDAS
8090    LET E7 = 1 / 10000!E1 = 10
8095    REM   INICIO DE ITERACIONES
8100    LET H1 =  FN L(E1) * FN M(E1) * FN N(E1)  V3
8105    LET H5 = E1 + E7
8110    LET H3 =  FN L(H5) * FN M(H5) * FN N(H5)  V3
8120    LET H2 = (H3  H1) / E7
8130    LET E2 = E1 - H1 / H2
8140    IF  ABS (E2  E1) < E7 THEN 8160
8150    LET E1 = E2! GOTO 8100
8160    RETURN
8560    REM
8565    REM    SUBRUTINA DE SOLUCION DEL POLINOMIO DE 2 GRADO
8570    REM
8575    LET D4 = A(1,1) * A(2,2)   A(1,2) * A(2,1)
8580    LET X(1) = (B(1) * A(2,2)   B(2) * A(1,2)) / D4
8585    LET X(2) = (B(2) * A(1,1)   B(1) * A(2,1)) / D4
8590    RETURN
8700    REM   SUBRUTINA PARA ENCONTRAR LOS CENTROIDES DE LAS SECCIONES DESDE
        LA FLOTACION
8705    REM
8710    LET C5 = L2 / 3
8720    FOR Q1 = 1 TO 10!C6 = C5 + F1(Q1,3)!D7 = F1(Q1,5) + 2
8730    LET F1(Q1,6) = F1(Q1,4) / 2 * (C6 ^ 2   C5 ^ 2)  F1(Q1,4) / C6 ^ F1
        (Q1,5) / D7 * (C6 ^ D7   C5 ^ D7)
8740    LET F1(Q1,6) = F1(Q1,6) / F1(Q1,1)   C5! NEXT Q1
8750    RETURN
9000    REM   SUBRUTINA PARA CURVA DE SEMIAREAS
9005    LET C5 = L / 2!C6 = .4 * I! REM   SECCION DE PROA
9010    LET A(1,1) = C5 ^ 2!A(1,2) = C5 ^ 3!B(1) =   A2
9015    LET A(2,1) = C6 ^ 2!A(2,2) = C6 ^ 3!B(2) = F1(1,1)   A2
9020    GOSUB 8560
9022    LET P4(1,1) = A2!P4(1,2) = X(1)!P4(1,3) = X(2)
9025    LET C5 = L / 2!C6 = I / N1! REM   SECCION DE POPA
9030    LET A(1,1) = C5 ^ 3 / 3!A(1,2) =     (C5 ^ 4 / 4)!A(1,3) = C5 ^ 5 /
9035 A(2,1) = C5 ^ 2!A(2,2) =     C5 ^ 3!A(2,3) = C5 ^ 4
9040    LET A(3,1) = C6 ^ 2!A(3,2) =     C6 ^ 3!A(3,3) = C6 ^ 4
9045    LET B(1) = V3 / 2   A2 * I   X(1) * C5 ^ 3 / 3   X(2) * C5 ^ 4 / 4
9050    LET B(2) = F1(10,1)   A2!B(3) =     A2
9055    LET N = 3! GOSUB 6200
9060    LET P4(2,0) = A2!P4(2,1) = X(1)!P4(2,2) = X(2)!P4(2,3) = X(3)
9065    RETURN
9100    REM   SUBRUTINA DE CURVA DEL PLANO DE FLOTACION
9110    LET C5 = L / 2
9115    LET A(1,1) =   C5!A(1,2) = C5 ^ 2 / 5!A(1,3) =   C5 ^ 3 / 25!B(1)
        0
9120    LET A(2,1) = C5!A(2,2) = C5 ^ 2!A(2,3) = C5 ^ 3!B(2) =      L1 / 2
```

```
9125   LET A(3,1) = 61 * C5 ^ 3 / 12:A(3,2) = 43 * C5 ^ 4 / 12:A(3,3) = 11:
       * C5 ^ 5 / 40:B(3) = 7 * B2 * A1 + 5,5 * C5 * (A1 - L1 * C5)
9130   LET N = 3! GOSUB 6200
9140   LET P3(1,1) = L1 / 2:P3(1,2) = X(1):P3(1,3) = X(2):P3(1,4) = X(3)
9150   LET P3(2,3) = 60 * (C5 ^ 3 / 3 * X(1) + C5 ^ 4 / 4 * X(2) + C5 ^ 5 /
       5 * X(3) - B2 * A1) / (11 * C5 ^ 4)! REM  COEF. DE POPA
9155   LET P3(2,2) = C5 * P3(2,3) / 5
9160   REM  CALCULO DE LA INTERSECCION N1
9165   LET N1 = - L * 2 * P3(2,3) / (   P3(2,2) +  SQR (P3(2,2) ^ 2 - 2 *
       P3(2,3) * L1))
9170   RETURN
```

]

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******************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	
L/V1^(1/3)	4.20080899
L/B	5.14564938
B/H	3.72053769
B/D	2.8049469
ANGULO MEDIO DE ENTRADA	2.4081338
ASTILLA MUERTA	40.1181443
ANGULO DE LA RODA	11.6010672
% LCB/L	59.8340402
% LCF/L	-1.45010167
KB/V3^(1/3)	3.57774639
KM/V3^(1/3)	.256913526
COEF. BLOCK	.604274272
COEF. PRISMATICO	.518937493
COEF. DE FLOTACION	.685367054
COEF. DE SECCION	.837025783
	.757167258

****************************TABLA DE PUNTOS(%)********************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	16.1261035	29.0665854	38.993127?
2	12.2887812	35.9981968	54.0699659	67.1142985
3	24.8238047	51.573987	74.2735541	86.288635?
4	38.3004083	68.7932323	86.2203456	95.134323
5	46.1329457	73.6682064	88.7577516	96.098564?
6	44.373787	69.6067296	85.2373273	94.0400084
7	34.0218294	60.7134594	78.2327524	88.806045?
8	2.7002202	39.8769581	64.3638726	79.204339
9	0	0	25.0690048	58.881959?
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.6416535E 07	6.12996877	12.234277?
1	46.1163348	50.6871086	55.1559755	61.776886?
2	75.7906908	80.8245303	84.5151842	88.633454?
3	92.7685993	95.6183977	97.3922501	99.511799?
4	98.9987445	100.274813	100.771825	101.11974
5	99.0893662	100	100.232058	100.16509?
6	98.339834	100	100.164955	100.16509?
7	94.4342362	96.8671337	97.4610686	97.492523?
8	87.1451995	90.601401	91.872555	92.147380?
9	75.0941668	81.202802	83.4367065	84.129667?
10	19.2942107	68.6713367	73.3673544	73.43930??

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	16.6776432	9.37780287	6.2518686	3.1259343	0
EST	6	7	8	9	10
	-2.254301051	.60821147	15.6694994	?? ???????	

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4,10829884
L/V1^(1/3)	5,03233198
L/B	3,6972474
B/H	2,79423867
B/D	2,41409348
ANGULO MEDIO DE ENTRADA	24,6545704
ASTILLA MUERTA	2,5856572
ANGULO DE LA RODA	57,8473482
% LCB/L	-1,96068211
% LCF/L	-4,45794424
KB/V3^(1/3)	,232487851
KM/V3^(1/3)	,474154923
COEF, BLOCK	,550009997
COEF, PRISMATICO	,586198686
COEF, DE FLOTACION	,721990476
COEF, DE SECCION	,93826549

*****************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10,2667781	19,0899607	25,2959889
2	15,679031	38,7982761	50,4184798	55,5175043
3	51,3309197	74,3510694	77,9430324	78,3366887
4	89,406377	92,5771884	92,6057753	92,6058839
5	94,0340953	99,7696977	99,9950951	99,9999559
6	75,8923111	94,3970944	99,002745	99,8795253
7	48,9860314	76,2924606	88,0369966	92,3174234
8	2,87394882	44,3408349	66,1843321	76,3212234
9	0	0	21,3560676	48,321390
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1,66811201E-07	3,2444843	6,4953114
1	29,2928587	31,5147101	33,5118371	36,5278511
2	57,3461557	57,8176521	59,0130265	62,255520
3	78,362489	78,3632391	79,351792	82,2555204
4	92,605884	92,605884	93,2925444	82,3173887
5	99,9999999	100	100	95,3525255
6	99,992249	100	100	100
7	93,5382556	93,772098	93,8599109	100
8	80,2170635	81,3162939	81,8699972	95,01783
9	59,2958106	62,6325878	64,3381795	85,053502
10	9,94481409	37,7209797	45,8233267	70,1070041
				50,1783401

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**********

EST	1	2	3	4	5
	18,6301058	9,28352173	6,18901447	3,09450727	0
EST	6	7	8	9	10
	-2,252705671	,64350954	15,8020844	42,2378815	80,712389

```
***********************CARACTERISTICAS   PRINCIPALES********************
    L/V3^(1/3)                                    4,10829884
    L/V1^(1/3)                                    5,03233198
    L/B                                           3,6972474
    B/H                                           2,79856412
    B/D                                           2,41409348
    ANGULO MEDIO DE ENTRADA                       28,1781875
    ASTILLA MUERTA                                3,94097613
    ANGULO DE LA RODA                             57,8473482
    % LCB/L                                       -2,00633557
    % LCF/L                                       -4,28884002
    KB/V3^(1/3)                                   ,23638248
    KM/V3^(1/3)                                   ,49160006
    COEF, BLOCK                                   ,550009997
    COEF, PRISMATICO                              ,606237195
    COEF, DE FLOTACION                            ,745235146
    COEF, DE SECCION                              ,907252148
```

```
*****************************TABLA DE PUNTOS(%)************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	11,4977703	21,3801815	28,3312221
2	14,787566	38,3249821	51,6959488	58,4860401
3	42,7248334	71,4018768	79,6078399	81,450871
4	77,2994554	92,6124017	94,0317896	94,1159339
5	84,2090913	98,1248502	99,8491473	99,9930976
6	70,1465756	91,3610567	98,007707	99,6700267
7	47,8949216	75,5226722	87,9226777	92,6772024
8	3,08078266	46,1334855	68,3793943	78,4683583
9	0	0	23,9876984	52,7653108
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,66811201E-07	3,91465971	7,6410771
1	32,807882	35,2964329	37,5332664	40,91126
2	61,4035143	62,3557194	63,6715928	66,774388
3	81,7409448	81,7667896	82,6364207	85,238306
4	94,118544	94,1185732	94,6666521	96,3108875
5	99,9998711	100	94,6666521	96,3108875
6	99,9685078	100,000001	100,000002	100,000001
7	94,1207589	94,4205875	100,000001	100,000001
8	82,237079	83,2617627	94,5389778	95,485448
9	63,5677182	66,5235254	83,7598459	86,4563431
10	12,3504387	44,2058755	67,915801	72,9126856
			51,7363511	54,854476

```
*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**********
```

EST 1	2	3	4	5
18,6318991	9,29789249	6,19859198	3,09929749	0

EST 6	7	8	9	10
-2,252948	851,63828165	15,78172	42,2073654	80,7123892

```
*************************CARACTERISTICAS  PRINCIPALES********************
       L/V3^(1/3)
       L/V1^(1/3)                                           4,10829884
       L/B                                                  5,03233198
       B/H                                                  3,6972474
       B/D                                                  2,80289626
       ANGULO MEDIO DE ENTRADA                              2,41409348
       ASTILLA MUERTA                                       31,5691815
       ANGULO DE LA RODA                                    5,26096459
       % LCB/L                                              57,8473482
       % LCF/L                                              1,99399686
       KB/V3^(1/3)                                          4,09758596
       KM/V3^(1/3)                                          ,239734802
       COEF, BLOCK                                          ,509930767
       COEF, PRISMATICO                                     ,550009997
       COEF, DE FLOTACION                                   ,626275704
       COEF, DE SECCION                                     ,768479817
                                                            ,87822343
```

```
**************************************TABLA DE PUNTOS(%)**************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	12,7612671	23,731186	31,4471232
2	14,2429368	38,1907775	53,0196851	61,3670893
3	37,1436764	68,03859	80,1573153	84,1156594
4	65,775799	89,8166892	94,8203699	95,5911932
5	74,8176152	94,8748011	99,2202584	99,9222279
6	64,9592541	88,0503011	96,6550286	99,2993109
7	46,4854286	74,9887148	87,5468995	92,8980976
8	3,2348978	47,3373835	70,0422671	80,2944174
9	0	0	26,2977688	56,71397
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,66811201E-07	4,62686258	8,81452937
1	36,416374	39,1787363	41,6616643	45,4112958
2	65,442231	67,0114836	68,5133286	71,4144912
3	85,1021431	85,2608626	86,0241301	88,2378568
4	95,6677142	95,6714946	96,0775433	97,2951331
5	99,9960715	100	100,000172	100,0000061
6	99,9106996	100,000061	100,000061	100,000061
7	94,6452074	95,043932	95,2081242	95,94287
8	84,1034303	85,1317959	85,6213342	87,8284936
9	67,514485	70,2635918	71,4761911	75,6569269
10	14,7222794	50,4393197	57,3394116	59,4281711

```
*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************
```

EST 1	2	3	4	5
18,6337571	9,31228554	6,20819035	3,10409521	0

EST 6	7	8	9	10
-2,2531924	1,63304571	15,7613242	42,1768019	80,7123892

***************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4,10829884
L/V1^(1/3)	5,03233198
L/B	3,6972474
B/H	2,80723512
B/D	2,41409348
ANGULO MEDIO DE ENTRADA	34,7703045
ASTILLA MUERTA	6,54570613
ANGULO DE LA RODA	57,8473482
% LCB/L	-1,93656247
% LCF/L	-3,90171472
KB/V3^(1/3)	,242649125
KM/V3^(1/3)	,529362967
COEF, BLOCK	,550009997
COEF, PRISMATICO	,646314214
COEF, DE FLOTACION	,791724488
COEF, DE SECCION	,850994742

*********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	14,0410068	26,1127592	34,6036625
2	13,9178288	38,3070186	54,4059289	64,1879828
3	33,3279996	65,0015918	80,0754887	86,27321
4	57,0115975	85,5730476	91,5450788	96,7959753
5	66,8806825	90,7523523	97,9554463	99,6783069
6	60,3209608	84,6317706	95,0028395	98,7461229
7	44,8668509	72,9666372	86,9339728	92,9822031
8	3,33879349	48,025003	71,2542114	81,8649492
9	0	0	28,2657159	60,232178
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1,66811201E-07	5,37325968	10,0003579
1	40,0719838	43,1117554	45,8440068	49,9701405
2	69,4389894	71,7341064	73,4713585	76,1165248
3	88,3242206	88,8005798	89,4992824	91,2780853
4	97,2016859	97,2447021	97,5103412	98,2933986
5	99,9711932	100	100,002415	100,001042
6	99,8010443	100	100,001042	100,001042
7	95,1160199	95,6545975	95,8791253	96,4000128
8	85,8638825	86,9637925	87,4799606	89,1979552
9	71,2370316	73,927585	75,0545065	78,3948688
10	17,0587568	56,5459751	62,7390889	63,9907536

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(ZH)***********

EST 1	2	3	4	5
18,6356806	9,32670084	6,21780056	3,10890031	0

EST 6	7	8	9	10
-2,2534363	1,62780176	15,7408971	42,1461919	80,712389

```
*************************CARACTERISTICAS  PRINCIPALES**********************
```

L/V3^(1/3)	4,10829884
L/V1^(1/3)	5,03233198
L/B	3,6972474
B/H	2,81158068
B/D	2,41409348
ANGULO MEDIO DE ENTRADA	37,7346125
ASTILLA MUERTA	7,79680665
ANGULO DE LA RODA	57,8473482
% LCB/L	-1,84875515
% LCF/L	-3,71976635
KB/V3^(1/3)	,24520895
KM/V3^(1/3)	,550096471
COEF, BLOCK	,550009997
COEF, PRISMATICO	,666352723
COEF, DE FLOTACION	,814969159
COEF, DE SECCION	,825403692

```
*************************TABLA DE PUNTOS(%)********************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	15,3175082	28,4886896	37,7528603
2	13,7373279	38,6006593	55,8373629	66,9437037
3	30,5838435	62,4258301	79,7005195	88,003886
4	50,4341635	81,0514977	93,3904707	97,552466
5	60,3346644	86,3629367	96,1160005	99,1832933
6	56,1827941	81,2176098	93,1210139	98,0097848
7	43,1271422	71,3262465	86,1115526	92,934879
8	3,39861893	48,2821133	72,0932802	83,2369983
9	0	0	29,9072048	63,40650
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,66811201E 07	6,14376664	11,1802264
1	43,7191519	47,0357168	50,0167329	54,5185235
2	73,3568428	76,4428602	78,4629388	80,8100509
3	91,3368599	92,3321451	93,0330695	94,3150853
4	98,6315653	98,8142868	98,9571392	99,2939031
5	99,8944331	100	100,013433	100,006781
6	99,62542	100	100,006781	100,006731
7	95,5392532	96,2675273	96,5570857	96,87231
8	87,5647466	88,8025822	89,3707133	90,6033897
9	74,8406284	77,6051643	78,7110546	81,1999985
10	19,3936561	62,6752739	68,0399463	68,6621434

```
*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********
```

EST 1	2	3	4	5
18,6376685	9,34113847	6,22742564	3,11371285	0

EST 6	7	8	9	10
-2,25368059	1,62254954	15,7204379	42,1155337	80,7123892

**************************CARACTERISTICAS PRINCIPALES*******************

```
L/V3^(1/3)                                      4.10829884
L/V1^(1/3)                                      5.03233198
L/B                                             3.6972474
B/H                                             2.81593298
B/D                                             2.41409348
ANGULO MEDIO DE ENTRADA                         40.4260237
ASTILLA MUERTA                                  9.01746291
ANGULO DE LA RODA                               57.8473482
% LCB/L                                         -1.7471906
% LCF/L                                         -3.57128902
KB/V3^(1/3)                                     .247481654
KM/V3^(1/3)                                     .572319877
COEF. BLOCK                                     .550009997
COEF. PRISMATICO                                .686391232
COEF. DE FLOTACION                              .838213829
COEF. DE SECCION                                .801306852
```

***************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	16.5679137	30.816478	40.8384021
2	13.6507392	39.0059374	57.2748739	69.602687
3	28.5239669	60.2677481	79.2026731	89.39563
4	45.3880211	76.7513396	91.6911514	97.8404084
5	51.9192903	82.0387679	93.9624037	98.423456
6	52.485783	77.8784169	91.0764897	97.1041998
7	41.3346866	69.5311505	85.1114998	92.7663585
8	3.42280206	48.2018126	72.6376633	84.4655295
9	0	0	31.2704235	66.3416831
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.66811201E 07	6.92598548	12.332601
1	47.2926674	50.8804643	54.1052408	58.97512
2	77.1423061	81.0565571	83.3918922	85.4133119
3	94.1034319	95.7924178	96.5735974	97.299541
4	99.8780964	100.352186	100.414756	97.299541
5	99.7375506	100	100.414756	100.286197
6	99.3754511	100	100.044682	100.025664
7	95.9234993	96.9002609	100.025664	100.025664
8	89.2544803	90.7007825	97.2362329	97.3828655
9	78.4373378	81.4015649	91.3289863	92.0972682
10	21.7935613	69.0026082	82.5204665	84.1688722
			73.3762798	73.5976777

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
18.6397213	9.35559843	6.23706562	3.11853284	0

EST 6	7	8	9	10
-2.2539252	41.61728924	15.6999473	42.0848283	80.7123892

******************************CARACTERISTICAS PRINCIPALES*************************

```
L/V3^(1/3)                          4.10829884
L/V1^(1/3)                          5.03233198
L/B                                 3.6972474
B/H                                 2.820292
B/D                                 2.41409348
ANGULO MEDIO DE ENTRADA            42.8180985
ASTILLA MUERTA                     10.2121755
ANGULO DE LA RODA                  57.8473482
% LCB/L                             1.6504867
% LCF/L                             3.47683893
KB/V3^(1/3)                          .249520809
KM/V3^(1/3)                          .596221915
COEF. BLOCK                          .550009997
COEF. PRISMATICO                     .706429741
COEF. DE FLOTACION                   .8614585
COEF. DE SECCION                     .778577069
```

******************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	17.7658433	33.0470583	43.7952653
2	13.6216326	39.1644131	58.6682758	72.1149669
3	26.9207433	58.445072	78.6508882	90.5041535
4	41.4085118	72.8261374	89.7047639	97.7236376
5	50.3866706	77.9307676	91.5592814	97.4286304
6	49.1704578	74.6536765	88.9252795	96.0505256
7	39.5409982	67.6382138	83.9691442	92.4922778
8	3.42082079	47.8799643	72.9686618	85.6085615
9	0	0	32.4314245	69.1612871
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.66811201E 07	7.70508237	13.4326556
1	50.71723	54.5649842	58.0233822	63.2460477
2	80.7264335	85.4779811	88.1486976	89.8324281
3	96.5949816	99.1084858	100.04746	100.175817
4	100.896272	101.825994	101.873248	101.260236
5	99.4854057	100	100.108804	100.069704
6	99.0481932	100	100.069685	100.069704
7	96.2805851	97.5730511	97.9154997	97.962411
8	90.9863648	92.7191533	93.3787813	93.7478243
9	82.1499564	85.4383067	86.5529827	87.4259446
10	24.3557339	75.7305111	78.9566743	78.9967716

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST 1	2	3	4	5
18.6418389	9.37008077	6.2467205	3.12336027	0

EST 6	7	8	9	10
-2.25417035	1.61202082	15.679425	42.0540755	80.7123891

***************************CARACTERISTICAS PRINCIPALES********************

$L/V3^{(1/3)}$	4.10829884
$L/V1^{(1/3)}$	5.03233198
L/B	3.6972474
B/H	2.82465778
B/D	2.41409348
ANGULO MEDIO DE ENTRADA	44.891521
ASTILLA MUERTA	11.3856455
ANGULO DE LA RODA	57.8473482
% LCB/L	-1.57948894
% LCF/L	-3.45797956
$KB/V3^{(1/3)}$	.25136976
$KM/V3^{(1/3)}$	.622022115
COEF. BLOCK	.550009997
COEF. PRISMATICO	.726468251
COEF. DE FLOTACION	.884703171
COEF. DE SECCION	.757101218

*********************************TABLA DE PUNTOS(%)**************************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	0	18.8812389	35.1245079	46.5493353
2	13.6209358	39.9202769	59.9578058	74.4145815
3	25.6309043	56.8739126	78.0580949	91.35026
4	38.187265	69.289332	87.5891235	97.2803019
5	46.5407707	74.0939892	89.0509574	96.2454338
6	46.1821562	71.5619762	86.7106564	94.8717363
7	37.7815301	65.6944579	82.7197246	92.1321656
8	3.40226951	47.4117273	73.1725432	86.7309999
9	0	0	33.4932883	72.0151493
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	1.66811201E 07	8.46354849	14.4522173
1	53.9070104	57.9969356	61.6729629	67.22425
2	84.0249048	89.5963227	92.6103275	93.960305
3	98.7761885	102.197212	103.363703	102.88035
4	101.666453	103.198774	103.309323	102.204394
5	99.1358648	100	100.216426	102.204394
6	98.6446968	100	100.151999	100.152413
7	96.625543	98.3089836	100.151999	100.152413
8	92.8206926	94.9269507	98.6376665	98.6489862
9	86.1184509	89.8539013	95.5349955	95.6421335
10	27.2103488	83.0898355	90.8497585	91.1318545
			85.1167701	85.1181491

*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
18.6440215	9.38458554	6.25639035	3.1281952	0

EST 6	7	8	9	10
-2.25441584	1.60674423	15.6588709	42.0232749	80.712389

************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	
L/V1^(1/3)	4,33850115
L/B	5,31431108
B/H	3,75453036
B/D	2,32080672
ANGULO MEDIO DE ENTRADA	2,03493558
ASTILLA MUERTA	18,6118851
ANGULO DE LA RODA	16,9869991
% LCB/L	68,2530512
% LCF/L	-1,03924047
KB/V3^(1/3)	-4,64205277
KM/V3^(1/3)	,32009173
COEF, BLOCK	,584485951
COEF, PRISMATICO	,400009944
COEF, DE FLOTACION	,554
COEF, DE SECCION	,68464
	,722039609

*********************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,79011297	6,58166529	11,3731567	16,164574E
2	8,84238617	22,9471036	33,9086035	42,0072467
3	21,6673528	44,3674271	58,8002253	67,185517
4	34,9141135	61,7965139	77,381107	85,489705E
5	39,5305952	66,2710327	83,2222833	93,035850E
6	33,3105722	56,3011469	73,8635159	86,5742125
7	19,031763	38,7623315	56,1091808	70,969655E
8	0	16,5439929	33,5436244	49,5742424
9	0	0	5,04705145	22,69253E
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5,06233516E 08	1,85329722	4,91173235
1	20,9559011	25,7471037	30,538371	35,329925E
2	47,5527753	50,8965244	54,7622203	61,610359E
3	71,442953	73,1723933	75,8978381	82,2468712
4	89,0800286	90,2988414	91,9365775	95,7332981
5	97,9965336	100	100,667687	100,563477
6	95,0568397	100	100,563353	100,563477
7	83,2115973	92,6528242	94,7484552	94,75965E
8	64,4672879	77,9584725	82,974974	83,1519997
9	39,7095146	55,9169451	64,6702423	65,740523
10	4,6313004	26,5282417	38,456673	42,5252205

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
10,440086	7,83006453	5,22004301	2,61002152	0

EST 6	7	8	9	10
-2,228110462	,17225326	17,86172	45,3242606	80,7123891

***********************CARACTERISTICAS   PRINCIPALES*********************

```
L/V3^(1/3)                                        4,33850115
L/V1^(1/3)                                        5,31431108
L/B                                               3,75453036
B/H                                               2,3243993
B/D                                               2,03493558
ANGULO MEDIO DE ENTRADA                           16,3289073
ASTILLA MUERTA                                    15,5560698
ANGULO DE LA RODA                                 68,2530512
% LCB/L                                           -,967594997
% LCF/L                                           -4,67359375
KB/V3^(1/3)                                       ,316955068
KM/V3^(1/3)                                       ,573278931
COEF, BLOCK                                       ,400009944
COEF, PRISMATICO                                  ,511027741
COEF, DE FLOTACION                                ,66959218
COEF, DE SECCION                                  ,739352003
```

*****************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,63371558	6,01802215	10,4022727	14,7864555
2	9,07834063	23,162641	33,6332781	40,9687115
3	23,2872352	46,3065337	59,792165	66,89707
4	37,8906335	65,0392142	79,3991963	86,0959981
5	42,3537132	69,5500881	85,7764871	94,5139576
6	34,7606374	58,1804784	75,6052653	87,8242267
7	19,184352	38,974361	56,272938	70,9893265
8	0	15,9687149	32,4766943	48,1830365
9	0	0	4,58393596	20,7993166
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,30105621E-07	1,59795665	4,28951513
1	19,1705546	23,5545396	27,9385842	32,322894
2	45,6694794	48,2654475	51,6636159	58,3984725
3	70,0921812	71,1990857	73,6725567	80,062218
4	88,6853998	89,4218158	90,9271528	94,8600924
5	98,5509776	100	100,43159	100,338055
6	95,6638189	100	100,338056	100,338055
7	83,0075291	92,1691146	94,2003209	94,2115735
8	62,9387388	76,5073438	81,7512848	81,9586046
9	36,9501794	53,0146877	62,2865429	63,5791505
10	3,67687103	21,6911461	33,178898	39,0732117

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
10,4562472	7,04218541	5,22812361	2,61406184	0

EST 6	7	8	9	10
-2,22831548	2,16784391	17,8445441	45,2985223	80,7123891

*****************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4.33850115
L/V1^(1/3)	5.31431108
L/B	3.75453036
B/H	2.32799745
B/D	2.03493558
ANGULO MEDIO DE ENTRADA	14.0818507
ASTILLA MUERTA	11.1207775
ANGULO DE LA RODA	68.2530512
% LCB/L	.853787289
% LCF/L	-4.67484493
KB/V3^(1/3)	.313607346
KM/V3^(1/3)	.562416225
COEF. BLOCK	.400009944
COEF. PRISMATICO	.528055481
COEF. DE FLOTACION	.654544359
COEF. DE SECCION	.757514992

********************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.48385708	5.47640329	9.46889919	13.4613346
2	9.40174379	23.5019632	33.4352847	39.9599702
3	25.297626	48.5206075	60.7784942	66.4807203
4	41.450501	68.5599009	81.3244293	86.5062033
5	45.5743367	73.0791121	88.3473419	95.8901637
6	36.2708206	60.095494	77.3364552	89.0313308
7	19.2417267	39.0255095	56.2546387	70.8468475
8	0	15.2513915	31.1719475	46.5249194
9	0	0	4.07761984	18.7453090
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4.83386872E-08	1.35740312	3.69097783
1	17.453694	21.4459514	25.4382622	29.43081
2	43.81873	45.7351416	48.7226875	55.3241574
3	68.678756	69.3013562	71.5980645	77.9968943
4	88.1942453	88.5783806	90.0153508	94.0748953
5	99.0223222	100	100.255083	100.184035
6	96.2303789	100	100.184035	100.184035
7	82.697473	91.6644111	93.7077187	93.72116
8	61.1944362	74.9932332	80.5517147	80.7954377
9	33.9725046	49.9864665	59.8718629	61.4068408
10	2.71601796	16.6441108	27.145489	35.5553781

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	10.4724333	7.85432499	5.23621664	2.61810834	0
EST	6	7	8	9	10
	-2.22852098	2.16342766	17.8273415	45.2727441	80.7123885

****************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	4.22373306
L/V1^(1/3)	5.1737295
L/B	3.72625201
B/H	2.33101355
B/D	2.0410003
ANGULO MEDIO DE ENTRADA	18.8161294
ASTILLA MUERTA	13.1373299
ANGULO DE LA RODA	66.3330807
% LCB/L	-1.11868516
% LCF/L	-4.64060707
KB/V3^(1/3)	.306352202
KM/V3^(1/3)	.549551487
COEF. BLOCK	.428882421
COEF. PRISMATICO	.554409071
COEF. DE FLOTACION	.685114523
COEF. DE SECCION	.773584784

*******************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.97433443	7.33144395	12.4383124	17.2597795
2	10.4682163	26.1119293	37.1731576	44.4707222
3	26.5269878	50.971932	64.0053936	70.14169
4	43.2778544	70.8879188	83.5080269	88.4531916
5	48.040158	75.6282034	90.0832231	96.7486793
6	39.5797012	64.1412528	80.8447161	91.3627992
7	22.6785927	44.6630221	62.4274892	76.1804064
8	0	19.5037197	38.3018557	54.3872296
9	0	0	5.99627044	25.7964764
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	9.75757106E-08	1.99185464	5.2491607
1	21.7457514	25.8175561	30.0204314	34.97821
2	48.810253	50.9810673	54.1549188	60.9873601
3	72.5424667	73.2358005	75.4704587	81.6103785
4	89.9953883	90.3270224	91.6001492	95.2130203
5	99.2902287	100	100.166631	100.113063
6	97.264999	100	100.113063	100.113063
7	86.1633823	92.6677497	94.3158725	100.113063
8	67.6901139	78.0032492	82.4224213	94.3456264
9	42.572858	56.0064983	63.7634611	82.8107539
10	4.92872257	26.6774972	38.0031236	65.508444E

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	10.6973701	7.80526706	5.20351137	2.6017557	0
EST	6	7	8	9	10
	-2.22769087	2.18127418	17.8968594	45.3769173	80.712388E

************************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)
L/V1^(1/3)                                    4.22373306
L/B                                           5.1737295
B/H                                           3.72625201
B/D                                           2.33462194
ANGULO MEDIO DE ENTRADA                       2.0410003
ASTILLA MUERTA                                20.929021
ANGULO DE LA RODA                             14.1732408
% LCB/L                                       66.3330807
% LCF/L                                       1.17289085
KB/V3^(1/3)                                   4.58791707
KM/V3^(1/3)                                   .308060473
COEF. BLOCK                                   .558510083
COEF. PRISMATICO                              .428882421
COEF. DE FLOTACION                            .566246589
COEF. DE SECCION                              .698846044
                                              .757412812
```

**************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.12914529	7.91700102	13.4344803	18.6435927
2	10.2592316	26.0228857	37.6243234	45.654294
3	24.9360845	49.3273256	63.4420077	70.7698752
4	40.3132767	68.1244743	82.1577611	88.3444674
5	45.3534508	72.8442946	88.1822258	95.8054059
6	38.294945	62.5952255	79.5285366	90.5068309
7	22.6360649	44.6332827	62.4698058	76.336034
8	0	20.290708	39.4934785	55.817145
9	0	0	6.57748352	27.80483
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.08362975E 07	2.25059349	5.87157585
1	23.4902141	27.8893462	32.4300554	37.7863342
2	50.7232079	53.4672154	56.9866328	63.9409923
3	74.0057789	75.1004115	77.4678572	83.5703194
4	90.5760236	91.1557385	92.4503777	95.9090852
5	98.9947066	100	100.264729	100.192058
6	96.8948227	100	100.192058	100.192059
7	86.4536427	93.0913922	94.6941218	94.71688
8	69.1350026	79.2741767	83.4377813	83.7665469
9	45.2096077	58.5483534	65.8365397	67.3410353
10	5.87009451	30.9139223	42.2559801	45.4403534

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	10.7083248	7.81734953	5.21156634	2.60578319	0

EST	6	7	8	9	10
	-2.22789533	2.17687876	17.8797379	45.3512605	80.712389

**********************************CARACTERISTICAS PRINCIPALES*********************************

```
L/V3^(1/3)                          4.11720097
L/V1^(1/3)                          5.04323636
L/B                                 3.69950487
B/H                                 2.3408546
B/D                                 2.04679593
ANGULO MEDIO DE ENTRADA            19.3416305
ASTILLA MUERTA                      9.78814019
ANGULO DE LA RODA                  64.4131102
% LCB/L                            -1.25782313
% LCF/L                            -4.63227804
KB/V3^(1/3)                         .293372953
KM/V3^(1/3)                         .518972582
COEF. BLOCK                         .458345674
COEF. PRISMATICO                    .55663659
COEF. DE FLOTACION                  .687698444
COEF. DE SECCION                    .823419951
```

TABLA DE PUNTOS(%)******************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.84940365	7.98899152	13.5477674	18.480766
2	12.2179304	29.3101131	40.2866945	46.740219
3	32.4416499	57.757299	68.4780868	72.31395
4	54.0346989	79.8373101	87.999736	90.0646303
5	58.5876398	85.0370373	95.5164364	98.9803524
6	47.022001	72.4720686	87.3836917	95.2411147
7	27.1434781	51.3944566	69.0823176	81.1937465
8	0	23.404669	43.8966995	59.6413116
9	0	0	7.29029382	29.711674
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.9851419E-08	2.16765022	5.5412111
1	22.7279491	26.2025589	29.8094818	34.53428
2	50.0656835	51.4430707	54.0413729	60.3587303
3	73.3833958	73.5823031	75.4973282	81.1335768
4	90.4406317	90.4810236	91.6085282	94.9778598
5	99.8563627	100	100.020168	100.010613
6	98.7753111	100	100.010613	100.010613
7	88.7370884	92.7486822	94.1517548	94.3054484
8	70.9622564	78.2460465	81.9706976	82.8951187
9	45.9476038	56.492093	62.920866	65.779624
10	5.40810523	27.4868218	38.2345246	42.9589646

***********************ALTOS DEL ALERIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	11.9207644	7.78195635	5.18797089	2.59398546	0

EST	6	7	8	9	10
	-2.22729639	2.18975416	17.9298921	45.4264169	80.712388

********************************CARACTERISTICAS PRINCIPALES********************************

L/V3^(1/3)	4,11720097
L/V1^(1/3)	5,04323636
L/B	3,69950487
B/H	2,34447822
B/D	2,04679593
ANGULO MEDIO DE ENTRADA	23,7008555
ASTILLA MUERTA	11,9341919
ANGULO DE LA RODA	64,4131102
% LCB/L	-1,33940995
% LCF/L	-4,49665126
KB/V3^(1/3)	,297807504
KM/V3^(1/3)	,537766823
COEF, BLOCK	,458345674
COEF, PRISMATICO	,580927868
COEF, DE FLOTACION	,715876327
COEF, DE SECCION	,788988959

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,15350315	9,31016585	15,7903468	21,5407412
2	11,6587036	29,0492759	41,3366499	49,4360445
3	28,030227	53,8741439	67,6786225	74,1920642
4	45,6319779	73,7448607	86,0123052	90,6153214
5	51,2592834	78,7564037	92,0664911	97,6507584
6	43,5339911	68,7008956	84,5430326	93,6378311
7	26,7893501	50,9851721	68,8806865	81,3407571
8	0	24,8791686	46,2932478	62,4246864
9	0	0	8,6368989	34,124674
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,03345988E 07	2,76947858	6,92239811
1	26,4916598	30,541971	34,7464891	40,2540776
2	54,2471294	56,6503651	59,8080722	66,3073831
3	76,7472535	77,4877739	79,5168402	85,0083998
4	91,9523397	92,2167884	93,27162	96,2832134
5	99,5454475	100	100,092329	100,05791
6	98,1875135	100	100,05791	100,05791
7	89,2644693	93,5960269	94,8757165	94,947184
8	73,7414766	80,7880805	84,0765641	84,7257409
9	51,3580138	61,5761609	67,201144	69,393571
10	7,5236054	35,9602683	46,4300892	48,9506791

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)********************

EST 1	2	3	4	5
11,9259049	7,79400269	5,19600177	2,59800089	0

EST 6	7	8	9	10
-2,22750024	2,18537192	17,9128217	45,4008368	80,712388

***************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4:01801491
L/V1^(1/3)	4:9217415
L/B	3:67415164
B/H	2:35035637
B/D	2:0523437
ANGULO MEDIO DE ENTRADA	20:4186842
ASTILLA MUERTA	6:95997982
ANGULO DE LA RODA	62:4931397
% LCB/L	-1:44332619
% LCF/L	-4:60951992
KB/V3^(1/3)	:281335685
KM/V3^(1/3)	:492984447
COEF: BLOCK	:488371539
COEF: PRISMATICO	:561922231
COEF: DE FLOTACION	:693829789
COEF: DE SECCION	:86910877

*******************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1:40248166	8:67975786	14:905153	20:0659342
2	14:0434771	32:5153037	43:3540061	49:0752023
3	39:2553804	64:1385271	72:0156591	74:01005
4	66:9858384	86:9391364	90:3895483	90:816503
5	71:0793081	93:0942528	98:7309275	99:840590
6	55:7220423	80:8372756	92:9024979	97:918903
7	32:671725	58:9996003	75:8694223	85:762003
8	0	28:327177	50:5225826	65:332262
9	0	0	9:14954201	34:816452
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1:62632896E 08	2:4367866	5:9105190
1	24:1462587	27:1252196	30:1695835	34:46407
2	51:6540903	52:5502635	54:6579326	60:114352
3	74:3735929	74:4126976	76:0519259	80:956832
4	90:8489486	90:8500878	91:8643391	94:906977
5	99:9892286	100	100:000656	100:00025
6	99:6020214	100	100:000255	100:00025
7	90:8429687	92:938452	93:9029193	94:428268
8	74:2636762	78:8153561	81:4431079	83:284296
9	50:0405618	57:6307123	62:2498085	66:568337
10	6:23941058	29:3845205	39:4871447	44:280392

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
13:7048417	7:75999673	5:17333115	2:58666559	0

EST 6	7	8	9	10
-2:22692475	2:19774277	17:9610103	45:473048	80:712389

**************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4,01801491
L/V1^(1/3)	4,9217415
L/B	3,67115164
B/H	2,3539947
B/D	2,0523437
ANGULO MEDIO DE ENTRADA	24,1599507
ASTILLA MUERTA	8,73570542
ANGULO DE LA RODA	62,4931397
% LCB/L	1,52268047
% LCF/L	-4,48413129
KB/V3^(1/3)	,285472331
KM/V3^(1/3)	,508691079
COEF, BLOCK	,488371539
COEF, PRISMATICO	,582675648
COEF, DE FLOTACION	,717903752
COEF, DE SECCION	,838153338

*************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,59528958	9,8756062	16,9590541	22,8311463
2	13,3699788	32,1753172	44,3743672	51,6341499
3	33,8151273	60,5535824	72,1006547	76,3295199
4	56,7330154	82,5374257	90,2118759	92,0162442
5	62,6257222	88,002653	96,8728801	99,3991145
6	51,9019626	77,3485593	90,7398591	96,9470494
7	32,2854989	58,6173153	75,7526554	85,9885396
8	0	29,8809802	52,852562	67,8450253
9	0	0	10,6099807	39,1116709
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5,45391959E 08	3,00753558	7,1439929
1	27,4738576	30,8634007	34,3273538	39,2137217
2	55,4317378	57,0360808	59,4750792	65,044458
3	77,5428547	77,7770606	79,3974927	84,1262967
4	92,3166046	92,3453603	93,2484471	95,9493307
5	99,9311064	100	100,007647	100,003655
6	99,3291506	100	100,003655	100,003655
7	91,3680284	93,6546929	94,6057159	94,937490
8	76,6412759	80,9640786	83,3249398	84,8051624
9	54,8198955	61,9281573	65,9317805	69,6066707
10	8,24524006	36,5469288	46,3216695	49,342014

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	13,7057577	7,77200915	5,1813394	2,59066972	0

EST	6	7	8	9	10
	-2,22712803	2,19337284	17,943988	45,1475399	80,7123899

************************CARACTERISTICAS PRINCIPALES**********************)

L/V3^(1/3)	4.01801491
L/V1^(1/3)	4.9217415
L/B	3.67415164
B/H	2.35763865
B/D	2.0523437
ANGULO MEDIO DE ENTRADA	27.8389675
ASTILLA MUERTA	10.4561259
ANGULO DE LA RODA	62.4931397
% LCB/L	-1.52328399
% LCF/L	-4.31426119
KB/V3^(1/3)	.289001739
KM/V3^(1/3)	.525096467
COEF. BLOCK	.488371539
COEF. PRISMATICO	.603429065
COEF. DE FLOTACION	.741977716
COEF. DE SECCION	.809327173

***************************TABLA DE PUNTOS(%)************************)

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.79610013	11.1218447	19.0996037	25.713062
2	12.98061	32.1532531	45.5229316	54.198203
3	30.1381868	57.4165267	71.6300472	78.11082
4	49.2126298	77.550611	88.930146	92.752190
5	55.8822476	82.8510083	91.4023085	98.588639
6	48.4402442	73.9374926	88.4310913	95.796928
7	31.6210268	57.8469928	75.2818706	85.966195
8	0	30.9639126	54.5695135	69.840394
9	0	0	11.8979815	42.872848
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	9.75797378E 08	3.6187929	8.4261750
1	30.941921	34.7593914	38.6606575	44.16390
2	59.251467	61.7112696	64.5687526	70.1557897
3	80.6031229	81.2834523	82.9535871	87.438230
4	93.7379648	93.9037566	94.7104278	97.0476691
5	99.7747485	100	100.036519	100.020498
6	98.9647886	100	100.020498	100.020498
7	91.7624989	94.3314813	95.2597595	95.440272
8	78.7021352	82.9944438	85.1807312	86.279822
9	59.1101123	65.9888877	69.5800674	72.539146
10	10.1979624	43.3148127	52.4588296	54.218246

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
13.7067396	7.78404009	5.18936005	2.59468005	0

EST 6	7	8	9	10
-2.22733163	2.18899619	17.9269394	45.4219923	80.712389

****************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	3.92540928
L/V1^(1/3)	4.80830713
L/B	3.65007153
B/H	2.35954264
B/D	2.05766251
ANGULO MEDIO DE ENTRADA	22.2628535
ASTILLA MUERTA	4.69873275
ANGULO DE LA RODA	60.5731692
% LCB/L	1.66636377
% LCF/L	4.55885647
KB/V3^(1/3)	.270563167
KM/V3^(1/3)	.471972644
COEF. BLOCK	.518934258
COEF. PRISMATICO	.571405362
COEF. DE FLOTACION	.70483022
COEF. DE SECCION	.908171837

*********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.533566605	9.51704692	16.7288512	22.2685171
2	15.8270189	35.6642612	46.5158057	51.7836445
3	46.0975612	69.4765049	74.8749389	75.81532
4	79.8520286	90.8039165	91.4978267	91.5210985
5	84.0400974	98.0813187	99.8433879	99.9927055
6	65.5429884	88.1663521	96.841645	99.3557455
7	39.6327095	67.4536805	82.4452031	89.5932107
8	0	34.8654548	58.3693734	71.3355544
9	0	0	11.9771367	41.5826604
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5.52981673E 08	2.87987234	6.45879213
1	26.250508	28.8114333	31.3226451	35.04829
2	53.9242093	54.5737199	56.2170202	60.604163
3	75.923798	75.9302899	77.2528615	81.2194058
4	91.5245707	91.5245734	92.3901846	94.987018
5	99.9998606	100	100.000002	100.00000
6	99.920517	100.000001	100.000001	100.00000
7	92.4339127	93.2712139	93.6724923	94.661994
8	77.5089028	79.8136418	81.1284888	83.985982
9	54.9621317	59.6272837	62.165949	67.971963
10	7.64688939	32.7121394	41.980559	46.619939

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	15.77728822	7.73926916	5.15951278	2.57925639	0
EST	6	7	8	9	10
	-2.2265740	42.20528302	17.9903823	45.517062	80.7123887

