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Fish Capture Commitee

MESCHAL
DATA ACQUISITION SOFTWARE
FOR SEA TRIALS

by

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Abstract

Scientists and sometimes professional skippers who want to correlate fishing results with fishing conditions, and those who want to keep a record of fishing conditions as a help in decision making for future fishing operations are interested in storing all the available information under a format which makes as easy as possible all comparisons, correlations and data processing, all these operations being possible with the same PC computer.

A data acquisition software has been developed to record data from analog/digital inputs, Scanmar system and GPS navigation system.

Analog/Digital Input

A multifunction high speed analog/digital input expansion board from NAUTIL Interfaces is used. This card is the Nautil-ANA 12-T. Specially designed for Personal Computer, this card allows 1 to 16 simple analog inputs. The digital conversion is made on 12 bits and gives a 4096 points resolution for 1-10 V input range. A calibration process is available and a specific driver delivers functions for programming the card.

The tension sensors, engine temperature and rating, propeller pitch, surface boat speed loch, rudder are usually connected.

1 to 16 input lines are used and each signal can be filtered by low and high filter values. The analog value is adjusted by linear coefficient calculated according to the sensor calibration before the trial. At the end of a test, the filter values can be changed to re-calculate averages and mini-maxi in the new interval of data and the active results page can be printed. All the data are recorded on disk and used with a data sheet program like Excel. The maximum sampling frequency is 100 Hz.

Scanmar Serial Input

The Scanmar Plasma Display delivers a 20 mA current loop interface. We use a special conversion unit to convert the current loop to the RS232C host computer interface. The logging is controlled by sending commands to the cabinet which transmits data after each request. We collect all the information delivered by the Scanmar system. 1 to 6 channels (+2) are available and filtered each one by a low and a high filter values. At the end of a test, the filter values can be changed to re-calculate averages and mini-maxi in the new interval of data and the active results page can be printed. All the data are recorded on disk and use with a data sheet program like Excel. The maximum sampling frequency is 1 Hz.

GPS Serial Input

A GPS system from the French MLR Corp. is used to get the information about navigation parameters (position of the boat, bottom speed and heading referred to the bottom). This part of program is in development, the purpose is to calculate the actual trail length during sampling trawlings operations (for stock assessment) when it is important to accuratly know the trail length. All data are recorded on disk and use with a data sheet program like Excel. The maximum sampling frequency is 1 Hz.

Hardware and Software Requirements

IBM PC or BIOS compatible (386 SX at least) with math coprocessor chip, fixed disk drive, one parallel printer interface, two RS232 serial communication ports, EGA or VGA color video monitor, DOS 3.1 or higher, real time clock supported by PC, Epson compatible printer, virtual disk emulation for real time data acquisition.

PROGRAM

The first page invites for configuration of every part:

- virtual disk
- analog input
- Scanmar input
- Position input
- Timers

Virtual disk

A virtual disk is used to record in real-time as fast as possible the raw data. You must give the letter used by your computer for this drive. At the end of the program they are copied on a hard disk. The size depends on the duration and number of analog input used on test.

Analog Input

The system loads the last configuration in use during the last test. So, for the same kind of recording you just keep the active configuration. You can also modify the parameters, create a new configuration or use an old one. You can also exit.

You can select any input you want (from 1 to 16), in any order. The following parameters can be changed:

- linear regression analysis slope (pente)
- linear regression analysis intercept (o.o.)
- minimum filter value (mini)
- maximum filter value (maxi)
- unit of the value after regression (unité)
- title of the value (titre)

+ See appendix for examples.

Scanmar Input

The system loads the last configuration in use during the last test. So, for the same kind of recording you just keep the active configuration. You can also modify the parameters, create a new configuration or use an old one. You can also exit.

The Scanmar system gives all the channel codes (6+2) supported by the system, anyway if one or more are not used. The system delivers the code sensor used on concerned channel in order, from 1 to 6, each sensor with it's own description. The following parameters can be changed:

- minimum filter value (mini)

- maximum filter value (maxi)
- title of the channel (nom)

+ See appendix for examples.