```
****************************CARACTERISTICAS   PRINCIPALES********************
      L/V3^(1/3)                                        3,92540928
      L/V1^(1/3)                                        4,80830713
      L/B                                               3,65007153
      B/H                                               2,36319519
      B/D                                               2,05766251
      ANGULO MEDIO DE ENTRADA                          26,3644827
      ASTILLA MUERTA                                    6,59604572
      ANGULO DE LA RODA                                60,5731692
      % LCB/L                                           1,73467103
      % LCF/L                                          -4,39418396
      KB/V3^(1/3)                                        ,27544089
      KM/V3^(1/3)                                        ,489317841
      COEF, BLOCK                                        ,518934258
      COEF, PRISMATICO                                   ,594196845
      COEF, DE FLOTACION                                 ,73126834
      COEF, DE SECCION                                   ,873337283
```

```
************************************TABLA DE PUNTOS(%)***********************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,61292722	10,9047436	19,1668851	25,513378:
2	14,9473618	35,2611959	47,8138361	54,862422:
3	38,4695173	65,7152369	75,8144488	78,898483:
4	66,1540986	88,1288456	92,5024818	93,141536:
5	72,8170248	93,9572435	98,9795581	99,884388:
6	60,1814073	84,5413153	94,9594806	98,731028:
7	38,868572	66,774728	82,2789116	89,883549:
8	0	36,742696	60,9579945	73,967197:
9	0	0	13,9677344	46,67183:
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,809111E 07	3,60425123	7,87941035
1	30,0753485	33,0092914	35,886302	40,154665:
2	58,2929331	59,6111497	61,5010603	65,837442:
3	79,6060424	79,7083623	80,9410388	84,594664:
4	93,2010109	93,2037166	93,926192	96,093253:
5	99,9931396	100	100,00036	100,00013:
6	99,7978402	100	100,000134	100,00013:
7	93,0487364	94,0346491	94,4942764	95,20631:
8	79,960724	82,1039471	83,2714848	85,618677:
9	60,0869269	64,2078942	66,2491617	71,237221:
10	10,0924384	40,3464903	49,0786068	52,061946:

```
*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********
```

EST	1	2	3	4	5
	15,7704761	7,75124947	5,16749965	2,58374982	0

EST	6	7	8	9	10
	-2,22677673	2,20092184	17,9734056	45,4916222	80,712388:

```
****************************CARACTERISTICAS   PRINCIPALES*********************
        L/V3^(1/3)                                      3,92540928
        L/V1^(1/3)                                      4,80830713
        L/B                                             3,65007153
        B/H                                             2,36685339
        B/D                                             2,05766251
        ANGULO MEDIO DE ENTRADA                         30,3376307
        ASTILLA MUERTA                                  8,4306175
        ANGULO DE LA RODA                               60,5731692
        % LCB/L                                         -1,71716248
        % LCF/L                                         -4,18788861
        KB/V3^(1/3)                                     ,279549815
        KM/V3^(1/3)                                     ,507423043
        COEF, BLOCK                                     ,518934258
        COEF, PRISMATICO                                ,616988327
        COEF, DE FLOTACION                              ,75770646
        COEF, DE SECCION                                ,841076297
```

```
***************************TABLA DE PUNTOS(%)*****************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,695676943	12,3464199	21,6995178	28,884044
2	14,4613868	35,2545927	49,2266956	57,8994491
3	33,6158455	62,1317207	75,7318147	81,33782
4	55,8986856	83,2127858	92,1181348	94,4531461
5	63,752177	88,7678539	97,1917677	99,48696
6	55,4360408	80,586111	92,7538527	97,855725
7	37,7344881	65,62153	81,6617842	89,9293668
8	0	37,9452781	62,7940932	76,0605198
9	0	0	15,686803	51,0677374
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,14796E 07	4,38280551	9,3515918
1	34,0484307	37,3698247	40,6267927	45,45888
2	62,6800381	64,8437897	67,0729842	71,275294
3	83,1988417	83,6328423	84,8229525	88,1031679
4	94,8974311	94,9479299	95,5265114	97,2448431
5	99,9447231	100	100,005717	100,002659
6	99,5854346	100	100,002659	100,002659
7	93,547683	94,7574153	95,2849533	95,7341342
8	82,1254009	84,2722461	85,3909531	87,1970837
9	64,6911211	68,5444922	70,3123316	74,391508
10	12,4792555	47,5711534	55,5684516	57,317407

```
*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%D)***********
```

EST	1	2	3	4	5
	15,7681371	7,76324831	5,17549887	2,58774944	0
EST	6	7	8	9	10
	-2,22697981	2,19655984	17,9564024	45,4661427	80,7123883

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,92510928
L/V1^(1/3)	4,80830349
L/B	3,65007153
B/H	2,37051725
B/D	2,05766251
ANGULO MEDIO DE ENTRADA	34,0911309
ASTILLA MUERTA	10,2061649
ANGULO DE LA RODA	60,5731692
% LCB/L	-1,63190136
% LCF/L	-3,96497782
KB/V3^(1/3)	,283063083
KM/V3^(1/3)	,526599068
COEF, BLOCK	,518934258
COEF, PRISMATICO	,63977981
COEF, DE FLOTACION	,784144579
COEF, DE SECCION	,811113839

*************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,780591065	13,8202992	21,2884735	32,3295668
2	14,2207101	35,5356953	50,7594277	60,924987
3	30,3233399	59,1448963	75,2343653	83,2364712
4	48,5106438	77,9430595	90,5789156	95,174205
5	56,5787583	83,4311543	94,7060055	98,6993057
6	51,2405094	76,7150478	90,3251506	96,7485273
7	36,3589523	64,1158335	80,7493799	89,7531064
8	0	38,5616218	63,9961624	77,7206134
9	0	0	17,0941137	54,82767
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1,98066706E 07	5,2054586	10,8524341
1	38,1096946	41,827114	45,4724523	50,8807527
2	67,0613861	70,1925368	72,838037	76,8380523
3	86,5871023	87,6411026	88,8858534	91,6976864
4	96,4813383	96,7308457	97,1913211	98,4330079
5	99,7987909	100	100,031464	100,01737
6	99,2691847	100	100,01737	100,01737
7	93,9402448	95,4559927	96,0343629	96,26643
8	84,078247	86,367978	87,4960739	88,7645618
9	68,9110382	72,7359559	74,3827108	77,5117535
10	14,7831762	54,5599265	61,6387452	62,5080092

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	15,7658652	7,77526573	5,18351048	2,59175524	0
EST	6	7	8	9	10
	-2,227183	162,19218815	17,9393731	45,1106242	80,7123885

***************************CARACTERISTICAS PRINCIPALES**********************

$L/V3^{(1/3)}$	3.92540928
$L/V1^{(1/3)}$	4.80830713
L/B	3.65007153
B/H	2.37418678
B/D	2.05766251
ANGULO MEDIO DE ENTRADA	37.5500963
ASTILLA MUERTA	11.9305552
ANGULO DE LA RODA	60.5731692
% LCB/L	-1.50007707
% LCF/L	-3.75214598
$KB/V3^{(1/3)}$	.286114886
$KM/V3^{(1/3)}$	.547126195
COEF. BLOCK	.518934258
COEF. PRISMATICO	.662571292
COEF. DE FLOTACION	.810582699
COEF. DE SECCION	.78321271

************************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.866127466	15.2992359	26.8860525	35.7864563
2	14.1372315	36.0127023	52.374215	63.9200377
3	27.9647957	56.7260561	74.6199488	84.74978
4	43.0340016	73.0410179	88.4062247	95.2997658
5	50.8306854	78.3529534	91.8201234	97.5436307
6	47.5210576	72.9921503	87.7591101	95.4426374
7	34.8437923	62.3620823	79.5740156	89.3799833
8	0	38.7013649	61.683827	79.040283
9	0	0	18.1950736	58.0555443
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.50132755E 07	6.05896881	12.353341
1	42.1843029	46.299023	50.333987	56.32036
2	71.3861076	75.5588276	78.6785975	82.4281187
3	89.7299261	91.6691208	93.0781967	95.3233732
4	97.8406723	98.5196092	98.9304431	99.6528959
5	99.5167353	100	100.100123	100.063455
6	98.8449339	100	100.063454	100.063455
7	94.239117	96.1509151	96.7436219	100.063455
8	85.8891441	88.4527451	89.608272	96.8376348
9	72.8910184	76.9054901	78.5265822	90.3859948
10	17.0309669	61.5091501	67.4806635	80.7085348
				67.8052547

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	15.7636609	7.78730174	5.1915345	2.59576725	0
EST	6	7	8	9	10
	-2.22738682	2.18780964	17.9223173	45.4150661	80.7123889

```
****************************CARACTERISTICAS  PRINCIPALES********************
```

L/V3^(1/3)	
L/V1^(1/3)	3,92540928
L/B	4,80830713
B/H	3,65007153
B/D	2,37786199
ANGULO MEDIO DE ENTRADA	2,05766251
ASTILLA MUERTA	40,6583068
ANGULO DE LA RODA	13,6132223
% LCB/L	60,5731692
% LCF/L	-1,34611224
KB/V3^(1/3)	-3,57777377
KM/V3^(1/3)	,288805192
COEF, BLOCK	,569257045
COEF, PRISMATICO	,518934258
COEF, DE FLOTACION	,685362775
COEF, DE SECCION	,837020819
	,757167265

```
***************************TABLA DE PUNTOS(%)*****************************
```

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	,950410313	16,7501201	29,1346115	39,1779935
2	14,1522476	36,6063217	54,0119043	66,8321898
3	26,199816	51,7606796	73,9998107	85,9772918
4	38,8243893	68,6731975	85,9640329	94,9520128
5	46,1329505	73,6682114	88,7577551	96,0985659
6	44,2109375	69,451159	85,124352	93,9767296
7	33,2681706	60,4512099	78,1985318	88,8416131
8	0	38,4846634	64,9802844	80,1111124
9	0	0	19,0355701	60,89256
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	-3,08534439E 07	6,92670616	13,8199035
1	46,1818229	50,6862994	55,1034955	61,6569835
2	75,5773032	80,8235594	84,4555709	87,9277381
3	92,6038425	95,6176695	97,3104927	98,9144719
4	98,9271193	100,27452	100,738955	100,899489
5	99,0893668	100	100,232058	100,165094
6	98,3164666	100	100,164971	100,165094
7	94,4624056	96,8669956	97,4590627	97,92411
8	87,6309241	90,6009867	91,7566578	94,470544
9	76,7869875	81,2019733	82,8289482	84,1290153
10	19,293543	68,6699554	73,3662507	73,4382962

```
********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************
```

EST	1	2	3	4	5
	15,7615228	7,7993564	5,19957093	2,59978516	0
EST	6	7	8	9	10
	-2,227590772	,1834244	17,9052352	45,3894684	80,7123889

*************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3,83872113
L/V1^(1/3)	4,7021212
L/B	3,62715765
B/H	2,36843493
B/D	2,06276933
ANGULO MEDIO DE ENTRADA	25,0729295
ASTILLA MUERTA	3,05016717
ANGULO DE LA RODA	58,6531987
% LCB/L	-1,91476372
% LCF/L	-4,45794317
KB/V3^(1/3)	,26141228
KM/V3^(1/3)	,456509921
COEF, BLOCK	,550010229
COEF, PRISMATICO	,586198817
COEF, DE FLOTACION	,721990628
COEF, DE SECCION	,938265675

**************************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10,5962066	19,2695587	25,378369
2	17,4094629	38,7022509	49,9621798	55,211771
3	51,3365667	73,6318649	77,7608815	78,31493
4	88,5240006	92,5458759	92,6054858	92,605893
5	94,0311536	99,7697025	99,9950953	99,999955
6	75,7555661	94,3432327	98,9884924	99,877112
7	48,5133126	76,4711493	88,2346375	92,408479
8	0	43,8290053	67,4333618	77,246182
9	0	0	16,5907924	50,452659
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,01096826E 07	3,63816417	7,28335147
1	29,3191943	31,5147346	33,1941239	36,48741
2	57,2408768	57,8176816	58,9589746	61,926332
3	78,3614097	78,3632612	79,2812217	82,0348871
4	92,6058939	92,6058939	79,2663832	95,247851
5	100	100	100	100
6	99,9920374	100	100	100
7	93,5605762	93,7721023	93,8489186	95,0178371
8	80,5380857	81,3163068	81,6639332	85,053511
9	60,5730565	62,6326137	63,1330535	70,107022
10	9,94480904	37,7210228	45,8233907	50,178371

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
17,964786	7,719668222	5,14644548	2,57322274	0

EST 6	7	8	9	10
-2,226242322	,21241366	18,0181583	45,5586848	80,712389

********************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)
L/V1^(1/3)                                           3.83872113
L/B                                                  4.7021212
B/H                                                  3.62715765
B/D                                                  2.37210123
ANGULO MEDIO DE ENTRADA                              2.06276933
ASTILLA MUERTA                                       28.6370881
ANGULO DE LA RODA                                    4.64709097
% LCB/L                                              58.6531987
% LCF/L                                             -1.95420606
KB/V3^(1/3)                                         -4.28883858
KM/V3^(1/3)                                           .2657697
COEF. BLOCK                                           .471806673
COEF. PRISMATICO                                     .550010229
COEF. DE FLOTACION                                   .606237351
COEF. DE SECCION                                     .745235328
                                                     .907252296
```

*************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	11.8705937	21.583439	28.4244559
2	16.5719637	38.3880266	51.275892	58.1339217
3	43.4825221	70.7218987	79.228821	81.348297
4	76.6088602	92.3165969	93.9961928	94.1140328
5	84.2091458	98.1248642	99.8491492	99.9930971
6	69.9995312	91.2886793	97.9828628	99.6642634
7	47.3686507	75.6595321	88.108432	92.7705665
8	0	45.6296206	69.6561773	79.3856814
9	0	0	18.8852797	55.154584
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.54102033E 08	4.39639553	8.5812745
1	32.837689	35.2961628	37.5132213	40.865503
2	61.2563673	62.3557555	63.6222204	66.384432
3	81.7270901	81.7668166	82.5540583	84.903120
4	94.11852	94.1185852	94.6355953	96.186234
5	99.9998711	100	100.000002	100.000001
6	99.9677617	100.000001	100.000001	100.000001
7	94.1455524	94.4205925	94.5263108	95.48545
8	82.5455531	83.2617775	83.5696536	86.456353
9	64.8255936	66.523555	67.106327	72.912707
10	12.3504537	44.205925	51.7363986	54.854511

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	17.9595676	7.73161817	5.15441212	2.57720606	0

EST	6	7	8	9	10
	-2.22644454	2.20806645	18.0012245	45.5333093	80.712389

**************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3.83872113
L/V1^(1/3)	4.7021212
L/B	3.62715765
B/H	2.37577322
B/D	2.06276933
ANGULO MEDIO DE ENTRADA	32.0604539
ASTILLA MUERTA	6.20045018
ANGULO DE LA RODA	58.6531987
% LCB/L	-1.93536855
% LCF/L	-4.09758412
KB/V3^(1/3)	.269523926
KM/V3^(1/3)	.487652958
COEF. BLOCK	.550010229
COEF. PRISMATICO	.626275886
COEF. DE FLOTACION	.768480028
COEF. DE SECCION	.878223546

**************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	13.1793848	23.9591391	31.5516865
2	16.069612	38.3803306	52.6452496	60.9886999
3	38.2484204	67.5478598	79.6851233	83.91532
4	65.5869524	89.3787861	94.6826663	95.5689054
5	74.8176242	94.874805	99.2202593	99.9222281
6	64.8064777	87.9614048	96.6179656	99.2884514
7	45.9057665	74.4742499	87.7167622	92.9931908
8	0	46.7948968	71.3210981	81.2141111
9	0	0	20.9000289	59.3065366
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.42909532E-07	5.20228039	9.9106141
1	36.4498046	39.1787719	41.6391855	45.35997
2	65.2602715	67.0115263	68.468783	70.9621633
3	85.057207	85.2608948	85.9346517	87.8486181
4	95.6660602	95.6715088	96.0415541	97.1507723
5	99.9960715	100	100.000172	100.000061
6	99.9088313	100.000061	100.000061	100.000061
7	94.6729422	95.0139375	95.1937926	95.9428757
8	84.411595	85.1318125	85.436898	87.828506
9	68.7649787	70.2636249	70.7328331	75.6569513
10	14.7222919	50.4393748	57.3394662	59.4282116

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	17.9544198	7.74358662	5.16239113	2.58119554	0
EST	6	7	8	9	10
	-2.22664709	2.2037125	17.9842645	45.5078945	80.712389

**************************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                              3.83872113
L/V1^(1/3)                              4.7021212
L/B                                     3.62715765
B/H                                     2.37945089
B/D                                     2.06276933
ANGULO MEDIO DE ENTRADA                 35.2857527
ASTILLA MUERTA                          7.7098749
ANGULO DE LA RODA                       58.6531987
% LCB/L                                 -1.87121491
% LCF/L                                 -3.90171269
KB/V3^(1/3)                             .272790591
KM/V3^(1/3)                             .504254517
COEF. BLOCK                             .550010229
COEF. PRISMATICO                        .64631442
COEF. DE FLOTACION                      .791724727
COEF. DE SECCION                        .850994828
```

********************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	14.5058126	26.3661677	34.7199035
2	15.7845897	38.6010156	54.0790106	63.7963636
3	34.5985652	64.7025372	79.5894443	85.9965917
4	57.1502347	85.1519509	94.3162536	96.7300307
5	66.8807129	90.7523706	97.9554529	99.6783084
6	60.1656214	84.5288539	94.9529898	98.7286606
7	44.2392045	72.9981389	87.0841937	93.0777039
8	0	47.4023996	72.5130178	82.7961595
9	0	0	22.5872669	62.98089
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	6.63672654E-08	6.04694875	11.2540303
1	40.1091489	43.111796	45.8190185	49.9130883
2	69.2290249	71.7341553	73.4304993	75.6010182
3	88.2399237	88.8006165	89.4084656	90.8341202
4	97.191852	97.2447184	97.4703014	98.1286947
5	99.9711934	100	100.002415	100.001042
6	99.7973218	100	100.001042	100.001042
7	95.1468638	95.6546038	95.8640191	96.40001
8	86.1823712	86.9638112	87.295274	89.1979693
9	72.5019953	73.9276223	74.349412	78.394897
10	17.0587856	56.5460373	62.7391414	63.9908006

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	17.9493412	7.75557361	5.1703824	2.5851912	0
EST	6	7	8	9	10
	-2.22684992	2.19935182	17.9672782	45.4824404	80.7123891

*************************CARACTERISTICAS PRINCIPALES*************************

L/V3^(1/3)	3.83872113
L/V1^(1/3)	4.7021212
L/B	3.62715765
B/H	2.38313425
B/D	2.06276933
ANGULO MEDIO DE ENTRADA	38.2666633
ASTILLA MUERTA	9.17691644
ANGULO DE LA RODA	58.6531987
% LCB/L	-1.77654961
% LCF/L	-3.71976431
KB/V3^(1/3)	.275663367
KM/V3^(1/3)	.521798918
COEF. BLOCK	.550010229
COEF. PRISMATICO	.666352954
COEF. DE FLOTACION	.814969427
COEF. DE SECCION	.825403753

*************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	15.8297588	28.7679649	37.8809669
2	15.6445188	38.9830881	55.5563099	66.546863
3	31.9358974	62.2873117	79.240923	87.67881
4	50.7635342	80.7068138	93.1131603	97.4381276
5	60.3346831	86.3629505	96.1160068	99.1832953
6	56.0272566	81.1033659	93.0587142	97.9846797
7	42.4587381	71.3029611	86.2382843	93.0286291
8	0	47.547137	73.3125439	84.1862921
9	0	0	23.9428358	66.2727799
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-8.36319447E 08	6.91897869	12.5907546
1	43.760111	47.035762	49.9891942	54.45564
2	73.1245046	76.4429145	78.424261	80.2315239
3	91.2150363	92.3321859	92.9445504	93.8165583
4	98.6059201	98.8143048	98.9154125	99.1089203
5	99.8944335	100	100.013433	100.006781
6	99.6191006	100	100.006781	100.006781
7	95.5729709	96.2675345	96.5433634	96.8723222
8	87.9025718	88.8026034	89.1858193	90.603406
9	76.1465568	77.6052068	78.0260992	81.2000311
10	19.3937176	62.6753447	68.0399983	68.662198

*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************************

EST	1	2	3	4	5
	17.9443321	7.76757914	5.1783861	2.58919301	0
EST	6	7	8	9	10
	-2.22705313	2.19498441	17.9502656	45.4569471	80.7123893

*****************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.83872113
L/V1^(1/3)	4.7021212
L/B	3.62715765
B/H	2.38682331
B/D	2.06276933
ANGULO MEDIO DE ENTRADA	40.9681869
ASTILLA MUERTA	10.6050371
ANGULO DE LA RODA	58.6531987
% LCB/L	-1.66808529
% LCF/L	-3.57128745
KB/V3^(1/3)	.278216735
KM/V3^(1/3)	.540458505
COEF. BLOCK	.550010229
COEF. PRISMATICO	.686391488
COEF. DE FLOTACION	.838214126
COEF. DE SECCION	.80130689

**********************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	17.1275939	31.121613	40.9783715
2	15.5990844	39.4654523	57.0374969	69.2061163
3	29.9162935	60.2581555	78.7867573	89.0447595
4	45.8266354	76.4923199	91.3999534	97.6865253
5	54.9193013	82.0387774	93.9624089	98.423458
6	52.3319063	77.75556	91.0027742	97.0709662
7	40.6341187	69.4548202	85.2118298	92.8559414
8	0	47.3332268	73.800361	85.4363111
9	0	0	25.0039891	69.294212
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	7.80432249	13.8963898
1	47.337419	50.8805124	54.07515	58.9064243
2	76.8923302	81.056615	83.3538628	84.7730582
3	93.9503624	95.7924613	96.4886384	96.7476021
4	99.8330046	100.352205	100.374051	100.081367
5	99.737551	100	100.044682	100.025664
6	99.3659036	100	100.025664	100.025664
7	95.9595502	96.9002692	97.2266718	97.38287
8	89.6190512	90.7008075	91.153997	92.0972878
9	79.8116395	81.4016149	81.8578478	84.1689115
10	21.7935619	69.0026914	73.3763523	73.5977431

***************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	17.9393933	7.77960326	5.18640218	2.59320109	0

EST	6	7	8	9	10
	-2.22725657	2.19061028	17.9332267	45.131414	80.712389

***************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.83872113
L/V1^(1/3)	4.7021212
L/B	3.62715765
B/H	2.39051809
B/D	2.06276933
ANGULO MEDIO DE ENTRADA	43.36522
ASTILLA MUERTA	11.9992732
ANGULO DE LA RODA	58.6531987
% LCB/L	-1.56455281
% LCF/L	-3.47683796
KB/V3^(1/3)	.280510151
KM/V3^(1/3)	.560401847
COEF. BLOCK	.550010229
COEF. PRISMATICO	.706430022
COEF. DE FLOTACION	.861458826
COEF. DE SECCION	.778577087

********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	18.3720069	33.3775348	43.9468579
2	15.6106991	39.991934	58.471942	71.7223652
3	28.3319333	58.5385671	78.2843077	90.14334
4	41.9089387	72.6443851	89.4202645	97.5124892
5	50.3866726	77.9307695	91.5592825	97.4286309
6	49.0200437	74.525125	88.8418715	96.0093167
7	38.8174887	67.5129553	84.0417048	92.57556
8	0	46.8673695	74.0609572	86.6013713
9	0	0	25.8424013	72.175177
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.02537753E 07	8.68616927	15.142806
1	50.7656965	54.5650348	57.9907904	63.17163
2	80.4627471	85.4780418	88.1100259	89.1330618
3	96.4178093	99.1085313	99.9658751	99.572761
4	100.832112	101.826011	101.835516	101.036415
5	99.4854059	100	100.108804	100.069704
6	99.0350131	100	100.069688	100.069705
7	96.3182828	97.5730609	97.911059	97.9624187
8	91.3835167	92.7191824	93.237987	93.7478479
9	83.6184866	85.4383648	85.9549042	87.4259917
10	24.3558639	75.730608	78.9567517	78.99685

*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
17.9345237	7.79164599	5.1944307	2.59721533	0

EST 6	7	8	9	10
-2.22746032	2.18622932	17.9161615	45.4058417	80.712389

**************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	3.83872113
L/V1^(1/3)	4.7021212
L/B	3.62715765
B/H	2.39421858
B/D	2.06276933
ANGULO MEDIO DE ENTRADA	45.4398488
ASTILLA MUERTA	13.3649018
ANGULO DE LA RODA	58.6531987
% LCB/L	1.4869205
% LCF/L	3.4579799
KB/V3^(1/3)	.282591733
KM/V3^(1/3)	.581819297
COEF. BLOCK	.550010229
COEF. PRISMATICO	.726468557
COEF. DE FLOTACION	.804703526
COEF. DE SECCION	.757101218

********************************TABLA DE PUNTOS(%)***************************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	0	19.5318540	35.4792191	46.7120432
2	15.6484734	40.5078559	59.7996865	74.0285271
3	27.0490563	57.0504234	77.7411065	90.9901695
4	38.7217097	69.1725493	87.3219196	97.0827971
5	46.5407718	74.0939903	89.0509582	96.245434:
6	46.0371855	71.4310123	86.6200073	94.8234227
7	37.044563	65.5266525	82.7652244	92.207904
8	0	46.2540022	74.184785	87.744485
9	0	0	26.5587179	75.07279X
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	0	9.5446743	16.2980779
1	53.9590282	57.9969858	61.6379759	67.144380(
2	83.7508377	89.5963831	92.5700714	93.205937:
3	98.5814979	102.197287	103.284688	102.22977(
4	101.585767	103.198794	103.275565	101.962925
5	99.135865	100	100.216426	100.15241(
6	98.6278084	100	100.152036	100.15241(
7	96.6643215	98.3089953	98.6362609	98.64899(X
8	93.2548242	94.9269861	95.4575731	95.6421631
9	87.7036878	89.853972	90.4226658	91.131913:
10	27.2102302	83.0899535	85.1169692	85.118247(

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********:

EST 1	2	3	4	5
17.9297237	7.80370737	5.20247158	2.60123575	0

EST 6	7	8	9	10
-2.227664442	.18184154	17.8990698	45.3802297	80.712389(

**********************CARACTERISTICAS PRINCIPALES*******************

L/V3^(1/3)	4,09511719
L/V1^(1/3)	5,01618552
L/B	3,69389824
B/H	2,01632658
B/D	1,77788083
ANGULO MEDIO DE ENTRADA	18,8958652
ASTILLA MUERTA	19,3725544
ANGULO DE LA RODA	68,6442018
% LCB/L	,949655973
% LCF/L	-4,64205277
KB/V3^(1/3)	,353409488
KM/V3^(1/3)	,573788641
COEF, BLOCK	,400009998
COEF, PRISMATICO	,554
COEF, DE FLOTACION	,68464
COEF, DE SECCION	,722039707

*************************TABLA DE PUNTOS(%)*******************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,18858479	6,90044069	11,6122365	16,32396
2	9,66926378	23,3138047	34,004378	41,9803311
3	22,4273709	44,4769357	58,6744082	67,04171
4	35,2424358	61,7244468	77,2203958	85,3734119
5	39,5307560	66,2712253	83,2224379	93,0359429
6	33,2020435	56,1755044	73,7512391	86,494579
7	18,60722	38,1790601	55,9381802	70,8825702
8	0	15,6005656	33,317438	49,7632022
9	0	0	2,01294367	22,5601133
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	2,05682853	5,4511478
1	21,0355927	25,7474035	30,4586798	35,17054
2	47,5087638	50,8965242	54,6984683	61,23686
3	71,3207031	73,1723932	75,8529603	81,9547118
4	89,0336255	90,2988414	91,9253228	95,628708
5	97,9965698	100	100,667671	100,56346
6	95,0181447	100	100,563347	100,56346
7	83,1810131	92,6528242	94,748575	94,7596357
8	64,7431628	77,9584725	82,951203	83,1519863
9	40,3838875	55,916945	64,417932	65,7405123
10	4,63133029	26,5282415	38,4566096	42,5252135

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	8,92531903	6,69293408	4,46195602	2,23007805	0
EST	6	7	8	9	10
	-2,20886809	2,58592247	19,4731018	47,7389281	80,7123892

************************CARACTERISTICAS   PRINCIPALES*********************)

L/V3^(1/3)	1.09511719
L/V1^(1/3)	5.01618552
L/B	3.69389824
B/H	2.01944783
B/D	1.77788083
ANGULO MEDIO DE ENTRADA	16.5823296
ASTILLA MUERTA	17.7665346
ANGULO DE LA RODA	68.6442048
% LCB/L	.885925856
% LCF/L	1.6735938
KB/V3^(1/3)	.349945348
KM/V3^(1/3)	.563597675
COEF. BLOCK	.400009998
COEF. PRISMATICO	.541027776
COEF. DE FLOTACION	.669592221
COEF. DE SECCION	.739352054

************************TABLA DE PUNTOS(%)*********************)

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.99903199	6.31027353	10.6214602	14.9325809
2	9.90337861	23.488505	33.6875464	40.9171305
3	24.0386137	46.3486223	59.6238286	66.7491988
4	38.194847	64.9232345	79.2256006	85.9883202
5	42.3538851	69.5502825	85.7766339	94.5140397
6	34.6544485	58.0610325	75.5014132	87.7527308
7	18.7685493	38.7104141	56.1246702	70.9220677
8	0	15.0662651	32.2729878	48.385465
9	0	0	2.56265185	20.670461
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	1.77123316	4.754657
1	19.2436187	23.5545452	27.8655314	32.176779
2	45.6183881	48.2654542	51.6102519	58.0666411
3	70.0282618	71.1990902	73.6295328	79.8037814
4	88.6482845	89.4218181	90.9142921	94.7677376
5	98.551007	100	100.431578	100.338048
6	95.6302435	100	100.338046	100.338048
7	82.9886722	92.1691161	94.2003545	94.211561
8	63.2235279	76.5073481	81.7239081	81.9585988
9	37.5834537	53.0146962	62.0129303	63.5791494
10	3.6768729	21.6911601	33.1789147	39.0732173

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************)

EST	1	2	3	4	5
	8.93874717	6.70329467	4.46886312	2.23443155	0
EST	6	7	8	9	10
	-2.20904345	2.58215343	19.4584202	47.7169275	80.7123892

************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4:09511719
L/V1^(1/3)	5:01618552
L/B	3:69389824
B/H	2:02257391
B/D	1:77788083
ANGULO MEDIO DE ENTRADA	14:3035922
ASTILLA MUERTA	16:1489994
ANGULO DE LA RODA	68:6442048
% LCB/L	:779713084
% LCF/L	-4:67484499
KB/V3^(1/3)	:346247957
KM/V3^(1/3)	:553636373
COEF. BLOCK	:400009998
COEF. PRISMATICO	:528055553
COEF. DE FLOTACION	:654544441
COEF. DE SECCION	:757514992

*************************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1:81716855	5:7430552	9:66889134	13:594666
2	10:2267992	23:7821474	33:4466783	39:886497
3	26:0261505	48:4815122	60:5757202	66:33881
4	41:7140691	68:3945318	81:1450337	86:413523
5	45:5745177	73:0793044	88:3474765	95:890232
6	36:1672	59:9824916	77:2410543	88:967714
7	18:8359785	38:7805984	56:1279158	70:798009
8	0	14:3938911	30:9862244	46:734585
9	0	0	2:28483976	18:614973
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	1:50217184	4:0846274
1	17:520366	21:4159627	25:3716144	29:297500
2	43:7636609	45:7351552	48:6775261	55:032475
3	68:6274416	69:3013664	71:5560916	77:7709457
4	88:1677135	88:5783851	90:0012312	93:994325
5	99:0223446	100	100:255075	100:184020
6	96:2015715	100	100:184028	100:184020
7	82:6893618	91:6411139	93:2076596	93:721164
8	61:4848517	74:9932417	80:5206162	80:795438
9	34:5553712	49:9864834	59:583392	61:406848
10	2:71599045	16:6411388	27:1456515	35:555395

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
8:95225839	6:71367129	4:47578087	2:23289045	0

EST 6	7	8	9	10
-2:20921905	2:5783786	19:4437159	47:694893	80:712389

***********************CARACTERISTICAS PRINCIPALES********************

```
     L/V3^(1/3)                                      3.98659416    ▓
     L/V1^(1/3)                                      1.88325364
     L/B                                             3.66602644
     B/H                                             2.02807428
     B/D                                             1.78318904
     ANGULO MEDIO DE ENTRADA                         21.2417805
     ASTILLA MUERTA                                  16.2102515
     ANGULO DE LA RODA                               66.7794233
     % LCB/L                                         -1.1052429
     % LCF/L                                         -4.58793553
     KB/V3^(1/3)                                     .340215231
     KM/V3^(1/3)                                     .548937465
     COEF. BLOCK                                     .428879805    ▓
     COEF. PRISMATICO                                .566243129
     COEF. DE FLOTACION                              .69884203
     COEF. DE SECCION                                .75741282
```

***************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.47786858	8.18347153	13.6240745	18.762350(
2	11.1404649	26.3054867	37.6030638	45.537599(
3	25.6946457	49.3192136	63.2261315	70.59519▓
4	40.5994668	67.9758097	81.9709492	88.237518(
5	45.3534492	72.0442928	88.1822245	95.805405(
6	38.1968344	62.4929873	79.4457729	90.454064(
7	22.2007839	44.4173673	62.393029	76.331395(
8	0	19.2862781	39.4425263	56.204414(
9	0	0	3.71252629	27.908889(
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.3116121E 07	2.49776909	6.5147458(
1	23.5450983	27.888731	32.3750217	37.66929▓
2	50.6381251	53.4664771	56.9394789	63.577778(
3	73.9327682	75.0998570	77.4178215	83.276723(
4	90.5412384	91.1554924	92.4322426	95.802644(
5	98.9947064	100	100.264729	100.192050(
6	96.8721107	100	100.192058	100.192050(
7	86.4689107	93.0912708	94.6935105	94.716802(
8	69.5092164	79.2730123	83.3808975	83.766290(
9	46.1110388	58.5176245	65.4193865	67.340522(
10	5.8697806	30.9127075	42.2548598	45.439498

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)*********** ▓

```
EST 1          2              3              4              5
    9.64012917  6.68113421    4.45408945     2.22704476     0
EST 6          7              8              9              10
   -2.208668432.5902151      19.4898229     47.7639849     80.712389(
```

**************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.88585225
L/V1^(1/3)	4.75985299
L/B	3.63966115
B/H	2.03323975
B/D	1.78826235
ANGULO MEDIO DE ENTRADA	19.6354148
ASTILLA MUERTA	11.2345879
ANGULO DE LA RODA	64.9146419
% LCB/L	-1.21739243
% LCF/L	-4.63227989
KB/V3^(1/3)	.321082893
KM/V3^(1/3)	.512067675
COEF. BLOCK	.458341695
COEF. PRISMATICO	.556636113
COEF. DE FLOTACION	.687697892
COEF. DE SECCION	.823413508

*******************************TABLA DE PUNTOS(%)***************************

ESTACION	L.W 1	L.W 2	L.W 3	L.W 4
0	0	0	0	0
1	2.09756512	8.16962909	13.6693576	18.5521918
2	13.1137274	29.412331	40.0994001	46.5415976
3	33.0517591	57.4680138	68.1789258	72.1755033
4	54.0819692	79.5421548	87.8431759	90.0197656
5	58.5860733	85.0358188	95.5158412	98.980154
6	46.9426291	72.4056106	87.3398338	95.2186388
7	26.727347	51.2946246	69.1307929	81.2765444
8	0	22.4355897	44.0800262	60.2202165
9	0	0	4.12593003	30.067760
10	0	0	0	0

ESTACION	L.W 5	L.W 6	L.W 7	L.W 8
0	0	1.91963909E 07	2.39971861	6.13292637
1	22.7585929	26.2024764	29.7807687	34.4704951
2	49.9657147	51.4429717	54.0095913	60.0739186
3	73.3488852	73.5822288	75.4446609	80.8963869
4	90.433916	90.4809906	91.5875285	94.8909098
5	99.856324	100	100.020175	100.010618
6	98.7677417	100	100.010618	100.010618
7	88.7894338	92.748665	94.1445879	94.305440
8	71.4005430	78.2459948	81.8213282	82.895086
9	46.9616151	56.4919895	62.2331838	65.779554
10	5.40805655	27.4866492	38.2343615	42.958846

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	11.2321825	6.64997926	4.43331951	2.21665974	0

EST	6	7	8	9	10
	-2.20814122	2.60154873	19.5339713	47.8301413	80.7123891

****************************CARACTERISTICAS PRINCIPALES************************

L/V3^(1/3)	3.88585225
L/V1^(1/3)	4.75985299
L/B	3.63966115
B/H	2.03638718
B/D	1.78826235
ANGULO MEDIO DE ENTRADA	24.0461509
ASTILLA MUERTA	13.6767617
ANGULO DE LA RODA	64.9146419
% LCB/L	-1.2916664
% LCF/L	-4.49667161
KB/V3^(1/3)	.328976766
KM/V3^(1/3)	.528925735
COEF. BLOCK	.458341695
COEF. PRISMATICO	.580924998
COEF. DE FLOTACION	.715872998
COEF. DE SECCION	.788986008

*********************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.4451503	9.52264188	15.933037	21.6243895
2	12.5792293	29.2372446	41.1984793	49.2367061
3	28.7606459	53.7439095	67.3875894	73.99762
4	45.8489376	73.5222086	85.8444392	90.5246879
5	51.2586751	78.7558338	92.0661451	97.6506092
6	43.4515659	68.6259761	81.4893779	93.6077499
7	26.3580039	50.8576522	68.9039	81.4074933
8	0	23.8506514	46.4785948	63.0121697
9	0	0	4.93606734	34.5926343
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.09256747E 07	3.07158368	7.675566935
1	26.5273048	30.5114439	34.7122512	40.17853
2	54.1276936	56.6497327	59.7740066	65.9512562
3	76.6769395	77.1872996	79.4619977	84.7107315
4	91.9292261	92.2165776	93.2487266	96.1739538
5	99.5454078	100	100.092339	100.057918
6	98.1762939	100	100.057918	100.057918
7	89.3104789	93.5959303	94.8720974	94.9471256
8	74.1778401	80.7877909	83.9546568	84.7255411
9	52.4700598	61.5755818	66.5561351	69.3931644
10	7.52328385	35.959303	46.429282	48.9499954

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	11.2316025	6.66027334	4.44018224	2.2200911	0
EST	6	7	8	9	10
	-2.2083154	12.5978039	19.5193839	47.808282	80.7123889

************************CARACTERISTICAS   PRINCIPALES********************

```
    L/V3^(1/3)                                    3.88585225
    L/V1^(1/3)                                    4.75985299
    L/B                                           3.63966115
    B/H                                           2.03953948
    B/D                                           1.78826235
    ANGULO MEDIO DE ENTRADA                       28.3754069
    ASTILLA MUERTA                                16.0368932
    ANGULO DE LA RODA                             64.9146419
    % LCB/L                                       -1.2543006
    % LCF/L                                       -4.29815676
    KB/V3^(1/3)                                    .333106662
    KM/V3^(1/3)                                    .546619353
    COEF. BLOCK                                    .458341695
    COEF. PRISMATICO                               .605213883
    COEF. DE FLOTACION                             .744048104
    COEF. DE SECCION                               .757321846
```

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.81039143	10.944307	18.3115472	24.8524223
2	12.3272872	29.4148583	42.5058184	52.0132955
3	25.8586343	50.7758312	66.4167574	75.3659194
4	39.9442419	68.0153477	83.133531	90.3373095
5	45.5412793	73.0140376	88.3227334	95.8775646
6	40.2879424	64.9970858	81.5651539	91.8230645
7	25.6879339	49.9532701	68.2016677	81.163567
8	0	24.7329375	48.085489	65.0675599
9	0	0	5.62664263	38.40278
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3.62128526E 08	3.79881802	9.29025221
1	30.4871762	35.1004923	39.8938653	46.1760872
2	58.3857412	62.1205908	65.9265358	72.1471328
3	79.8241101	81.5904431	83.8415618	88.7647575
4	93.1979047	94.0401969	95.0993599	97.5903291
5	99.0182298	100	100.256506	100.185216
6	97.4595156	100	100.185212	100.185216
7	89.6139938	91.3881756	95.6040338	95.63869
8	76.4682985	83.1645265	86.0465808	86.5456474
9	57.2781732	66.3290531	70.8123782	72.9060794
10	9.53735758	43.8817551	53.5396773	54.7199885

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
11.2310935	6.67058337	4.44705559	2.22352778	0

EST 6	7	8	9	10
-2.20848992	2.59405331	19.5017739	17.7863888	80.7123885

**************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	3,79205321
L/V1^(1/3)	4,6449568
L/B	3,61466795
B/H	2,04124939
B/D	1,79311915
ANGULO MEDIO DE ENTRADA	20,726169
ASTILLA MUERTA	8,00194392
ANGULO DE LA RODA	63,0498605
% LCB/L	-1,41884019
% LCF/L	-4,60952452
KB/V3^(1/3)	,310864598
KM/V3^(1/3)	,487197037
COEF. BLOCK	,488367492
COEF. PRISMATICO	,56192127
COEF. DE FLOTACION	,693828674
COEF. DE SECCION	,869103055

*************************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,58485922	8,80548513	14,9846351	20,1092859
2	14,9509696	32,4753175	43,0558708	48,8345974
3	39,6226587	63,6606579	71,7327668	73,9248281
4	66,6881404	86,6417269	90,3174703	90,8076103
5	71,077529	93,0933375	98,7306528	99,8405401
6	55,6633354	80,8008756	92,8842471	97,9118846
7	32,2831601	59,0164117	76,0133199	85,8881913
8	0	27,404353	50,9810889	66,0682485
9	0	0	5,25124098	35,5548853
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2,07281824E 08	2,6923015	6,52925118
1	24,1632262	27,1250505	30,1546014	34,43011
2	51,5519576	52,5500606	54,6269106	59,883406
3	74,3602413	74,4125454	75,997508	80,7333693
4	90,8484106	90,8500202	91,8436216	94,8242395
5	99,9892238	100	100,000656	100,000255
6	99,6002992	100	100,000255	100,000255
7	90,9018389	92,9384179	93,8807837	94,4282449
8	74,705661	78,8152537	81,1951089	83,2842245
9	51,1663886	57,6305074	61,3474403	66,5681939
10	6,23926755	29,3841789	39,4868991	44,280153

*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
13,2982078	6,6303312	4,42022079	2,23011038	0

EST 6	7	8	9	10
-2,20780872	2,6086964	19,5618138	47,8718637	80,7123892

********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,79205321
L/V1^(1/3)	4,6449568
L/B	3,61466795
B/H	2,04440922
B/D	1,79311915
ANGULO MEDIO DE ENTRADA	24,5107084
ASTILLA MUERTA	10,0340609
ANGULO DE LA RODA	63,0498605
% LCB/L	-1,49431341
% LCF/L	-4,48414611
KB/V3^(1/3)	,315425421
KM/V3^(1/3)	,501396681
COEF, BLOCK	,488367492
COEF, PRISMATICO	,582673589
COEF, DE FLOTACION	,717901364
COEF, DE SECCION	,838149354

**********************TABLA DE PUNTOS(%)**********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,80578372	10,0206677	17,0506978	22,8810524
2	14,3094271	32,2202103	44,1041691	51,3699128
3	34,4196135	60,2097256	71,7541058	76,1665134
4	56,7283209	82,2174486	90,0573974	91,9757022
5	62,6246538	88,0019144	96,872566	99,3990259
6	51,8401117	77,3056145	90,7157142	96,9365168
7	31,8835585	58,6135797	75,882484	86,1091539
8	0	28,9255368	53,3383794	68,5969982
9	0	0	6,1618849	40,02119
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,01985306E 08	3,32833408	7,90472456
1	27,493281	30,8630216	34,3098539	39,1742883
2	55,3002607	57,035626	59,4472206	64,7262325
3	77,5009576	77,7767195	79,3373072	83,8532881
4	92,3110273	92,3452087	93,2236017	95,8481855
5	99,9310922	100	100,007649	100,003654
6	99,3261689	100	100,003656	100,003654
7	91,4262547	93,6546239	94,5890447	94,937444
8	77,0804375	80,9638715	83,0994783	84,8050157
9	56,0167692	61,927743	65,0560555	69,6063757
10	8,24495784	36,5462383	46,3211294	49,3415223

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*********************

EST 1	2	3	4	5
13,293233	6,64059487	4,42706327	2,21353164	0

EST 6	7	8	9	10
-2,20798241	2,60496262	19,5472695	47,8500687	80,712388

********************************CARACTERISTICAS PRINCIPALES*********************************

L/V3^(1/3)	3.79205321
L/V1^(1/3)	4.6449568
L/B	3.61466795
B/H	2.04757394
B/D	1.79311915
ANGULO MEDIO DE ENTRADA	28.2263664
ASTILLA MUERTA	11.997079
ANGULO DE LA RODA	63.0498605
% LCB/L	-1.49078456
% LCF/L	-4.3142896
KB/V3^(1/3)	.319317707
KM/V3^(1/3)	.516015738
COEF. BLOCK	.488367492
COEF. PRISMATICO	.603425908
COEF. DE FLOTACION	.741974053
COEF. DE SECCION	.809324701

*****************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.03652325	11.2874859	19.2041918	25.769944
2	13.9475273	32.2664117	45.2831957	53.9217676
3	30.8524579	57.20318	71.2793731	77.92158
4	49.3754788	77.2813786	88.727891	92.6707883
5	55.8816766	82.8535309	94.4020546	98.5885454
6	48.3759991	73.8885089	88.4008371	95.7822986
7	31.2074946	57.8206832	75.3957871	86.0807492
8	0	29.9723151	55.0619862	70.6008079
9	0	0	6.97513533	43.9213248
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5.60588064E 08	4.00957724	9.33453917
1	30.9639577	34.7587885	38.6401773	44.11864
2	59.0966199	61.7105161	64.5427631	69.777859
3	80.5275656	81.2829096	82.0924945	87.1136165
4	93.7198483	93.9035153	94.6832563	96.9273522
5	99.7747278	100	100.036523	100.020501
6	98.9601353	100	100.020501	100.020501
7	91.8203956	94.3313809	95.2487776	95.4402024
8	79.1423068	82.9911126	84.9843264	86.2796062
9	60.3668359	65.9802852	68.7517125	72.5387117
10	10.1975604	43.3138086	52.4580222	54.2175189

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(ZH)*********************

EST 1	2	3	4	5
13.2883302	6.65087443	4.13391628	2.21695812	0

EST 6	7	8	9	10
-2.20815638	2.6012231	19.5327028	47.8282406	80.7123891

*************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.79205321
L/V1^(1/3)	4.6449568
L/B	3.61466795
B/H	2.05074356
B/D	1.79311915
ANGULO MEDIO DE ENTRADA	31.7989118
ASTILLA MUERTA	13.8991381
ANGULO DE LA RODA	63.0498605
% LCB/L	1.42094796
% LCF/L	-4.118132
KB/V3^(1/3)	.322688426
KM/V3^(1/3)	.531290178
COEF. BLOCK	.488367492
COEF. PRISMATICO	.624178227
COEF. DE FLOTACION	.766046743
COEF. DE SECCION	.782416738

***************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.2745619	12.5918934	21.4212034	28.7438638
2	13.7727508	32.5107197	46.5874571	56.5078055
3	28.2840961	54.7117801	70.6454159	79.3284286
4	43.845171	72.5777778	86.7604498	92.8510945
5	50.4296465	77.9718187	91.5847796	97.4399429
6	45.2369516	70.5884726	85.9950598	94.4755164
7	30.3330235	56.7279716	74.6464658	85.8343646
8	0	30.5948365	56.235068	72.1643339
9	0	0	7.66742568	47.26573
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3.30458882E 08	4.72975296	10.8018577
1	34.5366858	38.7690507	43.0983338	49.2082175
2	62.9292144	66.5228608	69.8478411	74.9868089
3	83.4011626	84.8921456	86.6541482	90.4889419
4	94.977926	95.5076203	96.2408876	98.0659274
5	99.4885105	100	100.107935	100.069076
6	98.5021138	100	100.069076	100.069076
7	92.0970404	94.9795141	95.8693676	95.961410
8	80.954378	84.9385422	86.8400943	87.7460842
9	64.3050174	69.8770844	72.4362082	75.4230928
10	12.0641511	49.7951406	58.0925908	58.9924374

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	13.283499	6.66116991	4.44077993	2.22038998	0
EST	6	7	8	9	10
	-2.2083305	72.59747776	19.5181135	17.8063783	80.7123885

*************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3,79205321
L/V1^(1/3)	4,6449568
L/B	3,61466795
B/H	2,05391809
B/D	1,79311915
ANGULO MEDIO DE ENTRADA	35,1633961
ASTILLA MUERTA	15,749673
ANGULO DE LA RODA	63,0498605
% LCB/L	-1,29966958
% LCF/L	-3,9150101
KB/V3^(1/3)	,325646707
KM/V3^(1/3)	,547424763
COEF, BLOCK	,488367492
COEF, PRISMATICO	,644930546
COEF, DE FLOTACION	,790119433
COEF, DE SECCION	,757240443

************************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,51673533	13,9163314	23,6718554	31,762718
2	13,7270425	32,9831751	47,9908779	59,116962
3	26,3615715	52,6796187	70,0067852	80,50257
4	39,5561355	68,3241414	84,4963606	92,607025
5	45,9381564	73,4635597	88,6158003	96,026852
6	42,3883054	67,4277388	83,5435284	93,044360
7	29,3265024	55,4119102	73,6026195	85,400609
8	0	30,8569887	56,9441615	73,364104
9	0	0	8,23092843	50,102729
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	6,60255523E 08	5,48070289	12,285819
1	38,1632905	42,839729	47,6233015	54,37436
2	66,7681097	71,4076748	75,2819285	80,288563
3	86,1150465	88,5557561	90,583274	93,947057
4	96,038392	97,1358917	97,908481	99,268485
5	99,0661352	100	100,239869	100,17148
6	97,9564743	100	100,171462	100,17148
7	92,2702397	95,6125432	96,4892209	96,532575
8	82,5732297	86,8376297	88,6758661	89,254755
9	67,9276433	73,6752593	76,1368051	78,338025
10	13,8437175	56,125432	63,4063753	63,782384

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	13,2787398	6,67148136	4,44765424	2,22382712	0
EST	6	7	8	9	10
	-2,20850505	2,59372666	19,5035016	47,7844823	80,712388

*********************CARACTERISTICAS PRINCIPALES********************

```
        L/V3^(1/3)                                          3.70417402
        L/V1^(1/3)                                          4.53767941
        L/B                                                 3.5909281
        B/H                                                 2.04898907
        B/D                                                 1.79777593
        ANGULO MEDIO DE ENTRADA                             22.5927385
        ASTILLA MUERTA                                      5.40754751
        ANGULO DE LA RODA                                   61.185079
        % LCB/L                                             1.65561375
        % LCF/L                                             4.55886308
        KB/V3^(1/3)                                         .299023712
        KM/V3^(1/3)                                         .46679944
        COEF. BLOCK                                         .518931462
        COEF. PRISMATICO                                    .571404278
        COEF. DE FLOTACION                                  .704828963
        COEF. DE SECCION                                    .908168668
```

*************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.632709169	9.58132224	16.7666785	22.287450:
2	16.7303413	35.4828962	46.1191012	51.510360:
3	46.1195473	68.8847599	74.6510408	75.771815!
4	79.1858859	90.6468387	91.485983	91.523656
5	84.0389868	98.081061	99.8433496	99.992703:
6	65.5179243	88.4611859	96.8412706	99.355926:
7	39.323493	67.6201361	82.6469471	89.728588:
8	0	34.1276837	59.1851803	72.167431:
9	0	0	7.05065928	42.89198
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.6549946E 07	3.1752662	7.12094991
1	26.2571355	28.811238	31.317137	35.035843:
2	53.8214617	54.5734856	56.1844539	60.351782:
3	75.9196154	75.9301142	77.1976958	80.998179:
4	91.5244892	91.5244952	92.3694833	94.904447:
5	99.9998606	100	100.000002	100.00000:
6	99.9205778	100.000001	100.000001	100.00000:
7	92.4805123	93.2711766	93.6466544	94.66196
8	77.8856382	79.8135298	80.8693607	83.985903:
9	56.0992729	59.6270595	61.2754835	67.971805:
10	7.64675325	32.7117658	41.9802314	46.619675:

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
15.6035835	6.61176028	4.40781019	2.20392009	0

EST 6	7	8	9	10
-2.20749449	2.61545225	19.58813	17.9112989	80.712389:

**************************CARACTERISTICAS PRINCIPALES*******************)

```
        L/V3^(1/3)                                      3.70447402
        L/V1^(1/3)                                      4.53767941
        L/B                                             3.5909281
        B/H                                             2.05216089
        B/D                                             1.79777593
        ANGULO MEDIO DE ENTRADA                        26.7384552
        ASTILLA MUERTA                                  7.58543372
        ANGULO DE LA RODA                              61.185079
        % LCB/L                                        -1.72185732
        % LCF/L                                        -4.39419734
        KB/V3^(1/3)                                      .304396413
        KM/V3^(1/3)                                      .482557367
        COEF. BLOCK                                      .518931462
        COEF. PRISMATICO                                .591195238
        COEF. DE FLOTACION                              .731266476
        COEF. DE SECCION                                .87333494
```

*****************************TABLA DE PUNTOS(%)************************)

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.730647812	10.9810452	19.2117661	25.53581
2	15.9004226	35.1806752	47.4303815	54.5412438
3	38.9223818	65.2133583	75.4486207	78.76189
4	65.894687	87.7971008	92.4075036	93.1273008
5	72.8162754	93.9568845	98.9794591	99.8843717
6	60.1509105	84.5310487	94.9567357	98.73052
7	38.541159	66.9204565	82.4646212	90.0220025
8	0	36.0048132	61.8235983	74.8131552
9	0	0	8.35961507	48.2506556
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.1795618E 07	3.98079819	8.7021665
1	30.0831567	33.0089891	35.8796818	40.13979
2	58.1477899	59.6107869	61.4752442	65.524516
3	79.5785536	79.7080902	80.8764431	84.320226
4	93.1999319	93.2035957	93.9005357	95.990804
5	99.9931382	100	100.00036	100.00013
6	99.7977941	100	100.000134	100.00013
7	93.0987228	94.0315969	94.1692697	95.206277
8	80.330166	82.1037906	83.0316829	85.618565
9	61.2487962	64.2075812	65.4295728	71.236996
10	10.0921879	10.3459687	19.0782099	52.061571

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********)

EST 1	2	3	4	5
15.5949811	6.62199517	4.41466344	2.20733173	0

EST 6	7	8	9	10
-2.20766774	2.6117289	19.5736265	47.8895651	80.712389

*************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.70447402
L/V1^(1/3)	4.53767941
L/B	3.5909281
B/H	2.0553376
B/D	1.79777593
ANGULO MEDIO DE ENTRADA	30.7469172
ASTILLA MUERTA	9.68623833
ANGULO DE LA RODA	61.185079
% LCB/L	1.70209907
% LCF/L	4.18790915
KB/V3^(1/3)	.308925556
KM/V3^(1/3)	.498745177
COEF. BLOCK	.518931462
COEF. PRISMATICO	.616986198
COEF. DE FLOTACION	.75770399
COEF. DE SECCION	.84107467

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.833620447	12.4358153	21.7520815	28.910290
2	15.4513184	35.2504753	48.8625338	57.546344
3	34.2587603	61.7734056	75.3182178	81.116223
4	55.9225423	82.8771094	91.9364056	94.3990555
5	63.7517437	88.7675647	97.1916497	99.486928
6	55.4015412	80.5708077	92.7480212	97.853957
7	37.3883951	65.7416765	81.860937	90.071207
8	0	37.1852983	63.6804734	76.921239
9	0	0	9.50676995	52.86202
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	6.68732303E-08	1.81668085	10.340824
1	34.0575296	37.3694114	40.618967	45.441371
2	62.4988281	64.8432937	67.053902	70.899471
3	83.1328225	83.6324703	84.7557072	87.773480
4	94.8888354	94.9477646	95.4966303	97.1217579
5	99.9447183	100	100.005718	100.00266
6	99.5850831	100	100.00266	100.00266
7	93.602095	94.7573493	95.2628434	95.73408
8	82.4984324	84.272048	85.1666181	87.196938
9	65.8792466	68.5440959	69.5478489	74.391217
10	12.478933	47.5734933	55.5679324	57.3169225

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
15.5864533	6.63224594	4.42149728	2.21074866	0

EST 6	7	8	9	10
-2.20784115	2.60799984	19.5591005	47.8677979	80.7123892

**************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.70417402
L/V1^(1/3)	4.53767941
L/B	3.5909281
B/H	2.05851924
B/D	1.79777593
ANGULO MEDIO DE ENTRADA	34.5264909
ASTILLA MUERTA	11.7134678
ANGULO DE LA RODA	61.185079
% LCB/L	-1.61441898
% LCF/L	-3.96500374
KB/V3^(1/3)	.312801952
KM/V3^(1/3)	.515668363
COEF. BLOCK	.518931462
COEF. PRISMATICO	.639777158
COEF. DE FLOTACION	.784141503
COEF. DE SECCION	.811112832

*************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.940208956	13.9237324	24.3492786	32.3599089
2	15.2436579	35.5918448	50.4146739	60.5492034
3	31.0538893	58.9097838	74.8223738	82.9571064
4	48.6892191	77.6665312	90.3524745	95.0745564
5	56.5785217	83.4309602	94.7059044	98.6992694
6	51.2031124	76.6950407	90.3157979	96.744971
7	35.9957603	64.2075401	80.9152599	89.8976345
8	0	37.7585371	64.8781465	78.5976564
9	0	0	10.4462032	56.7807459
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.74085902E-07	5.76169856	12.0114325
1	38.1201874	41.8265927	45.4633463	50.8604207
2	66.849564	70.1919113	72.8246375	76.3979497
3	86.4812558	87.6439334	88.0210074	91.3115648
4	96.456815	96.7306371	97.1598248	98.288848
5	99.7987831	100	100.031466	100.01737
6	99.268276	100	100.017371	100.01737
7	93.9995873	95.4559121	96.0180626	96.2663744
8	84.4646638	86.3677362	87.2900593	88.7643811
9	70.1402998	72.7354724	73.6566728	77.5113911
10	14.782768	51.5591206	61.638109	62.5074057

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	15.5780007	6.64251259	4.42834174	2.21417087	0
EST	6	7	8	9	10
	-2.20801493	2.604265	19.5445521	47.845997	80.712389

**************************CARACTERISTICAS PRINCIPALES*******************

L/V3^(1/3)	3:70447402
L/V1^(1/3)	4,53767941
L/B	3:5909281
B/H	2,06170581
B/D	1,79777593
ANGULO MEDIO DE ENTRADA	38,0028356
ASTILLA MUERTA	13,6755467
ANGULO DE LA RODA	61,185079
% LCB/L	-1,48003355
% LCF/L	-3,75217368
KB/V3^(1/3)	,316172367
KM/V3^(1/3)	,533595369
COEF, BLOCK	,518931462
COEF, PRISMATICO	,662568117
COEF, DE FLOTACION	,810579017
COEF, DE SECCION	,783212245

*****************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,04858292	15,4174661	26,9555513	35,821128
2	15,1924814	36,1187429	52,0477238	63,527472
3	28,7373293	56,5867674	74,2295646	81,435554
4	43,2947205	72,8308289	88,1677421	95,164245
5	50,8305751	78,352849	91,8200593	97,543602
6	47,4816719	72,9679658	87,7460917	95,436891
7	34,4664084	62,4242897	79,7561203	89,525821
8	0	37,8392319	65,5403022	79,934115
9	0	0	11,1688092	60,114688
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	9,45518785E 08	6,71110532	13,682158
1	42,1962791	46,2984035	50,3235181	56,297094
2	71,1482078	75,5580812	78,6695282	81,923566
3	89,5896291	91,6685631	93,0177181	94,880700
4	97,7967994	98,5193614	98,9002459	99,487621
5	99,5167278	100	100,100125	100,063454
6	98,8432112	100	100,063456	100,063454
7	94,3034278	96,1508175	96,7343691	96,83756
8	86,2970258	88,4524523	89,4321043	90,385771
9	74,1830818	76,9049047	77,8371701	80,708687
10	17,0304827	61,5081745	67,4798881	67,804507

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
15,5696221	6,65279511	4,43519676	2,21759838	0

EST 6	7	8	9	10
-2,20818889	2,6005244	19,5299812	17,8211625	80,712389

******************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3,70447402
L/V1^(1/3)	4,53767941
L/B	3,5909281
B/H	2,0648973
B/D	1,79777593
ANGULO MEDIO DE ENTRADA	41,1210238
ASTILLA MUERTA	15,582761
ANGULO DE LA RODA	61,185079
% LCB/L	-1,32340194
% LCF/L	-3,57779725
KB/V3^(1/3)	,31914604
KM/V3^(1/3)	,55276259
COEF, BLOCK	,518931462
COEF, PRISMATICO	,685359077
COEF, DE FLOTACION	,83701653
COEF, DE SECCION	,757167271

************************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,1564641	16,8839489	29,5131081	39,217157(
2	15,2394889	36,7519785	53,7022295	66,426865;
3	26,9927379	51,6953385	73,6378454	85,64387|
4	39,1281693	68,5205172	85,7309883	94,792830:
5	46,1329479	73,6682089	88,7577533	96,098565:
6	44,1703504	69,4234636	85,1077914	93,968571(
7	32,8801839	60,4844217	78,3649164	88,987084(
8	0	37,5541467	65,794519	81,020435(
9	0	0	11,7006319	63,012149:
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,07212671E 07	7,6763805	15,314690:
1	46,1953532	50,685601	55,0917032	61,63069|
2	75,3171186	80,8227212	81,4495629	87,36004
3	92,4358817	95,617041	97,2544379	98,416423(
4	98,8649087	100,27424	100,711899	100,71354:
5	99,0893664	100	100,232058	100,16509(
6	98,3137142	100	100,164973	100,16509(
7	94,531361	96,8668761	97,4547853	97,492320:
8	88,0663923	90,6006283	91,6270895	92,146772;
9	78,1650628	81,2012566	82,2061621	84,128451:
10	19,2929618	68,6687611	73,3652964	73,437356;

*************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	15,5613182	6,66309359	4,4420624	2,2210312	0
EST	6	7	8	9	10
	-2,20836315	2,59677809	19,5153878	47,802294	80,712389;

**********************CARACTERISTICAS PRINCIPALES*******************

L/V3^(1/3)	3.62248849
L/V1^(1/3)	4.4372538
L/B	3.56833647
B/H	2.0564773
B/D	1.8022475
ANGULO MEDIO DE ENTRADA	25.4343629
ASTILLA MUERTA	3.51219012
ANGULO DE LA RODA	59.3202975
% LCB/L	1.91819693
% LCF/L	4.45794413
KB/V3^(1/3)	.288941979
KM/V3^(1/3)	.451435328
COEF. BLOCK	.550010027
COEF. PRISMATICO	.586198702
COEF. DE FLOTACION	.721990495
COEF. DE SECCION	.938265515

***************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10.5718599	19.2562621	25.372251
2	18.2987195	38.3834451	49.4622332	54.8941054
3	51.0379951	72.9770583	77.5742208	78.2880992
4	87.7956474	92.5084949	92.6049185	92.6058818
5	94.0341082	99.7696988	99.9950952	99.9999559
6	75.7858753	94.3652525	98.9955804	99.8784387
7	48.3993405	76.8247443	88.491588	92.5133504
8	0	43.6280902	68.6727257	78.0226535
9	0	0	10.2841639	52.568820
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5.20110086E 09	4.00348987	8.0147210
1	29.3172216	31.514713	33.1954213	36.4904024
2	57.1286485	57.8176557	58.9257064	61.6664037
3	78.3596621	78.3632418	79.2233378	81.8030915
4	92.6058853	92.6058853	93.2446225	95.1608342
5	99.9999999	100	100	100
6	99.9921611	100	100	100
7	93.5843669	93.7720985	93.8377723	95.017830
8	80.7695674	81.3162957	81.5302672	85.053503
9	61.4780589	62.6325912	62.9391886	70.1070065
10	9.94484662	37.7209854	45.8232956	50.1783442

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	18.0145232	6.59417497	4.39611661	2.19805829	0
EST	6	7	8	9	10
	-2.20719694	2.62184944	19.6130493	47.9486405	80.712388

***************************CARACTERISTICAS PRINCIPALES*******************

$L/V3^{(1/3)}$	
$L/V1^{(1/3)}$	3.62248849
L/B	4.4372538
B/H	3.56833647
B/D	2.0596607
ANGULO MEDIO DE ENTRADA	1.8022475
ASTILLA MUERTA	29.0328413
ANGULO DE LA RODA	5.34861517
% LCB/L	59.3202975
% LCF/L	-1.95755174
$KB/V3^{(1/3)}$	-4.28883987
$KM/V3^{(1/3)}$	.293735628
COEF. BLOCK	.465340139
COEF. PRISMATICO	.550010027
COEF. DE FLOTACION	.606237215
COEF. DE SECCION	.74523517
	.907252167

*********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	11.8469399	21.5705178	28.4185075
2	17.5188852	38.1597642	50.7704258	57.7560965
3	43.7075593	70.0661225	78.8685619	81.24326
4	76.023791	92.0622311	93.9615245	94.1118317
5	84.2091055	98.1248538	99.8491478	99.9930976
6	70.0220408	91.3120092	97.992847	99.6668498
7	47.2257725	75.9963237	88.3738132	92.8863299
8	0	45.4799128	70.9155599	80.1620424
9	0	0	11.9684326	57.5355031
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.19539775E 07	4.84477069	9.45646778
1	32.8357672	35.2964366	37.5144773	40.868400
2	61.0991861	62.3557238	63.5971793	66.0726267
3	81.7111672	81.7667929	82.4864114	84.6252339
4	94.1184585	94.1185747	94.6095136	96.0823254
5	99.9998711	100	100.000002	100.000010
6	99.9681198	100.000001	100.000001	100.000005
7	94.17385	94.4205883	94.5125033	95.4854485
8	82.7681268	83.2617648	83.4465176	86.4563446
9	65.6713326	66.5235294	66.7088517	72.9126887
10	12.3504356	44.2058823	51.7363633	54.8544808

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	18.002722	6.60438267	4.10292124	2.20146089	0
EST	6	7	8	9	10
	-2.20736968	2.61813607	19.5985844	47.9269646	80.7123889

**************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.62248849
L/V1^(1/3)	4.4372538
L/B	3.56833647
B/H	2.06284903
B/D	1.8022475
ANGULO MEDIO DE ENTRADA	32.4833411
ASTILLA MUERTA	7.13236045
ANGULO DE LA RODA	59.3202975
% LCB/L	-1.93852567
% LCF/L	-4.09758576
KB/V3^(1/3)	.297869226
KM/V3^(1/3)	.479544982
COEF. BLOCK	.550010027
COEF. PRISMATICO	.626275728
COEF. DE FLOTACION	.768479844
COEF. DE SECCION	.878223445

***************************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	13.1571326	23.9469792	31.5460841
2	17.0583828	38.2221467	52.1425048	60.5649815
3	38.7383995	67.0001569	79.2294021	83.7187286
4	65.3464004	89.0100245	94.5622937	95.5479693
5	74.8176365	94.8748104	99.2202607	99.9222283
6	64.821985	87.9842564	96.6301854	99.2924945
7	45.7307916	74.791826	87.989773	93.1217943
8	0	46.6509469	72.6422434	82.0048452
9	0	0	13.4741219	61.89774
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	5.73903038	10.9331674
1	36.4479898	39.1787407	41.6403612	45.3626971
2	65.062366	67.0144889	68.4529892	70.5971084
3	85.0105634	85.2608667	85.8620308	87.5234439
4	95.6643234	95.6714963	96.0111424	97.028747
5	99.9960715	100	100.000172	100.000061
6	99.9095792	100.000061	100.000061	100.000061
7	94.7071743	95.0439327	95.1768098	95.94287
8	84.6369541	85.1317981	85.3147863	87.8284953
9	69.5734528	70.2635962	70.3929225	75.6569301
10	14.7222752	50.4393271	57.3394236	59.4281765

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	17.9909995	6.61460617	4.40973745	2.20486873	0
EST	6	7	8	9	10
	-2.20754266	2.61441695	19.5840971	47.9052553	80.7123886

**************************CARACTERISTICAS PRINCIPALES************************

L/V3^(1/3)	3,62248849
L/V1^(1/3)	4,4372538
L/B	3,56833647
B/H	2,0660423
B/D	1,8022475
ANGULO MEDIO DE ENTRADA	35,7286341
ASTILLA MUERTA	8,86244693
ANGULO DE LA RODA	59,3202975
% LCB/L	-1,87407325
% LCF/L	-3,90171444
KB/V3^(1/3)	,301470262
KM/V3^(1/3)	,494252396
COEF, BLOCK	,550010027
COEF, PRISMATICO	,64631424
COEF, DE FLOTACION	,791724519
COEF, DE SECCION	,850994753

*********************************TABLA DE PUNTOS(%)******************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	11,4857224	26,3551842	34,714838
2	16,8084857	38,4986081	53,581767	63,336325
3	35,2267815	61,2712193	79,0969358	85,72358
4	57,142216	81,783967	94,1191992	96,6714543
5	66,8806954	90,75236	97,9554491	99,6783075
6	60,175174	84,5500845	94,9666238	98,7341204
7	44,032248	73,2922209	87,3628369	93,2201184
8	0	47,22179	73,8503375	83,614969
9	0	0	14,7319164	65,742904
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4,50305838E 08	6,67642055	12,425564
1	40,1075027	43,1117605	45,8200735	49,915540
2	68,9947572	71,7341127	73,4238533	75,1820264
3	88,1548472	88,8005845	89,3363649	90,461069
4	97,1826403	97,2447043	97,4364117	97,9887239
5	99,9711933	100	100,002415	100,001042
6	99,798581	100	100,001042	100,001042
7	95,1883091	95,6515984	95,8443811	96,400013
8	86,4210405	86,9637919	87,1671517	89,197957
9	73,3038084	73,9275897	74,0347854	78,394872
10	17,0587584	56,5459829	62,7390965	63,9907595

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	17,9793565	6,6248455	4,41656367	2,20828184	0
EST	6	7	8	9	10
	-2,20771591	2,61069203	19,5695874	47,8835124	80,712389

**********************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.62218849
L/V1^(1/3)	4.1372538
L/B	3.56833647
B/H	2.06921051
B/D	1.8022475
ANGULO MEDIO DE ENTRADA	38.7230022
ASTILLA MUERTA	10.5401899
ANGULO DE LA RODA	59.3202975
% LCB/L	1.7789931
% LCF/L	3.71976608
KB/V3^(1/3)	.304641675
KM/V3^(1/3)	.509643525
COEF. BLOCK	.550010027
COEF. PRISMATICO	.666352753
COEF. DE FLOTACION	.814969193
COEF. DE SECCION	.825403699

*************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	15.8126274	28.7585934	37.8766391
2	16.7003253	38.9261157	55.0619071	66.0569091
3	32.639014	61.9554013	78.7428865	87.3497258
4	50.895944	80.3846853	92.8709223	97.3376955
5	60.3346706	86.3629413	96.1460025	99.1832939
6	56.0318597	81.1223208	93.0729718	97.9913417
7	42.2218937	71.5702783	86.519657	93.1848363
8	0	47.2952861	74.6513659	85.0442584
9	0	0	15.7143038	69.179448
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.01695209E 07	7.64425504	13.910590
1	43.758698	17.0357227	49.9900855	54.457732
2	72.8577513	76.4428672	78.426183	79.7587295
3	91.0917833	92.3321504	92.876667	93.3957755
4	98.5827779	98.8142891	98.8801408	98.951061
5	99.8941333	100	100.013433	100.006781
6	99.6209271	100	100.006781	100.006781
7	95.6226575	96.2675283	96.5235647	96.87231
8	88.1640681	88.8025849	89.0479779	90.6033918
9	76.9753568	77.6051698	77.7108339	81.2000027
10	19.3936756	62.675283	68.0399507	68.6621504

****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	17.9677925	6.63510069	4.42340046	2.21170023	0
EST	6	7	8	9	10
	-2.20788949	2.60696138	19.5550552	47.8617358	80.712388

**************************CARACTERISTICAS PRINCIPALES*********************)

```
L/V3^(1/3)                               3.62248849
L/V1^(1/3)                               4.4372538
L/B                                      3.56833647
B/H                                      2.07244367
B/D                                      1.8022475
ANGULO MEDIO DE ENTRADA                  41.4324378
ASTILLA MUERTA                           12.1692268
ANGULO DE LA RODA                        59.3202975
% LCB/L.                                 1.66999691
% LCF/L                                 -3.57128894
KB/V3^(1/3)                              .307464737
KM/V3^(1/3)                              .525881145
COEF. BLOCK                              .550010027
COEF. PRISMATICO                         .686391265
COEF. DE FLOTACION                       .838213868
COEF. DE SECCION                         .801306857
```

***********************************TABLA DE PUNTOS(%)*****************************)

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	17.1142285	31.1142929	40.974982
2	16.6850452	39.4167472	56.5519016	68.691159
3	30.6612721	60.0065521	78.2981109	88.67634
4	46.0424124	76.2250392	91.1383101	97.550319
5	54.9192949	82.0387718	93.9624058	98.423456
6	52.3323857	77.7718716	91.0169552	97.085039
7	40.3707916	69.6933723	85.4926985	93.025101
8	0	46.9851743	75.1263346	86.340929
9	0	0	46.4388156	72.327276
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	7.56897046E-08	8.62692654	15.361141
1	47.3363036	50.88047	54.0758354	58.90804
2	76.5966687	81.0565641	83.3635442	84.217569
3	93.7928333	95.7924231	96.4267603	96.280095
4	99.7926592	100.352188	100.339771	99.906001
5	99.7375508	100	100.044682	100.025664
6	99.3682814	100	100.025664	100.025664
7	96.0181899	96.900262	97.2111478	97.382866
8	89.9118733	90.700786	91.0093503	92.097271
9	80.7010958	81.401572	81.5224139	84.168877
10	21.7935712	69.00262	73.3762891	73.597687

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********)

EST 1	2	3	4	5
17.9563075	6.64537174	4.4302478	2.21512391	0

EST 6	7	8	9	10
-2.20806332	2.60322491	19.5405005	47.8399255	80.712389

**************************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                              3,62248849
L/V1^(1/3)                              1,4372538
L/B                                     3,56833647
B/H                                     2,07565179
B/D                                     1,8022475
ANGULO MEDIO DE ENTRADA                 43,8330277
ASTILLA MUERTA                          13,7550468
ANGULO DE LA RODA                       59,3202975
% LCB/L                                 1,56581436
% LCF/L                                 3,47683877
KB/V3^(1/3)                             ,310004773
KM/V3^(1/3)                             ,543121463
COEF, BLOCK                             ,550010027
COEF, PRISMATICO                        ,706429778
COEF, DE FLOTACION                      ,861458542
COEF, DE SECCION                        ,778577071
```

*******************************TABLA DE PUNTOS(%)***************************

ESTACION	LH 1	LH 2	LH 3	LH 4
0	0	0	0	0
1	0	18,3632074	33,3727055	43,9446119
2	16,7251509	40,0061516	57,9920718	71,1864433
3	29,1000276	58,3504119	77,8109213	89,747598
4	42,1739885	72,4278448	89,1551211	97,3794011
5	50,3866755	77,9307723	91,5592843	97,4286317
6	49,0171412	74,5386918	88,8554492	96,0173842
7	38,5316666	67,7219008	84,3188859	92,7562127
8	0	46,4091282	75,3605802	87,5563733
9	0	0	16,960973	75,31964
10	0	0	0	0

ESTACION	LH 5	LH 6	LH 7	LH 8
0	0	-3,83239011E 08	9,60575482	16,7459639
1	50,7649458	51,5649908	57,9912273	63,1726913
2	80,1415329	85,477989	88,1266092	88,5571113
3	96,2307459	99,1084918	99,9106247	99,0605413
4	100,774417	101,825996	101,804025	100,8443
5	99,4854062	100	100,108803	100,069704
6	99,0378734	100	100,069687	100,069704
7	96,3862377	97,5730524	97,9028315	97,962411
8	91,714982	92,719157	93,1024292	93,7478273
9	84,6003663	85,4383139	85,5916766	87,4259504
10	24,3557469	75,7305231	78,9566841	78,9967813

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	17,9448999	6,6556587	4,43710577	2,21855286	0
EST	6	7	8	9	10
	-2,20823738	2,59948265	19,5259232	47,8180813	80,7123886

************************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                          3.62248849
L/V1^(1/3)                          4.4372538
L/B                                 3.56833647
B/H                                 2.0564773
B/D                                 1.8022475
ANGULO MEDIO DE ENTRADA             45.9080904
ASTILLA MUERTA                      16.1160468
ANGULO DE LA RODA                   59.3202975
% LCB/L                             -1.38552683
% LCF/L                             -3.4579796
KB/V3^(1/3)                         .316770451
KM/V3^(1/3)                         .56599161
COEF. BLOCK                         .550010027
COEF. PRISMATICO                    .72646829
COEF. DE FLOTACION                  .884703217
COEF. DE SECCION                    .757101218
```

*************************************TABLA DE PUNTOS(%)*********************************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	0	19.4555336	35.4375536	46.692888
2	16.6728761	40.2021683	58.9201025	73.142106
3	27.3344412	56.069509	76.4761284	90.009778
4	37.9635697	67.6605964	85.9959464	96.281259
5	45.0985675	72.572013	87.9896862	95.705917
6	44.5480424	69.8395518	85.4271856	94.152622
7	35.1848584	63.7842309	81.5200654	91.521762
8	0	43.4464872	73.3967641	87.63514
9	0	0	15.2697132	76.387927
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	0	10.7377698	18.178707
1	53.9528697	57.996942	61.6420653	67.153769
2	83.2268512	89.5963305	92.6726592	92.551058
3	98.1101428	102.197248	103.337589	101.66311
4	101.280799	103.198777	103.329074	101.78249
5	98.9620403	100	100.276258	100.20171
6	98.3827783	100	100.200968	100.2017
7	96.4154099	98.3089851	98.6850342	98.697549
8	93.2730573	91.9269552	95.4616274	95.689219
9	88.4240065	89.8539104	90.1665718	91.176724
10	27.2101732	83.0898506	85.1584322	85.160063

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	18.0145232	6.59417497	4.39611661	2.19805829	0
EST	6	7	8	9	10
	-2.20719694	2.62184944	19.6130493	17.9186405	80.712388

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4,5203724
L/V1^(1/3)	5,53708857
L/B	3,54493035
B/H	2,94468594
B/D	2,55931341
ANGULO MEDIO DE ENTRADA	19,6303111
ASTILLA MUERTA	13,5363888
ANGULO DE LA RODA	67,9678671
% LCB/L	1,16150297
% LCF/L	-4,64205277
KB/V3^(1/3)	,278442014
KM/V3^(1/3)	,648639691
COEF, BLOCK	,400009997
COEF, PRISMATICO	,554
COEF, DE FLOTACION	,68464
COEF, DE SECCION	,722039706

***************************TABLA DE PUNTOS(%)********************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,22411466	6,12887939	11,0335781	15,938197,
2	7,62471219	22,4120603	33,7708624	42,046583
3	20,5508257	44,2058767	58,9813141	67,38544
4	34,4457716	61,896558	77,6034103	85,648671
5	39,5307633	66,2712331	83,2224442	93,035946
6	33,4593392	56,4731306	74,0169563	86,682837
7	19,6023937	39,1439162	56,3401998	71,087792
8	1,01699284	17,6806441	33,8144426	49,333478
9	0	0	7,24578615	22,767257
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-8,80435911E-08	1,6285072	4,3159838
1	20,8427174	25,7471034	30,6515572	35,55631
2	47,6154537	50,8965241	54,8380497	62,079515,
3	71,5415431	73,1723932	75,9503791	82,607295
4	89,1425088	90,2980414	91,9488878	95,861371
5	97,9965713	100	100,66767	100,56346
6	95,1095054	100	100,563321	100,56344
7	83,2533576	92,6528242	94,7482512	94,759635
8	64,1143846	77,9584724	83,001797	83,151985
9	38,9067436	55,9169449	61,9191875	65,740511
10	4,63130473	26,5282414	38,4566611	42,525213

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	12,5070871	9,38031526	6,25354348	3,12672174	0
EST	6	7	8	9	10
	-2,25434357	1,60829767	15,6649222	42,032343	80,712389

**********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4,5203724
L/V1^(1/3)	5,53708857
L/B	3,54493035
B/H	2,94924428
B/D	2,55931341
ANGULO MEDIO DE ENTRADA	17,2386276
ASTILLA MUERTA	12,3740277
ANGULO DE LA RODA	67,9678671
% LCB/L	1,07902574
% LCF/L	4,67359369
KB/V3^(1/3)	,275715495
KM/V3^(1/3)	,634613303
COEF, BLOCK	,400009997
COEF, PRISMATICO	,541027776
COEF, DE FLOTACION	,669592221
COEF, DE SECCION	,739352053

*************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,11490669	5,60290823	10,091009	14,578956
2	7,85465562	22,6842646	33,554789	41,042954
3	22,1747348	46,2416325	60,0290693	67,101462
4	37,4548764	65,2007024	79,6389327	86,242344
5	42,3538926	69,550291	85,7766403	94,514043
6	34,906153	58,3439383	75,7471615	87,9217342
7	19,7423253	39,3294813	56,4731602	71,080699
8	,996527652	17,0534754	32,7183212	47,924393
9	0	0	6,57740884	20,87434
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4,6419022E-08	1,40609277	3,7744846
1	19,0668127	23,5545454	28,0423405	32,530417
2	45,7417725	48,2654545	51,7272699	58,817346
3	70,1783496	71,1990908	73,7244192	80,382665
4	88,7348652	89,4218181	90,9422431	94,973767
5	98,5510083	100	100,431578	100,338040
6	95,7095105	100	100,338045	100,338040
7	83,033472	92,169116	94,20025	94,21156
8	62,573893	76,5073478	81,7822989	81,958598
9	36,1960833	53,0146957	62,5618964	63,579149
10	3,67687264	21,6911594	33,178915	39,073216

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	12,5264479	9,39483592	6,26322393	3,13161199	0
EST	6	7	8	9	10
	-2,254589311	,60301529	15,6413455	42,0015088	80,712388

****************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4.5203724
L/V1^(1/3)	5.53708857
L/B	3.54193035
B/H	2.95380968
B/D	2.55931341
ANGULO MEDIO DE ENTRADA	14.8785123
ASTILLA MUERTA	11.2139763
ANGULO DE LA RODA	67.9678671
% LCB/L	.954829658
% LCF/L	4.67484498
KB/V3^(1/3)	.272805462
KM/V3^(1/3)	.621181018
COEF. BLOCK	.400009997
COEF. PRISMATICO	.528055552
COEF. DE FLOTACION	.654544441
COEF. DE SECCION	.757514992

*****************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.01057107	5.09778978	9.184953	13.2720495
2	8.16765597	23.0875678	33.4182627	40.0650224
3	24.2085552	48.5732041	61.0634569	66.67479
4	41.0709521	68.7909987	81.5712643	86.6309675
5	45.5745284	73.0793158	88.3474846	95.8902367
6	36.4127559	60.2500762	77.4667582	89.1180645
7	19.7853533	39.354605	56.4256829	70.9133428
8	.964577865	16.2804387	31.3903678	46.2564142
9	0	0	5.85242509	18.8274897
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4.0316991E-08	1.1965626	3.2536323
1	17.3590624	21.4459626	25.5329198	29.62013
2	43.8960735	45.7351551	48.7772118	55.69459
3	68.7465682	69.3013664	71.6501244	78.278034
4	88.2290343	88.5783851	90.0326425	94.174701
5	99.0223459	100	100.255074	100.184020
6	96.2695713	100	100.184028	100.184020
7	82.7089051	91.6644139	93.7077837	93.721164
8	60.8220087	74.9932416	80.587137	80.795437
9	33.2783238	49.9864833	60.1677019	61.406848
10	2.71595723	16.6441387	27.1457821	35.5553947

******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
12.5458387	9.40937897	6.27291933	3.13645968	0

EST 6	7	8	9	10
-2.25483539	1.59772473	15.6237371	41.9706269	80.7123889

**********************CARACTERISTICAS   PRINCIPALES*******************

```
    L/V3^(1/3)                                        1.3011?091
    L/V1^(1/3)                                        ?.??1???0?
    L/B                                               3.5?83???3
    B/H                                               2.95022263
    B/D                                               2.56691042
    ANGULO MEDIO DE ENTRADA                          19.843574
    ASTILLA MUERTA                                   10.4199601
    ANGULO DE LA RODA                                66.0071464
    % LCB/L                                           1.22324093
    % LCF/L                                           4.64060662
    KB/V3^(1/3)                                        .266415261
    KM/V3^(1/3)                                        .607021324
    COEF. BLOCK                                        .428886361
    COEF. PRISMATICO                                  .554409219
    COEF. DE FLOTACION                                .685114694
    COEF. DE SECCION                                  .773591683
```

********************************TABLA DE PUNTOS(%)************************

ESTACION	LH 1	LH 2	LH 3	LH 4
0	0	0	0	0
1	1.41478578	6.90384292	12.1339537	17.0?897??
2	9.11198358	25.6576043	37.1572736	44.58945?
3	25.3748201	51.0033592	64.2913252	70.342312
4	42.8990998	71.1283539	83.752128	88.571439?
5	48.0411705	75.6292231	90.0838964	96.7?9000
6	39.7382953	64.3065743	80.9765309	91.44489??
7	23.291394	45.0006747	62.5810493	76.227036?
8	1.18863177	20.7799393	38.421373	53.9745??
9	0	0	8.52262162	25.6?493?
10	0	0	0	0

ESTACION	LH 5	LH 6	LH 7	LH 8
0	0	5.29834206E-08	1.75240803	4.620?927?
1	21.6570827	25.8175813	30.1073078	35.16?996?
2	48.897659	50.9810975	54.2205933	61.42?78??
3	72.614078	73.2358232	75.5357705	81.95096??
4	90.0268383	90.3270325	91.6240474	95.33472??
5	99.2903246	100	100.166601	100.1?30?
6	97.2992736	100	100.11304	100.1?30?
7	86.1647447	92.6677552	94.3161964	94.3456??
8	67.2561783	78.0032654	82.4872226	82.010?86?
9	41.6079568	56.0065309	64.1816622	65.508?52?
10	4.92876179	26.6775515	38.003119	42.4387?7?

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	12.4841721	9.35266941	6.23511292	3.11755644	0
EST	6	7	8	9	10
	-2.25387575	1.61835481	15.7040981	42.0910485	80.712?89?

*****************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4.40114081
L/V1^(1/3)	5.39103957
L/B	3.51830903
B/H	2.96280192
B/D	2.56691842
ANGULO MEDIO DE ENTRADA	22.0512353
ASTILLA MUERTA	11.2542554
ANGULO DE LA RODA	66.0071464
% LCB/L	-1.28650074
% LCF/L	-4.58788962
KB/V3^(1/3)	.267900776
KM/V3^(1/3)	.618665567
COEF. BLOCK	.428886361
COEF. PRISMATICO	.5662518
COEF. DE FLOTACION	.698852089
COEF. DE SECCION	.757412799

*****************************TABLA DE PUNTOS(%)*********************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.52206106	7.45327915	13.1046637	18.437070
2	8.89445933	25.5087464	37.5568191	45.749597
3	23.7535331	49.2590576	63.6881545	70.97943
4	39.8779171	68.3063658	82.3989797	88.481852
5	45.353201	72.8440283	88.182038	95.805309
6	38.4570743	62.7687376	79.6705082	90.597798
7	23.2653284	44.9970713	62.6502092	76.403652
8	1.26175754	21.5378193	39.6323733	55.413723
9	0	0	9.31673398	27.668908
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	9.85247255E 08	1.97794879	5.1625714
1	23.3947603	27.8902714	32.5253637	37.98912
2	50.8084856	53.4683256	57.0621051	61.424377
3	74.0931112	75.1012443	77.5354118	83.949300
4	90.6193775	91.1561085	92.4739032	96.0448711
5	98.994675	100	100.26474	100.19206
6	96.9340599	100	100.192067	100.19206
7	86.4661644	93.0915754	94.6913281	94.717025
8	68.7091333	79.2747262	83.4951403	83.766941
9	44.1940778	58.5494523	66.2280779	67.341815
10	5.87053983	30.9157539	42.25771	45.441647

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	12.5023954	9.36714723	6.2447648	3.12238238	0
EST	6	7	8	9	10
	-2.25412076	1.613088	15.6835822	42.0603052	80.712389

**************************CARACTERISTICAS PRINCIPALES********************