Positionning Input

We are developping the interface for a GPS. This work will give to the real distance, the heading and the speed referred to bottom.

Timers

The system loads the last configuration in use during the last test. So, for the same kind of recording you just keep the active configuration. You can also modify the parameters, create a new configuration or use an old one. You can also exit.

The following parameters can be changed:
- total time for the test
- time interval for analog input readings
- time of sampling for analog input readings
- number of readings by analog input sample
- total number of records for analog inputs
- time interval for Scanmar inputs
- time interval for GPS inputs

+ See appendix for examples.

RESULTS

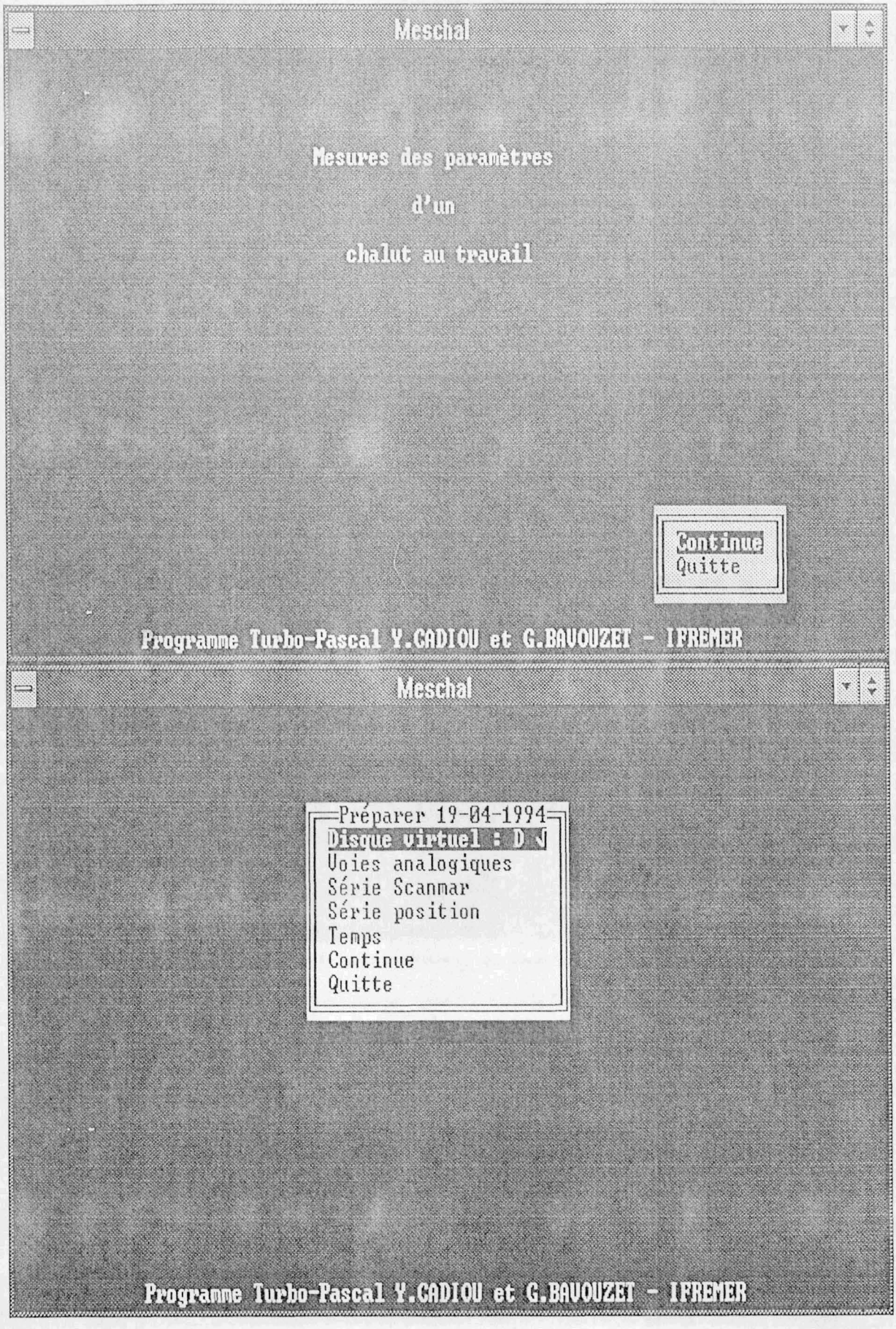
The results and all general conditions are on three pages: one for analog inputs and the other one for Scanmar. Each page can be refiltered by the change of values:

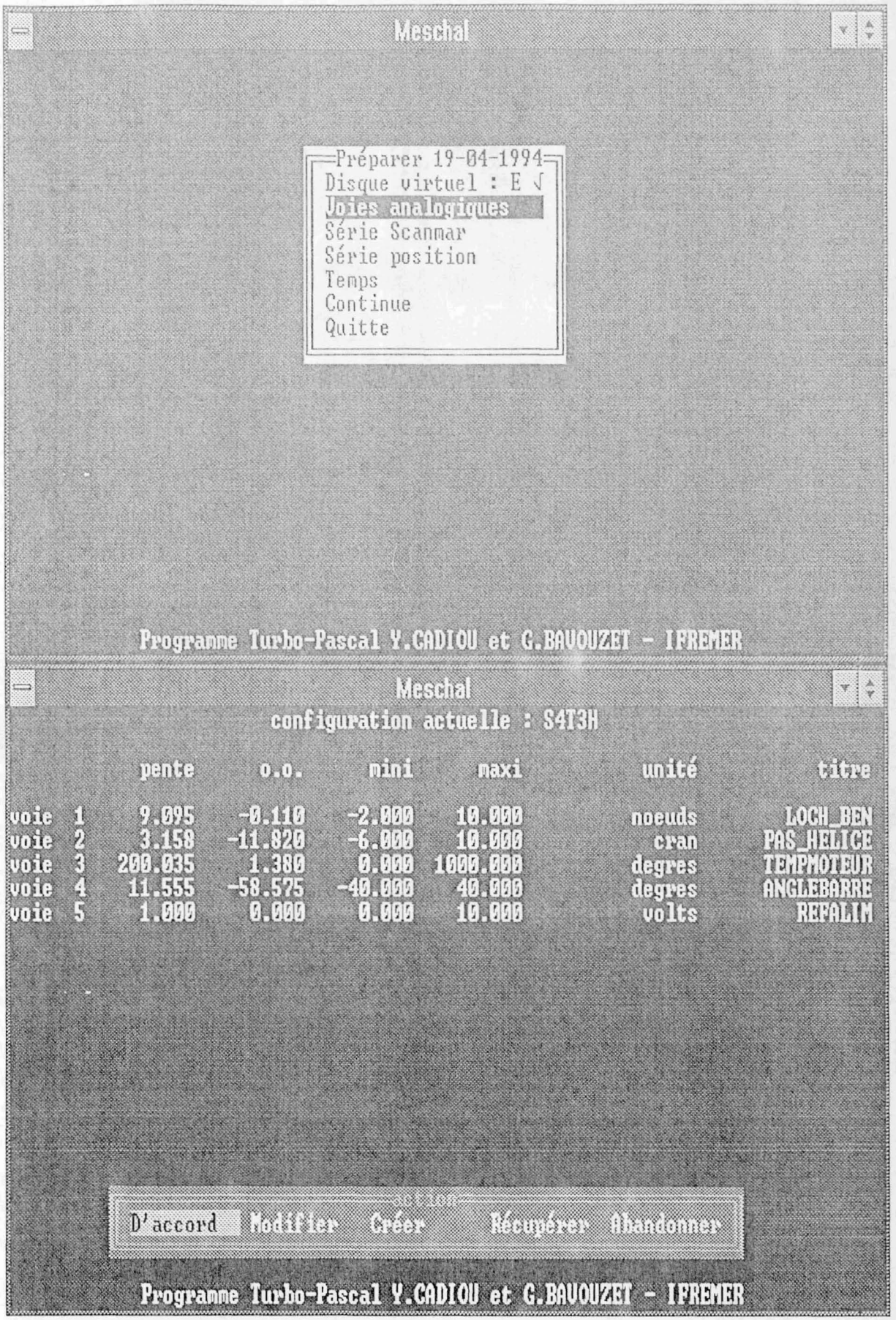
- mini and maxi values
- slope and intercept values only for analog page