```
L/V3^(1/3)                                     4.29016 7
L/V1^(1/3)                                      5.25547034
L/B                                             3.49313042
B/H                                             2.97128594
B/D                                             2.57418544
ANGULO MEDIO DE ENTRADA                        20.3926917
ASTILLA MUERTA                                  7.73880066
ANGULO DE LA RODA                              64.0464250
% LCB/L                                         1.33172581
% LCF/L                                         4.6322753
KB/V3^(1/3)                                     .255029705
KM/V3^(1/3)                                     .571064305
COEF. BLOCK                                     .458351725
COEF. PRISMATICO                                .556637315
COEF. DE FLOTACION                              .687699285
COEF. DE SECCION                                .82342975
```

***************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.38319113	7.6498253	13.3195996	18.346821
2	10.7800386	29.0477186	40.4647856	46.9632245
3	31.4265918	58.095072	69.8498731	72.4804269
4	53.9288166	80.2259627	88.2009418	90.119841
5	58.5899403	85.0388261	95.5173103	98.980643
6	47.1641252	72.5979583	87.4689619	95.285445
7	27.7475089	51.6038115	69.0897926	81.193891
8	1.40657677	24.5772453	43.7349978	58.980596
9	0	0	10.1961674	29.27920
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.01926744E 07	1.90815982	4.8801371
1	22.6705185	26.2026845	29.8631442	34.653483
2	50.1796574	51.4432213	54.090247	60.730811
3	73.4226656	73.582416	75.5655273	81.434514
4	90.4484489	90.4810738	91.6350142	95.0869821
5	99.8564197	100	100.020157	100.01060
6	98.7903662	100	100.010607	100.01060
7	88.6906728	92.7487085	94.1583363	94.30546
8	70.4342197	78.2461255	82.1303653	82.895168
9	44.772777	56.4922511	63.613081	65.779730
10	5.40820373	27.4870851	38.2347201	42.959145

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
13.1794657	9.32674267	6.21782845	3.10891422	0

EST 6	7	8	9	10
-2.25343696	1.62778659	15.7408379	42.1461033	80.712389

******************************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                          4.2904647
L/V1^(1/3)                          5.25547034
L/B                                 3.49313042
B/H                                 2.97588545
B/D                                 2.57418544
ANGULO MEDIO DE ENTRADA            24.9355971
ASTILLA MUERTA                      9.45293846
ANGULO DE LA RODA                  64.0464258
% LCB/L                            -1.42643605
% LCF/L                            -4.49662046
KB/V3^(1/3)                         .258890064
KM/V3^(1/3)                         .595043899
COEF. BLOCK                         .458351725
COEF. PRISMATICO                    .580932232
COEF. DE FLOTACION                  .715881389
COEF. DE SECCION                    .788993448
```

***************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.60701691	8.91306206	15.5232081	21.3841825
2	10.2030854	28.6540339	41.42752	49.6443261
3	26.8632962	53.9718825	68.0273057	74.42781
4	45.2862562	74.0277251	86.2978639	90.7301305
5	51.2601354	78.7572016	92.0669755	97.6509671
6	43.6808634	68.8412399	84.6458232	93.6961604
7	27.4205021	51.240923	68.9316876	81.3102811
8	1.53763772	26.1338864	46.1455836	61.7662027
9	0	0	12.0032421	33.5796869
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5.21229161E-08	2.43294493	6.0841074
1	26.4249028	30.5427721	34.8101391	40.39464
2	51.379142	56.6513265	59.8623986	66.7673208
3	76.8308237	77.4884949	79.5879411	85.3820897
4	91.9809397	92.2171089	93.3003203	96.4189467
5	99.5455031	100	100.092314	100.0579
6	98.2094187	100	100.0579	100.0579
7	89.230854	93.5961738	94.8786696	94.9472811
8	73.2219428	80.7885213	84.2027561	84.7260458
9	50.0699867	61.5770425	67.8259848	69.394192
10	7.52409753	35.9617374	46.431312	48.9517201

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
13.1914837	9.34118038	6.2245361	3.11372678	0

EST 6	7	8	0	10
-2.2536813	1.62253439	15.7203788	42.1151152	80.7123891

************************CARACTERISTICAS PRINCIPALES************************

```
L/V3^(1/3)                                        4.18742952
L/V1^(1/3)                                        5.12926061
L/B                                               3.16926741
B/H                                               2.98390859
B/D                                               2.58114045
ANGULO MEDIO DE ENTRADA                          21.5172595
ASTILLA MUERTA                                     5.49151115
ANGULO DE LA RODA                                62.0857051
% LCB/L                                           1.49660651
% LCF/L                                           4.60951332
KB/V3^(1/3)                                        .244476448
KM/V3^(1/3)                                        .541040876
COEF. BLOCK                                        .488377595
COEF. PRISMATICO                                   .56192367
COEF. DE FLOTACION                                 .693831458
COEF. DE SECCION                                   .869117321
```

*************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.99733397	8.40052276	14.7286612	19.969662
2	12.5376705	32.4395241	43.6822205	49.353553
3	38.5542928	64.738403	72.3590276	74.1053271
4	67.3667169	87.3234462	90.4756409	90.826116
5	71.0818842	93.0955778	98.7313253	99.840664
6	55.848278	80.9271938	92.9510703	97.938468
7	33.253362	59.0695473	75.7542864	85.639418
8	1.7010695	29.4285689	50.0361162	64.468315
9	0	0	12.5524996	33.973454
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	8.00645552E-08	2.14807732	5.2120865
1	24.1085252	27.1254721	30.2026224	34.539060
2	51.7702757	52.5505666	54.7045162	60.480151
3	74.3870223	74.4129249	76.120649	81.236572
4	90.8494939	90.8501889	91.8900404	95.009536
5	99.9892356	100	100.000655	100.00025
6	99.6069716	100	100.000255	100.00025
7	90.7817917	92.9385034	93.925852	94.42830
8	73.7130217	78.8155102	81.7272763	83.284403
9	48.7018032	57.6310204	63.2388458	66.568552
10	6.23960524	29.3850339	39.4875545	44.280751

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************************

EST	1	2	3	4	5
	14.5898095	9.30237918	6.20158612	3.10079304	0
EST	6	7	8	9	10
	-2.25302471	1.63664948	15.7753622	42.197838	80.712388

*************************CARACTERISTICAS PRINCIPALES********************

```
L/V3^(1/3)                              4.18742952
L/V1^(1/3)                              5.12926061
L/B                                     3.46926741
B/H                                     2.98852765
B/D                                     2.58114045
ANGULO MEDIO DE ENTRADA                25.4115529
ASTILLA MUERTA                          6.90033613
ANGULO DE LA RODA                      62.0857051
% LCB/L                                -1.58399658
% LCF/L                                -4.48410879
KB/V3^(1/3)                             .248081565
KM/V3^(1/3)                             .560859393
COEF. BLOCK                             .488377595
COEF. PRISMATICO                        .58267873
COEF. DE FLOTACION                      .717907327
COEF. DE SECCION                        .838159297
```

***************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.13069558	9.55548529	16.7568138	22.720952
2	11.8373084	31.9650557	44.6451203	51.9314701
3	32.7845508	60.9480104	72.5249575	76.522940
4	56.6906667	82.9541646	90.4075383	92.065191
5	62.6272436	88.0037047	96.8733274	99.3992401
6	52.0324305	77.4508333	90.8010909	96.974796
7	32.8916594	58.7237757	25.6652894	85.880048
8	1.84626084	31.0311836	52.3484772	66.970373
9	0	0	14.4410109	38.097654
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-9.35045793E-08	2.64637835	6.2883903
1	27.4308345	30.8639688	34.3655509	39.30007
2	55.5807426	57.0367626	59.5192156	65.449616
3	77.589996	77.7775719	79.473769	84.464849
4	92.3229712	92.3455876	93.2790975	96.073588
5	99.9311265	100	100.007644	100.003651
6	99.3372019	100	100.003653	100.003651
7	91.3108948	93.651796	91.6220626	94.9375621
8	76.096957	80.9643879	83.5782406	84.8053811
9	53.3881859	61.9287758	66.8824375	69.6071099
10	8.24563774	36.5479595	46.3225079	49.3427471

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
14.597556	9.31677918	6.21118613	3.10559307	0

EST 6	7	8	9	10
-2.25326039	1.63141103	15.7549565	42.16726	80.712388

```
**************************CARACTERISTICAS   PRINCIPALES******************
```

L/V3^(1/3)	4.18742952
L/V1^(1/3)	5.12926061
L/B	3.46926741
B/H	2.99315386
B/D	2.58114045
ANGULO MEDIO DE ENTRADA	29.2190716
ASTILLA MUERTA	8.27006471
ANGULO DE LA RODA	62.0857051
% LCB/L	1.59308427
% LCF/L	-4.31421897
KB/V3^(1/3)	.251155318
KM/V3^(1/3)	.581976825
COEF. BLOCK	.488377595
COEF. PRISMATICO	.60343379
COEF. DE FLOTACION	.741983196
COEF. DE SECCION	.809330871

```
*************************TABLA DE PUNTOS(%)*****************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.26878783	10.7585831	18.870199	25.588180(
2	11.4218155	31.8356864	45.7343461	54.498240(
3	28.9682438	57.6130894	72.0488633	78.403473(
4	48.9337772	77.8929746	89.1888876	92.853958(
5	55.8830512	82.8546803	94.4026659	98.508771:
6	48.573772	74.0509185	88.5050589	95.833067:
7	32.2495246	57.9934704	75.2261757	85.873980(
8	1.96067432	32.1691472	54.073149	68.966341
9	0	0	16.1033189	41.72452
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-2.97867773E-08	3.17998316	7.40717545
1	30.8933182	34.7602928	38.7042966	44.262239
2	59.4244743	61.7123513	64.6125531	70.633251(
3	80.6913494	81.2842635	83.0312135	87.838064:
4	93.7598923	93.9041172	94.7438338	97.194528(
5	99.7747776	100	100.036512	100.02049.
6	98.9767822	100	100.020494	100.02049.
7	91.709942	94.3316318	95.269797	95.41037
8	78.1613092	82.9948953	85.3943803	86.200146(
9	57.6020446	65.9897905	70.4554228	72.539799.
10	10.1985949	43.3163175	52.4600193	54.219336:

```
*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********
```

EST 1	2	3	4	5
14.6053662	9.33120139	6.22080094	3.11040049	0

EST 6	7	8	9	10
-2.25351241	1.62616445	15.7345193	42.1366349	80.712380(

******************************CARACTERISTICAS PRINCIPALES*********************

```
        L/V3^(1/3)                          4.18742952      ▓
        L/V1^(1/3)                          5.12926061
        L/B                                 3.46926741
        B/H                                 2.99778722
        B/D                                 2.58114045
        ANGULO MEDIO DE ENTRADA             32.8636727
        ASTILLA MUERTA                      9.60718857
        ANGULO DE LA RODA                   62.0857051
        % LCB/L                            -1.5364563
        % LCF/L                            -4.11802808
        KB/V3^(1/3)                         .253813348
        KM/V3^(1/3)                         .604658551
        COEF. BLOCK                         .488377595      ▓
        COEF. PRISMATICO                    .624188849
        COEF. DE FLOTACION                  .766059065
        COEF. DE SECCION                    .782419608
```

**********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.40995882	11.996365	21.0452693	28.539442(
2	11.1904156	31.963786	46.9524181	57.0836867
3	26.2883587	54.8604612	71.348387	79.87984▓
4	43.1848055	73.0295498	87.2540491	93.1128357
5	50.4301931	77.9723404	91.5851036	97.4400865
6	45.4385963	70.7662478	86.1178468	94.5414824
7	31.4052292	56.9680499	74.501065	85.6545675
8	2.04535928	32.8933301	55.2882927	70.5375354
9	0	0	17.518137	44.873818
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-4.91553775E-08	3.74398869	8.55527355
1	34.4574691	38.7711241	43.1706298	49.37041▓
2	63.2928783	66.5253489	69.9197283	75.978053
3	83.6316954	84.8910117	86.7898815	91.3294948
4	95.0558887	95.5081497	96.3009004	98.3760607
5	99.4885498	100	100.107924	100.069068
6	98.525516	100	100.069068	100.069068
7	91.9931421	94.9798407	95.880822	95.9616456
8	79.9694498	84.939522	87.1685899	87.7468017
9	61.4172043	69.879044	73.9609513	75.4245357
10	12.0654585	49.7984065	58.095203	58.9948475

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	14.6132403	9.34564601	6.23043069	3.11521536	0
EST	6	7	8	9	10
	-2.253756871	.62090976	15.7140505	42.1059622	80.712388(

**************************CARACTERISTICAS   PRINCIPALES**********************

```
        L/V3^(1/3)                                    4.0912353
        L/V1^(1/3)                                    5.0113053
        L/B                                           3.44660518
        B/H                                           2.99612158
        B/D                                           2.58780749
        ANGULO MEDIO DE ENTRADA                       23.438939
        ASTILLA MUERTA                                3.70279399
        ANGULO DE LA RODA                             60.1249811
        % LCB/L                                       1.70399177
        % LCF/L                                      -4.55884735
        KB/V3^(1/3)                                   .235041099
        KM/V3^(1/3)                                   .517327003
        COEF. BLOCK                                   .518938244
        COEF. PRISMATICO                              .571406909
        COEF. DE FLOTACION                            .704832014
        COEF. DE SECCION                              .908176357
```

***************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.181548867	9.28863173	16.5912082	22.200884
2	14.2704168	35.7644268	46.965246	52.096684
3	45.8662345	70.2154189	75.1284619	75.858052
4	80.7465753	90.985944	91.5091093	91.524480
5	84.0417011	98.0817639	99.8434433	99.992709
6	65.644841	88.5192308	96.8621791	99.361425
7	40.1427389	67.3538253	82.2323554	89.451186
8	2.11744707	35.7554389	57.4779726	70.335531
9	0	0	15.9914252	40.164090
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.37539626E-08	2.54295361	5.7042175
1	26.2265435	28.811711	31.3118123	35.0921121
2	54.0376512	54.5740533	56.2654678	60.925108
3	75.9273088	75.93051	77.3214506	81.493735
4	91.5246837	91.5246844	92.4156439	95.088522
5	99.9998607	100	100.000002	100.00000
6	99.9214421	100.000001	100.000001	100.00000
7	92.3825726	93.2712675	93.7012437	94.66203
8	77.0162709	79.8138026	81.4625586	83.986095
9	53.5413048	59.6276051	63.3140529	67.972190
10	7.6471164	32.7126752	41.9809755	46.620317

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(ZH)************

EST 1	2	3	4	5
16.3657764	9.2794389	6.18629258	3.0931463	0

EST 6	7	8	9	10
-2.252636481	.64499492	15.8078701	12.2465515	80.712388

*************************CARACTERISTICAS PRINCIPALES********************

$L/V3^{(1/3)}$	4,0912353
$L/V1^{(1/3)}$	5,01143053
L/B	3,44660518
B/H	3,00075954
B/D	2,58780749
ANGULO MEDIO DE ENTRADA	27,6950086
ASTILLA MUERTA	5,20260616
ANGULO DE LA RODA	60,1249844
% LCB/L	-1,7784594
% LCF/L	-4,39416506
$KB/V3^{(1/3)}$	,239295767
$KM/V3^{(1/3)}$	,539056163
COEF, BLOCK	,518938244
COEF, PRISMATICO	,594199136
COEF, DE FLOTACION	,731270998
COEF, DE SECCION	,873340624

********************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,204855224	10,6399896	19,0108628	25,4350585
2	13,3434646	35,1984726	48,222329	55,225244
3	37,6127561	66,3149115	76,2539343	79,05325
4	66,4613317	88,5534668	92,6164867	93,157217
5	72,8181062	93,9577613	98,9797009	99,884412
6	60,2897028	84,6076657	94,9904128	98,741620
7	39,4112889	66,7146567	82,0558992	89,745256
8	2,29906053	37,6512289	60,0270799	72,957240
9	0	0	18,4429213	44,990008
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,01051387E-07	3,17650673	6,9456146
1	30,0476662	33,0097222	35,9086408	40,20555
2	58,455076	59,6116667	61,5429907	66,230909
3	79,6347562	79,70825	81,0215939	84,931678
4	93,2021227	93,2038889	93,9574781	96,218042
5	99,9931416	100	100,00036	100,00013
6	99,8800649	100	100,000134	100,00013
7	92,9959939	94,0347237	94,5207566	95,206369
8	79,478391	82,104171	83,5776157	85,618838
9	58,6045231	64,2083419	67,3406398	71,237543
10	10,0927561	40,3472365	49,0792129	52,062484

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
16,3703521	9,29380336	6,19586888	3,0929345	0

EST 6	7	8	9	10
-2,25287964	1,63976934	15,7875148	42,2160491	80,712389

************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4,0912353
L/V1^(1/3)	5,01143053
L/B	3,44660518
B/H	3,00540468
B/D	2,58780749
ANGULO MEDIO DE ENTRADA	31,7904732
ASTILLA MUERTA	6,65692745
ANGULO DE LA RODA	60,1249844
% LCB/L	1,76747893
% LCF/L	4,18785944
KB/V3^(1/3)	,242876835
KM/V3^(1/3)	,562254569
COEF. BLOCK	,518938244
COEF. PRISMATICO	,616991364
COEF. DE FLOTACION	,757709983
COEF. DE SECCION	,841078618

*****************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,228305382	12,0432218	21,5208756	28,794415
2	12,8201187	35,0679656	49,5866352	58,208793
3	32,5054732	62,5099532	76,2239004	81,597399
4	55,8005336	83,6401516	92,3459039	94,510284
5	63,7528321	88,768291	97,1919461	99,487007
6	55,548325	80,6643528	92,7958449	97,872650
7	38,3086547	65,6067499	81,4927431	89,795857
8	2,43264025	38,8977292	61,8580841	75,043633
9	0	0	20,5566576	49,18015
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	3,85734533	8,2320283
1	34,0168116	37,3704138	40,6524829	45,517336
2	62,8814702	64,8444966	67,1088298	71,744097
3	83,2730673	83,6333725	84,907433	88,505268
4	94,9072703	94,9481656	95,5628419	97,393803
5	99,9447303	100	100,005716	100,00265
6	99,5897395	100	100,002659	100,00265
7	93,4931011	94,7575096	95,3070039	95,73420
8	81,6423443	84,2725289	85,6687567	87,197291
9	63,1538409	68,5450578	71,3350831	74,391923
10	12,4797064	47,5750965	55,5691961	57,318099

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	16,3749912	9,30819002	6,20546	3,10273002	0

EST	6	7	8	9	10
	-2,25312314	1,63453563	15,7671279	42,185499	80,712388

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.0912353
L/V1^(1/3)	5.01113053
L/B	3.14660518
B/H	3.01005701
B/D	2.58780749
ANGULO MEDIO DE ENTRADA	35.6328632
ASTILLA MUERTA	8.06938214
ANGULO DE LA RODA	60.1219844
% LCB/L	1.6890393
% LCF/L	3.96494103
KB/V3^(1/3)	.245935935
KM/V3^(1/3)	.587266839
COEF. BLOCK	.518938244
COEF. PRISMATICO	.639783592
COEF. DE FLOTACION	.784148967
COEF. DE SECCION	.811115275

*************************TABLA DE PUNTOS(%)********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.251438387	13.4720444	24.0862584	32.228146
2	12.5411305	35.2487533	51.0704777	61.326732
3	29.1063067	59.3348744	75.708048	83.56307
4	48.1969567	78.2826872	90.8632976	95.297307
5	56.5791101	83.4314493	94.7061559	98.6993591
6	51.3549969	26.8034395	90.3781708	96.772806
7	36.9606593	64.1488505	80.6081393	89.626468
8	2.52104234	39.581792	63.0852561	76.698999
9	0	0	22.3089091	52.793111
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3.73405452E-08	1.5766657	9.5434433
1	38.0739639	41.8278571	45.5016227	50.94702
2	67.2935961	70.1931205	72.869833	77.383850
3	86.7086412	87.6450711	88.9679333	92.166270
4	96.5107956	96.7311428	97.2295134	98.606654
5	99.7988025	100	100.031162	100.017361
6	99.2763483	100	100.017368	100.017361
7	93.884089	95.4561078	96.0195122	96.266518
8	83.5849828	86.3683234	87.7377168	88.764819
9	67.3129425	72.7366467	75.3200203	77.512270
10	14.7837247	54.5610779	61.6396648	62.508871

******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
16.3796939	9.32259901	6.21506599	3.10753301	0

EST 6	7	8	9	10
-2.253366831	.62929391	.15.7467095	42.154902	80.712308

*********************CARACTERISTICAS   PRINCIPALES*********************

      L/V3^(1/3)   4,0912359
      L/V1^(1/3)   5,01143053
      L/B   3,44660518
      B/H   3,01471655
      B/D   2,58780749
      ANGULO MEDIO DE ENTRADA   39,1496405
      ASTILLA MUERTA   9,44676038
      ANGULO DE LA RODA   60,1249844
      % LCB/L   1,56423233
      % LCF/L   3,75210662
      KB/V3^(1/3)   ,248590888
      KM/V3^(1/3)   ,614415558
      COEF, BLOCK   ,518938244
      COEF, PRISMATICO   ,66257582
      COEF, DE FLOTACION   ,810587952
      COEF, DE SECCION   ,783213375

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,273722182	14,9149647	26,659693	35,672949
2	12,4168537	35,6418399	52,6395904	64,326403
3	26,7025843	56,7704217	75,0475975	85,111043
4	42,6090428	73,2835434	88,7017528	95,467671
5	50,8308308	78,353091	91,820208	97,543667
6	47,6362684	73,0888093	87,8225227	95,474797
7	35,467426	62,4426635	79,4634997	89,262768
8	2,57048484	39,8067106	63,8228362	78,016722
9	0	0	23,7206877	55,928644
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	5,32270352	10,854876
1	42,1443469	46,2999064	50,3667015	56,394629
2	71,6426359	75,5598877	78,7085339	83,051114
3	89,8909634	91,6699158	93,1556745	95,858579
4	97,8942521	98,5199626	98,9668033	99,051276
5	99,5167453	100	100,10012	100,063451
6	98,8556129	100	100,063452	100,06345
7	94,1821786	96,1510543	96,7515744	96,83773
8	85,3781286	88,4531631	89,7985508	90,386313
9	71,2192546	76,9063262	79,3102697	80,709174
10	17,0316395	61,5105437	67,4817733	67,8063211

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST 1	2	3	4	5
16,38446	9,33703028	6,22468684	3,11234343	0

EST 6	7	8	9	10
-2,253611	071,62404406	15,7262596	42,1212577	80,712388

**********************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4.00119313
L/V1^(1/3)	4.90113619
L/B	3.42504295
B/H	3.00795248
B/D	2.59420788
ANGULO MEDIO DE ENTRADA	26.3568804
ASTILLA MUERTA	2.40198033
ANGULO DE LA RODA	58.1642637
% LCB/L	1.93834175
% LCF/L	-4.45794426
KB/V3^(1/3)	.227043073
KM/V3^(1/3)	.500547843
COEF. BLOCK	.550010003
COEF. PRISMATICO	.586198689
COEF. DE FLOTACION	.721990479
COEF. DE SECCION	.938265495

*********************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10.4281166	19.1778778	25.336289
2	15.8116563	38.956346	50.5243671	55.566706
3	51.5320135	74.4220221	77.9554982	78.33786
4	89.4386197	92.5777987	92.6057793	92.605884
5	94.0341127	99.7696991	99.9950953	99.999955
6	75.8138169	94.3602553	98.9922611	99.877677
7	48.8379415	76.1706683	87.9722703	92.293432
8	2.74482872	44.172891	66.0643654	76.261539
9	0	0	21.1989606	48.231851
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	3.21802568	6.4423052
1	29.305726	31.5147105	33.5031724	36.50808
2	57.3601677	57.8176526	59.0089261	62.252371
3	78.3625362	78.3632395	79.3523263	82.319529
4	92.6058843	92.6058842	93.2928997	95.353945
5	100	100	100	100
6	99.9920828	100	100	100
7	93.5329243	93.7720981	93.862413	95.017834
8	80.1986953	81.3162943	81.8811358	85.053502
9	59.2653036	62.6325887	64.3564786	70.107004
10	9.94483017	37.720981	45.8233089	50.178341

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*********************

EST 1	2	3	4	5
18.3064063	9.25779884	6.1718659	3.08593299	0

EST 6	7	8	9	10
-2.2522703	1.65286714	15.8385355	42.2925038	80.712389

******************************CARACTERISTICAS   PRINCIPALES*********************

```
        L/V3^(1/3)                                         4.00119313
        L/V1^(1/3)                                         4.90113619
        L/B                                                3.42504295
        B/H                                                3.01260876
        B/D                                                2.59420708
        ANGULO MEDIO DE ENTRADA                           30.0399701
        ASTILLA MUERTA                                     3.66157243
        ANGULO DE LA RODA                                 58.1642637
        % LCB/L                                            1.98125598
        % LCF/L                                            4.28803991
        KB/V3^(1/3)                                         .230847918
        KM/V3^(1/3)                                         .519688367
        COEF. BLOCK                                         .550010003
        COEF. PRISMATICO                                    .606237199
        COEF. DE FLOTACION                                  .745235151
        COEF. DE SECCION                                    .907252152
```

***************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	11.6783477	21.1705018	28.3763271
2	14.9135339	38.4918518	51.8228012	50.554582
3	42.8988013	71.5089313	79.6450232	81.458944
4	77.3626859	92.6237992	94.0328350	94.115980
5	84.2091127	98.1248557	99.8491481	99.993097
6	70.0680175	91.3151848	97.9908085	99.665951
7	47.7388837	75.3886014	87.8479423	92.647910
8	2.94356044	45.9434946	68.2438873	78.401964
9	0	0	23.8029442	52.66037
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	3.88256487	7.5783855
1	32.8222837	35.2964337	37.5235693	40.889150
2	61.4268136	62.3557205	63.6643153	66.772075
3	81.7418723	81.7667904	82.6372075	85.241779
4	94.1185451	94.1185735	94.6671508	96.312881
5	99.9998711	100	100.000002	100.00000
6	99.9679672	100.000001	100.000001	100.0000
7	94.1138048	94.4205877	94.5423272	95.48544
8	82.2171112	83.2617628	83.7715111	86.456343
9	63.5336684	66.5235258	67.9350699	72.912686
10	12.3504252	44.2058761	51.7363639	54.854476

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	18.3084406	9.2721298	6.18141988	3.09070997	0
EST	6	7	8	9	10
	-2.2525128	41.6476538	15.8182277	42.2620724	80.712389

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.00119313
L/V1^(1/3)	4.90113619
L/B	3.42504295
B/H	3.01727224
B/D	2.59420788
ANGULO MEDIO DE ENTRADA	33.5562333
ASTILLA MUERTA	4.88886878
ANGULO DE LA RODA	58.1642637
% LCB/L	-1.96610267
% LCF/L	-4.09758594
KB/V3^(1/3)	.234122685
KM/V3^(1/3)	.539914801
COEF. BLOCK	.550010003
COEF. PRISMATICO	.626275709
COEF. DE FLOTACION	.768479822
COEF. DE SECCION	.878223433

********************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	12.9615223	23.8403354	31.497155
2	14.3659031	38.3664318	53.1655223	61.454320
3	37.2975562	68.1642559	80.2190757	84.13611
4	65.8428967	89.8424866	91.8262909	95.592001
5	74.8176226	94.8748043	99.2202592	99.922228
6	64.8821645	87.9972961	96.6313568	99.292109
7	46.3237334	74.2428451	87.4610475	92.862234
8	3.09197399	47.1262834	69.890085	80.219706
9	0	0	26.0848846	56.591958
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	4.58877419	8.7419146
1	36.4323483	39.178737	41.650908	45.38676
2	65.4756567	67.0144814	68.5019671	71.413033
3	85.1060848	85.2608634	86.0247268	88.242694
4	95.6677673	95.6714948	96.0781862	97.297713
5	99.9960715	100	100.000172	100.00006
6	99.9094313	100.000061	100.000061	100.00006
7	94.6360269	95.0439322	95.2125311	95.942871
8	84.0809966	85.1317964	85.633989	87.828494
9	67.4760997	70.2635928	21.4966996	75.656927
10	14.7222581	50.4393211	57.3394266	59.428172

**************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	18.3105397	9.28640293	6.19098862	3.09549433	0
EST	6	7	8	9	10
	-2.25275575	1.64243236	15.7978883	42.2315936	80.712389

****************************CARACTERISTICAS PRINCIPALES****************************

```
L/V3^(1/3)                              4.00119313
L/V1^(1/3)                              4.90113619
L/B                                     3.42504295
B/H                                     3.02194294
B/D                                     2.59420788
ANGULO MEDIO DE ENTRADA                 36.8488469
ASTILLA MUERTA                          6.08406931
ANGULO DE LA RODA                       58.1642637
% LCB/L                                 1.90581201
% LCF/L                                -3.90171458
KB/V3^(1/3)                             .236969192
KM/V3^(1/3)                             .561455225
COEF. BLOCK                             .550010003
COEF. PRISMATICO                        .646314219
COEF. DE FLOTACION                      .791724494
COEF. DE SECCION                        .850994744
```

****************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	14.2612744	26.2327065	34.658681
2	14.039945	38.4916536	54.5693045	64.293185
3	33.468534	65.1378618	80.1579549	86.308287
4	57.0762425	85.6093683	94.55827	96.799134
5	66.8806984	90.7523618	97.9554498	99.678307
6	60.2461384	84.5733992	94.972605	98.735137
7	44.7017297	72.8099562	86.8363504	92.938603
8	3.19246719	47.7944311	71.0844111	81.780169
9	0	0	28.0249429	60.09129
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	5.32888659	9.9177116
1	40.0895505	43.1117566	45.8321792	49.943165
2	69.4829253	71.734108	73.4552584	76.115929
3	88.3333323	88.800581	89.4988764	91.2843
4	97.2021038	97.2447027	97.5110913	98.296572
5	99.9711933	100	100.002415	100.00104
6	99.7986492	100	100.001042	100.00104
7	95.1039436	95.6545976	95.8845138	96.40001
8	85.8379903	86.9637928	87.4939056	89.197955
9	71.1932372	73.9275856	75.0765126	78.394869
10	17.0587628	56.5459758	62.7390872	63.990754

****************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)****************************

EST	1	2	3	4	5
	18.3127035	9.30085829	6.2005722	3.10028612	0

EST	6	7	8	9	10
	-2.25299893	1.63720283	15.7775176	42.201068	80.712389

**************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	4.00119313
L/V1^(1/3)	4.90113619
L/B	3.42504295
B/H	3.02662087
B/D	2.59420788
ANGULO MEDIO DE ENTRADA	39.8739108
ASTILLA MUERTA	7.24877526
ANGULO DE LA RODA	58.1642637
% LCB/L	-1.81514532
% LCF/L	-3.71976625
KB/V3^(1/3)	.239468728
KM/V3^(1/3)	.584522738
COEF. BLOCK	.550010003
COEF. PRISMATICO	.666352729
COEF. DE FLOTACION	.814969166
COEF. DE SECCION	.825403693

************************TABLA DE PUNTOS(%)**********************

ESTACION	LH 1	LH 2	LH 3	LH 4
0	0	0	0	0
1	0	15.5576642	28.6195532	37.812845:
2	13.8599679	38.7945078	56.0173553	67.066203(
3	30.715616	62.5693446	79.8002009	88.05379
4	50.4953801	81.0947063	93.4111053	97.559348(
5	60.3346771	86.3629461	96.1460048	99.183294:
6	56.1107322	81.1554668	93.0848261	97.994672'
7	42.960723	71.1602233	86.0020554	92.882605:
8	3.25092459	48.0342705	71.9052666	83.140393:
9	0	0	29.6394407	63.244880:
10	0	0	0	0

ESTACION	LH 5	LH 6	LH 7	LH 8
0	0	0	6.09290268	11.087595
1	43.7383041	47.0357181	50.0038378	51.48911
2	73.4114279	76.4428618	78.4416497	80.810311:
3	91.3525783	92.3321163	93.030788	94.322669:
4	98.6329274	98.8142873	98.9578603	99.297666:
5	99.8944334	100	100.013433	100.00678:
6	99.6215317	100	100.006781	100.00678:
7	95.523595	96.2675276	96.5627428	96.872317:
8	87.5342975	88.8025827	89.3857826	90.60339
9	74.7900792	77.6051653	78.7344914	81.199999:
10	19.3936592	62.6752754	68.0399471	68.662144(

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
18.3149319	9.31525591	6.21017061	3.10508533	0

EST 6	7	8	9	10
-2.25324263	1.6319652	15.7571153	42.170495	80.712389:

********************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4.00119313
L/V1^(1/3)	4.90113619
L/B	3.42504295
B/H	3.03130605
B/D	2.59420788
ANGULO MEDIO DE ENTRADA	42.6001669
ASTILLA MUERTA	8.38604393
ANGULO DE LA RODA	58.1642637
% LCB/L	-1.71076414
% LCF/L	-3.57128899
KB/V3^(1/3)	.241687339
KM/V3^(1/3)	.609320396
COEF. BLOCK	.550010003
COEF. PRISMATICO	.686391239
COEF. DE FLOTACION	.838213837
COEF. DE SECCION	.801306852

*************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	16.8275293	30.9579446	40.9032469
2	13.7746794	39.2089106	57.470525	69.741663
3	28.6498769	60.4169535	79.3169329	89.459755
4	45.4461005	76.7991075	91.7184817	97.851719
5	54.9193003	82.0387767	93.9624084	98.423457
6	52.4167758	77.8138731	91.0351777	97.084911
7	41.1689743	69.3576736	84.9906189	92.704816
8	3.27541617	47.9393676	72.4313872	84.355536
9	0	0	30.9770533	66.15749
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	6.86852926	12.230213
1	47.3133708	50.8804655	54.091301	58.943333
2	77.2074078	81.0565585	83.365163	85.414404
3	94.1265218	95.7924189	96.5687021	97.308460
4	99.8809921	100.352186	100.415223	100.29053
5	99.737551	100	100.044682	100.02566
6	99.3697895	100	100.025664	100.02566
7	95.9036203	96.9002611	97.2407534	97.38286
8	89.2183245	90.7007831	91.3439863	92.097268
9	78.3784668	81.4015663	82.5442932	84.168873
10	21.7935696	69.0026103	73.3762808	73.597679

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**********

EST 1	2	3	4	5
18.3172247	9.32967582	6.21978388	3.10989196	0

EST 6	7	8	9	10
-2.253486661	.62671946	15.7366814	42.1398747	80.712389

********************CARACTERISTICAS PRINCIPALES********************

```
    L/V3^(1/3)                                    1.00119313
    L/V1^(1/3)                                    1.90113619
    L/B                                           3.42504295
    B/H                                           3.03599847
    B/D                                           2.59420788
    ANGULO MEDIO DE ENTRADA                      45.0068831
    ASTILLA MUERTA                                9.5001377
    ANGULO DE LA RODA                            58.1642637
    % LCB/L                                        1.61133572
    % LCF/L                                        3.47683894
    KB/V3^(1/3)                                    .243677298
    KM/V3^(1/3)                                    .636053499
    COEF. BLOCK                                    .550010003
    COEF. PRISMATICO                               .706429749
    COEF. DE FLOTACION                             .861458509
    COEF. DE SECCION                               .778577069
```

*********************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	18.0440757	33.1986684	43.864758(
2	13.7472737	39.6761683	58.8785316	72.269441!
3	27.0426077	58.5990683	78.7776863	90.581556(
4	41.463974	72.8770686	89.7378732	97.739564(
5	50.3866862	77.9307825	91.5592906	97.428634!
6	49.104907	74.5881139	88.8799234	96.027325!
7	39.3779263	67.4595821	83.8380204	92.421336(
8	3.27501242	17.6058732	72.7447123	85.483983(
9	0	0	32.113967	68.952799!
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	7.64105796	13.320949(
1	50.7394174	54.5649854	59.0084432	63.21197(
2	80.8017083	85.4779825	88.1164569	89.834311!
3	96.6257293	99.1084869	100.039404	100.18600!
4	100.90114	101.825994	101.873207	101.26512!
5	99.485407	100	100.108803	100.06970(
6	99.0406133	100	100.069687	100.06970(
7	96.2559788	97.5730514	97.9178771	97.962410!
8	90.9433773	92.7191542	93.3909664	93.747824(
9	82.0810461	85.4303084	86.5741050	87.425945(
10	24.3558072	75.7305139	78.9566747	78.996773!

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)********************

EST	1	2	3	4	5
	18.3195825	9.34411807	6.22941205	3.11470606	0
EST	6	7	8	9	10
	-2.253731	1.62146567	15.7162159	42.109207	80.712389!

**************************CARACTERISTICAS   PRINCIPALES********************

L/V3^(1/3)	1,22182289
L/V1^(1/3)	5,17506445
L/B	3,47797598
B/H	2,49748927
B/D	2,18679399
ANGULO MEDIO DE ENTRADA	19,9785675
ASTILLA MUERTA	15,8475466
ANGULO DE LA RODA	68,4343456
% LCB/L	-1,03730613
% LCF/L	-4,64205277
KB/V3^(1/3)	,312684349
KM/V3^(1/3)	,611782859
COEF, BLOCK	,40000996
COEF, PRISMATICO	,554
COEF, DE FLOTACION	,68464
COEF, DE SECCION	,722039638

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,79887171	6,58867643	11,3784186	16,1680855
2	8,86082061	22,9552614	33,9107351	42,0066622
3	21,6843003	44,3699075	58,7974403	67,1824052
4	34,9213833	61,7949968	77,3776565	85,4872139
5	39,5306438	66,2710906	83,2223298	93,0358781
6	33,3082611	56,2984789	73,8611356	86,5725265
7	19,0226712	38,7562832	56,1055452	70,9678164
8	0	16,5246859	33,5390381	49,5782473
9	0	0	5,00529906	22,6905284
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2,2888538E 07	1,8437803	4,88651099
1	20,9576581	25,7471037	30,5366158	35,3264226
2	47,5518146	50,8965243	54,7641483	61,6154975
3	71,4413995	73,1723932	75,8997986	82,2523124
4	89,0790393	90,2988411	91,9374295	95,7354448
5	97,9965445	100	100,667682	100,563472
6	95,0560214	100	100,563349	100,563472
7	83,2109586	92,6528242	94,7484535	94,759644
8	64,4731156	77,9584726	82,9744954	83,1519957
9	39,7232862	55,9169451	64,6655002	65,7405198
10	4,63130627	26,5282418	38,4566595	42,5252185

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
10,4073388	7,80550412	5,2036694	2,60183472	0

EST 6	7	8	9	10
-2,22769479	2,181188	17,8965238	45,3764143	80,7123894

************************CARACTERISTICAS   PRINCIPALES*****************

L/V3^(1/3)	4:22182289
L/V1^(1/3)	5:17506115
L/B	3:47797598
B/H	2:50135536
B/D	2:18679399
ANGULO MEDIO DE ENTRADA	17:5502862
ASTILLA MUERTA	14:5034342
ANGULO DE LA RODA	68:4343456
% LCB/L	:965832759
% LCF/L	1:67359378
KB/V3^(1/3)	:309620249
KM/V3^(1/3)	:599589096
COEF. BLOCK	:40000996
COEF. PRISMATICO	:541027752
COEF. DE FLOTACION	:669592192
COEF. DE SECCION	:739352018

*************************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1:6417421	6:0244434	10:1070888	14:789667
2	9:09678696	23:1699102	33:6314962	40:9675856
3	23:3040439	46:3075276	59:7885114	66:8938841
4	37:0973875	65:036742	79:3951611	86:0936930
5	42:3537655	69:5501473	85:7765318	94:5139827
6	34:7583798	58:1729468	75:603068	87:822716
7	19:1754565	38:9687351	56:2697966	70:9879171
8	0	15:9502647	32:4725827	48:1873281
9	0	0	4:54612325	20:7973511
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	8.09849321E 08	1:58979959	4:2676194
1	19:1721608	23:5545412	27:936981	32:31960
2	45:6683665	48:2654494	51:6653267	58:4027447
3	70:0908136	71:199082	73:6741643	80:0668165
4	88:6846117	89:4218165	90:9278245	94:8619141
5	98:5509866	100	100:431587	100:338055
6	95:6631104	100	100:338053	100:338055
7	83:0071449	92:169115	94:2003191	94:211571
8	62:9447581	76:5073451	81:7507353	81:958602
9	36:9631232	53:0146903	62:2813558	63:579150
10	3:67690712	21:6911504	33:1788026	39:073213

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
10:4234492	7:81758691	5:21172462	2:60586233	0

EST 6	7	8	9	10
-2:22789926	2:17679246	17:8794017	45:3507567	80:712389

**************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4:22482289
L/V1^(1/3)	5:17506445
L/B	3:47797598
B/H	2:50522743
B/D	2:18679399
ANGULO MEDIO DE ENTRADA	15:1518767
ASTILLA MUERTA	13:1576232
ANGULO DE LA RODA	68:4343456
% LCB/L	-:852187405
% LCF/L	-4:67484492
KB/V3^(1/3)	:306349983
KM/V3^(1/3)	:587817439
COEF. BLOCK	:40000996
COEF. PRISMATICO	:528055503
COEF. DE FLOTACION	:654544384
COEF. DE SECCION	:757514992

******************************TABLA DE PUNTOS(%)******************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1:49117953	5:48226258	9:47329506	13:4642667
2	9:42025055	23:5082307	33:4355537	39:9583637
3	25:3139883	48:5198051	60:7740871	66:4776657
4	41:4563838	68:556354	81:3205774	86:5042283
5	45:5743922	73:0791712	88:3473831	95:8901847
6	36:268612	60:0930923	77:3344309	89:0299827
7	19:2330497	39:0202903	56:2719558	70:8458297
8	0	15:2338705	31:1682108	46:5293637
9	0	0	4:0440131	18:74324
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1:14957425E-07	1:35052783	3:6722835
1	17:4551621	21:4459548	25:4368013	29:427886
2	43:8175332	45:7351458	48:7241505	55:3275975
3	68:677668	69:3013593	71:5993175	78:0006825
4	88:1936865	88:5783819	90:0158551	94:0764059
5	99:0223291	100	100:25508	100:18403
6	96:2297692	100	100:184033	100:18403
7	82:6973172	91:664412	93:7077162	93:7211671
8	61:2005742	74:9932358	80:5510913	80:7954371
9	33:9843965	49:9864716	59:8663588	61:406843
10	2:7159903	16:6441193	27:1456138	35:5553833

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	10:4395846	7:82968844	5:21979227	2:60989613	0
EST	6	7	8	9	10
	-2:22810409	2:17239004	17:8622529	45:3250592	80:712389

****************************CARACTERISTICAS PRINCIPALES*******************

L/V3^(1/3)	4.11311352
L/V1^(1/3)	5.03822956
L/B	3.45179277
B/H	2.50855193
B/D	2.19330824
ANGULO MEDIO DE ENTRADA	20.1953014
ASTILLA MUERTA	12.2363485
ANGULO DE LA RODA	66.5395562
% LCB/L	-1.11248345
% LCF/L	-4.64060697
KB/V3^(1/3)	.299250874
KM/V3^(1/3)	.5743833
COEF. BLOCK	.428883032
COEF. PRISMATICO	.554109094
COEF. DE FLOTACION	.685114549
COEF. DE SECCION	.773585853

**********************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.00675264	7.3562441	12.4559872	17.2708828
2	10.4992512	26.1392943	37.1936262	44.4832445
3	26.557111	50.9877768	64.0126817	70.1444280
4	43.2893167	70.8897709	83.5074907	88.4526555
5	48.0403448	75.6283916	90.0833473	96.7487380
6	39.5709724	64.1312216	80.8363872	91.3574920
7	22.6584815	44.6413919	62.4108266	76.1664210
8	0	19.5492713	38.2783782	54.3732197
9	0	0	5.94217829	25.7796700
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.82141095E 07	1.9802236	5.2183705
1	21.7509207	25.8175601	30.0153714	34.96741
2	48.8155375	50.9810722	54.1526356	60.986295
3	72.543156	73.2358041	75.4707143	81.620125
4	89.9952121	90.3270241	91.6004392	95.21401
5	99.2902464	100	100.166625	100.113059
6	97.2627503	100	100.113059	100.113059
7	86.1562601	92.6677506	94.3168348	94.3456232
8	67.6839733	78.0032516	82.423005	82.810752
9	42.5736806	56.0065032	63.7610758	82.810752
10	4.92871765	26.6775054	38.0031436	42.4387033

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	10.5913819	7.78105631	5.18737084	2.59368544	0

EST	6	7	8	9	10
	-2.22728113	2.19008171	17.9311677	45.4283285	80.712389

**********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.42359549
L/V1^(1/3)	5.41854472
L/B	4.06570015
B/H	2.56136955
B/D	2.22325173
ANGULO MEDIO DE ENTRADA	18.5939338
ASTILLA MUERTA	6.39103383
ANGULO DE LA RODA	61.5320027
% LCB/L	1.52698319
% LCF/L	4.6095157
KB/V3^(1/3)	.256759305
KM/V3^(1/3)	.486235352
COEF. BLOCK	.488375362
COEF. PRISMATICO	.561923139
COEF. DE FLOTACION	.693830842
COEF. DE SECCION	.869114168

**********************TABLA DE PUNTOS(%)********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.761038698	8.2375657	14.6255409	19.9132795
2	12.3799682	32.2613555	43.5527214	49.2850997
3	38.3600171	64.6345346	72.3239463	74.09762
4	67.3069456	87.3105018	90.4737378	90.8259204
5	71.0810284	93.0951326	98.7311931	99.84064
6	55.918193	80.9874497	92.9863208	97.9532936
7	33.3791544	59.2064155	75.8618743	85.7039016
8	1.8545972	29.5951733	50.1784451	64.5651735
9	0	0	12.7206786	34.0742334
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2.67545013E-08	2.18161624	5.29461533
1	24.0862652	27.125379	30.2216527	34.58250
2	51.7472358	52.5504549	51.7157635	60.4993195
3	74.3860449	74.4128412	76.1222123	81.2427491
4	90.8494506	90.8501516	91.8902522	95.0104947
5	99.9892333	100	100.000656	100.000255
6	99.6108209	100	100.000255	100.000255
7	90.807256	92.9384845	93.9175292	94.4282912
8	73.7580783	78.8154532	81.7087223	83.2843639
9	48.7452654	57.6309065	63.22032	66.568473
10	6.23952925	29.3848441	39.4874102	44.2806186

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
15.0945867	9.35789859	6.23859907	3.11929955	0

EST 6	7	8	9	10
-2.25396417	1.61645249	15.696688	42.0799444	80.712389

*************************CARACTERISTICAS PRINCIPALES***********************

```
L/V3^(1/3)
L/V1^(1/3)                                        4,42359549
L/B                                               5,41854172
B/H                                               4,06570015
B/D                                               2,56533452
ANGULO MEDIO DE ENTRADA                           2,22325173
ASTILLA MUERTA                                   22,0668371
ANGULO DE LA RODA                                 8,02538969
% LCB/L                                          61,5320027
% LCF/L                                          -1,61864272
KB/V3^(1/3)                                       -4,48411714
KM/V3^(1/3)                                        ,26054463
COEF, BLOCK                                        ,502565901
COEF, PRISMATICO                                  ,488375362
COEF, DE FLOTACION                                ,582677593
COEF, DE SECCION                                  ,717906009
                                                  ,838157099
```

***********************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0.	0
1	,86214448	9,37024886	16,6395629	22,6567979
2	11,6841393	31,7738437	44,4897575	51,8380175
3	32,6072346	60,8185165	72,4611506	76,5008418
4	56,6233302	82,9277335	90,3999103	92,0636439
5	62,626747	88,003614	96,8731814	99,3991996
6	52,1022635	77,5167411	90,8435748	96,9948276
7	33,0274211	58,8753273	75,7867403	85,9542486
8	2,01066463	31,2204419	52,5126902	67,0819953
9	0	0	14,6394909	38,21920
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2,16941332E 07	2,68780182	6,38824098
1	27,4054444	30,8637592	34,3870623	39,3493128
2	55,5441459	57,036511	59,536165	65,4690687
3	77,5853098	77,7773832	79,4756282	84,46983
4	92,3227318	92,3455037	93,27913	96,0739178
5	99,9311199	100	100,007645	100,003654
6	99,3431534	100	100,003654	100,003654
7	91,3400098	93,654758	94,6147186	94,93753
8	76,1482965	80,964274	83,5591102	84,8053008
9	53,4407362	61,928548	66,8612751	69,606948
10	8,2455211	36,5475801	46,3221638	49,3424776

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

```
EST 1              2              3              4              5
    15,1016246  9,3723845      6,24825635     3,12412815     0
EST 6              7              8              9              10
    -2,25420931 1,61118277     15,6761607     42,049184      80,7123891
```

DISENO:-100/-100/10

************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.42359549
L/V1^(1/3)	5.11851472
L/B	4.06570015
B/H	2.56930563
B/D	2.22325173
ANGULO MEDIO DE ENTRADA	25.5132749
ASTILLA MUERTA	9.61113312
ANGULO DE LA RODA	61.5320027
% LCB/L	-1.63218088
% LCF/L	-4.31423449
KB/V3^(1/3)	.263772619
KM/V3^(1/3)	.519755261
COEF. BLOCK	.488375362
COEF. PRISMATICO	.603432047
COEF. DE FLOTACION	.741981175
COEF. DE SECCION	.809329507

************************************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.966684514	10.5501762	18.7382481	25.5159409
2	11.2696996	31.6311957	45.5546783	54.3800934
3	28.8027987	57.4674451	71.9595693	78.36341
4	48.8652169	77.8557251	89.1733992	92.8492148
5	55.88281	82.8544787	94.4025586	98.5887315
6	48.6442042	74.1216881	88.5544979	95.8594814
7	32.3937962	58.1591069	75.3621206	85.9591478
8	2.13314621	32.3807902	54.2605786	69.0945742
9	0	0	16.3319489	41.8696422
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.67997835E 07	3.22984811	7.52503469
1	30.8646703	34.7599605	38.7283872	44.3175077
2	59.3731436	61.7119525	64.6365585	70.6530001
3	80.6799268	81.2839643	83.0345392	87.841802
4	93.758927	93.9039842	94.743777	97.1942036
5	99.7747688	100	100.036514	100.020495
6	98.9852823	100	100.020495	100.020495
7	91.7452561	94.3315762	95.2641495	95.4403391
8	78.2202435	82.9947286	85.3758359	86.2800268
9	57.6655913	65.9894573	70.4324613	72.5395584
10	10.1983402	43.3157622	52.4595951	54.2189338

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
15.1087264	9.3868928	6.25792853	3.12896427	0

EST 6	7	8	9	10
-2.25445488	1.60590491	15.6556015	42.0183759	80.7123891

**********************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4,42359549
L/V1^(1/3)	5,41854472
L/B	4,06570015
B/H	2,57328288
B/D	2,22325173
ANGULO MEDIO DE ENTRADA	28,8656948
ASTILLA MUERTA	11,15544υ
ANGULO DE LA RODA	61,5320027
% LCB/L	-1,58013909
% LCF/L	-4,11805115
KB/V3^(1/3)	,266564786
KM/V3^(1/3)	,538040803
COEF. BLOCK	,488375362
COEF. PRISMATICO	,624186501
COEF. DE FLOTACION	,766056342
COEF. DE SECCION	,782418974

***********************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,07338794	11,7641539	20,898215	28,4588941
2	11,0371609	31,7455795	46,7492869	56,9411142
3	26,1306491	54,702809	71,2368754	79,8207915
4	43,1169866	72,9841844	87,2303358	93,1034202
5	50,4301266	77,972277	91,5850642	97,4400691
6	45,5088707	70,8411382	86,1738199	94,5728582
7	31,5565199	57,1469099	74,651832	85,7517836
8	2,22326997	33,1265247	55,4998723	70,6841916
9	0	0	17,776348	45,045278
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,80066095E 08	3,8027745	8,69161711
1	34,425473	38,7706653	43,1973703	49,4318774
2	63,2260787	66,5247984	69,9518369	75,998111
3	83,6113445	84,8935988	86,7960022	91,3319597
4	95,0534195	95,5082661	96,3009924	98,3750651
5	99,4885451	100	100,107926	100,069069
6	98,5369331	100	100,069069	100,069069
7	92,0347948	94,9797685	95,8770706	95,96159
8	80,0374191	84,9393056	87,1520247	87,7466425
9	61,4938322	69,8786112	73,9377514	75,4242164
10	12,0651616	49,7976855	58,0946288	58,9943149

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	15,1158914	9,40142364	6,26761573	3,13380787	0
EST	6	7	8	9	10
	-2,25470069	1,60061884	15,6350105	11,9875201	80,7123892

**************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4.32185499
L/V1^(1/3)	5.29392088
L/B	4.03910994
B/H	2.57168969
B/D	2.22900128
ANGULO MEDIO DE ENTRADA	20.3017415
ASTILLA MUERTA	4.3123014
ANGULO DE LA RODA	59.5170096
% LCB/L	-1.74252282
% LCF/L	4.55885082
KB/V3^(1/3)	.246865927
KM/V3^(1/3)	.465274183
COEF. BLOCK	.518936725
COEF. PRISMATICO	.573406319
COEF. DE FLOTACION	.70483133
COEF. DE SECCION	.908174634

***************************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	9.04941251	16.4530515	22.1297844
2	14.0548935	35.5130621	46.7917867	52.0122031
3	45.5660699	70.0868143	75.0983101	75.85389
4	80.6697998	90.9787276	91.5007447	91.5241324
5	84.0410775	98.0816025	99.8434217	99.992708
6	65.7576906	88.5948056	96.8950382	99.3710985
7	40.3408078	67.5490419	82.3641514	89.5165511
8	2.31690681	35.9979125	57.6761107	70.4565693
9	0	0	16.2225792	40.3067864
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4.11649546E 08	2.58478683	5.79926269
1	26.2010911	28.8116052	31.3614479	35.1374847
2	54.01204	54.5739263	56.2760235	60.9419348
3	75.9269544	75.9304447	77.3222947	81.4973491
4	91.5246413	91.5246421	92.4155966	95.0884599
5	99.9993607	100	100.000002	100.000001
6	99.9230797	100	100.000001	100.000001
7	92.403138	93.2712471	93.6906318	94.6620178
8	77.0645632	79.8137412	81.4341449	83.9860524
9	53.600169	59.6274026	63.2804218	67.9721043
10	7.64700325	32.712471	41.9808571	46.6201735

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	16.9731225	9.33412181	6.22274789	3.11137393	0
EST	6	7	8	9	10
	-2.25356186	1.62510205	15.7303811	42.1304336	80.7123888

************************CARACTERISTICAS PRINCIPALES***********************

```
    L/V3^(1/3)                            4,32185499
    L/V1^(1/3)                            5,29392088
    L/B                                   4,03910994
    B/H                                   2,57566163
    B/D                                   2,22900128
    ANGULO MEDIO DE ENTRADA              24,1275254
    ASTILLA MUERTA                        6,0558362
    ANGULO DE LA RODA                    59,5170096
    % LCB/L                              -1,82274016
    % LCF/L                              -4,39417234
    KB/V3^(1/3)                           ,25133263
    KM/V3^(1/3)                           ,483260927
    COEF, BLOCK                           ,518936725
    COEF, PRISMATICO                      ,594198263
    COEF, DE FLOTACION                    ,731269985
    COEF, DE SECCION                      ,87333935
```

*************************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10,3661219	18,8492418	25,3536304
2	13,1381385	34,9293895	48,0093772	55,1034288
3	37,3522524	66,133806	76,1770167	79,0315534
4	66,3616175	88,5221096	92,6103759	93,1564672
5	72,817675	93,9575548	98,9796439	99,8844026
6	60,4016651	84,6946785	95,0353623	98,7579099
7	39,6246875	66,9320928	82,2073635	89,8230163
8	2,51339655	37,9301041	60,2564837	73,0959285
9	0	0	18,7205794	45,16387
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,49279773E 07	3,22897217	7,06184257
1	30,0184895	33,0095578	35,9310718	40,2574851
2	58,4104954	59,6114693	61,5608253	66,2474389
3	79,6311947	79,708602	81,0223443	84,9334006
4	93,2020211	93,2038231	93,9571863	96,2170668
5	99,9931408	100	100,00036	100,000134
6	99,8036063	100	100,000134	100,000134
7	93,0214452	94,0346953	94,5090976	95,20634
8	79,5326347	82,1040858	83,5476923	85,6187777
9	58,6744515	64,2081716	67,3028476	71,2374214
10	10,0926687	40,3469527	49,0789497	52,0622798

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********************

EST	1	2	3	4	5
	16,9771314	9,34857096	6,23238063	3,11619034	0
EST	6	7	8	9	10
	-2,25380634	1,6198457	15,7099058	42,0997512	80,7123887

************************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                            4.32185499
L/V1^(1/3)                            5.29392088
L/B                                   4.03910994
B/H                                   2.57964872
B/D                                   2.22900128
ANGULO MEDIO DE ENTRADA               27.8731044
ASTILLA MUERTA                        7.74369174
ANGULO DE LA RODA                     59.5170096
% LCB/L                               1.81774154
% LCF/L                               4.18787062
KB/V3^(1/3)                           .255092945
KM/V3^(1/3)                           .502199187
COEF. BLOCK                           .518936725
COEF. PRISMATICO                      .616990207
COEF. DE FLOTACION                    .75770864
COEF. DE SECCION                      .841077734
```

*************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	11.7334061	21.338027	28.7022749
2	12.6178589	34.7802643	49.3372612	58.130328
3	32.2717343	62.302059	76.1048438	81.54932
4	55.7000247	83.5882661	92.3276867	94.51395
5	63.7525733	88.7681183	97.1918756	99.486989
6	55.658454	80.7603088	92.8524938	97.8967062
7	38.533972	65.8452295	81.6653689	89.8884028
8	2.65741287	39.2126056	62.1214595	75.2035046
9	0	0	20.8812579	49.3893415
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.54758153E-07	3.92123649	8.37021316
1	33.9837724	37.3701892	40.677814	45.57598
2	62.8159235	64.8442269	67.1361033	71.7603263
3	83.2611451	83.6331703	84.9095926	88.5050329
4	94.9066286	94.9480757	95.5623512	97.391883
5	99.9447275	100	100.005717	100.002659
6	99.5960542	100	100.002659	100.002659
7	93.5249449	94.7574738	95.2954161	95.7341768
8	81.7047959	84.2724213	85.6378061	87.1972121
9	63.2371759	68.5448426	71.2937782	74.3917651
10	12.4795343	47.5747376	55.5689126	57.3178358

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
16.9812039	9.36304242	6.24202828	3.12101412	0

EST 6	7	8	9	10
2.25405128	1.61458122	15.6893988	42.0690213	80.7123887

```
*************************CARACTERISTICAS   PRINCIPALES**********************
```

L/V3^(1/3)	4,32185499
L/V1^(1/3)	5,29392088
L/B	4,03910994
B/H	2,58364198
B/D	2,22900128
ANGULO MEDIO DE ENTRADA	31,4517271
ASTILLA MUERTA	9,37961073
ANGULO DE LA RODA	59,5170096
% LCB/L	-1,74542933
% LCF/L	-3,96495509
KB/V3^(1/3)	,258306097
KM/V3^(1/3)	,522397497
COEF, BLOCK	,518936725
COEF, PRISMATICO	,63978215
COEF, DE FLOTACION	,784147294
COEF, DE SECCION	,811114728

```
*****************************TABLA DE PUNTOS(%)***************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	13,1305353	23,8817428	32,1250728
2	12,3385995	34,9428919	50,7877744	61,1333723
3	28,8890793	59,1100186	75,5541	83,4863257
4	48,1001322	78,2170528	90,8315703	95,2862978
5	56,5789681	83,4313267	94,7060952	98,6993379
6	51,462703	76,9061883	90,4155628	96,8052037
7	37,1944797	64,406453	80,802591	89,7358061
8	2,75205463	39,9303081	63,3839544	76,8832302
9	0	0	22,679767	53,04171
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,58296781E 07	4,6526277	9,7040189
1	38,0369845	41,8275738	45,5299168	51,0125753
2	67,2064633	70,1930885	72,9079493	77,3997821
3	86,684341	87,6448164	88,9735805	92,1640458
4	96,5084175	96,7310295	97,2290957	98,6037724
5	99,7987978	100	100,031463	100,017369
6	99,2861915	100	100,017369	100,017369
7	93,9238493	95,456064	96,0400029	96,26648
8	83,6579284	86,3681918	87,7075315	88,7647212
9	67,4125133	72,7363836	75,2769717	77,5120733
10	14,7835118	54,5606394	61,6393161	62,5085429

```
*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************
```

EST 1	2	3	4	5
16,98534	9,3775363	6,25169087	3,12584541	0

EST 6	7	8	9	10
-2,254296521	,60930855	15,6688601	42,0382139	80,7123885

***************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4.32185499
L/V1^(1/3)	5.29392088
L/B	4.03910994
B/H	2.58764143
B/D	2.22900128
ANGULO MEDIO DE ENTRADA	34.7871213
ASTILLA MUERTA	10.9710866
ANGULO DE LA RODA	59.5170096
% LCB/L	-1.62679006
% LCF/L	-3.75212157
KB/V3^(1/3)	.261096259
KM/V3^(1/3)	.544130452
COEF. BLOCK	.518936725
COEF. PRISMATICO	.662574094
COEF. DE FLOTACION	.810585949
COEF. DE SECCION	.783213122

*************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	14.5317	26.4334763	35.5589293
2	12.2114643	35.3168579	52.3245297	64.0989285
3	26.4954969	56.5324372	74.8641504	85.00608
4	42.5162051	73.2086244	88.6575298	95.4482861
5	50.8307584	78.9530224	91.8201658	97.5436493
6	47.7410933	73.1964248	87.8993532	95.515589
7	35.7063767	62.7167016	79.6794209	89.3902734
8	2.8041089	40.1853599	64.1572611	78.2282593
9	0	0	24.1360886	56.2205129
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	5.41138715	11.0378512
1	42.1034257	46.2995699	50.3979697	56.4670911
2	71.5334667	75.5594838	78.2585535	83.0667665
3	89.8519914	91.6696128	93.1667126	95.8543772
4	97.8888215	98.519828	98.9669718	99.8474363
5	99.5167403	100	100.100122	100.063454
6	98.8695373	100	100.063453	100.063454
7	94.231261	96.1510012	96.7456185	96.8376999
8	85.4640697	88.4530036	89.7723586	90.3861922
9	71.3383532	76.9060073	79.2993081	80.7089304
10	17.0313808	61.5100321	67.4813505	67.8059148

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	16.9895398	9.39205261	6.26136841	3.13068423	0
EST	6	7	8	9	10
	-2.25454219	1.60402778	15.6482896	42.007419	80.7123888

**********************CARACTERISTICAS PRINCIPALES**********************

```
L/V3^(1/3)                          4,32185499
L/V1^(1/3)                          5,29392088
L/B                                 4,03910994
B/H                                 2,59164707
B/D                                 2,22900128
ANGULO MEDIO DE ENTRADA            37,8170288
ASTILLA MUERTA                     12,5270202
ANGULO DE LA RODA                  59,5170096
% LCB/L                             1,48600269
% LCF/L                             3,57775303
KB/V3^(1/3)                          ,263555883
KM/V3^(1/3)                          ,567680056
COEF. BLOCK                          ,518936725
COEF. PRISMATICO                     ,685366038
COEF. DE FLOTACION                   ,837024604
COEF. DE SECCION                     ,75716726
```

*****************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	15,9057371	28,9365515	38,9276075
2	12,1795663	35,8188599	53,8890873	66,9780261
3	24,7190016	54,4437325	74,1642011	86,2196367
4	38,2536805	68,7505764	86,1914738	95,1195052
5	46,1329539	73,6682151	88,7577576	96,0985672
6	44,4268336	69,6645607	85,2815709	94,0654707
7	31,1479311	60,863657	78,3560526	88,8823593
8	2,82258206	40,0886561	64,5569537	79,3301757
9	0	0	25,3084567	59,05881
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	6,10332134E 08	6,18274986	12,3411371
1	46,0928297	50,686916	55,1739255	61,8184801
2	75,7219744	80,8242992	84,5480903	88,6417778
3	92,7399168	95,6182244	97,4017103	99,5087997
4	98,9937845	100,274766	100,772551	101,117315
5	99,0893672	100	100,232057	100,165094
6	98,3493853	100	100,164947	100,165094
7	94,4652646	96,867101	97,4594612	97,49249
8	87,1980012	90,6013031	91,8628152	92,1473035
9	75,1683697	81,2026061	83,4195571	84,1295132
10	19,2940544	68,6710101	73,3670934	73,4391261

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST 1	2	3	4	5
16,9938034	9,4065914	6,27106094	3,13553045	0

EST 6	7	8	9	10
-2,25478817	1,59873881	15,6276872	41,9765461	80,7123885

**************************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                              4:22661859
L/V1^(1/3)                              5:17726404
L/B                                     4:0138092
B/H                                     2:58166667
B/D                                     2:2345212
ANGULO MEDIO DE ENTRADA                 22.918083
ASTILLA MUERTA                          2:79845023
ANGULO DE LA RODA                       57:5020165
% LCB/L                                 1:98498806
% LCF/L                                -4:45794419
KB/V3^(1/3)                             :238474675
KM/V3^(1/3)                             .450070441
COEF. BLOCK                             .550009998
COEF. PRISMATICO                        .586198686
COEF. DE FLOTACION                      :721990476
COEF. DE SECCION                        :938265491
```

**********************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10:0889098	18:9931122	25:2516371
2	15:5357132	38:6266885	50:3028502	55:4633891
3	51:1127728	74:2733378	77:9292048	78:3353671
4	89:3712214	92:5765163	92:6057712	92:605884
5	94:0340928	99:7696975	99:9950952	99:9999559
6	75:9777911	94:4370726	99:0140757	99:8815125
7	49:1477195	76:4240615	88:1070368	92:3432458
8	3.0159681	44:5230151	66:3143854	76:3856193
9	0	0	21:5272668	48:4182243
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	7:22438160E-08	3:27331604	6:55307688
1	29:2787148	31:5147102	33:521344	36:549521
2	57:330613	57:8176523	59:0176336	62:2591078
3	78:3624355	78:3632392	79:3512362	82:3151591
4	92:6058841	92:6058841	93:2921661	95:351012
5	100	100	100	100
6	99:9924266	100	100	100
7	93:5439575	93:7720979	93:8572473	95:017834
8	80:2367802	81:3162930	81:8580631	85:053502
9	59:3286262	62:6325876	64:3185226	70:1070039
10	9:94482934	37:7209795	45:8233063	50:17834

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	18.9822727	9:31167132	6:20778086	3:10389043	0
EST	6	7	8	9	10
	-2.253182	1.63326929	15.762195	42.1781071	80.7123896

*************************CARACTERISITCAS PRINCIPALES************************

L/V3^(1/3)	
L/V1^(1/3)	4:226618..
L/D	5:1722640..
B/H	4:0138092
B/D	2:58566306
ANGULO MEDIO DE ENTRADA	2:2345212
ASTILLA MUERTA	26:2642551
ANGULO DE LA PODA	4:26453704
% LCB+	57:5020165
% LCF+	2:03362149
KB:V3^(1/3)	4:28883'..
KM/V3^(1/3)	:24246791
COEF. BLOCK	:46592805?
COEF. PRISMATICO	:55000975?
COEF. DE FLOTACION	:60623715
COEF. DE SECCION	:745235147
	:902252149

*****************************TABLA DE PUNTOS(%)*****************************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	0	11:2986879	21:2717826	28:2815911
2	14:6513063	38:1139055	51:5575347	58:3109413
3	42:536208	71:2852031	79:5670337	81:4417351
4	77:2307309	92:5999847	94:0306455	94:1158912
5	84:2090907	98:12485	99:8491473	99:9230228
6	70:2321522	91:4108864	98:026003	99:6244215
7	48:0653636	75:6684789	88:0035748	92:7007171
8	3:23186319	46:3405655	68:526279	78:539979
9	0	0	24:1890734	52:879..5?
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	6:38648536E-08	3:94963595	7:70940280
1	32:7920516	35:296433	37:5439069	40:9055950
2	61:3277835	62:3557197	63:6797231	66:2770911
3	81:7399081	81:7667898	82:6355963	85:2345954
4	94:1185433	94:1185733	94:6661185	96:3092911
5	99:9998211	100	100:000002	100:000441
6	99:969088	100	100:000001	100:000441
7	94:1281976	94:4205875	94:5354071	95:435..30
8	82:2584789	83:2617626	83:7473681	86:45..11
9	63:6043039	66:5235251	67:8951272	72:91248..
10	12:3504365	44:2058753	51:7363519	54:85....

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*****************

EST	1	2	3	4	5
	18:9838134	9:32608568	6:21739046	3:10869522	0
EST	6	7	8	9	10
	-2:25342589	1:62802553	15:7417689	42:1474985	80:21....?

***************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4:22661859
L/V1^(1/3)	5:17726404
L/B	4:0138092
B/H	2:58966564
B/D	2:2345212
ANGULO MEDIO DE ENTRADA	29:5098942
ASTILLA MUERTA	5:69162482
ANGULO DE LA RODA	57:5020165
% LCB/L	2:02434589
% LCF/L	4:09758589
KB/V3^(1/3)	:245905429
KM/V3^(1/3)	:482480159
COEF. BLOCK	:550009998
COEF. PRISMATICO	:626275704
COEF. DE FLOTACION	:768479817
COEF. DE SECCION	:878223431

******************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	12:5404308	23:6109428	31:3920584
2	14:1099688	38:0001969	52:8607806	61:2715624
3	36:976817	67:9018726	80:0898072	84:09316
4	65:7028582	89:7886214	94:8139143	95:5903095
5	74:8176179	94:8748022	99:2202586	99:9222279
6	65:0432625	88:1079273	96:6806939	99:3070938
7	46:6621005	74:5474028	87:639862	92:9367228
8	3,39240665	47:5675575	70:2072177	80:3749156
9	0	0	26:5299082	56:8458473
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	4:66837252	8:89367433
1	36:3988141	39:1787365	41:6734672	45:43820
2	65:4054097	67:0144838	68:5259712	71:4162705
3	85:0977791	85:2608629	86:0235283	88:2327114
4	95:6676562	95:6714946	96:0768535	88:2327114
5	99:9960715	100	100:000172	97:2923627
6	99:9120649	100	100:000061	100:000061
7	94:6550325	95:0439319	95:2034113	95:9428714
8	84:1274417	85:1317958	85:6078064	87:8284936
9	67:5556898	70:2635915	71:4542063	75:6569267
10	14,7222776	50:4393192	57:3394109	59,4281707

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************

EST 1	2	3	4	5
18,9854194	9,34052235	6,22701491	3,11350744	0

EST 6	7	8	9	10
-2,25367021	1,62277373	15,7213113	42,1168427	80,7123897

**************************CARACTERISTICAS PRINCIPALES**********************

```
L/V3^(1/3)                              4,22661859
L/V1^(1/3)                              5,17726404
L/B                                     4,0138092
B/H                                     2,59367441
B/D                                     2,2345212
ANGULO MEDIO DE ENTRADA                 32,5987016
ASTILLA MUERTA                          7,07962107
ANGULO DE LA RODA                       57,5020165
% LCB/L                                 -1,97002043
% LCF/L                                 -3,90171456
KB/V3^(1/3)                             ,248894316
KM/V3^(1/3)                             ,499931557
COEF, BLOCK                             ,550009998
COEF, PRISMATICO                        ,646314214
COEF, DE FLOTACION                      ,791724488
COEF, DE SECCION                        ,850994743
```

*********************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	13,7981589	25,9805317	34,5431101
2	13,7857637	38,1067155	54,2280056	64,0728935
3	33,1755752	64,8594363	79,9855108	86,2347814
4	56,9413142	85,5335518	94,5307159	96,7925297
5	66,8806871	90,752355	97,9554473	99,6783071
6	60,40251	84,695262	95,0356495	98,7580112
7	45,0473112	73,1371449	87,039729	93,029189
8	3,50019885	48,2765251	71,4382848	81,9562713
9	0	0	28,5284137	60,38443
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	7,89074017E 08	5,4216209	10,0904404
1	40,0526742	43,1117559	45,8569861	49,9997308
2	69,3906566	71,734107	73,4892271	76,1173834
3	88,3111834	88,8005803	89,4997968	91,2714509
4	97,2012297	97,2447023	97,509536	98,289986
5	99,9711932	100	100,002415	100,001042
6	99,8036279	100	100,001042	100,001042
7	95,1209543	95,6545974	95,8733305	96,40001
8	85,8915735	86,9637921	87,4650366	89,1979549
9	71,2840006	73,9275843	75,0309184	78,3948683
10	17,0587530	56,5459738	62,7390882	63,9907527

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************

EST	1	2	3	4	5
	18,9870905	9,35498135	6,23665425	3,11832712	0

EST	6	7	8	9	10
	-2,25391492	1,61751382	15,700822	42,0861393	80,7123896

****************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	4.22661859
L/V1^(1/3)	5.17726404
L/B	4.0138092
B/H	2.59768939
B/D	2.2345212
ANGULO MEDIO DE ENTRADA	35.4820239
ASTILLA MUERTA	8.43011765
ANGULO DE LA RODA	57.5020165
% LCB/L	-1.88532525
% LCF/L	-3.71976621
KB/V3^(1/3)	.251520319
KM/V3^(1/3)	.518469839
COEF. BLOCK	.550009998
COEF. PRISMATICO	.666352723
COEF. DE FLOTACION	.814969159
COEF. DE SECCION	.825403692

**********************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	15.0527262	28.3445193	37.6868387
2	13.6046861	38.3903704	55.6414037	66.8097775
3	30.440904	62.2698547	79.5918692	87.9492976
4	50.3675921	81.0045112	93.3680134	97.5449652
5	60.3346623	86.3629352	96.1459998	99.1832931
6	56.2613784	81.2852593	93.1603292	98.0261643
7	43.3090594	71.5069853	86.230237	92.9912553
8	3.56166025	48.552591	72.2971438	83.3410546
9	0	0	30.1995262	63.58118
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	6.19920378	11.2811959
1	43.6980982	47.0357173	50.0308843	54.55078
2	73.2968722	76.4428608	78.4865242	80.8099956
3	91.3195937	92.3321456	93.0356534	94.306971
4	98.6300788	98.814287	98.9563672	99.2898521
5	99.8944331	100	100.013433	100.006781
6	99.6296227	100	100.006781	100.006781
7	95.5560423	96.2675273	96.5509452	96.8723171
8	87.5973004	88.8025819	89.3545287	90.6033895
9	74.8948035	77.6051639	78.6859004	81.1999981
10	19.3936615	62.6752731	68.0399441	68.662143

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
18.988827	9.36946277	6.24630852	3.12315425	0

EST 6	7	8	9	10
-2.25415991	1.61224566	15.680301	42.0553883	80.7123892

**************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4.22661850
L/V1^(1/3)	5.17726404
L/B	4.0138092
B/H	2.60171058
B/D	2.2345212
ANGULO MEDIO DE ENTRADA	38.1200342
ASTILLA MUERTA	9.74644623
ANGULO DE LA RODA	57.5020165
% LCB/L	1.78682667
% LCF/L	3.571289
KB/V3^(1/3)	.253852507
KM/V3^(1/3)	.538270207
COEF. BLOCK	.550009998
COEF. PRISMATICO	.686391232
COEF. DE FLOTACION	.686391232
COEF. DE SECCION	.83821383
	.801306853

*********************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	16.2816715	30.6606234	40.7670302
2	13.5166820	38.7057482	57.0619035	69.4508095
3	28.387371	60.1056148	79.0782028	89.3255636
4	45.3248383	76.699304	91.6614045	97.8280035
5	54.9192085	82.0387665	93.9621028	98.4234557
6	52.5609995	77.9486603	91.1213709	97.125112
7	41.5158548	69.720062	85.2425932	92.8327848
8	3.58561003	48.4883501	72.8614094	84.584039
9	0	0	31.5908938	66.5107762
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3.66022051E 08	6.98860908	12.4442083
1	47.2699073	50.8804643	54.1205381	59.0100008
2	77.0708288	81.0565572	83.4214682	85.4123669
3	94.0781103	95.7924179	96.5790552	97.2899825
4	99.0749371	100.352186	100.414263	100.281523
5	99.7375505	100	100.044682	100.025664
6	99.3815743	100	100.025664	100.025664
7	95.9448388	96.9002608	97.2312513	97.38286
8	89.2931422	90.7007824	91.312753	92.0072681
9	78.5804018	81.4015648	82.4947911	84.1688722
10	21.7935502	69.002608	73.3762807	73.5976776

*****************ALTOS DEL ALETRIZ SOBRE LA LINEA BASE(%H)*************

EST 1	2	3	4	5
18.9906284	9.38396659	6.25597775	3.12798885	0

EST 6	7	8	9	10
-2.2544053	1.60696945	15.6597482	42.0245899	80.7123894

************************CARACTERISTICAS   PRINCIPALES********************

```
   L/V3^(1/3)                                    4:22661859    
   L/V1^(1/3)                                    5:17726404    
   L/B                                           4:0138092
   B/H                                           2:605738
   B/D                                           2:2345212
   ANGULO MEDIO DE ENTRADA                      40:4812985
   ASTILLA MUERTA                               11:033365
   ANGULO DE LA RODA                            57:5020165
   % LCB/L                                       1:69308836
   % LCF/L                                       3:47683878
   KB/V3^(1/3)                                    :255945768
   KM/V3^(1/3)                                    :559505891
   COEF. BLOCK                                    :550009998
   COEF. PRISMATICO                              :706429742
   COEF. DE FLOTACION                            :8614585
   COEF. DE SECCION                              :77857707
```

***************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	17:4590686	32:8800251	43:7187748
2	13,4857341	39:2347012	58:4394413	71:9462044
3	26.7885251	58:2777441	78:5128055	90.41963
4	41,3481796	72.770751	89:6607392	97.7062924
5	50:386667	77:9307643	91:5592293	97:4286295
6	49,2419068	74.7250412	88:9745734	96:0756949
7	39:7192906	67:8327907	84:1114198	92:5689137
8	3:58196894	48:1793237	73:2116731	85:7428445
9	0	0	32:7784111	69:3867008
10.	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	7:77106658	13:5544228
1	50:6928381	54:5649847	58:0397768	63:28342
2	80:643829	85:4779817	88:1843412	89:8306392
3	96:561298	99:1084863	100:056389	100:164883
4	100:890965	101:825994	101:873309	101:254968
5	99:4854056	100	100:109804	100:069704
6	99:0563992	100	100:069683	100:069704
7	96:3070314	97:573051	97:9128187	97:9624109
8	91:0323552	92:719153	93:3653971	93:7478241
9	82:2237598	85:4383059	86:5300034	87:4259441
10	24:355778	75:7305099	78:9566722	78:9967707

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
18,992495	9,39849286	6:26566191	3:13283095	0

EST 6	7	8	9	10
-2.254651	161.60168506	15,6391636	41:9937437	80:7123895

```
*********************CARACTERISTICAS  PRINCIPALES********************
        L/V3^(1/3)
        L/V1^(1/3)                                      4,22661859
        L/B                                             5,17726404
        B/H                                             4,0138092
        B/D                                             2,60977165
        ANGULO MEDIO DE ENTRADA                         2,2345212
        ASTILLA MUERTA                                  42,5409965
        ANGULO DE LA PROA                               12,2958482
        % LCB/L                                         57,5020165
        % LCF/L                                          1,62489886
        KB/V3^(1/3)                                     -3,45797948
        KM/V3^(1/3)                                      ,257844492
        COEF. BLOCK                                      ,582375543
        COEF. PRISMATICO                                ,550009998
        COEF. DE FLOTACION                              ,726468251
        COEF. DE SECCION                                ,884703171
                                                        ,757101219
```

```
*************************TABLA DE PUNTOS(%)***********************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0.	0
1	0	18,5553754	34,9470815	46,4680854
2	13,4830912	39,681744	59,7144883	74,2302523
3	25,5018959	56,7022198	77,9083218	91,2525342
4	38,1293173	69,2315113	87,5477831	97,2580782
5	46,5407687	74,0939071	89,0509559	96,2454331
6	46,249247	71,6328764	86,7629295	94,9005411
7	37,9547608	65,8936669	82,8711514	92,2185248
8	3,56077245	47,7204965	73,4334347	86,8817871
9	0	0	33,8655802	72,2687390
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	8,54030528	14,5834057
1	53,8811007	57,9969358	61,6903769	67,2639541
2	83,931796	89,596323	92,65192	93,9577392
3	98,7342241	102,197242	103,37648	102,868151
4	101,650718	103,198774	103,310186	102,198579
5	99,1350646	100	100,216426	100,152413
6	98,654965	100	100,151974	100,152413
7	96,6574053	98,3089835	98,636691	98,6489892
8	92,875092	94,9269504	95,5278894	95,6421332
9	86,2049173	89,8539009	90,8354967	91,1318542
10	27,2103502	83,0898348	85,1167698	85,1181486

```
******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***************
```

EST	1	2	3	4	5
	18,9944266	9,41304164	6,27536111	3,13768053	0
EST	6	7	8	9	10
	-2,254897321	,59639244	15,6185472	41,9628499	80,7123897

***************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.46407977
L/V1^(1/3)	5.46813469
L/B	4.07615875
B/H	2.14499021
B/D	1.88353749
ANGULO MEDIO DE ENTRADA	17.2336502
ASTILLA MUERTA	18.2899289
ANGULO DE LA RODA	68.0555124
% LCB/L	-1.04135905
% LCF/L	4.64205277
KB/V3^(1/3)	.328235929
KM/V3^(1/3)	.559833751
COEF. BLOCK	.400009999
COEF. PRISMATICO	.554
COEF. DE FLOTACION	.68464
COEF. DE SECCION	.722039709

**********************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0			
1	1.78056556	0	0	0
2	8.82229718	6.57403292	11.3674371	16.1607655
3	21.6489683	22.9382607	33.9063409	42.0079333
4	34.906391	44.3648807	58.8033992	67.18899
5	39.5307636	61.7984157	77.3850554	85.492524
6	33.3132702	66.2712335	83.2224445	93.0359468
7	19.0417815	56.3042895	73.8663304	86.5762103
8	0	38.7691103	56.1193518	70.9718403
9	0	16.5650892	33.5407816	49.5700641
10	0	0	5.09230031	22.6948028
			0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	1.86361808	4.93909173
1	20.9539985	25.7471035	30.5402756	35.3337
2	47.5538483	50.8965242	54.7601176	61.6048029
3	71.4446796	73.1223932	75.8956976	82.2409713
4	89.081142	90.2988414	91.9356376	95.7309551
5	97.9965713	100	100.66767	100.56346
6	95.0578106	100	100.563336	100.56346
7	83.2124002	92.6528242	94.7484359	94.759635
8	64.4610702	77.9584725	82.9754703	83.1519857
9	39.6946618	55.9169449	64.6253409	65.7405118
10	4.63131632	26.5282415	38.4566375	42.5252132

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	10.4757708	7.85682813	5.23788544	2.61894268	0
EST	6	7	8	9	10
	-2.22856337	2.16251707	17.8237944	45.2674287	80.7123892

******************CARACTERISTICAS PRINCIPALES******************

L/V3^(1/3)	
L/V1^(1/3)	4.46107972
L/B	5.46813462
B/H	4.07615875
B/D	2.14831114
ANGULO MEDIO DE ENTRADA	1.88353749
ASTILLA MUERTA	15.1016593
ANGULO DE LA PROA	16.7622011
% LCB/L	68.0555124
% LCF/L	.96952583
KB/V3^(1/3)	4.67359383
KM/V3^(1/3)	.325019488
COEF. BLOCK	.549548048
COEF. PRISMATICO	.400009999
COEF. DE FLOTACION	.541027777
COEF. DE SECCION	.669592222
	.739352055

******************TABLA DE PUNTOS(%)******************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.62496287	6.01102135	10.3970237	14.7829586
2	9.0582379	23.1517693	33.6320137	40.9699898
3	23.2690098	46.305613	59.7962806	66.900636
4	37.8834919	65.0421599	79.4034369	86.098595
5	42.3530922	69.5502906	85.77664	94.5140431
6	34.7632869	58.1034795	75.6078815	87.8260297
7	19.1941621	38.9806885	56.2765798	70.99105
8	0	15.988873	32.4813269	48.1785394
9	0	0	4.62492111	20.801554
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	1.60680367	4.31326717
1	19.1680089	23.5545452	27.9403412	32.3264015
2	45.6707226	48.2654543	51.6617611	58.3938666
3	70.0937029	71.1990907	73.6708115	80.0572427
4	88.6062866	89.4218181	90.9264178	94.8591097
5	98.5510082	100	100.431578	100.338048
6	95.6646658	100	100.338045	100.338049
7	83.0080599	92.1691161	94.2003101	94.21156
8	62.9323116	76.5073482	81.7518673	81.9585785
9	36.9362382	53.0146965	62.2921336	63.5791495
10	3.67687598	21.6911607	33.178907	39.0732174

******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)******************

EST	1	2	3	4	5
	10.4919872	7.8689904	5.24599362	2.62299678	0
EST	6	7	8	9	10
	-2.22876915	2.15809267	17.8065598	15.2416025	80.7123892

*************************CARACTERISTICAS   PRINCIPALES*********************

```
L/V3^(1/3)
L/V1^(1/3)                                           4:46907977
L/B                                                  5:46813469
B/H                                                  4:07615875
B/D                                                  2:15163669
ANGULO MEDIO DE ENTRADA                              1:88353749
ASTILLA MUERTA                                      13:0100607
ANGULO DE LA RODA                                   15:2264738
% LCB/L                                             68:0555124
% LCF/L                                               :055536238
KB/V3^(1/3)                                          4:67484494
KM/V3^(1/3)                                           :321586635
COEF, BLOCK                                           :539532413
COEF, PRISMATICO                                     :40000999
COEF, DE FLOTACION                                   :528055554
COEF, DE SECCION                                      :654544443
                                                     :757514992
```

*******************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,47587382	5:42002092	9:46411697	13:4581516
2	9,38157181	23:4951828	33:435054	39:9612742
3	25,2798979	48:5216513	60:7834247	66:48411
4	41,4443498	68:5640349	81:3287923	86:5084282
5	45,5745274	73:0793146	88:3424838	95:8902363
6	36,2734011	60:0983289	77:3308553	89:0329332
7	19,2512906	39:0313804	56:2577657	70:8481309
8	0	15:2705274	31:1761551	46:5202414
9	0	0	4:11403436	18:7475958
10.	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	1:36406039	3:71125792
1	17,4521092	21:4459631	25:4398714	29:43402
2	43,8200688	45:7351558	48:7211153	55:3204661
3	68,679971	69:3013668	71:5967161	77:9928084
4	88,1948772	88:5283853	90:0148048	94:0732583
5	99,0223458	100	100.235074	100.184028
6	96,2311047	100	100.184028	100.184028
7	82,697747	91:6644139	93:707215	93,7211646
8	61,1878724	74:9932418	80:5523857	80,795430
9	33,9596542	49:9864832	59:8228256	61,4068483
10	2,71596139	16:6441394	27:1452665	35:5553952

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