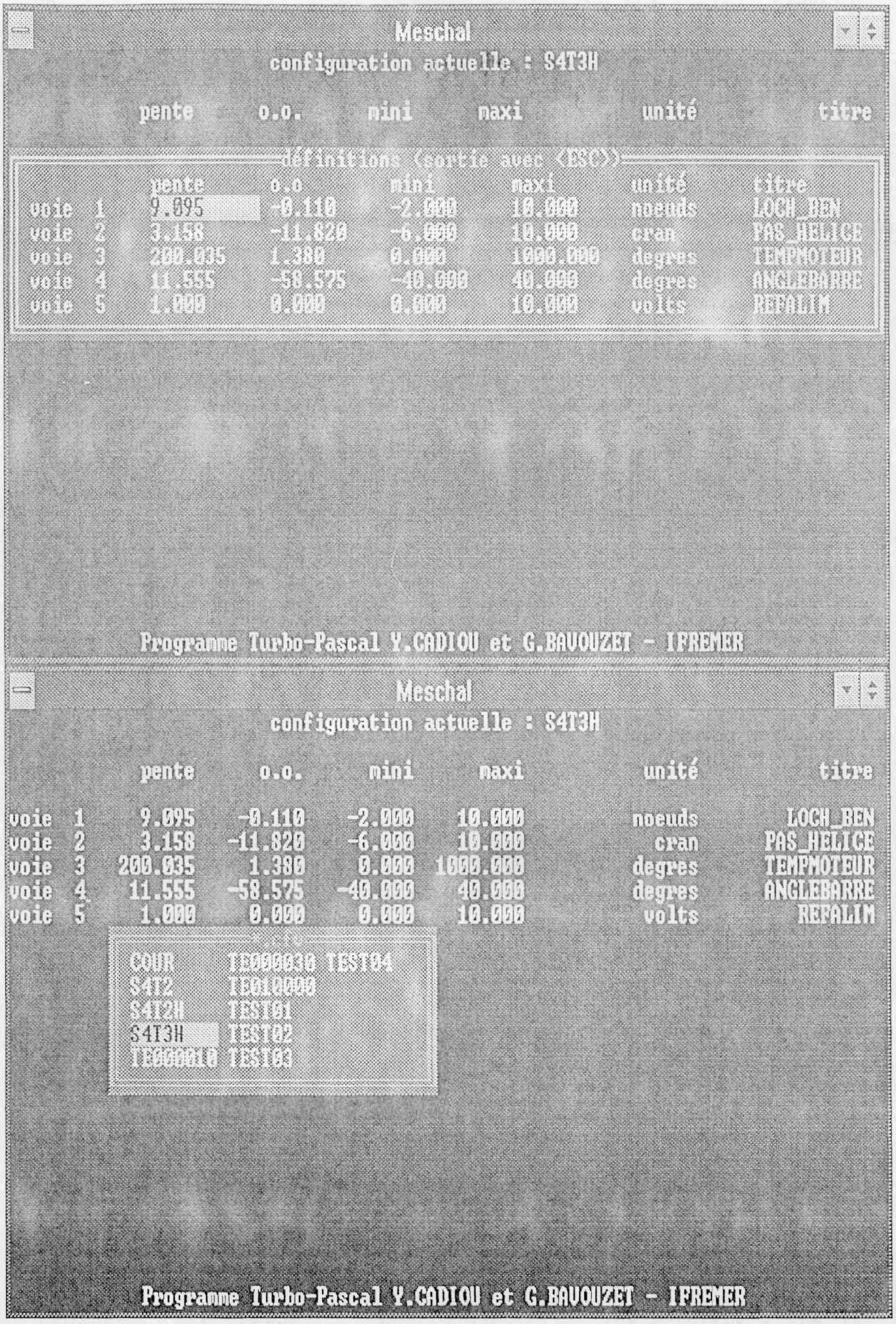
+ See appendix for examples (only page 1 and 2).