```
EST 1          2             3            4            5
   10,5082287 7,88117154    5:25411436   2:62705718   0
EST 6          7             8            9            10
   -2,228975282,15366134    17,7892984   45,2157362   80,7123892
```

**********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.34593778
L/V1^(1/3)	5.32342034
L/B	4.04544433
B/H	2.15435296
B/D	1.88915349
ANGULO MEDIO DE ENTRADA	17.4240108
ASTILLA MUERTA	14.1730824
ANGULO DE LA RODA	66.1081078
% LCB/L	-1.12602812
% LCF/L	-4.64060728
KB/V3^(1/3)	.314161529
KM/V3^(1/3)	.527185468
COEF. BLOCK	.42888167
COEF. PRISMATICO	.554409043
COEF. DE FLOTACION	.68511449
COEF. DE SECCION	.773583469

*************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.93581248	7.3019744	12.4173097	17.2465864
2	10.4329742	26.0794098	37.1481899	44.4551838
3	26.4923945	50.9524675	63.9958848	70.1379324
4	43.2644976	70.8850706	83.5081253	88.4535783
5	48.0398177	75.6278608	90.0829968	96.7485715
6	39.5899144	64.1530174	80.8544918	91.3690293
7	22.7018098	44.6886136	62.450513	76.1972782
8	0	19.6230091	38.3300918	54.4050753
9	0	0	6.0557307	25.81697
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.23520486E 07	2.00457018	5.28283508
1	21.7396085	25.8175507	30.0264392	34.9910543
2	48.8036156	50.981061	54.1580517	60.9896872
3	72.5414702	73.2357957	75.4704001	81.6172339
4	89.9955314	90.3270203	91.5999059	95.212195
5	99.2901965	100	100.166641	100.113071
6	97.2676395	100	100.113071	100.113071
7	86.1720159	92.6677488	94.315676	100.113071
8	67.6984437	78.0032462	94.315676	94.34563
9	42.5738988	56.0064923	82.4215719	82.8107582
10	4.9286868	26.6774872	63.7653772	65.5084457
			38.0031808	42.4386957

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	10.8229509	7.83166014	5.2211068	2.6105534	0
EST	6	7	8	9	10
	-2.22813743	2.17167283	17.859459	45.3208725	80.7123893

*****************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4.34593778
L/V1^(1/3)	5.32342034
L/B	4.04544433
B/H	2.15768787
B/D	1.88915349
ANGULO MEDIO DE ENTRADA	19.4055523
ASTILLA MUERTA	15.2832702
ANGULO DE LA RODA	66.1081078
% LCB/L	-1.18079476
% LCF/L	-4.58792228
KB/V3^(1/3)	.315913219
KM/V3^(1/3)	.535287353
COEF. BLOCK	.42888167
COEF. PRISMATICO	.566245596
COEF. DE FLOTACION	.698844892
COEF. DE SECCION	.757412814

************************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.0877156	7.88526878	13.4118164	18.6292927
2	10.2238114	25.9885556	37.5966788	45.6361572
3	24.9017694	49.3058043	63.4301853	70.764514
4	40.2995283	68.1205663	82.1572676	88.344664
5	45.3533619	72.8441998	88.1821589	95.8053714
6	38.3054688	62.6076183	79.5390838	90.513739
7	22.6602217	44.6604069	62.4944677	76.3542438
8	0	20.3323575	39.5239782	55.8367427
9	0	0	6.64245904	27.8272653
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.31927639E-07	2.26498191	5.90930465
1	23.4834651	27.8891697	32.4363164	37.799904
2	50.7149138	53.4670007	56.9902133	63.9426758
3	74.0040467	75.1002528	77.4676877	83.568425
4	90.5761056	91.1556679	92.4499945	95.9079528
5	98.9946953	100	100.264733	100.192062
6	96.8978453	100	100.192061	100.192062
7	86.463012	93.0913573	94.6939239	94.7168663
8	69.1442525	79.2740718	83.4368218	83.7664758
9	45.2111177	58.5481436	65.8379558	67.3408898
10	5.87000394	30.9135728	42.2556582	45.4401088

**************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************

EST	1	2	3	4	5
	10.8332793	7.84378343	5.22918899	2.61459448	0

EST	6	7	8	9	10
	-2.22834259	2.16726258	17.8422795	45.295129	80.7123893

```
*************************CARACTERISTICAS  PRINCIPALES********************
```

L/V3^(1/3)	4,23626772
L/V1^(1/3)	5,18908344
L/B	4,01639113
B/H	2,16337881
B/D	1,89452071
ANGULO MEDIO DE ENTRADA	17,9168619
ASTILLA MUERTA	10,5740097
ANGULO DE LA RODA	64,1607031
% LCB/L	-1,27079904
% LCF/L	-4,6322786
KB/V3^(1/3)	,300865661
KM/V3^(1/3)	,498465407
COEF. BLOCK	,458344561
COEF. PRISMATICO	,556636457
COEF. DE FLOTACION	,68769829
COEF. DE SECCION	,823418149

```
*****************************TABLA DE PUNTOS(%)*************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,76868393	7,93018746	13,5081349	18,4574408
2	12,1600704	29,2450802	40,2347627	46,7089854
3	32,3785336	57,7149528	68,4575607	72,3067854
4	54,0117807	79,8291908	87,9974452	90,0641584
5	58,5871975	85,0366931	95,5162683	98,9802964
6	47,0450882	72,4958556	87,4008503	95,2503527
7	27,1874879	51,4465729	69,1280399	81,2250058
8	0	23,470614	43,955523	59,6840576
9	0	0	7,36987651	29,75559
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5,66466134E 08	2,18302222	5,58097539
1	22,7179003	26,2025357	29,8187988	34,5550142
2	50,0533407	51,443043	54,0478448	60,3677342
3	73,3818662	73,5822823	75,4982815	81,1363988
4	90,4405679	90,4810144	91,6086293	81,1363988
5	99,8563518	100	100,02017	94,9782711
6	98,7785192	100	100,010614	100,010614
7	88,7515232	92,7486774	94,1501033	94,30544
8	70,9839287	78,2460322	81,9650467	82,8951097
9	45,9651633	56,4920644	62,9151111	65,7796048
10	5,40806383	27,4867739	38,2345313	42,9589317

```
*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********
```

EST	1	2	3	4	5
	12,1418567	7,80799126	5,20532748	2,60266378	0
EST	6	7	8	9	10
	-2,22773692	2,18028316	17,8929993	45,3711329	88,7123895

***************************CARACTERISTICAS   PRINCIPALES********************

L/V3^(1/3)	4,23626772
L/V1^(1/3)	5,18908344
L/B	4,01639113
B/H	2,1667277
B/D	1,89452071
ANGULO MEDIO DE ENTRADA	22,0158884
ASTILLA MUERTA	12,882008
ANGULO DE LA RODA	64,1607031
% LCB/L	-1,35457544
% LCF/L	-4,49665689
KB/V3^(1/3)	,305413425
KM/V3^(1/3)	,51559026
COEF, BLOCK	,458344561
COEF, PRISMATICO	,580927065
COEF, DE FLOTACION	,715875395
COEF, DE SECCION	,788980134

********************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,05959278	9,24201871	15,7141803	21,5135223
2	11,6008037	28,9773786	41,2736249	49,3936999
3	27,970431	53,8239417	67,6472378	74,17727
4	45,6077308	79,7321885	86,0368436	90,6134922
5	51,259108	78,7562393	92,0663913	97,6507155
6	43,557674	68,7269044	84,5632064	93,6496479
7	26,8373843	51,0438265	68,9332047	81,3773432
8	0	24,9549419	46,3627765	62,4755969
9	0	0	8,73276034	34,1800774
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	2,78917509	6,97223204
1	26,4798658	30,5418237	34,7571905	40,27803
2	54,2280579	56,6501885	59,8177215	66,3163911
3	76,7427268	77,4876414	79,5183681	85,0104193
4	91,9519151	92,2167295	93,2716425	96,2832238
5	99,545436	100	100,092332	100,057912
6	98,192042	100	100,057912	100,057912
7	89,2816949	93,5959998	94,8746156	94,9471699
8	73,7671567	80,7879991	84,0710083	84,725685
9	51,3810241	61,5759987	67,1938887	69,3934575
10	7,52351891	35,9599979	46,4298565	48,9504876

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST 1	2	3	4	5
12,1465311	7,82007794	5,21338527	2,60669267	0

EST 6	7	8	9	10
-2,22794144	2,17588623	17,8758718	45,3454673	80,7123892

```
******************************CARACTERISTICAS  PRINCIPALES***********************
```

L/V3^(1/3)	4,23626772
L/V1^(1/3)	5,18908344
L/B	4,01639113
B/H	2,17008176
B/D	1,89452071
ANGULO MEDIO DE ENTRADA	26,0813803
ASTILLA MUERTA	15,1175045
ANGULO DE LA RODA	64,1607031
% LCB/L	-1,32729927
% LCF/L	-4,29812237
KB/V3^(1/3)	,309250918
KM/V3^(1/3)	,533686438
COEF, BLOCK	,458344561
COEF, PRISMATICO	,605217673
COEF, DE FLOTACION	,744052501
COEF, DE SECCION	,757321838

```
***************************TABLA DE PUNTOS(%)***********************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,36473027	10,6200072	18,093388	24,7244683
2	11,3219649	29,0785475	42,5229648	52,1504695
3	25,0245174	50,7280519	66,6248856	75,5605193
4	39,6218059	68,1427698	83,3233241	90,4558384
5	45,5412828	73,0440414	88,3227361	95,8775659
6	40,3968475	65,107655	81,6515855	91,8758753
7	26,182983	50,1753761	68,2666408	81,1580113
8	0	25,9019051	48,0008805	64,5463966
9	0	0	9,88605795	37,9265408
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5,73546961E-08	3,44526049	8,42847608
1	30,4325877	35,1012176	39,9461379	46,2914781
2	58,4909392	62,1214611	65,9797957	72,5871871
3	79,9150143	81,5910958	83,8994822	89,127069
4	93,2392948	94,0404871	95,1212081	97,7225898
5	99,0182302	100	100,256506	100,185215
6	97,4811208	100	100,185211	100,185215
7	89,5959639	94,3882957	95,6050638	95,638780
8	76,0651217	83,1648872	86,131873	86,54591
9	56,1183314	66,3297742	71,3660836	72,9066045
10	9,53775005	43,8829571	53,5406613	54,7208639

```
*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************
```

EST	1	2	3	4	5
	12,1512718	7,83218332	5,22145553	2,6107278	0
EST	6	7	8	9	10
	-2,22814628	2,17148249	17,8587177	45,3197618	80,7123898

**************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4.13416015
L/V1^(1/3)	5.06400997
L/B	3.98885178
B/H	2.17209219
B/D	1.89965846
ANGULO MEDIO DE ENTRADA	18.9266781
ASTILLA MUERTA	7.52520812
ANGULO DE LA RODA	62.2132985
% LCB/L	-1.46074899
% LCF/L	-4.60952132
KB/V3^(1/3)	.288532122
KM/V3^(1/3)	.473904908
COEF. BLOCK	.488370371
COEF. PRISMATICO	.561921954
COEF. DE FLOTACION	.693829466
COEF. DE SECCION	.86910712

*****************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	
1	1.27115078	8.58909114	14.8477113	0
2	13.9593266	32.4163118	43.2791146	20.0344827
3	39.1524104	64.0769252	71.9925524	49.0337892
4	66.9506637	86.929622	90.3878902	74.001350
5	71.0787701	93.093976	98.7308445	90.816318
6	55.7620444	80.0719205	92.9228436	99.8405756
7	32.7426204	59.0797029	75.9329402	97.9274907
8	0	28.4250925	50.6109223	85.8000524
9	0	0	9.25647546	65.3927328
10	0	0	0	34.8839393
				0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.47403817E 07	2.4552834	5.95610843
1	24.1338215	27.1251707	30.1802526	34.48843
2	51.6394136	52.5502048	54.6650565	60.1553514
3	74.3727839	74.4126535	76.0528959	80.9605177
4	90.8489213	90.8500683	91.8644798	94.9075978
5	99.9892272	100	100.000656	100.000255
6	99.6042597	100	100.000255	100.000255
7	90.857911	92.9384422	93.8978784	94.4282619
8	74.2912379	78.8153268	81.4302565	83.2842757
9	50.0695868	57.6306535	62.2346275	66.5682962
10	6.23935346	29.3844226	39.4871045	44.2803236

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
13.9943884	7.78568626	5.19045751	2.59522874	0

EST 6	7	8	9	10
-2.22735946	2.18839736	17.9246067	45.4184967	80.7123889

**************************CARACTERISTICAS PRINCIPALES*******************

```
L/V3^(1/3)
L/V1^(1/3)                                          4.13416015
L/B                                                 5.06400997
B/H                                                 3.98885178
B/D                                                 2.17545456
ANGULO MEDIO DE ENTRADA                             1.89965846
ASTILLA MUERTA                                      22.4496352
ANGULO DE LA RODA                                   9.44050828
% LCB/L                                             62.2132985
% LCF/L                                             -1.54255481
KB/V3^(1/3)                                         -4.48413547
KM/V3^(1/3)                                         .292774183
COEF. BLOCK                                         .488280382
COEF. PRISMATICO                                    .488370371
COEF. DE FLOTACION                                  .582675054
COEF. DE SECCION                                    .717903062
                                                    .838152187
```

*************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.4460456	9.77255938	16.8937518	22.7953683
2	13.2873014	32.0688291	44.28521	51.5787045
3	33.7208571	60.478959	72.0613909	76.3149523
4	56.6953223	82.5202543	90.2063685	92.0150312
5	62.6253954	88.0024271	96.8727841	99.3990875
6	51.9421674	77.3864224	90.7643506	96.9586364
7	32.3619798	58.7058557	75.8242203	86.0322568
8	0	29.9924294	52.9543301	67.9142674
9	0	0	10.7363717	39.19305
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.87723688E-07	3.0304354	7.19928435
1	27.4596779	30.8632916	34.3394174	39.241341
2	55.4091892	57.0359499	59.485682	65.9556252
3	77.5395395	77.7769624	79.3987623	84.129318
4	92.3164232	92.3453167	93.2484948	95.9496009
5	99.931102	100	100.007648	100.003655
6	99.3326059	100	100.003655	100.003655
7	91.385571	93.6546728	94.6012479	94.93747
8	76.6723378	80.9640186	83.3116434	84.8051199
9	54.85427	61.9280373	65.9146464	69.6065849
10	8.24517833	36.5467288	46.3214912	49.3418715

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	13.9949334	7.79773841	5.19849225	2.59924612	0
EST	6	7	8	9	10
	-2.2275634	42.18401289	17.907528	45.392904	80.712388

*******************************CARACTERISTICAS PRINCIPALES*****************************

L/V3^(1/3)	4.13416015
L/V1^(1/3)	5.06400997
L/B	3.98885178
B/H	2.17882214
B/D	1.89965846
ANGULO MEDIO DE ENTRADA	25.9401813
ASTILLA MUERTA	11.2932718
ANGULO DE LA RODA	62.2132985
% LCB/L	-1.54571473
% LCF/L	-4.31426948
KB/V3^(1/3)	.29639399
KM/V3^(1/3)	.503177421
COEF. BLOCK	.488370371
COEF. PRISMATICO	.603428153
COEF. DE FLOTACION	.741976658
COEF. DE SECCION	.809326459

************************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.62822567	11.0059201	19.0261231	25.6727812
2	12.8977077	32.0390707	45.4202284	54.1288798
3	30.0497696	57.3335303	71.5766992	78.1157411
4	49.1750309	77.527697	88.919863	92.748045
5	55.8820701	82.85306	94.4022296	98.5886101
6	48.4804892	73.9781263	88.4595733	95.8117328
7	31.7022224	57.9435809	75.3618363	86.0163195
8	0	31.0885422	54.6853947	69.9195132
9	0	0	12.0431884	42.9698137
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	9.72637284E-08	3.64640709	8.49155293
1	30.9259261	34.7592171	38.674169	44.1949020
2	59.2204443	61.7110605	64.5835658	70.1671296
3	80.595622	81.2832954	82.9558767	87.4405683
4	93.7372642	93.9036868	94.7104521	97.0475746
5	99.7747421	100	100.03652	100.020499
6	98.9697188	100	100.020499	100.020499
7	91.7832066	94.3314523	95.256307	95.4402527
8	78.7375143	82.9943571	85.1676262	86.2797603
9	59.1509068	65.9887141	69.5613063	72.5390216
10	10.1978646	43.3145235	52.4585851	54.2180367

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	13.9955445	7.80980921	5.20653949	2.60326973	0
EST	6	7	8	9	10
	-2.22776769	2.17962179	17.890423	45.3672721	80.7123886

************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	4.13416015
L/V1^(1/3)	5.06400997
L/B	3.98885178
B/H	2.18219493
B/D	1.89965846
ANGULO MEDIO DE ENTRADA	29.3294471
ASTILLA MUERTA	13.091386
ANGULO DE LA RODA	62.2132985
% LCB/L	-1.48286415
% LCF/L	-4.11810233
KB/V3^(1/3)	.29952635
KM/V3^(1/3)	.518824403
COEF. BLOCK	.488370371
COEF. PRISMATICO	.624181253
COEF. DE FLOTACION	.766050254
COEF. DE SECCION	.782417556

**************************************TABLA DE PUNTOS(%)*************************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.81564515	12.2754494	21.2211134	28.6347322
2	12.6948515	32.2491163	46.6823069	56.7072276
3	27.4329339	54.7333647	70.908023	79.544965
4	43.5535238	72.7548577	86.9629855	92.9606034
5	50.4298064	77.9719713	91.5849744	97.4399849
6	45.3431177	70.6859068	86.0686618	94.5127981
7	30.8427718	56.8843798	74.610776	85.7853639
8	0	31.7638508	55.8848855	71.4916645
9	0	0	13.1505882	46.22953
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2.4419832E 07	1.29753016	9.81770049
1	34.4940344	38.7696417	43.1363259	49.2940786
2	63.063043	66.5235698	69.8931504	75.4376985
3	83.4942942	84.8926774	86.7178856	90.8682666
4	95.011062	95.5078566	96.2680776	98.2054894
5	99.488522	100	100.107932	100.069073
6	98.5154429	100	100.069073	100.069073
7	92.0646028	94.9796072	95.8732614	95.961473
8	80.5501049	84.9388213	86.9891062	87.7462886
9	63.0403758	69.8776425	73.1772278	75.4235036
10	12.0645045	49.7960707	58.0933428	58.9931237

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	13.9962214	7.82189871	5.21459915	2.60729956	0
EST	6	7	8	9	10
	-2.22797225	2.17522385	17.8732914	45.3416004	80.7123888

```
***********************CARACTERISTICAS   PRINCIPALES********************
```

L/V3^(1/3)	4,13416015
L/V1^(1/3)	5,06400997
L/B	3,98885178
B/H	2,18557294
B/D	1,89965846
ANGULO MEDIO DE ENTRADA	32,5539592
ASTILLA MUERTA	14,8439334
ANGULO DE LA RODA	62,2132985
% LCB/L	-1,36879473
% LCF/L	-3,91497346
KB/V3^(1/3)	,302275643
KM/V3^(1/3)	,535426261
COEF, BLOCK	,488370371
COEF, PRISMATICO	,644934353
COEF, DE FLOTACION	,79012385
COEF, DE SECCION	,757240436

```
***********************TABLA DE PUNTOS(%)********************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2,00575415	13,5640101	23,4491096	31,6412687
2	12,6193089	32,6347477	48,0454975	59,3048992
3	25,4872929	52,6099622	70,2259437	80,72469
4	39,2154414	68,4386857	84,6904259	92,7365958
5	45,9381518	73,4635549	88,615797	96,0268509
6	42,4954365	67,5319168	83,6214826	93,0897348
7	29,8473479	55,6034731	73,6258535	85,368369
8	0	32,0809083	56,636231	72,7064907
9	0	0	14,0553027	49,0223685
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,19451388E-07	4,97643831	11,1588805
1	38,1158786	42,8404775	47,6657098	54,470088
2	66,9080879	71,4085729	75,3337862	80,8019487
3	86,226551	88,5564296	90,6478476	94,3794696
4	96,0867756	97,1361909	97,9341203	99,4276485
5	99,0664347	100	100,239869	100,171486
6	97,9740324	100	100,17146	100,171486
7	92,2433808	95,6126589	96,4910753	96,5326631
8	82,1674436	86,8379768	88,7874838	89,2550175
9	66,6147998	73,6759537	76,7845968	78,338549
10	13,8441696	56,1265895	63,4072946	63,7832576

```
********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**********
```

EST	1	2	3	4	5
	13,9969646	7,83400691	5,22267129	2,61133563	0
EST	6	7	8	9	10
	-2,22817717	2,17081906	17,8561334	45,315889	80,712388

********************CARACTERISTICAS PRINCIPALES********************

```
L/V3^(1/3)                              4,03882575
L/V1^(1/3)                              4,94723309
L/B                                     3,96269479
B/H                                     2,18051514
B/D                                     1,90458429
ANGULO MEDIO DE ENTRADA                20,6602208
ASTILLA MUERTA                          5,08284527
ANGULO DE LA RODA                      60,2658939
% LCB/L                                -1,68785499
% LCF/L                                -4,55885862
KB/V3^(1/3)                             ,277492125
KM/V3^(1/3)                             ,453889643
COEF, BLOCK                             ,518933384
COEF, PRISMATICO                        ,571405023
COEF, DE FLOTACION                      ,704829827
COEF, DE SECCION                        ,908170847
```

********************TABLA DE PUNTOS(%)********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,333335046	9,3869244	16,6519697	22,229732
2	15,7128778	35,5292576	46,4187713	51,7337988
3	45,9424895	69,4015478	74,854582	75,8119815
4	79,8066154	90,7984288	91,4974823	91,5240658
5	84,0397453	98,0812575	99,8433758	99,9927049
6	65,6058966	88,5087063	96,8601047	99,3612004
7	39,7432165	67,5651178	82,5202968	89,6300672
8	0	35,0077196	58,4883183	71,4061022
9	0	0	12,1250473	41,674630
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,166295E 07	2,90278678	6,51092459
1	26,2365958	28,8113721	31,3334055	35,0731737
2	53,9080915	54,5736465	56,2236345	60,6133878
3	75,9234793	75,9302349	77,2533308	81,2213848
4	91,5245462	91,5245488	92,3901573	94,986983
5	99,9998606	100	100,000002	100,000001
6	99,9214442	100	100,000001	100,000001
7	92,4453253	93,2712023	93,6665588	94,661980
8	77,5354858	79,813607	81,1121253	83,9859577
9	54,9967049	59,627214	62,1448994	67,9719148
10	7,64682188	32,7120234	41,9804948	46,6198576

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)********************

EST 1	2	3	4	5
16,1116645	7,76462484	5,17641655	2,58820826	0

EST 6	7	8	9	10
-2,22700309	2,19605914	17,951452	45,4632203	80,7123893

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.03882575
L/V1^(1/3)	4.94723309
L/B	3.96269479
B/H	2.18389055
B/D	1.90458429
ANGULO MEDIO DE ENTRADA	24.5380545
ASTILLA MUERTA	7.13249363
ANGULO DE LA RODA	60.2658939
% LCB/L	-1.75937053
% LCF/L	-4.39418825
KB/V3^(1/3)	.282493567
KM/V3^(1/3)	.469810197
COEF. BLOCK	.518933384
COEF. PRISMATICO	.594196342
COEF. DE FLOTACION	.731267757
COEF. DE SECCION	.87333655

*************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.383756528	10.7558061	19.078877	25.4689679
2	14.8370607	35.1160694	47.6957948	54.7923533
3	38.3335613	65.611493	75.7683848	78.88429
4	66.0990936	88.10935	92.498258	93.1409645
5	72.8167854	93.9571288	98.9795264	99.884383
6	60.2437683	84.5899794	94.984702	98.7402
7	38.9874042	66.8986147	82.335135	89.9274248
8	0	36.9070896	61.095935	74.0477921
9	0	0	14.1459469	46.7837395
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.21059433E-08	3.6330734	7.94334847
1	30.0594027	33.0091967	35.8985911	40.18311
2	58.266104	59.611036	61.5120063	65.8464297
3	79.6034698	79.708277	80.9415468	84.5955407
4	93.2009408	93.2036787	93.9260249	96.0926933
5	99.9931392	100	100.00036	100.000134
6	99.7998418	100	100.000134	100.000134
7	93.0628993	91.0346328	94.487678	95.2063036
8	79.9903489	82.1038981	83.2542153	85.6186428
9	60.1268423	64.207797	66.2262871	71.2371518
10	10.0923544	10.3463283	49.0784883	52.0618302

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	16.1089422	7.7766444	5.18442955	2.59221477	0
EST	6	7	8	9	10
	-2.22720646	2.19168664	17.9374197	45.4376972	80.7123894

**********************CARACTERISTICAS   PRINCIPALES**********************

```
    L/V3^(1/3)                          4,03802575
    L/V1^(1/3)                          4,94723302
    L/B -                               3,96262429
    B/H                                 2,18727119
    B/D                                 1,90450429
    ANGULO MEDIO DE ENTRADA            28,3273851
    ASTILLA MUERTA                      9,11185850
    ANGULO DE LA RODA                  60,2658939
    % LCB/L                            -1,74519934
    % LCF/L                            -4,18789509
    KB/V3^(1/3)                         ,286707267
    KM/V3^(1/3)                         ,486281939
    COEF, BLOCK                         ,518933384
    COEF, PRISMATICO                    ,616987661
    COEF, DE FLOTACION                  ,757705600
    COEF, DE SECCION                   -,841075780
```

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	,43649777	12,1779725	21,5999723	28,8338015
2	14,3517136	35,099141	49,0893165	57,8926967
3	33,4926663	62,0174132	75,663285	81,3006389
4	55,8443456	83,1823531	92,1067478	94,4502599
5	63,7520413	88,7677633	97,1917308	99,4969502
6	55,4973434	80,6397361	92,7856086	97,8622531
7	37,8596592	65,7571409	81,7599866	89,9816431
8	0	38,1307627	62,9521066	76,1530497
9	0	0	15,8947097	51,2603932
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,649581148E-08	4,41797712	9,422 5754
1	34,0303764	37,3696954	40,6406672	45,4210299
2	62,6416106	64,8436345	67,0893502	71,20 0374
3	83,1911487	83,6327259	84,8244393	80,19 7029
4	94,8969825	94,9478781	95,5262409	97,7 7302
5	99,9447217	100	100,005717	100,00266
6	99,5889984	100	100,00266	100,00266
7	93,5654634	94,7573948	95,2782892	95,7 134
8	82,1593133	84,2721843	85,3727394	82,7 5
9	64,7376326	68,5443686	70,2874253	71,7 1 75
10	12,4791591	47,5739477	55,5682865	5

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(ZH)***

EST	1	2	3	4	5
	16,1062874	7,78868255	5,19245502	2,59622749	0
EST	6	7	8	9	10
	-2,22741012	2,18730735	17,9203608	45,4121342	80,71 0 0

**********************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                                              4.03882575
L/V1^(1/3)                                              4.94723309
L/B                                                     3.96269479
B/H                                                     2.19065706
B/D                                                     1.90458429
ANGULO MEDIO DE ENTRADA                               31.9404669
ASTILLA MUERTA                                         11.0245731
ANGULO DE LA RODA                                     60.2658939
% LCB/L                                                -1.66335627
% LCF/L                                                -3.96498604
KB/V3^(1/3)                                             .290310976
KM/V3^(1/3)                                             .503603196
COEF. BLOCK                                             .518933384
COEF. PRISMATICO                                        .639778981
COEF. DE FLOTACION                                      .784143618
COEF. DE SECCION                                        .811113524
```

***************************TABLA DE PUNTOS(%)**********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.490793591	13.6319454	24.1771565	32.2733729
2	14.109767	35.3695219	50.6036059	60.8160397
3	30.2079153	59.0216068	75.1172108	83.19141
4	48.4586943	77.9055158	90.5599298	95.1673305
5	56.57868	83.4310901	94.705972	98.6992937
6	51.3004352	76.772434	90.3628993	96.7667281
7	36.4885107	64.2620287	80.859926	89.8149394
8	0	38.7663227	64.1749387	77.827083
9	0	0	17.3300431	54.9868086
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.29103608E 07	5.24733923	10.94109
1	38.0894901	41.8269508	45.4879461	50.91667
2	67.010901	70.1923409	72.8606279	76.8465512
3	86.5722323	87.6442556	88.8894801	91.69626
4	96.4797906	96.7307803	97.1911239	98.4313506
5	99.7987883	100	100.031465	100.01737
6	99.2747327	100	100.01737	100.01737
7	93.9625208	95.4559675	96.0287886	96.2664154
8	84.1178916	86.3679027	87.4774854	88.7645056
9	68.9658318	72.7358054	74.3557134	77.5116409
10	14.783046	54.5596757	61.6385477	62.5078214

******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	16.1037004	7.80073934	5.20049284	2.60024642	0
EST	6	7	8	9	10
	-2.2276142	2.1829213	17.9032757	45.3865321	80.7123893

************************CARACTERISTICAS PRINCIPALES***********************

```
L/V3^(1/3)                              4.03882575
L/V1^(1/3)                              4.94720389
L/B                                     3.96269479
B/H                                     2.19404817
B/D                                     1.90450429
ANGULO MEDIO DE ENTRADA                35.3010529
ASTILLA MUERTA                         12.8788292
ANGULO DE LA RODA                      60.2650939
% LCB/L                                -1.53492237
% LCF/L                                -3.75215465
KB/V3^(1/3)                             .29344227
KM/V3^(1/3)                             .52203984
COEF. BLOCK                             .518933384
COEF. PRISMATICO                        .6625703
COEF. DE FLOTACION                      .810581548
COEF. DE SECCION                        .783212565
```

**************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.545672917	15.0909515	26.7629509	35.7243068
2	14.0239306	35.8356577	52.2007103	63.7924834
3	27.8539982	56.5955908	74.5169398	84.6892498
4	42.9843238	72.9987043	88.3803581	95.2880672
5	50.8306458	78.3529159	91.8201004	97.5436206
6	47.5793591	73.0522247	87.8021176	95.4655349
7	34.9758436	62.517298	79.6966792	89.4521584
8	0	38.9227446	64.883482	79.1626735
9	0	0	18.4565385	50.24194
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4.8533141E 08	6.10780916	12.4544931
1	42.1619485	46.2988294	50.3511061	56.3600742
2	71.3234355	75.5585953	78.707921	82.4363814
3	89.7067472	91.6689464	93.0850064	95.3207907
4	97.8372929	98.5195318	98.9306248	99.6506868
5	99.5167327	100	100.100124	100.063455
6	98.8527737	100	100.063455	100.063455
7	94.2666978	96.1508845	96.7400608	96.8374177
8	85.9360425	88.4526537	89.5909237	90.3859259
9	72.9561998	76.9053073	78.4982228	80.709395
10	17.0308126	61.5088455	67.4804217	67.8050215

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	16.1011808	7.81281478	5.20854318	2.60427161	0
EST	6	7	8	9	10
	-2.22781852	2.17852849	17.8861641	45.3608903	80.7123895

*******************CARACTERISTICAS PRINCIPALES************************

L/V3^(1/3)	4.03882575
L/V1^(1/3)	4.94723309
L/B	3.96269479
B/H	2.19744453
B/D	1.90458429
ANGULO MEDIO DE ENTRADA	38.3477765
ASTILLA MUERTA	14.6845192
ANGULO DE LA RODA	60.2658939
% LCB/L	-1.38440236
% LCF/L	-3.57778122
KB/V3^(1/3)	.296203584
KM/V3^(1/3)	.541826934
COEF. BLOCK	.518933384
COEF. PRISMATICO	.685361619
COEF. DE FLOTACION	.837019478
COEF. DE SECCION	.757167267

*****************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.599945591	16.5226275	29.2999766	39.1100176
2	14.0360102	36.4185557	53.821571	66.6868086
3	26.0917879	54.6239792	73.8829826	85.90209
4	38.7765667	68.6274553	85.9321833	94.9352681
5	46.1329485	73.6682093	88.7577536	96.0985652
6	44.2672888	69.5128371	85.1716846	94.0040556
7	33.4008649	60.6134584	78.3324177	88.9244055
8	0	38.7197452	65.2002189	80.2507143
9	0	0	19.319721	61.108097
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	7.22543953E-08	6.98262155	13.9332506
1	46.1573683	50.6860808	55.1222109	61.70040
2	75.5026069	80.8232969	84.491888	87.9357827
3	92.5718546	95.6174727	97.3212573	98.9107672
4	98.9213803	100.274432	100.739852	100.896743
5	99.0893665	100	100.232058	100.165094
6	98.3267527	100	100.164964	100.165094
7	94.4959303	96.8669583	97.4572297	97.4923849
8	87.6866138	90.600875	91.743032	92.1469667
9	76.8649878	81.2017499	82.8017787	84.1288395
10	19.293367	68.6695831	73.3659529	73.4380032

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	16.0987278	7.8249089	5.21660591	2.60830295	0
EST	6	7	8	9	10
	-2.22802323	2.17412881	17.8690259	45.3352087	80.7123895

******************************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                              3.94958248
L/V1^(1/3)                              4.83791734
L/B                                     3.93780418
B/H                                     2.18066747
B/D                                     1.90931389
ANGULO MEDIO DE ENTRADA                23.3135762
ASTILLA MUERTA                          3.30038846
ANGULO DE LA RODA                      58.3184892
% LCB/L                                -1.94085719
% LCF/L                                -4.45794424
KB/V3^(1/3)                             .268110619
KM/V3^(1/3)                             .438973339
COEF. BLOCK                             .55001
COEF. PRISMATICO                        .586198687
COEF. DE FLOTACION                      .721990477
COEF. DE SECCION                        .938265493
```

*************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10.4122025	19.1692023	25.3323104
2	17.2633928	38.527456	49.8394234	56.1509198
3	51.1229198	73.5441399	77.7420323	78.3126398
4	88.4805548	92.5444981	92.6054608	92.6058832
5	94.0341003	99.7696981	99.9950952	99.9999559
6	75.846255	94.3858692	99.0006373	99.8792545
7	48.6874548	76.6181375	88.3097295	92.4355015
8	0	44.0412311	67.5816908	77.3138942
9	0	0	16.8098698	50.570376
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	3.66828242	7.34369721
1	29.3044548	31.5147104	33.5040289	36.5100435
2	57.2220951	57.8176524	58.9647336	61.9300679
3	78.3612629	78.3632393	79.2806258	82.0325495
4	92.6058842	92.6058842	93.2659799	95.2462672
5	99.9999999	100	100	100
6	99.9922303	100	100	100
7	93.5663519	93.7720981	93.8462856	95.01783
8	80.5565045	81.3162941	81.6535887	85.0535022
9	60.6050124	62.6325883	63.4165571	70.1070044
10	9.94479948	37.7209803	45.8233461	50.1783406

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	18.3385166	7.74470082	5.16313387	2.58156691	0

EST	6	7	8	9	10
	-2.22666593	2.20330718	17.9826855	45.5055283	80.7123889

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.94958248
L/V1^(1/3)	4.83791731
L/B	3.93780418
B/H	2.1920555
B/D	1.90931389
ANGULO MEDIO DE ENTRADA	26.7014455
ASTILLA MUERTA	5.02712314
ANGULO DE LA RODA	58.3184892
% LCB/L	-1.98316105
% LCF/L	-4.28883991
KB/V3^(1/3)	.272577731
KM/V3^(1/3)	.45302089
COEF. BLOCK	.55001
COEF. PRISMATICO	.606237197
COEF. DE FLOTACION	.745235148
COEF. DE SECCION	.90725215

**************************TABLA DE PUNTOS(%)********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	11.6647124	21.4711488	28.3729187
2	16.4312992	38.2027798	51.1302218	58.0514515
3	43.2953426	70.5980451	79.1812611	81.33657
4	76.535728	92.3011493	93.994494	94.1139292
5	84.2091003	98.1248525	99.8491477	99.9930978
6	70.0902609	91.3417635	98.0024912	99.6689902
7	47.5517175	75.8179406	88.1953038	92.803732
8	0	45.8702291	69.8232244	79.4603133
9	0	0	19.1451468	55.2914812
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.17061081E-08	4.43303229	8.65284753
1	32.8211946	35.2964335	37.524303	40.89082
2	61.2266233	62.3557202	63.6320103	66.3871527
3	81.7254952	81.7667902	82.5532254	84.8992075
4	94.1185064	94.1185734	94.6350219	96.1843648
5	99.9998711	100	100.000002	100.000001
6	99.9683895	100	100.000001	100.000001
7	94.1531578	94.4205876	94.5227188	95.485448
8	82.5652529	83.2617627	83.5590004	86.4563431
9	64.8594591	66.5235254	67.0905691	72.9126857
10	12.3504544	44.2058755	51.7363365	54.8544758

****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
18.3330076	7.75668953	5.17112634	2.58556315	0

EST 6	7	8	9	10
-2.22686879	2.19894588	17.9656969	45.4800707	80.7123893

****************************CARACTERISTICAS PRINCIPALES************************

$L/V3^{(1/3)}$	3.94958248
$L/V1^{(1/3)}$	4.83791734
L/B	3.93780418
B/H	2.1988473
B/D	1.90931389
ANGULO MEDIO DE ENTRADA	33.0978393
ASTILLA MUERTA	8.33477993
ANGULO DE LA RODA	58.3184892
% LCB/L	-1.9067157
% LCF/L	-3.9017145
$KB/V3^{(1/3)}$	.279776922
$KM/V3^{(1/3)}$	.482488473
COEF. BLOCK	.55001
COEF. PRISMATICO	.646314216
COEF. DE FLOTACION	.79172449
COEF. DE SECCION	.850994743

*****************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	14.2548372	26.2292774	34.6570717
2	15.6456464	38.394542	53.8928253	63.6728102
3	34.4440801	64.5483949	79.4921776	85.952964
4	57.0779116	85.1087466	91.2996556	96.7257909
5	66.8806895	90.7523565	97.9554478	99.6783072
6	60.2519542	84.5963525	94.9879999	98.7413974
7	44.4317511	73.1828805	87.1980656	93.1275916
8	0	47.6935065	72.7217775	82.8913224
9	0	0	22.9268104	63.1624104
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	6.09778952	11.348736
1	40.0890363	43.1117565	45.8325255	49.94395
2	69.1753764	71.7341077	73.4509952	75.60165
3	88.2278586	88.8005808	89.4094203	90.8269649
4	97.1912355	97.2447026	97.4694453	98.1250466
5	99.9711932	100	100.002415	100.001042
6	99.8001027	100	100.001042	100.001042
7	95.1603296	95.6545974	95.85794	96.4000127
8	86.2079464	86.9637922	87.2819918	89.1979549
9	72.5427615	73.9275845	74.3327371	78.3948684
10	17.0587567	56.545974	62.7390883	63.9907528

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	18.3222001	7.78072263	5.18714845	2.59357422	0
EST	6	7	8	9	10
	-2.2272754	22.19020303	17.9316405	45.4290369	80.7123889

*************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3,94958249
L/V1^(1/3)	4,83791734
L/B	3,93780418
B/H	2,20225109
B/D	1,90931389
ANGULO MEDIO DE ENTRADA	36,0013469
ASTILLA MUERTA	9,91646759
ANGULO DE LA RODA	58,3184892
% LCB/L	1,81535029
% LCF/L	-3,71976628
KB/V3^(1/3)	,282723851
KM/V3^(1/3)	,499281503
COEF, BLOCK	,55001
COEF, PRISMATICO	,666352725
COEF, DE FLOTACION	,814969161
COEF, DE SECCION	,825403693

**************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	15,5562072	28,6187586	37,8124803
2	15,5040634	38,7657331	55,3514729	66,403866
3	31,7899391	62,1251073	79,1247354	87,6183845
4	50,6952328	80,6562072	93,0879969	97,4293595
5	60,3346675	86,362939	96,1460016	97,1832734
6	56,110411	81,1752346	93,1006239	98,0022041
7	42,6521721	71,4984665	86,3661717	93,0887096
8	0	47,8586878	73,5436759	84,2953474
9	0	0	24,3181923	66,48049
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,13320668E 07	6,97732996	12,697037
1	43,738187	47,0357175	50,0039156	54,4892914
2	73,0586243	76,442861	78,4509289	80,2311129
3	91,1950955	92,3321457	92,947891	93,8077818
4	98,6040853	98,8142871	98,9146224	97,1045778
5	99,8944332	100	100,013433	100,006781
6	99,6236157	100	100,006781	100,006781
7	95,5905789	96,2675275	96,5367561	96,872312
8	87,9330476	88,8025823	89,170537	90,6033898
9	76,1932057	77,6051645	78,0076312	81,1999987
10	19,3936749	62,6752742	68,0399425	68,6621438

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	18,3169017	7,7927671	5,19517809	2,59758985	0
EST	6	7	8	9	10
	-2,22747928	2,18582146	17,9145727	45,4034607	80,7123889

**************************CARACTERISTICAS   PRINCIPALES*************************

L/V3^(1/3)	3,94958248
L/V1^(1/3)	4,83791734
L/B	3,93780418
B/H	2,20566015
B/D	1,90931389
ANGULO MEDIO DE ENTRADA	38,653183
ASTILLA MUERTA	11,454111
ANGULO DE LA RODA	58,3184892
% LCB/L	-1,71013663
% LCF/L	-3,57120898
KB/V3^(1/3)	,285344053
KM/V3^(1/3)	,515010188
COEF. BLOCK	,55001
COEF. PRISMATICO	,686391235
COEF. DE FLOTACION	,838213832
COEF. DE SECCION	,801306853

****************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	16,8319698	30,9603651	40,9043567
2	15,4563646	39,2373425	56,814995	69,0445479
3	29,7759618	60,0894202	78,6544201	88,96824
4	45,7618693	76,4368204	91,367186	97,6725184
5	54,9192929	82,0387703	93,9624049	98,4234564
6	52,4114845	77,8301577	91,0505876	97,0933188
7	40,8261346	69,658835	85,3531528	92,9269458
8	0	47,6612564	74,0539831	85,5614635
9	0	0	25,4111487	69,5309738
10	0	0	0	0

ESTACIÓN	LW 5	LW 6	LW 7	LW 8
0	0	-5,15345825E-08	7,87030281	14,0139854
1	47,3137251	50,880465	54,0910615	58,942781
2	76,8143833	81,0565579	83,9869601	84,7716328
3	93,9217961	95,7924184	96,4951809	96,7372442
4	99,8292783	100,352186	100,373603	100,076347
5	99,7375507	100	100,044682	100,025664
6	99,3724733	100	100,025664	100,025664
7	95,9820678	96,9002609	97,2211444	97,3828656
8	89,6558826	90,7007826	91,1371739	92,0972683
9	79,8663008	81,4015653	81,8368435	84,1688725
10	21,7935612	69,0026088	73,3762803	73,5976781

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
18,3116731	7,8048302	5,20322016	2,60161008	0

EST 6	7	8	9	10
-2,22768337	2,18143313	17,8974786	45,3778451	80,7123891

************************CARACTERISTICAS   PRINCIPALES*********************

       L/V3^(1/3)   3.94958248
       L/V1^(1/3)   4.83701737
       L/B   3.93780118
       B/H   2.202677??
       B/D   1.24931389
       ANGULO MEDIO DE ENTRADA   11.0229678
       ASTILLA MUERTA   12.953002
       ANGULO DE LA RODA   58.3184892
       % LCB/L   -1.6097476
       % LCF/L   -3.47683893
       KB/V3^(1/3)   .287698453
       KM/V3^(1/3)   .532822017
       COEF. BLOCK   .55001
       COEF. PRISMATICO   .706429744
       COEF. DE FLOTACION   .861458503
       COEF. DE SECCION   .778577069

***************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	18.0552844	33.2047778	43.86754
2	15.4653666	39.7535042	58.2329252	71.5433051
3	28.1954135	58.3642336	78.1379848	90.0518363
4	41.8470877	72.5855058	89.3809902	97.523111
5	50.3866664	77.9307636	91.5592789	97.4206293
6	49.0956094	74.6008731	88.8943456	96.0361911
7	39.0058757	67.7227356	84.195095	92.6576592
8	0	47.2076805	74.3363054	86.7443503
9	0	0	26.2772808	72.44365??
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.39087959E 07	8.75975145	15.2712072
1	50.7403117	54.5619847	58.0078393	63.2105996
2	80.3731446	85.4779816	88.1496045	89.1306703
3	96.3803678	99.1084862	99.9762121	99.5608947
4	100.826015	101.825994	101.835705	101.030748
5	99.4854055	100	100.108894	100.069704
6	99.0438046	100	100.069686	100.069704
7	96.3463232	97.5730513	97.9079726	97.96241??
8	91.4281659	92.7191536	93.2219072	93.7478247
9	83.683547	85.4383072	85.9315697	87.4259451
10	24.3557955	75.7305119	78.9566735	78.9967723

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**********

EST	1	2	3	4	5
	18.3065143	7.81691199	5.21127469	2.60563734	0
EST	6	7	8	9	10
	-2.22788784	2.17703791	17.880358	45.3521897	80.7123989

*************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.94958248
L/V1^(1/3)	4.83791731
L/B	3.93780418
B/H	2.21249411
B/D	1.90931389
ANGULO MEDIO DE ENTRADA	43.0870841
ASTILLA MUERTA	14.4196986
ANGULO DE LA RODA	58.3184892
% LCB/L	-1.53509083
% LCF/L	-3.45797943
KB/V3^(1/3)	.289836279
KM/V3^(1/3)	.551893783
COEF. BLOCK	.55001
COEF. PRISMATICO	.726468254
COEF. DE FLOTACION	.884703174
COEF. DE SECCION	.757101218

******************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	19.1955388	35.2957743	46.6278403
2	15.5005061	40.2598801	59.5455715	73.8333313
3	26.9152901	56.871337	77.5827161	90.88495
4	38.6622583	69.1112553	87.2771453	97.0582403
5	46.5407727	74.0939913	89.0509588	96.2454345
6	46.1081303	71.5062423	86.6756214	94.8541528
7	37.2270849	65.7389258	82.9284528	92.300564
8	0	46.6023973	74.4801585	87.9063002
9	0	0	27.0182156	75.3754836
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	9.62565968	16.4365005
1	53.9320754	57.9969367	61.6560853	67.18576
2	83.6502484	89.5963239	92.6159864	93.2026584
3	98.5353158	102.197243	103.299189	102.216516
4	101.577028	103.198775	103.276655	101.956659
5	99.1358651	100	100.216426	100.152413
6	98.6387964	100	100.152012	100.152413
7	96.6982267	98.3089836	100.152012	100.152413
8	93.3086181	94.9269507	98.635092	98.6489862
9	87.7816408	89.8539013	95.4466037	95.6421334
10	27.2101535	83.0898355	90.4001439	91.1318545
			85.1167703	85.118149

**************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)*************

EST 1	2	3	4	5
18.3014253	7.82901248	5.21934168	2.60967084	0

EST 6	7	8	9	10
-2.22809263	2.17263595	17.8632108	45.3264945	80.7123886

***********************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4.21387878
L/V1^(1/3)	5.16165892
L/B	4.01032376
B/H	1.86381909
B/D	1.64559759
ANGULO MEDIO DE ENTRADA	17.4991361
ASTILLA MUERTA	20.8261165
ANGULO DE LA RODA	68.451225
% LCB/L	.952254127
% LCF/L	-4.64205277
KB/V3^(1/3)	.362369722
KM/V3^(1/3)	.555445174
COEF. BLOCK	.400007993
COEF. PRISMATICO	.554
COEF. DE FLOTACION	.68464
COEF. DE SECCION	.722037698

*******************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.17716966	6.8913089	11.6053879	14.3123945
2	9.65098977	23.3035396	33.9994549	41.9785524
3	22.4103921	44.4725255	58.6722196	67.0135464
4	35.2350495	61.7249056	77.2231778	85.3755346
5	39.5307431	66.271209	83.2224249	93.035935
6	33.2051165	56.1791872	73.7545797	86.4962691
7	18.6175186	38.4872980	55.9443032	70.8865693
8	0	15.6232627	33.3255439	47.7623759
9	0	0	2.86740919	22.5634610
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	2.06759566	5.47969339
1	21.0333101	25.7471035	30.4609625	35.1751084
2	47.5084544	50.8965243	54.6971451	61.2317245
3	71.3717493	73.1723932	75.851102	81.9490058
4	89.0344931	90.2988414	91.9244695	95.6264268
5	97.9965667	100	100.667672	100.563462
6	95.019313	100	100.563348	100.563462
7	83.1829408	92.6528242	94.7485631	91.752637
8	64.7394659	77.9584725	82.9515885	83.1519874
9	40.3714443	55.916945	64.4232896	65.7405132
10	4.63132853	26.5282416	38.4566147	42.5252142

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	8.96942614	6.71678608	4.47785741	2.2389287	0

EST	6	7	8	9	10
	-2.20927171	2.57724549	19.1393019	47.6882786	80.7123888

***************************CARACTERISTICAS PRINCIPALES*************************

L/V3^(1/3)	4:21387878
L/V1^(1/3)	5:16165882
L/B	4:01039376
B/H	1:86670426
B/D	1:64559759
ANGULO MEDIO DE ENTRADA	15:3377248
ASTILLA MUERTA	19:1185085
ANGULO DE LA RODA	68:451925
% LCB/L	-:888255256
% LCF/L	4:67359371
KB/V3^(1/3)	:358817654
KM/V3^(1/3)	:545999693
COEF. BLOCK	:400009993
COEF. PRISMATICO	:541027773
COEF. DE FLOTACION	:669592217
COEF. DE SECCION	:739352049

*******************************TABLA DE PUNTOS(%)*****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,98878068	6:30207386	10:6153116	14:9284826
2	9,88531516	23:4794105	33:6839178	40:9163001
3	24,0219275	46:3458519	59:6257834	66:751411
4	38,1879986	64:9249875	79:2287671	85:9903558
5	42,3538708	69:5502662	85:7766216	94:5140328
6	34,6573972	58:0644668	75:5044418	87:7548364
7	18,7784935	38:7179419	56:1299635	70:9253353
8	0	15:0877815	32:2801329	48:3838679
9	0	0	2:61182529	20:6761804
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2:07614425E 08	1:7804337	4:77935464
1	19,24157	23:5545449	27:8675801	32:18087
2	45,6185049	48:2651539	51:6089826	58:0623631
3	70,0292915	71:1990904	73:6279638	79:7989538
4	88,6490001	89:421818	90:9136075	94:7657998
5	98,5510045	100	100:431579	100:338049
6	95,6312384	100	100:338047	100:338049
7	82,9901586	92:1691159	94:2003451	94:2115656
8	63,2193237	76:5073475	81:7243791	81:9585991
9	37,5714948	53:014695	62:018783	63:5791493
10	3:67687878	21:6911584	33:1788963	39:0732163

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	8,98203448	6,72718362	4,18478908	2,24239454	0
EST	6	7	8	9	10
	-2,20944768	2,57346307	19,424568	47,6661998	80,7123889

```
*************************CARACTERISTICAS    PRINCIPALES**********************
```

```
    L/V3^(1/3)                                     4:21387879
    L/V1^(1/3)                                     5:16165882
    L/B                                            4:01039326
    B/H                                            1:8695939
    B/D                                            1:64559759
    ANGULO MEDIO DE ENTRADA                        13:2159768
    ASTILLA MUERTA                                 17:3936337
    ANGULO DE LA RODA                              68:451925
    % LCB/L                                        -:781782144
    % LCF/L                                        -4:67484498
    KB/V3^(1/3)                                    :355026421
    KM/V3^(1/3)                                    :536720611
    COEF. BLOCK                                    :400009993
    COEF. PRISMATICO                               :529055547
    COEF. DE FLOTACION                             :654544434
    COEF. DE SECCION                               :757514992
```

```
***************************TABLA DE PUNTOS(%)***********************************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,80800844	5,73572662	9,66339441	13,5910016
2	10,2089016	23,7742931	33,4443341	39,8865086
3	26,0100354	48,4806588	60,5787006	66,3411697
4	41,7081064	68,3974094	81,1184408	86,4153302
5	45,5745039	73,0792898	88,3474663	95,8902274
6	36,1700258	59,9856833	77,2437909	88,9695561
7	18,845557	38,7874547	56,1324474	70,8006197
8	0	14,4141587	30,9925512	46,7324043
9	0	0	2,32833452	18,620236
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	1,50989707	4,10563931
1	17,5185328	21,4459617	25,3734454	29,3011691
2	43,7641031	45,7351541	48,6763713	55,027034
3	68,628336	69,3013656	71,554836	77,7669705
4	88,16824	88,5783847	90,0007084	93,9927212
5	99,0223428	100	100,255075	100,184029
6	96,2024105	100	100,184029	100,184029
7	82,6904587	91,6644137	93,7076518	93,72116
8	61,4802488	74,993241	80,5211763	80,7954381
9	34,5441538	49,986482	59,5895967	61,4068476
10	2,71599723	16,6441366	27,1456209	35,5553936

```
********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************
```

EST	1	2	3	4	5
	8,99472459	6,73759719	4,49173148	2,24586574	0
EST	6	7	8	9	10
	-2,20962388	2,56967479	19,4098114	47,6440868	80,712389

****************************CARACTERISTICAS PRINCIPALES**********************

$L/V3^{(1/3)}$	4.10216019
$L/V1^{(1/3)}$	5.02481263
L/B	3.98012066
B/H	1.8717249
B/D	1.650513
ANGULO MEDIO DE ENTRADA	17.6930736
ASTILLA MUERTA	16.2083381
ANGULO DE LA RODA	66.5604308
% LCB/L	-1.06607454
% LCF/L	-4.64060758
$KB/V3^{(1/3)}$	.34692456
$KM/V3^{(1/3)}$	.524488484
COEF. BLOCK	.4288792
COEF. PRISMATICO	.55440895
COEF. DE FLOTACION	.685114383
COEF. DE SECCION	.773579143

********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.24653531	7.53951799	12.5864644	17.3527313
2	11.3003638	26.3132862	37.0860082	44.3196895
3	27.2199459	50.869485	63.7495697	69.96934?6
4	43.5078729	70.6928497	83.3183398	88.3604695
5	48.0391267	75.6271651	90.0825375	96.7483524
6	39.4971786	64.0596737	80.7811573	91.3236988
7	22.2808502	44.4971744	62.3992276	76.21257
8	0	18.6633838	38.300769	54.8063719
9	0	0	3.43379203	25.9080944
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-6.18798429E-08	2.22208817	5.85462351
1	21.7889444	25.8175349	29.9780428	34.88753?6
2	48.71672	50.9810419	54.1191796	60.6673895
3	72.4803257	73.2357815	75.4227096	81.3566322
4	89.9701804	90.327014	91.5817423	95.1177146
5	99.290131	100	100.166661	100.113086
6	97.2487859	100	100.113086	100.113086
7	86.1977922	92.6677453	94.3147697	94.3456457
8	68.0837398	78.003236	82.3568033	82.8107642
9	43.4377934	56.006472	63.3254498	65.5084419
10	4.92869358	26.6774533	38.0031203	42.4386788

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	9.79839448	6.69435908	4.46290606	2.23145306	0

EST	6	7	8	9	10
	-2.20889218	2.58540413	19.4710824	47.735902	80.7123891

***********************CARACTERISTICAS PRINCIPALES***********************

```
L/V3^(1/3)                          4:10216017
L/V1^(1/3)                          5:02401263
L/B                                 3:98012066
B/H                                 1:87442231
B/D                                 1:650513
ANGULO MEDIO DE ENTRADA            19:6991519
ASTILLA MUERTA                     17:459505
ANGULO DE LA RODA                  66:5601300
% LCB/L                            -1:11555074
% LCF/L                            -4:58793968
KB/V3^(1/3)                         :348859035
KM/V3^(1/3)                         :531714632
COEF. BLOCK                         :4288792
COEF. PRISMATICO                    :566242322
COEF. DE FLOTACION                  :698841102
COEF. DE SECCION                    :757412822
```

*********************TABLA DE PUNTOS(%)*********************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	2:42526889	8:14319728	13:59533	18:7442418
2	11:1019815	26:2617062	37:5647613	45:5110802
3	25:6569384	49:2896073	63:2071613	70:5855778
4	40:5841192	67:968737	81:9681102	89:2365773
5	45:353469	72:8443141	88:1822394	95:8054129
6	38:2105689	62:5093504	79:4597717	90:4632656
7	22:2296646	44:4532916	62:4271858	76:3572416
8	0	19:3358771	39:4864329	56:2371251
9	0	0	3:78996238	27:94534
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	1:38858907E 07	2:51310859	6:55502467
1	23:5365938	27:888589	32:3830792	37:6066703
2	50:6255446	53:4663068	56:9459049	63:5028287
3	73:9294727	75:0997301	77:4186854	83:2769477
4	90:5414953	91:1554357	92:4321127	95:0021548
5	98:9947089	100	100:261728	100:192058
6	96:8761485	100	100:192058	100:192058
7	86:4824136	93:0912425	94:6932284	94:71670
8	69:5266303	79:2737277	83:3787116	83:7662301
9	46:1225533	58:5174554	65:4173712	67:3404026
10	5:86969997	30:9124257	42:2516127	45:4392992

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*********************

EST	1	2	3	4	5
	9:8029724	6:70472184	4:46981455	2:23490729	0

EST	6	7	8	9	10
	-2:2090675	6:58163427	19:4563927	47:7138968	80:7123891

******************************CARACTERISTICAS   PRINCIPALES*****************************

```
L/V3^(1/3)                              3.99845133
L/V1^(1/3)                              4.89777771
L/B                                     3.9514835
B/H                                     1.87934229
B/D                                     1.65521098
ANGULO MEDIO DE ENTRADA                 18.1918469
ASTILLA MUERTA                          12.1286404
ANGULO DE LA RODA                       64.6689365
% LCB/L                                 -1.23199206
% LCF/L                                 -4.63228034
KB/V3^(1/3)                             .332331169
KM/V3^(1/3)                             .497013514
COEF. BLOCK                             .458340773
COEF. PRISMATICO                        .556636003
COEF. DE FLOTACION                      .687697764
COEF. DE SECCION                        .823412015
```

***************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.00843865	8.10467795	13.6255701	18.5264127
2	13.0533888	29.340171	40.0400225	46.5047627
3	32.9856971	57.4190754	68.1535678	72.16609
4	54.0568052	79.5312661	87.8395987	90.0189329
5	58.5857205	85.0355443	95.5157072	98.9801093
6	46.9686374	72.4325325	87.3593003	95.2291391
7	26.7753546	51.3540947	69.183721	81.3129062
8	0	22.5085613	44.1504838	60.2730012
9	0	0	4.21748274	30.1249507
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2.4030306E-08	2.41593259	6.17493743
1	22.7474849	26.2024572	29.7910921	34.49346
2	49.9506866	51.4429487	54.0176042	60.0846645
3	73.3467517	73.5822115	75.4459882	80.9001703
4	90.4337988	90.4809829	91.5877099	94.8916114
5	99.8563153	100	100.020177	100.010618
6	98.7713947	100	100.010618	100.010618
7	88.8062281	92.748661	94.1425824	94.3054384
8	71.427448	78.2459829	81.8132849	82.8950785
9	46.9868095	56.4919457	62.2222416	65.7795386
10	5.40799253	27.4866095	38.2344283	42.9588187

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST 1	2	3	4	5
11.4809368	6.67324094	4.4488273	2.22441364	0

EST 6	7	8	9	10
-2.2085348	42.59308655	19.501008	47.7807458	80.7123889

***********************CARACTERISTICAS PRINCIPALES*********************

```
L/V3^(1/3)                               3.99845133
L/V1^(1/3)                               4.80777771
L/B                                      3.9514935
B/H -                                    1.89225142
B/D                                      1.65521098
ANGULO MEDIO DE ENTRADA                 22.341743
ASTILLA MUERTA                          14.7490042
ANGULO DE LA RODA                       69.6602365
% LCB/L                                  -1.30873444
% LCF/L                                  -4.49667627
KB/V3^(1/3)                              .337342998
KM/V3^(1/3)                              .512513201
COEF. BLOCK                              .450340773
COEF. PRISMATICO                         .580924333
COEF. DE FLOTACION                       .715872227
COEF. DE SECCION                         .798985324
```

*************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.34145255	9.44704953	15.8820425	21.5943273
2	12.5183505	29.1578359	41.1269186	47.1874742
3	28.698099	53.6870021	67.3502531	73.9793169
4	45.8230596	73.5066053	85.8370311	90.5220304
5	51.2585425	78.7557096	92.0660697	97.6505766
6	43.4781998	68.6553558	84.5122195	93.6211543
7	26.410464	50.9244768	68.9645295	81.4499216
8	0	23.9347533	46.5617483	63.0745528
9	0	0	5.04604842	34.66395
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4.99143785E-08	3.09240386	7.72833117
1	26.514295	30.5413219	34.7241483	40.2051237
2	54.1050048	56.6495863	59.7858554	65.962176
3	76.6711466	77.4871898	79.1641924	84.7137909
4	91.9286008	92.2165288	93.2488765	94.1742711
5	99.5453991	100	100.092342	100.057919
6	98.18144	100	100.057919	100.057919
7	89.3304641	93.5959079	94.8707664	94.94711
8	74.2093098	80.7877237	83.9467521	84.7254947
9	52.5014434	61.5754475	66.5434046	69.3930698
10	7.52321227	35.9590791	46.4290905	48.9498367

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	11.479895	6.68357104	4.45571403	2.227857	0
EST	6	7	8	9	10
	-2.208709642	.58932865	19.1863698	47.7588103	80.7123092

************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,90188881
L/V1^(1/3)	4,77949647
L/B	3,92433614
B/H	1,8866922
B/D	1,65970857
ANGULO MEDIO DE ENTRADA	19,215029
ASTILLA MUERTA	8,64821616
ANGULO DE LA RODA	62,7774422
% LCB/L	-1,43761987
% LCF/L	-4,6095255
KB/V3^(1/3)	,318787778
KM/V3^(1/3)	,473256469
COEF. BLOCK	,488366562
COEF. PRISMATICO	,561921049
COEF. DE FLOTACION	,693828417
COEF. DE SECCION	,869101741

***************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,44506681	8,70895134	14,9234597	20,0757823
2	14,8646411	32,3710713	42,9746643	48,7881501
3	39,5175934	63,592952	71,7054723	73,91752
4	66,6498734	86,6299286	90,3151964	90,80734
5	71,0771469	93,0931409	98,7305938	99,8405292
6	55,706542	80,8384040	92,9063126	97,9212083
7	32,3587118	59,1041211	76,0832213	85,9299493
8	0	27,5112364	51,0821416	66,1373563
9	0	0	5,3730061	35,6370738
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-2,48331392E 07	2,71167511	6,57708726
1	24,1499791	27,1250116	30,1660015	34,456137
2	51,5348455	52,550014	54,6352832	59,8954653
3	74,3591209	74,4125105	75,998664	80,737582
4	90,8483818	90,8500047	91,8438021	94,8250064
5	99,9892227	100	100,000656	100,000255
6	99,6027321	100	100,000255	100,000255
7	90,9181286	92,9384099	93,8751136	94,4282394
8	74,7364292	78,8152299	81,1794697	83,2842079
9	-51,2009036	57,6304597	61,3273513	66,5681605
10	6,23922936	29,3840995	39,4868503	44,2800975

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	19,6102798	6,65331372	4,43554240	2,21777124	0
EST	6	7	8	9	10
	-2,20819768	2,60033572	19,5292462	47,8230608	80,7123893

**********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3.90188981
L/V1^(1/3)	9.77949642
L/B	3.92433414
B/H	1.88961278
B/D	1.65970857
ANGULO MEDIO DE ENTRADA	22.7809953
ASTILLA MUERTA	10.8375672
ANGULO DE LA RODA	62.7774122
% LCB/L	-1.51573629
% LCF/L	-4.48414961
KB/V3^(1/3)	.323464521
KM/V3^(1/3)	.486376787
COEF. BLOCK	.488366562
COEF. PRISMATICO	.582673116
COEF. DE FLOTACION	.717900814
COEF. DE SECCION	.838148439

*************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.64694808	9.91097103	16.9811656	22.842953
2	14.223961	32.1079628	44.0080587	51.3086026
3	34.3232222	60.1292251	71.7097575	76.1192376
4	56.6885024	82.1975401	90.050587	91.9711234
5	62.624411	88.0012467	96.8724947	99.3970057
6	51.8834906	77.3465757	90.7422475	96.9490845
7	31.9650429	58.710451	75.9611208	86.1570732
8	0	29.0474605	53.454663	68.675721
9	0	0	6.30584012	40.1204304
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.42612375E-07	3.35237333	7.96207111
1	27.4781907	30.8629341	34.322759	39.2030064
2	55.2745924	57.035521	59.4595468	64.7385077
3	77.4968284	77.7766408	79.3389184	83.8568199
4	92.3107978	92.3451737	93.2236954	95.0485878
5	99.931089	100	100.00765	100.003656
6	99.3299209	100	100.003656	100.003656
7	91.4453667	93.654608	94.5839838	94.937430
8	77.114807	80.963824	83.0832639	84.804982
9	56.0568833	61.9276481	65.0338412	69.6063082
10	8.24491664	36.5460802	46.3209769	49.3414097

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	13.6049178	6.66361297	4.44240865	2.22120432	0
EST	6	7	8	9	10
	-2.20837192	2.59658902	19.5146515	47.8011905	80.712389

*************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3,90188881
L/V1^(1/3)	4,77919647
L/B	3,92433614
B/H	1,89253788
B/D	1,65970857
ANGULO MEDIO DE ENTRADA	26,3090403
ASTILLA MUERTA	12,9481906
ANGULO DE LA RODA	62,7774422
% LCB/L	-1,51496236
% LCF/L	-4,31429606
KB/V3^(1/3)	,327456318
KM/V3^(1/3)	,499765188
COEF, BLOCK	,408366562
COEF, PRISMATICO	,603425182
COEF, DE FLOTACION	,741973212
COEF, DE SECCION	,809324133

******************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,8578871	11,1641036	19,1259715	25,7270668
2	13,8612592	32,1457994	45,1727889	53,8457158
3	30,7617166	57,1142711	71,2202957	77,89286
4	49,3362617	77,2556211	88,7157703	92,6666939
5	55,8815462	82,853422	94,4019966	98,5885242
6	48,4193823	73,9324268	88,431665	95,7983417
7	31,2939616	57,9262296	75,4835526	86,135651
8	0	30,1087464	55,1941904	70,6903988
9	0	0	7,13987113	44,0394877
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,61622615E 07	4,03861263	9,40340549
1	30,9469514	34,7586499	38,6549464	44,15179
2	59,0617911	61,71038	64,5598077	69,7903582
3	80,5186845	81,2827849	82,8953743	87,1164403
4	93,7189808	93,9034601	94,683355	96,9273756
5	99,7747231	100	100,036524	100,020501
6	98,9654842	100	100,020501	100,020501
7	91,8429555	94,3313577	95,2448281	95,4401864
8	79,1812207	82,9940731	84,9681157	86,2795563
9	60,4136513	65,9881463	68,7274558	72,5386112
10	10,1974687	43,313577	52,4578354	54,2173512

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	13,5996278	6,67392816	4,44928544	2,22464272	0
EST	6	7	8	9	10
	-2,2085465	12,59283648	19,5000342	47,7792865	80,7123891

**********************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	3.901656
L/V1^(1/3)	4.770406
L/B	3.921661
B/H~	1.895675
B/D	1.657086
ANGULO MEDIO DE ENTRADA	29.72946
ASTILLA MUERTA	14.99870
ANGULO DE LA RODA	62.77443
% LCB/L	-1.447963
% LCF/L	-4.118161
KB/V3^(1/3)	.330913
KM/V3^(1/3)	.513650
COEF. BLOCK	.498366
COEF. PRISMATICO	.624172
COEF. DE FLOTACION	.766045
COEF. DE SECCION	.782416

**********************TABLA DE PUNTOS(%)**********************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	2.07559216	12.4544542	21.3340560	28.6760761
2	13.6846548	32.4115126	46.4631225	56.3171563
3	28.1967601	54.6192527	70.5734961	79.2800046
4	43.806955	72.5478021	86.7431703	92.6170034
5	50.4295878	77.9717627	91.5897448	97.4599271
6	45.2801917	70.6348899	86.0299144	94.4751336
7	30.4234838	56.8415502	74.7135136	85.8969312
8	0	30.7447817	56.3835677	72.2660435
9	0	0	7.85092108	47.40160
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	4.12300998E-08	4.76406894	10.0517271
1	34.5177091	38.7688592	43.1144099	49.2350731
2	62.8848513	66.5226311	69.8701875	74.999541
3	83.386375	84.8919734	86.6591179	90.4910400
4	94.9758952	95.5075437	96.2411788	98.0655626
5	99.4885062	100	100.107937	100.069077
6	98.5092864	100	100.069077	100.069077
7	92.1236567	94.979484	95.8667132	95.94139
8	80.9988809	84.9384522	86.8247661	87.7160194
9	64.3598918	69.8769044	72.4102274	75.4229493
10	12.0640177	49.7948406	58.0923558	58.9922161

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**********************

EST	1	2	3	4	5
	13.5944102	6.68425932	4.45617288	2.22808644	0

EST	6	7	8	9	10
	-2.20872126	2.58907823	19.4853945	47.7573487	80.7323894

******************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3.90188881
L/V1^(1/3)	4.77949647
L/B	3.92433614
D/H	1.89840167
B/D	1.65970857
ANGULO MEDIO DE ENTRADA	32.9783867
ASTILLA MUERTA	16.9685086
ANGULO DE LA RODA	62.7774422
% LCB/L	-1.3295704
% LCF/L	-3.9150219
KB/V3^(1/3)	.333949249
KM/V3^(1/3)	.528228068
COEF. BLOCK	.408366562
COEF. PRISMATICO	.644929315
COEF. DE FLOTACION	.790118006
COEF. DE SECCION	.757210446

***********************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	2.29718077	13.764665	23.5756778	31.7099654
2	13.6364625	32.8452112	47.8529156	59.0119117
3	26.2761519	52.5782679	69.9233525	80.45061
4	39.5108463	68.2909508	84.4743625	92.5959664
5	45.938157	73.4635603	88.6158006	96.0268520
6	42.4312409	67.476192	83.5820558	93.0675432
7	29.419975	55.5357306	73.7088413	85.4713331
8	0	31.0191155	57.1090099	73.4791035
9	0	0	8.43079158	50.2639095
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-1.88100203E 07	5.52052342	12.3768205
1	38.1423239	42.8394871	47.6410095	54.41501
2	66.7140193	71.4073845	75.3100011	89.3015375
3	86.0936593	88.5855304	70.5910444	93.9484268
4	96.0347534	97.1357949	97.7092009	99.2677283
5	99.0661353	100	100.237869	100.171486
6	97.9656343	100	100.171461	100.171486
7	92.301468	95.6125050	96.4875641	96.5325473
8	82.624434	86.9375172	88.6624617	89.2546707
9	67.9921915	73.6750245	76.1022459	78.3378556
10	13.8435675	56.1250574	43.1060786	63.7821021

*******************ALTOS DEL ALERTZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
	13.5892638 6.69460648	3.46302098	2.23153549	0
EST 6	7	8	9	10
	-2.208896362.58531412	19.4702318	47.7353765	80.7123888

**********************CARACTERISTICAS PRINCIPALES********************

    L/V3^(1/3)   3.0112400
    L/V1^(1/3)   4.4690100
    L/B   3.0905000
    B/H   1.9237000
    B/D   1.6690100
    ANGULO MEDIO DE ENTRADA   20.9705000
    ASTILLA MUERTA   5.0479100
    ANGULO DE LA RODA   60.8851000
    % LCB/L   -1.6781200
    % LCF/L   -4.5593600
    KB/V3^(1/3)   .3066520
    KM/V3^(1/3)   .4536200
    COEF. BLOCK   .5189300
    COEF. PRISMATICO   .5714910
    COEF. DE FLOTACION   .7048210
    COEF. DE SECCION   .9081670

******************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.421434981	9.44400832	16.6855415	22.2360198
2	16.6141857	35.3435219	46.0156551	51.0511724
3	45.9637835	68.8028006	74.6263798	75.7677415
4	79.1359148	90.6397134	91.4854685	91.5236229
5	84.0387485	98.0809993	99.8433413	97.9927025
6	65.5848453	88.5062922	96.8609325	97.3617346
7	39.441088	67.7404422	82.7477897	89.7670872
8	0	34.2848281	59.3193585	72.2446775
9	0	0	7.22167551	43.0021400
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.14329961E-07	3.19912595	7.17531614
1	26.2424638	28.8111947	31.328528	39.8621595
2	53.8026655	54.5734337	56.1923159	60.3619150
3	75.919151	75.9300753	77.198282	81.0005100
4	91.5244717	91.5244779	92.3694841	91.9045024
5	99.9998604	100	100.000002	100.009901
6	99.9215649	100	100.000001	100.009901
7	92.4924606	93.2711682	93.6404091	91.6619610
8	77.9131263	79.8135046	80.8522128	83.9050852
9	56.13643	59.6270092	61.2536382	67.9717701
10	7.64667617	32.711682	41.9802315	46.6196166

******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	15.9630949	6.63447316	4.42298213	2.21149103	0
EST	6	7	8	9	10
	-2.20787881	2.60718962	19.5559444	47.8630683	80.7123891

******************************CARACTERISTICAS PRINCIPALES************************

L/V3^(1/3)	3.81172852
L/V1^(1/3)	4.66905744
L/B	3.89854969
B/H	1.89672507
B/D	1.66402104
ANGULO MEDIO DE ENTRADA	24.8929469
ASTILLA MUERTA	8.19916628
ANGULO DE LA RODA	60.885948
% LCB/L	-1.74806775
% LCF/L	-4.39420034
KB/V3^(1/3)	.312161265
KM/V3^(1/3)	.468225952
COEF. BLOCK	.518930842
COEF. PRISMATICO	.594194881
COEF. DE FLOTACION	.731266063
COEF. DE SECCION	.873334419

*********************************TABLA DE PUNTOS(%)***************************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	.488900603	10.8239181	19.1189135	25.4889602
2	15.7870732	35.0305005	47.30544	54.4648527
3	38.7849991	65.1066371	75.3971079	78.74499
4	65.8368525	87.7748395	92.40232	93.1265586
5	72.8161103	93.9568055	98.9794373	99.8843681
6	60.2171885	84.5828372	94.983586	98.7402841
7	98.667454	67.0542316	82.557374	90.0687065
8	0	36.1869072	61.9789546	74.9006915
9	0	0	8.5661445	48.3848948
10	0	0	0	0

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	9.11430261E 08	1.01088969	8.76902273
1	30.0663514	33.0069218	35.8926979	40.16988
2	58.1174898	59.6107062	61.407993	65.5343031
3	79.575279	79.2080292	80.8771877	84.3214023
4	93.1998572	93.2035688	93.9003931	95.9903049
5	99.993138	100	100.00036	100.000134
6	99.799925	100	100.000134	100.000134
7	93.113577	94.0345853	94.4622418	95.2062694
8	80.3604323	82.1037559	83.0137146	85.6185403
9	61.2902028	64.2075117	65.4073043	71.2369464
10	10.0921199	40.3458529	42.078135	52.061488

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	15.9541453	6.64474325	4.42982885	2.21491439	0

EST	6	7	8	9	10
	-2.20805261	2.60345353	19.541391	47.84126	80.712389

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***********************CARACTERISTICAS  PRINCIPALES*******************
        L/V3^(1/3)                                        3.811 2980
        L/V1^(1/3)                                        4.669670
        L/B                                               3.898
        B/H                                               1.899
        B/D                                               1.66
        ANGULO MEDIO DE ENTRADA                          28.71
        ASTILLA MUERTA                                    14.45
        ANGULO DE LA RODA                                60.86
        % LCB/L                                            1.731
        % LCF/L                                            1.16
        KB/V3^(1/3)                                        .316805551
        KM/V3^(1/3)                                        .183032885
        COEF. BLOCK                                        .518990842
        COEF. PRISMATICO                                   .616935726
        COEF. DE FLOTACION                                 .75779341
        COEF. DE SECCION                                   .841074306
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*****************************TABLA DE PUNTOS(%)************************
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ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.560287777	12.2581518	21.6470857	33.857305
2	15.3377685	35.089221	48.71759	57.4174619
3	34.1334862	61.653337	75.2436921	83.0032028
4	55.8662009	82.8436771	91.9233259	94.370529
5	63.751641	88.7674961	97.1946217	99.4069299
6	55.4666352	80.6278306	92.7818061	97.069353
7	37.5212068	65.8879061	81.9745245	90.1267025
8	0	37.3907928	63.8581061	77.0213443
9	0	0	9.74690814	53.02270
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4.14970151E-08	4.0834712	10.1206279
1	34.0385133	37.3693196	40.6336683	45.4753814
2	62.4561767	64.8431836	67.0726509	70.9070031
3	83.1237345	83.6323877	84.7576913	87.2234512
4	94.888293	94.9477229	95.496394	97.120404
5	99.9447172	100	100.005718	100.00264
6	99.5888759	100	100.00266	100.00264
7	93.6207919	94.7573347	95.2556177	95.73107
8	82.5328857	84.272004	85.1474612	87.1267063
9	65.9261344	68.544008	69.524484	74.3211529
10	12.4788587	47.5733467	55.5678198	57.316815

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*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)*********
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EST	1	2	3	4	5
	15.9452709	6.65502929	4.43668614	2.21834305	0

EST	6	7	8	9	10
	-2.20822669	2.59971164	19.5268152	47.8194179	80.7123099

**********************CARACTERISTICAS   PRINCIPALES********************

L/V3^(1/3)	3.81172852
L/V1^(1/3)	4.66905744
L/B	3.89854969
B/H	1.90260183
B/D	1.66402104
ANGULO MEDIO DE ENTRADA	32.3613791
ASTILLA MUERTA	12.6438499
ANGULO DE LA RODA	60.885948
% LCB/L	-1.64779445
% LCF/L	-3.96500949
KB/V3^(1/3)	.320781517
KM/V3^(1/3)	.498487446
COEF. BLOCK	.518930842
COEF. PRISMATICO	.639776569
COEF. DE FLOTACION	.7841408?
COEF. DE SECCION	.811112608

*********************TABLA DE PUNTOS(%)*********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.634664391	13.7251246	24.2318981	32.3006666
2	15.1281293	35.419131	50.2505633	60.4322877
3	30.9358634	58.7806065	71.7287602	82.90734
4	48.6356517	77.6259751	90.3312953	95.0666604
5	56.5784724	83.4309196	94.7058833	98.6992618
6	51.2667113	76.7560362	90.3359446	96.7643348
7	36.1329616	64.3649481	81.0640673	89.9635764
8	0	37.9848744	65.0787345	78.7126965
9	0	0	10.7163922	56.9706751
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.09640293E 07	5.8055671	12.104441
1	38.0989164	41.8264762	45.4797675	50.89043
2	66.7941252	70.3917724	72.950182	76.4072233
3	86.4643263	87.6430293	89.8254762	91.310307
4	96.4550004	96.7305900	97.1597043	98.2871888
5	99.7987816	100	100.031466	100.017371
6	99.27418	100	100.017371	100.017371
7	91.0230763	93.4550942	96.0118708	96.2663612
8	84.5049338	86.3676925	87.2697845	89.7643413
9	70.1945655	72.7353649	73.6312618	77.5113114
10	14.7826848	54.5509116	63.6379654	62.5072717

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	15.9364717	6.66533117	4.44355411	2.22177706	0

EST	6	7	8	9	10
	-2.20840097	2.59596405	19.5122168	47.7975422	80.7123892

****************************CARACTERISTICAS PRINCIPALES********************

```
    L/V3^(1/3)                              3.81172852
    L/V1^(1/3)                              4.66905734
    L/B                                     3.89854942
    B/H                                     1.90554704
    B/D                                     1.66902103
    ANGULO MEDIO DE ENTRADA                35.7428165
    ASTILLA MUERTA                         14.7493201
    ANGULO DE LA RODA                      60.895948
    % LCB/L                                 1.51705756
    % LCF/L                                -3.75217982
    KB/V3^(1/3)                             .324239646
    KM/V3^(1/3)                            .514696706
    COEF. BLOCK                            .518930842
    COEF. PRISMATICO                       .662567413
    COEF. DE FLOTACION                     .810578199
    COEF. DE SECCION                       .78321214
```

******************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.710800613	15.1978977	26.8257772	35.7556248
2	15.0739512	35.9344339	51.8651753	63.3911183
3	28.6235013	56.4501284	74.119606	81.3695524
4	43.2436058	72.7855216	88.1393361	95.1511139
5	50.8305731	78.3528472	91.8200582	97.5436022
6	47.5435203	73.0317938	87.7918162	95.4612458
7	34.6059706	62.5911666	79.8878969	89.6028678
8	0	38.0831318	65.7638801	80.0663364
9	0	0	11.4644267	60.33652
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	6.76231734	13.7883762
1	42.1727536	46.2982659	50.3416932	56.339103
2	71.0798682	75.5579192	78.702382	81.9325878
3	89.5637672	91.6684393	93.0257338	94.878217
4	97.792938	98.5193064	98.9005797	99.4853777
5	99.5167277	100	100.100125	100.063456
6	98.8515526	100	100.063456	100.063456
7	94.3325879	96.1507958	96.7302966	96.8375478
8	86.3448798	88.4523873	89.4119895	90.3857219
9	74.2472477	76.9047746	77.8089456	80.7079875
10	17.0303761	61.5079577	67.4797159	67.8043415

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************

EST	1	2	3	4	5
	15.9277476	6.67564898	4.45043268	2.22521634	0
EST	6	7	8	9	10
	-2.20857556	2.59221055	19.4975958	47.7756326	80.7123893

**************************CARACTERISTICAS PRINCIPALES*******************

L/V3^(1/3)	3.72732614
L/V1^(1/3)	4.5656714
L/B	3.87401008
B/H	1.90066323
B/D	1.66816206
ANGULO MEDIO DE ENTRADA	23.6556111
ASTILLA MUERTA	3.79951915
ANGULO DE LA RODA	58.9944537
% LCB/L	-1.94546366
% LCF/L	-4.45794408
KB/V3^(1/3)	.296316473
KM/V3^(1/3)	.438651659
COEF. BLOCK	.550010033
COEF. PRISMATICO	.586198706
COEF. DE FLOTACION	.721990499
COEF. DE SECCION	.938265519

***************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	10.376909	19.1499684	25.3234939
2	18.1503849	38.2042836	49.3318068	54.8263013
3	50.8240101	72.0799051	77.5503334	78.2846805
4	87.7451399	92.506297	92.6040828	92.6058819
5	94.0341103	99.7696989	99.9950953	99.9999552
6	75.8820268	94.4103012	99.0003984	99.8806913
7	48.5866634	76.8790411	88.5709462	92.5411121
8	0	43.8704228	68.838897	78.0917994
9	0	0	18.5506401	52.707581
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3.16525947E-07	3.04452493	8.07724378
1	29.3016415	33.5147132	33.5052298	36.5143704
2	57.1064872	57.8176565	58.9329394	61.6700637
3	78.3594301	78.3632424	79.2228427	81.801063
4	92.6058855	92.6058855	93.2442453	95.1593245
5	99.9999990	100	100	100
6	99.9923629	100	100	100
7	93.590092	93.7720906	93.8352483	95.0178345
8	80.7862028	81.3362959	81.5218613	85.0535034
9	61.5062024	62.6325912	62.720476	70.1070069
10	9.94483763	37.7209061	45.8233053	50.1783448

***********************ALTOS DEL ALERTZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	18.4095939	6.61662721	4.4110840	2.2055424	0
EST	6	7	8	9	10
	-2.20757689	2.61368169	19.5812333	47.900964	80.7123897

********************CARACTERISTICAS PRINCIPALES********************

```
L/V3^(1/3)                          3,7273461?
L/V1^(1/3)                          4,5656?11
L/B                                 3,87101600
B/H -                               1,9036453?
B/D                                 1,6601320?
ANGULO MEDIO DE ENTRADA             27,070?05?
ASTILLA MUERTA                      5,7844?26?
ANGULO DE LA RODA                   58,99?25??
% LCB/L                            -1,98015802
% LCF/L                            -4,2807?202
KB/V3^(1/3)                         ,3012??95?
KM/V3^(1/3)                         ,45354501?
COEF. BLOCK                         ,55001000?
COEF. PRISMATICO                    ,60523?23?
COEF. DE FLOTACION                  ,745205174
COEF. DE SECCION                    ,907252171
```

********************TABLA DE PUNTOS(%)********************

ESTACION	LW 1	LW 2	LW 3	LW ?
0	0	0	0	0
1	0	11,6288811	21,451622	29,363?63
2	17,3746984	37,9694797	50,616808	5?,66?2053
3	43,5197198	69,9349585	78,8144659	81,2280129
4	75,946396	92,0439819	93,9592727	94,111609?
5	84,2091075	98,1248543	99,8491478	99,99302?8
6	70,1161628	91,3681973	98,0135293	99,6718?9?
7	47,4223338	76,1668608	88,4657552	92,92054?5
8	0	45,7554467	71,1311752	80,29?45?
9	0	0	12,2877753	57,6?4?3??
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,584246?2E 07	4,8828253	9,5380824
1	32,8183386	35,2964372	37,5262332	40,8732222
2	61,0652306	62,3557248	63,6090201	66,0760332
3	81,7089904	81,7667936	82,4857511	84,6215579
4	94,1184553	94,1185748	94,6089598	96,080109?
5	99,9998711	100	100,000002	100,00000?
6	99,9687789	100	100,000001	100,08000?
7	94,1814445	94,4205883	94,5090039	95,46?4?6?
8	82,7855935	83,2617649	83,4380659	84,?5?3?1?
9	65,6988068	66,5235299	66,7001259	72,912409
10	12,3504472	44,2058831	51,7363532	54,854?814

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)********************

EST	1	2	3	4	5
	18,397459	6,62686967	4,41791311	2,20895656	0
EST	6	7	8	9	10
	-2,20775018	2,60995562	19,566719	47,8792142	80,7123891

*****************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	3,72732614
L/V1^(1/3)	4,5656714
L/B	3,87101009
B/H	1,9065522
B/D	1,66816206
ANGULO MEDIO DE ENTRADA	30,3884699
ASTILLA MUERTA	7,71050801
ANGULO DE LA RODA	58,9944537
% LCB/L	-1,97256361
% LCF/L	-4,09758572
KB/V3^(1/3)	,305467758
KM/V3^(1/3)	,464605674
COEF. BLOCK	,550010033
COEF. PRISMATICO	,626275732
COEF. DE FLOTACION	,768479849
COEF. DE SECCION	,878223448

**************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	12,9154049	23,8151743	31,4856211
2	16,9147849	38,0200288	51,9669684	60,4528698
3	38,5690151	66,8507874	79,1427501	83,6878041
4	65,2677502	88,9718556	94,5529054	95,5464421
5	74,8176067	94,8747974	99,2202574	99,9222278
6	64,9162243	88,0491645	96,652171	99,3013065
7	45,933402	74,9770570	88,0757509	93,1640995
8	0	46,9569624	72,8428903	82,0890964
9	0	0	13,8451192	62,0791062
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3,17121620E-07	5,78437173	11,0196193
1	36,4286676	39,1787415	11,6533955	45,3924305
2	65,0157351	67,0114899	68,4704668	70,5094360
3	85,003596	85,2600624	85,8619795	87,51808
4	95,6641996	95,6714966	96,0104352	97,0258063
5	99,9960715	100	100,000172	100,000061
6	99,9111293	100	100,000061	100,000061
7	94,7173831	95,0439328	95,1229011	95,9428723
8	84,6563754	85,1317985	85,3055421	87,8204956
9	69,6012376	70,2635969	70,3852343	75,6569307
10	14,7222752	50,4393202	57,3394242	59,4281775

***************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************

EST	1	2	3	4	5
	18,3854049	6,63712799	4,42175199	2,212376	0
EST	6	7	8	9	10
	-2,2079238	2,60622384	19,5521824	47,0574309	80,7123891

**********************CARACTERISTICAS PRINCIPALES**********************

```
L/V3^(1/3)                           3,7273261
L/V1^(1/3)                           4,585673?
L/B                                  3,8710100?
B/H                                  1,9095035?
B/D                                  1,6681620?
ANGULO MEDIO DE ENTRADA             33,527?51
ASTILLA MUERTA                       9,5762?75?
ANGULO DE LA RODA                   58,9947507
% LCB/L                             -1,9115933?
% LCF/L                             -3,9017143?
KB/V3^(1/3)                          ,3091600?1
KM/V3^(1/3)                          ,4780265?9
COEF. BLOCK                          ,5500100??
COEF. PRISMATICO                     ,6463142?5
COEF. DE FLOTACION                   ,7217245?4
COEF. DE SECCION                     ,850991756
```

**********************TABLA DE PUNTOS(%)**********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	19,220075	26,2103328	34,6103008?
2	16,6642442	30,2856083	53,386556	63,2036494?
3	35,0696133	64,1106439	78,9923315	85,6788??4
4	57,0675078	84,73724	94,1005018	96,6664702?
5	66,8806963	90,7523606	97,9554493	99,6783076
6	60,2665584	84,6215303	95,0036452	98,74757
7	44,2380163	73,490836	87,4837491	93,2720542?
8	0	47,5545217	74,0817261	83,7102455
9	0	0	15,150266	65,940272?
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	6,76607003E-08	6,72940501	12,5242602
1	40,0862664	43,1112615	45,8344001	49,9182249?
2	68,9354072	71,734114	73,4475579	75,183264
3	88,1407556	88,8005855	89,3380133	90,4539991
4	97,181893	97,2447047	97,4355831	97,9050511
5	99,9711933	100.	100,002415	100,001042
6	99,801512	100	100,001042	100,001042
7	95,2019774	95,6545984	95,8381775	95,400018?
8	86,443706	86,9637952	87,1563498	87,1279572?
9	73,3334166	73,9275902	74,0272331	70,3740727
10	17,0587574	56,5459637	62,7390971	63,9907601

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**********************

EST	1	2	3	4	5
	18,3734294	6,64740218	4,43160145	2,21580073	0

EST	6	7	8	9	10
	-2,2080976	2,60248625	19,5376233	47,8356141	80,7123895?

************************CARACTERISTICAS PRINCIPALES*****************************

```
L/V3^(1/3)                                          3,7273261?
L/V4^(1/3)                                          4,5656714
L/B                                                 3,8741008
B/H                                                 1,91245941
B/D                                                 1,66816206
ANGULO MEDIO DE ENTRADA                             36,4474802
ASTILLA MUERTA                                      11,3827296
ANGULO DE LA RODA                                   58,9944537
% LCB/L                                             -1,8199981
% LCF/L                                             -3,71976604
KB/V3^(1/3)                                         ,312913067
KM/V3^(1/3)                                         ,49198335
COEF, BLOCK                                         ,550010033
COEF, PRISMATICO                                    ,666352750
COEF, DE FLOTACION                                  ,814969199
COEF, DE SECCION                                    ,825403702
```

**********************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	15,5231778	28,6007592	37,8042311
2	16,5538606	38,7015132	54,8503995	65,9040451
3	32,4897549	63,7865831	78,6170176	87,2031005
4	50,8255788	80,3305224	92,8432053	97,3273395
5	60,3346722	86,3629425	96,1460031	99,1832941
6	56,1190114	81,1983527	98,1172795	98,0098488
7	42,4281189	71,7803249	86,6556647	93,247656
8	0	47,6500652	71,7076609	85,1549325
9	0	0	16,173196	69,8147299
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5,67756?E 00	,7?051359	14,0?11744
1	43,7355566	47,0052296	50,8056981	54,4993492
2	72,7854679	76,4428604	78,4566295	79,7500806
3	91,0691589	92,3321513	92,8810527	93,3870052
4	98,5806359	98,8143894	98,8724191	98,9466598
5	99,8944333	100	100,013133	100,006781
6	99,6256887	100	100,006781	100,006781
7	95,6406692	96,2675285	96,5165898	96,8723179
8	88,1914531	88,8028854	89,034922	90,6033922
9	77,0087511	77,6051207	77,7025183	81,2000034
10	19,393668	62,6752017	68,0399535	68,6621510

********************ALTOS DEL ALFREZ SOBRE LA LINEA BASE(%H)********************

EST	1	2	3	4	5
	10,3615334	6,65769228	4,43846152	2,21923076	0
EST	6	7	8	9	10
	-2,20827174	2,5987429	19,5230416	47,8137633	80,7123893

**************************CARACTERISTICAS   PRINCIPALES**********************

```
  1/V3^(1/3)                                          3,722
  1/V1^(1/3)                                          4,565
  1/B                                                 3,874
  B/H                                                 1,915
  B/D                                                 1,668
  ANGULO MEDIO DE ENTRADA                            39,33
  ASTILLA MUERTA                                     13,133
  ANGULO DE LA RODA                                  58,994
  % LCP/L                                            -1,71
  % LCF/L                                            -3,571
  KB/V3^(1/3)                                         ,3153
  KM/V3^(1/3)                                         ,5066
  COEF. BLOCK                                         ,5500
  COEF. PRISMATICO                                    ,6863
  COEF. DE FLOTACION                                  ,8382
  COEF. DE SECCION                                    ,8013
```

*********************TABLA DE PUNTOS(%)*********************

ESTACION	LN 1	LN 2	LN 3	LN 4
0	0	0	0	0
1	0	16,8015238	30,9437733	
2	16,5356765	39,2102044	56,3190729	
3	30,5171593	59,8309359	78,157707	
4	45,9757619	76,1660757	91,1026691	
5	54,9192952	82,0302726	93,9624062	
6	52,416551	77,0508032	91,0675237	
7	40,5249813	69,9123513	85,6491612	
8	0	47,9571338	75,4070052	
9	0	0	16,93023	
10	0	0	0	

ESTACION	LN 5	LN 6	LN 7	LN 8
0	0	3,74038244E-08	8,69582771	15,
1	47,3113008	50,8801713	54,0922055	
2	76,511645	81,0565657	83,4009746	
3	93,7609827	95,7924242	96,4917142	
4	99,7884173	100,352189	100,33946	
5	99,7375508	100	100,044682	100,
6	99,3752163	100	100,025664	100,
7	96,0413703	96,9002621	97,2050378	
8	89,9455979	90,7007863	90,9937999	
9	80,7406631	81,4015726	81,5123428	84,
10	21,7935131	69,002621	73,376296	

****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)**************

EST	1	2	3	4	5
	18,3497175	6,66799831	4,44533221	2,222661	0

EST	6	7	8	9	10
	-2,208446	12,59499372	19,5084373	47,7918786	88,712

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	3,72732614
L/V1^(1/3)	4,5656714
L/B	3,87401008
B/H	1,91838492
B/D	1,66816206
ANGULO MEDIO DE ENTRADA	41,4868942
ASTILLA MUERTA	14,8349007
ANGULO DE LA RODA	58,9944537
% LCB/L	1,61357035
% LCF/L	3,47603874
KB/V3^(1/3)	,312917476
KM/V3^(1/3)	,522314806
COEF. BLOCK	,550010033
COEF. PRISMATICO	,706429784
COEF. DE FLOTACION	,861458549
COEF. DE SECCION	,778577072

***********************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	18,0202890	33,1200678	43,8608194
2	16,5725885	39,7591444	57,7120804	70,9960678
3	28,9593713	58,1689021	77,6551702	89,6109508
4	42,1103340	72,3655063	87,1127184	97,3500006
5	50,3866735	77,9307704	91,7593931	97,4206311
6	49,092036	71,6108265	88,9109467	96,0457694
7	38,731499	67,9468118	84,4823344	92,8426359
8	0	46,7923832	75,6663942	82,7043003
9	0	0	17,4772734	75,6258204
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	0	2,6926485	16,8801341
1	50,7381639	54,5619919	58,8012985	63,2191919
2	80,0442135	85,4779904	89,1710525	88,55519
3	96,1894777	99,1004998	99,0227378	99,0485267
4	100,767589	101,045007	101,001139	100,038506
5	99,485406	100	100,144803	100,069704
6	99,0471570	100	100,162685	100,069704
7	96,4152806	97,5790525	97,829204	97,962412
8	91,7567273	92,7391576	93,0855936	93,7178278
9	84,6498722	85,4383152	85,5783924	87,4259514
10	24,3552385	75,7305753	76,256806	78,996703

*****************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***************

EST	1	2	3	4	5
	18,3379802	6,6783203	4,15221353	2,22610677	0
EST	6	7	8	9	10
	-2,20862082	2,59123874	19,4938104	47,76996	80,7123889

**************************CARACTERISTICAS PRINCIPALES************************

L/V3^(1/3)	3.72732614
L/V1^(1/3)	4.5656714
L/B	3.87401008
B/H	1.92135456
B/D	1.66816206
ANGULO MEDIO DE ENTRADA	43.5542
ASTILLA MUERTA	16.4924106
ANGULO DE LA RODA	58.9944537
% LCB/L	1.53631734
% LCF/L	3.45797965
KB/V3^(1/3)	.320287953
KM/V3^(1/3)	.538521907
COEF. BLOCK	.559010033
COEF. PRISMATICO	.726468297
COEF. DE FLOTACION	.884703224
COEF. DE SECCION	.757101219

*****************************TABLA DE CUADERNAS(%Z)*************************

ESTACION	LH 1	LH 2	LH 3	LH 4
0	0	0	0	0
1	0	19.1728449	35.283408	46.6221736
2	16.6334812	40.2936802	57.0600103	73.2681602
3	27.6925526	56.7283024	77.1198709	90.4642366
4	38.9543862	68.9345796	87.0139432	96.8741974
5	46.5407738	74.0939923	89.0509595	96.2454346
6	46.1064899	71.52347	86.6211015	94.0641694
7	36.9334736	65.9335086	80.2092185	92.4920131
8	0	46.063464	75.7716083	88.9193722
9	0	0	47.2005455	78.66303
10	0	0	0	0

ESTACION	LH 5	LH 6	LH 7	LH 8
0	0	1.400030214E-07	49.6433626	58.1743067
1	53.9302699	57.9969429	61.6573119	67.3885515
2	83.2984786	89.5963316	92.649998	92.5801871
3	98.3197174	102.192249	103.252457	101.662511
4	101.502652	103.190272	103.242309	101.74882
5	99.1350652	100	100.216425	100.152413
6	98.6426546	100	100.152002	100.152413
7	96.776923	98.3009054	98.6318117	98.648963
8	93.6823114	94.9269956	95.0482521	95.6421374
9	88.8662004	89.0509912	90.0161093	91.1310614
10	27.2103803	83.0898504	85.1137850	85.118164

**********************ALTOS DEL ALEERTZ SOBRE LA LINEA BASE(ZD)*************

EST	1	2	3	4	5
	18.3263214	6.68865826	4.45910551	2.22955275	0
EST	6	7	8	9	10
	-2.20879578	2.58747798	19.4793609	42.7480028	80.7123891

************************CARACTERISTICAS PRINCIPALES********************

```
L/V3^(1/3)                              4,64169555
L/V1^(1/3)                              5,68569957
L/B                                     3,82673719
B/H                                     2,73592654
B/D                                     2,3816035
ANGULO MEDIO DE ENTRADA                18,2842581
ASTILLA MUERTA                         14,5271895
ANGULO DE LA RODA                      67,7808085
% LCB/L                                 1,16369852
% LCF/L                                 4,64205277
KB/V3^(1/3)                              ,285070343
KM/V3^(1/3)                              ,61224575
COEF, BLOCK                              ,400009995
COEF, PRISMATICO                         ,554
COEF, DE FLOTACION                       ,68464
COEF, DE SECCION                         ,722039702
```

*****************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,21371042	6,12055408	11,0273325	15,9340325
2	7,60182923	22,4020621	33,7683119	42,0473208
3	20,529875	44,2028368	58,981622	67,3890914
4	34,4371298	61,8983593	77,6074275	85,6515253
5	39,530762	66,2712317	83,2224431	93,0359459
6	33,4620093	56,4762135	74,0197037	86,6847804
7	19,6125435	39,1507043	56,3413098	71,089894
8	1,05566837	17,6996421	33,81895	49,3293226
9	0	0	7,27855682	22,767785
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	5,56725544E 08	1,63762659	4,34015245
1	20,8406341	25,7471034	30,6536396	35,5604784
2	47,6166088	50,8965241	54,836289	62,0754964
3	71,5433123	73,1723932	75,948561	82,6026821
4	89,1436204	90,2988114	91,9480758	95,8595114
5	97,9965709	100	100,66767	100,56346
6	95,110446	100	100,563321	100,56346
7	83,2541003	92,6528242	94,7482479	94,759630
8	64,1082806	77,9584721	83,0022284	83,1519859
9	38,8934111	55,9169448	64,9228842	65,7405119
10	4,63132893	26,5282414	38,4566132	42,5252133

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
12,5441879	9,40814093	6,27209395	3,13604698	0

EST 6	7	8	9	10
-2,2548144	1,59817519	15,6254916	41,9732559	80,7123888

************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.64169555
L/V1^(1/3)	5.68569957
L/B	3.82673719
B/H	2.74016172
B/D	2.3816035
ANGULO MEDIO DE ENTRADA	16.0367828
ASTILLA MUERTA	13.286029
ANGULO DE LA RODA	67.7808085
% LCB/L	-1.08102649
% LCF/L	-4.67359372
KB/V3^(1/3)	.282278968
KM/V3^(1/3)	.599467712
COEF. BLOCK	.400009995
COEF. PRISMATICO	.541027775
COEF. DE FLOTACION	.669592219
COEF. DE SECCION	.739352051

***************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.10536918	5.59535538	10.0852819	14.5751367
2	7.83156009	22.6752903	33.5533287	41.0443296
3	22.1537606	46.2403785	60.0333988	67.10515
4	37.4468118	65.2036246	79.6432594	86.2449617
5	42.3538918	69.55029	85.7766396	94.5140426
6	34.9087652	58.3468691	75.7497029	87.9234785
7	19.7522429	39.3357974	56.4767241	71.082328
8	1.03368025	17.071577	32.7223141	47.9199167
9	0	0	6.6071473	20.8749115
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2.19910956E-08	1.41393131	3.79552622
1	19.0649014	23.554545	28.0442499	32.534235
2	45.743098	48.2654511	51.7257039	58.8140624
3	70.1798835	71.1990905	73.7229565	80.3787925
4	88.7357393	89.4210181	90.9416177	94.9721961
5	98.5510081	100	100.431578	100.338046
6	95.7103268	100	100.338045	100.338046
7	83.0339349	92.1691159	94.2002488	94.2115644
8	62.5675731	76.5073477	81.7827986	81.9585982
9	36.1835517	53.0116953	62.5660355	63.5791487
10	3.67690052	21.691159	33.1788356	39.0732162

********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
12.5636062	9.42270461	6.28180308	3.14090154	0
EST 6	7	8	9	10
-2.25506083	1.59287714	15.604854	41.9423304	80.712389

*****************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4.64169555
L/V1^(1/3)	5.68569957
L/B	3.82673719
B/H	2.71440346
B/D	2.3816035
ANGULO MEDIO DE ENTRADA	13.826439
ASTILLA MUERTA	12.0456806
ANGULO DE LA RODA	67.7808085
% LCB/L	.956643095
% LCF/L	-1.67484194
KB/V3^(1/3)	.279299659
KM/V3^(1/3)	.587188986
COEF. BLOCK	.400009995
COEF. PRISMATICO	.528055549
COEF. DE FLOTACION	.654544138
COEF. DE SECCION	.757514992

********************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.00187065	5.09082895	9.17973193	13.2685684
2	8.14424949	23.0797668	33.4179467	40.066966
3	24.1879046	48.5741372	61.0686615	66.678277
4	41.0639229	68.795215	81.5757222	86.633191
5	45.5745276	73.0793148	88.3474839	95.8902363
6	36.4153047	60.2528191	77.4690931	89.1196168
7	19.7950115	39.3604607	56.4287333	70.9145337
8	.999852571	16.2975747	31.3939603	46.2517642
9	0	0	5.87898439	18.82829
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	-5.89945793E 08	1.20319386	3.27166393
1	17.3573214	21.1459622	25.5316597	29.6236136
2	43.8974872	45.7351547	48.7758802	55.6920125
3	68.7477601	69.301366	71.6490176	78.2756737
4	88.229644	88.5783849	90.0321869	94.1734079
5	99.0223458	100	100.255074	100.181028
6	96.2702718	100	100.184028	100.184028
7	82.709113	91.6644137	93.7077848	93.72116
8	60.815556	71.9932112	80.5877088	80.7954376
9	33.2668598	49.9864823	60.1721806	61.4068474
10	2.71593188	16.6441373	27.1458787	35.5553938

**************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	12.5830545	9.43729085	6.29152723	3.14576362	0
EST	6	7	8	9	10
	-2.25530765	1.5875709	15.5841844	41.9113569	80.7123889

****************************CARACTERISTICAS   PRINCIPALES************************

L/V3^(1/3)	4,51919777
L/V1^(1/3)	5,53564974
L/B	3,79798391
B/H	2,74840687
B/D	2,38868432
ANGULO MEDIO DE ENTRADA	18,4851316
ASTILLA MUERTA	11,1961865
ANGULO DE LA RODA	65,7941164
% LCB/L	-1,22683687
% LCF/L	-4,64060667
KB/V3^(1/3)	,272765161
KM/V3^(1/3)	,573774015
COEF, BLOCK	,428885723
COEF, PRISMATICO	,554409195
COEF, DE FLOTACION	,685114666
COEF, DE SECCION	,773590565

*********************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,39512676	6,88880606	12,1232389	17,0621635
2	9,08287528	25,6412027	37,1490712	44,5862575
3	25,3484301	50,9975519	64,2920145	70,34369
4	42,8900798	71,1306324	83,7552902	88,5730444
5	48,0412391	75,629292	90,0839419	96,749022
6	39,743591	64,3124526	80,9813388	91,4479247
7	23,3062097	45,0128804	62,5902031	76,2329474
8	1,23517342	20,8050127	38,4311991	53,9753206
9	0	0	8,56212392	25,6887481
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,07081391E 07	1,76317094	4,64864835
1	21,6539494	25,8175773	30,1103647	35,17052
2	48,8967016	50,9810928	54,2201003	61,41980
3	72,6146662	73,2358196	75,5345408	81,954755
4	90,0272676	90,3270309	91,6235103	95,333136
5	99,2903311	100	100,166599	100,11303
6	97,3005501	100	100,113038	100,11303
7	86,1675001	92,6677513	94,3161351	94,345606
8	67,2537265	78,0032627	82,4876908	82,810742
9	41,5977588	56,0065254	64,1862188	65,508447
10	4,92874059	26,6775121	38,0031483	42,438720

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
12,5454892	9,38004436	6,25336289	3,12668146	0
EST 6	7	8	9	10
-2,254338971	,60839622	15,6653061	42,0329185	80,71238

**************************CARACTERISTICAS PRINCIPALES**********************

L/V3^(1/3)	4,51919777
L/V1^(1/3)	5,53564974
L/B	3,79798391
B/H	2,75266138
B/D	2,38868432
ANGULO MEDIO DE ENTRADA	20,567873
ASTILLA MUERTA	12,0890958
ANGULO DE LA RODA	65,7941164
% LCB/L	-1,29034869
% LCF/L	-4,58789403
KB/V3^(1/3)	,274285887
KM/V3^(1/3)	,504271822
COEF, BLOCK	,428885723
COEF, PRISMATICO	,566250956
COEF, DE FLOTACION	,698851109
COEF, DE SECCION	,757412801

**********************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,50103353	7,43716272	13,0931389	18,4297783
2	8,86539793	25,4911976	37,54724	45,7451295
3	23,7271322	49,251514	63,6877261	70,9804559
4	39,8682384	68,3077462	82,4020367	88,4836759
5	45,3534551	72,8442992	88,182229	95,8054075
6	38,4625296	62,774939	79,6757071	90,6011722
7	23,2805836	45,00997	62,6600846	76,4101355
8	1,31019551	21,5640599	39,6429121	55,4148701
9	0	0	9,35953903	27,672870
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2,03769931E 08	1,9901232	5,19443987
1	23,391288	27,8903216	32,5284625	37,9959048
2	50,8069362	53,4681459	57,061409	64,4205283
3	74,093622	75,1011095	77,5338023	83,944181
4	90,6199171	91,1560487	92,4731747	96,042734
5	98,9947072	100	100,264728	100,192058
6	96,9355253	100	100,192058	100,192058
7	86,4692206	93,0915458	94,6942445	94,716990
8	68,7069047	79,2746371	83,4954538	83,7668709
9	44,1832464	58,5492741	66,2321134	67,3416836
10	5,87049471	30,9154568	42,2573872	45,4414339

************************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	12,5630565	9,39456459	6,26304302	3,13152153	0
EST	6	7	8	9	10
	-2,25458466	1,603114	15,6417301	42,0020852	80,7123894

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.40549624
L/V1^(1/3)	5.39637462
L/B	3.77079015
B/H	2.76044823
B/D	2.39545017
ANGULO MEDIO DE ENTRADA	19.0025403
ASTILLA MUERTA	8.32219444
ANGULO DE LA RODA	63.8074243
% LCB/L	1.34148853
% LCF/L	4.63227576
KB/V3^(1/3)	.2611215
KM/V3^(1/3)	.540404052
COEF. BLOCK	.458350608
COEF. PRISMATICO	.556637181
COEF. DE FLOTACION	.68769913
COEF. DE SECCION	.823427941

*****************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.32030494	7.6040382	13.2887643	18.3286887
2	10.7295943	28.9972937	40.427214	46.9417677
3	31.3727331	58.065265	68.8371493	72.47643
4	53.9108661	80.2220387	88.2003559	90.1197977
5	58.5894319	85.0384308	95.5171172	98.9805793
6	47.1814586	72.6156649	87.4816759	95.2922649
7	27.7823352	51.642122	69.1224792	81.1559606
8	1.4645483	24.6278455	43.7748965	59.0075817
9	0	0	10.2544191	29.3062363
10			0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2.07532375E 08	1.92136894	4.9142379
1	22.6627121	26.2026613	29.8703563	34.66952
2	50.1715804	51.1431935	54.0943058	60.736581
3	73.1218916	73.5823953	75.5659103	81.435633
4	90.4484429	90.4810646	91.6349863	95.086901
5	99.8564071	100	100.02016	100.01060
6	98.7927258	100	100.010608	100.01060
7	88.7008133	92.7487036	94.1572262	94.305458
8	70.4473792	78.2461108	82.1275597	82.895159
9	44.7808569	56.4922212	63.6120137	65.779710
10	5.40820379	27.4870361	38.2346478	42.959111

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)**********

			3	4	5
EST 1		2		3.11789485	0
	13.345843	9.35368451	6.23578966		10
EST 6		7	8	9	80.71238
	-2.2538929	71.61798546	15.7026596	42.088893	

**************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4,40549624
L/V1^(1/3)	5,39637462
L/B	3,77079015
B/H	2,76472137
B/D	2,39545017
ANGULO MEDIO DE ENTRADA	23,3016014
ASTILLA MUERTA	10,160665
ANGULO DE LA RODA	63,8074243
% LCB/L	1,43783717
% LCF/L	-1,4966262
KB/V3^(1/3)	,265073965
KM/V3^(1/3)	,562135531
COEF. BLOCK	,458350608
COEF. PRISMATICO	,580931426
COEF. DE FLOTACION	,715880455
COEF. DE SECCION	,788992619

***************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,53388552	8,85970763	15,4872929	21,3630139
2	10,1532152	28,5983948	41,381293	49,614488
3	26,8120468	53,9350077	68,0062871	74,418584
4	45,2662523	74,0199093	86,2952705	90,7297322
5	51,2599169	78,7569969	92,0668512	97,650914
6	43,6986853	68,8606545	84,6608163	93,7049113
7	27,4584328	51,28416	68,9694304	81,336276
8	1,6000506	26,1917607	46,1929083	61,798875
9	0	0	12,07261	33,61334
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2,07532375E 08	2,44983566	6,12675516
1	26,4157212	30,5126239	34,8183864	40,413158
2	54,3661658	56,6511187	59,8685361	66,7727779
3	76,8281109	77,4883615	79,5885078	85,3823112
4	91,9807782	92,2170496	93,3001669	96,4184539
5	99,5454888	100	100,092318	100,057902
6	98,2127603	100	100,057902	100,057902
7	89,2430326	93,5961467	94,877918	94,94726
8	73,2379964	80,7881399	84,1999255	84,7259903
9	50,0811164	61,5768799	67,824045	69,3940781
10	7,52400233	35,9611664	46,4310915	48,9515285

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
13,3573957	9,36816389	6,24544258	3,12272127	0

EST 6	7	8	9	10
-2,254137	921,61271819	15,6821416	42,0581465	80,7123892

**************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4.29963905
L/V1^(1/3)	5.26670817
L/B	3.74501572
B/H	2.77208227
B/D	2.40192596
ANGULO MEDIO DE ENTRADA	20.0636019
ASTILLA MUERTA	5.90856843
ANGULO DE LA RODA	61.8207323
% LCB/L	1.51100275
% LCF/L	-4.60951444
KB/V3^(1/3)	.250326518
KM/V3^(1/3)	.512391575
COEF. BLOCK	.488376471
COEF. PRISMATICO	.561923403
COEF. DE FLOTACION	.693831148
COEF. DE SECCION	.869115734

***************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	.885805045	8.3235977	14.6799703	19.9430322
2	12.4625588	32.3550397	43.6209638	49.3212425
3	38.462011	64.6892617	72.3424724	74.1016907
4	67.3382968	87.3173102	90.4747398	90.826023
5	71.0813134	93.0952843	98.7312372	99.8406482
6	55.8813067	80.9556674	92.9677349	97.9454808
7	33.3129269	59.1343035	75.805192	85.6699404
8	1.77430018	29.5075754	50.1034461	64.5140809
9	0	0	12.632605	34.0211043
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.05594129E 07	2.16412067	5.2515523
1	24.0980069	27.1254256	30.2116137	34.5595905
2	51.7594231	52.5505107	51.7097688	60.4890419
3	74.3865609	74.412883	76.1213484	81.2393424
4	90.8494724	90.8501703	91.8901258	95.0099334
5	99.989234	100	100.000655	100.000255
6	99.6087936	100	100.000255	100.000255
7	90.7938517	92.9384938	93.9219235	94.4282978
8	73.7342991	78.8154814	81.7185398	83.2843837
9	48.7222183	57.6309628	63.2302	66.5685126
10	6.23958037	29.384938	39.4874571	44.2806844

*********************ALTOS DEL ALERTIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	14.8290729	9.32890148	6.21926765	3.10963383	0
EST	6	7	8	9	10
	-2.25347351	1.62700118	15.7377786	42.141519	80.7123889

**************************CARACTERISTICAS   PRINCIPALES*********************

L/V3^(1/3)	4.29963905
L/V1^(1/3)	5.26670817
L/B	3.74501572
B/H	2.77637342
B/D	2.40192596
ANGULO MEDIO DE ENTRADA	23.7542471
ASTILLA MUERTA	7.42221303
ANGULO DE LA RODA	61.8207323
% LCB/L	-1.6004149
% LCF/L	-4.4841131
KB/V3^(1/3)	.254017476
KM/V3^(1/3)	.530409594
COEF. BLOCK	.488376471
COEF. PRISMATICO	.582678158
COEF. DE FLOTACION	.717906663
COEF. DE SECCION	.838158192

****************************TABLA DE PUNTOS(%)****************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.00394826	9.46804491	16.7011539	22.6906524
2	11.7643484	31.8743624	44.5715929	51.8873245
3	32.7002783	60.8867016	72.4948023	76.5125123
4	56.6586434	82.9116299	90.4039255	92.0644571
5	62.6268907	88.0034608	96.8732238	99.3992114
6	52.0656583	77.4819784	90.8211748	96.9842708
7	32.955938	58.7954839	75.7227643	85.9151786
8	1.92464999	31.1209043	52.4261632	67.0231345
9	0	0	14.535503	38.15511
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	6.5050855E 08	2.66619416	6.33614169
1	27.4188358	30.863863	31.3757085	39.3233333
2	55.5634834	57.0366356	59.5271396	65.4585975
3	77.5877839	77.7774767	79.4745913	84.467017
4	92.3228553	92.3455452	93.2790934	96.0736748
5	99.9311218	100	100.007645	100.003653
6	99.3400184	100	100.003653	100.003653
7	91.3250674	93.6547769	94.6186001	94.937544
8	76.1212173	80.9643308	83.5692311	84.8053411
9	53.4128915	61.9286615	66.8725397	69.6070288
10	8.24556782	36.5477693	46.3223478	49.3426124

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST	1	2	3	4	5
	14.8364707	9.34334251	6.22889501	3.1144475	0
EST	6	7	8	9	10
	-2.2537179	31.62174777	15.7173148	42.1108538	80.7123891

*************************CARACTERISTICAS PRINCIPALES***********************

L/V3^(1/3)	4,29963905
L/V1^(1/3)	5,26670817
L/B	3,74501572
B/H	2,78067121
B/D	2,40192596
ANGULO MEDIO DE ENTRADA	27,390086
ASTILLA MUERTA	8,89251089
ANGULO DE LA RODA	61,8207323
% LCB/L	-1,61161066
% LCF/L	-4,31422675
KB/V3^(1/3)	,2571647
KM/V3^(1/3)	,549501192
COEF. BLOCK	,488376471
COEF. PRISMATICO	,603432913
COEF. DE FLOTACION	,741982179
COEF. DE SECCION	,809330185

*******************************TABLA DE PUNTOS(%)******************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,12621158	10,6602085	18,8078993	25,5540614
2	11,349354	31,7386823	45,6492935	54,4424095
3	28,8895868	57,5440755	72,0066267	78,38454
4	48,901173	77,8753084	89,1815531	92,8517118
5	55,8828403	82,8545039	94,402572	98,5887364
6	48,6070593	74,0843731	88,5284384	95,8459855
7	32,317823	58,0718124	75,2905143	85,9143091
8	2,04287846	32,2694561	54,1618291	69,0269795
9	0	0	16,2121158	41,7931376
10	0		0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4,29910767E-08	3,20383817	7,46354134
1	30,8797779	34,7601255	38,7156689	44,28034
2	59,4002519	61,7121507	64,623789	70,6423293
3	80,6859552	81,2841129	83,0327175	87,8396074
4	93,7594322	93,9010502	94,743783	97,194292
5	99,7747699	100	100,036514	100,020495
6	98,9808058	100	100,020495	100,020495
7	91,7266756	94,3316038	95,2671396	95,440359
8	78,1891769	82,9948113	85,3856485	86,2800867
9	57,631955	65,9896226	70,4446626	72,5396783
10	10,198455	43,3160377	52,459813	54,2191337

***********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST	1	2	3	4	5
	14,8439322	9,35780588	6,23853726	3,11926859	0
EST	6	7	8	9	10
	-2,25396265	1,61648621	15,6968194	42,0801414	80,712389

**************************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4,29963905
L/V1^(1/3)	5,26670817
L/B	3,74501572
B/H	2,78497566
B/D	2,40192596
ANGULO MEDIO DE ENTRADA	30,8987106
ASTILLA MUERTA	10,3262846
ANGULO DE LA RODA	61,8207323
% LCB/L	-1,55715537
% LCF/L	-4,11803973
KB/V3^(1/3)	,259886606
KM/V3^(1/3)	,569917096
COEF, BLOCK	,488376471
COEF, PRISMATICO	,624187667
COEF, DE FLOTACION	,766057694
COEF, DE SECCION	,782419289

***************************TABLA DE PUNTOS(%)************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,25112284	11,8867557	20,9758368	28,5013954
2	11,1174077	31,8602628	46,8562369	57,0162857
3	26,2133698	54,7857375	71,2956198	79,8519341
4	43,152547	73,0080253	87,242812	93,1083753
5	50,430088	77,9722402	91,5850413	97,4400585
6	45,4718178	70,8016592	86,1743222	94,5563294
7	31,4768547	57,0526949	74,5724372	85,7006157
8	2,13012236	33,0038332	55,3884135	70,606914
9	0	0	17,6409589	44,95490
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	4,61709789E 08	3,77211239	8,62048156
1	34,4123426	38,7708931	13,1832505	49,3994442
2	63,261342	66,5250717	69,9347706	75,9872326
3	83,6220808	84,8938038	86,7926909	91,3303986
4	95,0547158	95,5083573	96,3009153	98,3754936
5	99,4885423	100	100,107926	100,069069
6	98,5309213	100	100,069069	100,069069
7	92,0128864	94,9798044	95,8790615	95,96162
8	80,0016101	84,9394132	87,160797	87,7467226
9	61,453316	69,8788263	73,9500666	75,4243759
10	12,0653057	49,7980439	58,0949155	58,9945803

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************

EST 1	2	3	4	5
14,8514574	9,37229164	6,24819444	3,12409722	0

EST 6	7	8	9	10
-2,25420783	1,61121655	15,6762922	42,0493811	80,7123893

**************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4,29963905
L/V1^(1/3)	5,26670817
L/B	3,74501572
B/H	2,78928677
B/D	2,40192596
ANGULO MEDIO DE ENTRADA	34,2154292
ASTILLA MUERTA	11,7312601
ANGULO DE LA RODA	61,8207323
% LCB/L	-1,45174902
% LCF/L	-3,91489564
KB/V3^(1/3)	,262275059
KM/V3^(1/3)	,591891361
COEF, BLOCK	,488376471
COEF, PRISMATICO	,644942422
COEF, DE FLOTACION	,79013321
COEF, DE SECCION	,757240421

*****************************TABLA DE PUNTOS(%)*************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1,37688502	13,1310638	23,1759735	31,4928707
2	11,0083118	32,1687632	48,1672273	59,603804
3	24,2436625	52,538935	70,5573855	81,04552
4	38,7474136	68,6060684	84,9615453	92,9139717
5	45,9380936	73,4634937	88,6157543	96,0268294
6	42,6253814	67,6558861	83,7133499	93,1428603
7	30,4961411	55,8116387	73,6224843	85,3031221
8	2,18932325	33,3848784	56,1857484	71,8375603
9	0	0	18,8256936	47,6906446
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	7,93922993E 08	4,36459823	9,790526
1	38,0584633	42,8420643	47,7181995	54,587700
2	67,119406	71,1104771	75,3793858	81,4268826
3	86,3830364	88,5578578	90,7206272	94,9055614
4	96,1510206	97,1368257	97,9641525	99,6212586
5	99,0664278	100	100,239872	100,171486
6	97,9944841	100	100,171459	100,171488
7	92,1976504	95,6129041	96,4939897	96,5328499
8	81,6165651	86,8387123	88,9108268	89,255574
9	64,9641061	73,6774245	77,4121534	78,3396601
10	13,8451232	56,1290409	63,409243	63,7851083

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%)**********

EST 1	2	3	4	5
14,8590463	9,38679984	6,25786658	3,12893329	0
EST 6	7	8	9	10
-2,25445329	1,60593871	15,6557332	42,0185733	80,7123892

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**************************CARACTERISTICAS  PRINCIPALES******************
```

L/V3^(1/3)	4.20080899
L/V1^(1/3)	5.14564938
L/B	3.72053769
B/H	2.78333724
B/D	2.4081338
ANGULO MEDIO DE ENTRADA	21.881568
ASTILLA MUERTA	3.98523797
ANGULO DE LA RODA	59.8340402
% LCB/L	-1.72237386
% LCF/L	-4.55884897
KB/V3^(1/3)	.240672946
KM/V3^(1/3)	.490109591
COEF. BLOCK	.518937493
COEF. PRISMATICO	.571406617
COEF. DE FLOTACION	.704831676
COEF. DE SECCION	.908175505

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************************************TABLA DE PUNTOS(%)*********************
```

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	6.76057538E 03		9.17513843	16.5272178
22.1671293				
2	14.1672408	35.6444179	46.8826415	52.056567
3	45.7228776	70.154213	75.1141667	75.856087
4	80.7100143	90.9825144	91.5089357	91.5244571
5	84.0413589	98.0816754	99.8434314	99.9927087
6	65.6986248	88.5553185	96.8778689	99.3660497
7	40.2371021	67.4469135	82.2952711	89.4824303
8	2.21255186	35.8714057	57.5728882	70.393597
9	0	0	16.1018018	40.2322149
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.44721178E 07	2.56297025	5.7496867
1	26.2144536	28.8116589	31.3511425	35.1136764
2	54.0255281	54.5739908	56.2704323	60.932999
3	75.9271404	75.9304931	77.3218268	81.495358
4	91.5246628	91.5246637	92.415612	95.0884572
5	99.9998606	100	100.000002	100.000001
6	99.9222261	100	100.000001	100.000009
7	92.3924178	93.2712573	93.6961688	94.662025
8	77.0394674	79.813772	81.4489283	83.9860741
9	53.5694099	59.627544	63.2980151	67.9721477
10	7.64702965	32.7125732	41.980962	46.620245

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******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)************
```

EST	1	2	3	4	5
	16.6555204	9.3055551	6.20370339	3.10185171	0
EST	6	7	8	9	10
	-2.25307851	1.63549417	15.7708618	42.1910943	80.7123889

************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4.20080899
L/V1^(1/3)	5.14564938
L/B	3.72053769
B/H	2.78764582
B/D	2.4081338
ANGULO MEDIO DE ENTRADA	25.9314176
ASTILLA MUERTA	5.59814489
ANGULO DE LA RODA	59.8340402
% LCB/L	-1.79958313
% LCF/L	-4.3941685
KB/V3^(1/3)	.245028733
KM/V3^(1/3)	.509906272
COEF. BLOCK	.518937493
COEF. PRISMATICO	.594198704
COEF. DE FLOTACION	.731270497
COEF. DE SECCION	.873339994

**********************************TABLA DE PUNTOS(%)**************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	4.75960452E-03		10.5100578	18.9341617
	25.3964002			
2	13.2451771	35.0699786	48.1208542	55.1673312
3	37.4882913	66.228575	76.2173508	79.0429582
4	66.4137462	88.538517	92.6135755	93.1568595
5	72.8178457	93.9576366	98.9796666	99.8844064
6	60.3430584	84.6491618	95.0118675	98.7494037
7	39.512944	66.8183373	82.1282075	89.7824301
8	2.40117983	37.7841856	60.1365565	73.0235025
9	0	0	18.5754787	45.0730374
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	3.40636949E 07	3.20161085	7.00121795
1	30.0338068	33.0096413	35.9192983	40.2302575
2	58.4339359	59.6115696	61.5513959	66.2386332
3	79.6330699	79.7086773	81.0219176	84.93238
4	93.2020734	93.2038566	93.9573276	96.2175345
5	99.9931411	100	100.00036	100.000134
6	99.801759	100	100.000134	100.000134
7	93.0081807	94.0342095	94.5151874	95.2063586
8	79.5043428	82.1041284	83.5633278	85.6188083
9	58.6379361	64.2082567	67.3226062	71.2374827
10	10.0927108	40.3470945	49.0790821	52.0623819

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(XH)***********

EST 1	2	3	4	5
16.659818	9.31996003	6.21330667	3.10665338	0

EST 6	7	8	9	10
-2.25332219	1.63025391	15.7504493	42.160506	80.7123892

**********************CARACTERISTICAS PRINCIPALES********************

L/V3^(1/3)	4.20080899
L/V1^(1/3)	5.14564938
L/B	3.72053769
B/H	2.79196106
B/D	2.4081338
ANGULO MEDIO DE ENTRADA	29.8626977
ASTILLA MUERTA	7.16097181
ANGULO DE LA RODA	59.8340402
% LCB/L	-1.79145557
% LCF/L	-4.18786496
KB/V3^(1/3)	.24869528
KM/V3^(1/3)	.530907174
COEF. BLOCK	.518937493
COEF. PRISMATICO	.616990792
COEF. DE FLOTACION	.757709319
COEF. DE SECCION	.841078181

************************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	1.95751503E-03		11.8962381	21.4341015
	28.7506717			
2	12.7231301	34.9302238	49.167414	58.2131979
3	32.3937751	62.4107764	76.1671992	81.574546
4	55.7525592	83.6151059	92.3372203	94.5162186
5	63.752689	88.7681955	97.1919071	99.4869975
6	55.6008127	80.7101148	92.8228813	97.884148
7	38.4159715	65.7204533	81.5751489	89.810099
8	2.53967961	39.0478166	61.9837721	75.1200337
9	0	0	20.7115696	49.2800506
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	2.01145626E-07	3.88791699	8.29813595
1	34.0011169	37.3703027	40.6645166	45.5452049
2	62.8502691	64.8443633	67.1217351	71.7516514
3	83.2674095	83.6332725	84.9084161	88.5050159
4	94.9069634	94.9481212	95.5625943	97.39283
5	99.9447288	100	100.005717	100.002659
6	99.5927591	100	100.002659	100.002659
7	93.5083493	94.7574918	95.3014824	95.73419
8	81.6722479	84.2724756	85.6539884	87.1972519
9	63.1936756	68.5449513	71.3153775	74.3918449
10	12.4796196	47.5749187	55.5690554	57.3179688

**********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
16.6641788	9.33438717	6.22292478	3.1114624	0
EST 6	7	8	9	10
-2.25356638	1.62500557	15.7300051	42.1298702	80.7123892

************************CARACTERISTICAS PRINCIPALES*********************

L/V3^(1/3)	4.20080899
L/V1^(1/3)	5.14564938
L/B	3.72053769
B/H	2.79628298
B/D	2.4081338
ANGULO MEDIO DE ENTRADA	33.584885
ASTILLA MUERTA	8.67743273
ANGULO DE LA RODA	59.8340402
% LCB/L	-1.71593829
% LCF/L	-3.96494786
KB/V3^(1/3)	.251827684
KM/V3^(1/3)	.55343792
COEF. BLOCK	.518937493
COEF. PRISMATICO	.639782879
COEF. DE FLOTACION	.78414814
COEF. DE SECCION	.811115004

***********************TABLA DE PUNTOS(%)***********************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	13.3126559	23.9892041	32.1792126
2	12.444182	35.1026699	50.93569	61.2347108
3	29.0024991	59.2275834	75.6346917	83.5265568
4	48.1507387	78.2513784	90.8481712	95.2920604
5	56.5790227	83.4313715	94.7061185	98.6993463
6	51.4063233	76.8524311	90.410325	96.7882754
7	37.0720134	64.2716602	80.7009567	89.6787338
8	2.6310008	39.7478798	63.2277976	76.7870549
9	0	0	22.4858425	52.9118498
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1.75979348E 07	4.61301354	9.620263
1	38.0563976	41.8277173	45.5150634	50.9781769
2	67.2522127	70.1932608	72.8878441	77.3912359
3	86.6970963	87.6449457	88.9705645	92.1650487
4	96.5096616	96.731087	97.2292982	98.6052235
5	99.7987997	100	100.031462	100.017369
6	99.2810526	100	100.017369	100.017369
7	93.9031266	95.4560859	96.045	96.2665028
8	83.6199116	86.3682579	87.7233534	88.7647704
9	67.360564	72.7365159	75.2994938	77.5121724
10	14.7836216	51.5608598	61.6394902	62.508708

*******************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)***********

EST 1	2	3	4	5
16.6686034	9.34883672	6.23255781	3.11627895	0

EST 6	7	8	9	10
-2.25381085	1.61974909	15.7095292	42.0891060	90.7122005

********************************CARACTERISTICAS   PRINCIPALES******************************

L/V3^(1/3)	4:20080899
·L/V1^(1/3)	5,14564938
L/B	3,72053769
B/H	2,80061159
B/D	2,4081338
ANGULO MEDIO DE ENTRADA	37,0225731
ASTILLA MUERTA	10,1546527
ANGULO DE LA RODA	59,8340402
% LCB/L.	·1,59407263
% LCF/L.	-3,75211399
KB/V3^(1/3)	,254547034
KM/V3^(1/3)	,577800528
COEF. BLOCK	,518937493
COEF. PRISMATICO	,662574967
COEF. DE FLOTACION	,810586961
COEF. DE SECCION	,78321325

**************************************TABLA DE PUNTOS(%)***************************

ESTACION	LW 1	LW 2	LW 3	LW 4
0	0	0	0	0
1	0	14,7331425	26,5523421	35,6188201
2	12,318536	35,4866189	52,4893568	64,2181209
3	26,6036214	56,656852	74,9601587	85,0610783
4	42,5647267	73,2478031	88,6806662	95,4584317
5	50,8307858	78,3530484	91,8201818	97,5436563
6	47,6862246	73,1401213	87,8591776	95,494270
7	35,5812131	62,5732966	79,5665543	89,32371
8	2,68163723	39,9871224	63,9824171	78,1178406
9	0	0	23,9187939	56,0680471
10	0	0	0	0

ESTACION	LW 5	LW 6	LW 7	LW 8
0	0	1,57273851E 07	5,36524333	10,9424118
1	42,1249078	46,2997401	50,381554	56,429063
2	71,5907678	75,5596881	78,7321862	83,0583391
3	89,872435	91,6697662	93,1608596	95,8563939
4	97,8916634	98,5198961	98,9668647	99,84938
5	99,5167423	100	100,100121	100,063454
6	98,862266	100	100,063453	100,063454
7	94,2056762	96,1510281	96,748766	96,8377203
8	85,4192897	88,4530841	89,7861155	90,3862534
9	71,2762326	76,9061683	79,3207755	80,7090534
10	17,031506	61,5102804	67,4815648	67,8061203

*********************ALTOS DEL ALEFRIZ SOBRE LA LINEA BASE(%H)*************

EST	1	2	3	4	5
	16,6730917	9,3633086	6,24220573	3,12110291	0
EST	6	7	8	9	10
	-2,2540557	11,61448439	15,6890217	42,0684562	80,7123889