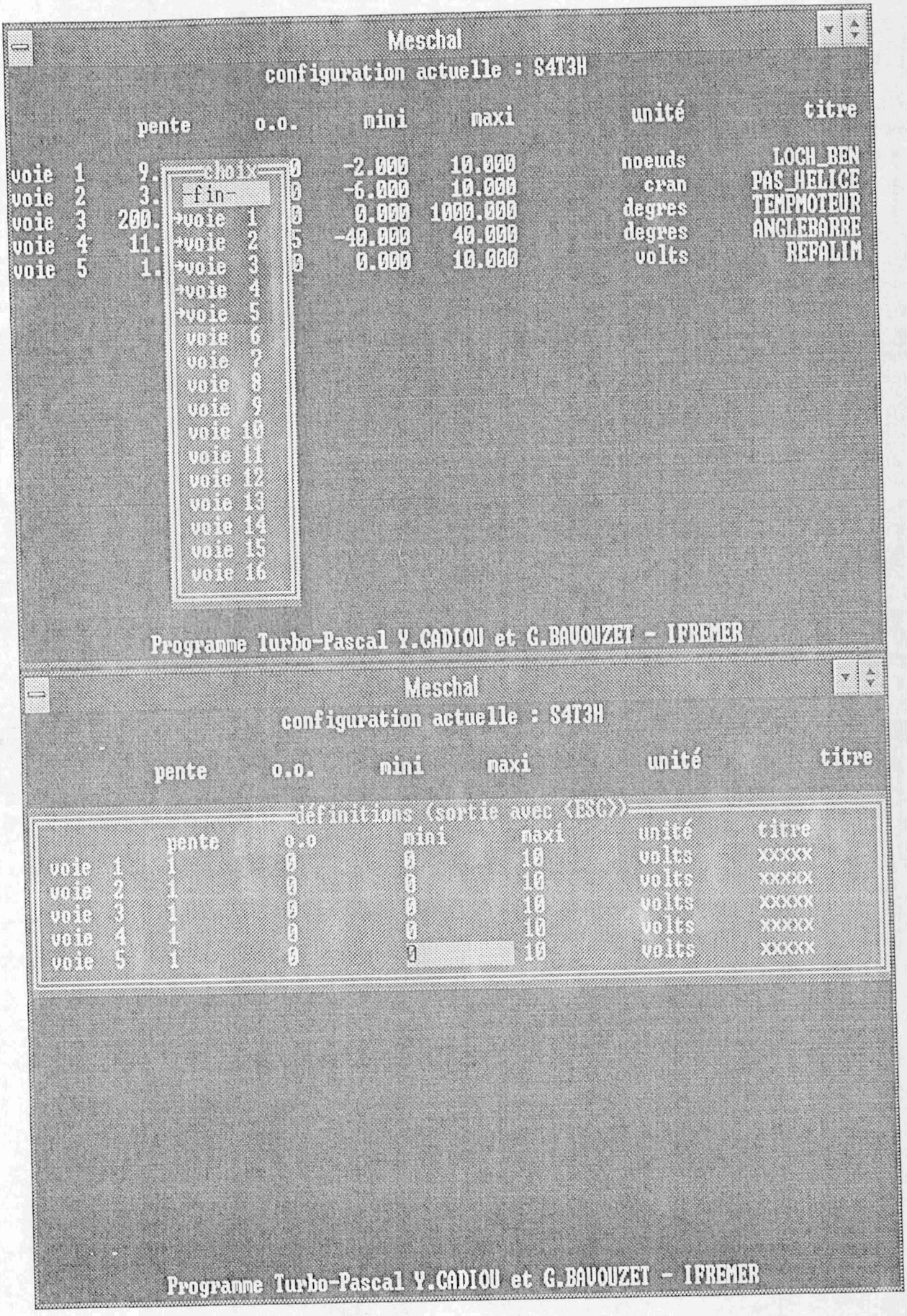
The third page (in development) will resume the general conditions from the GPS and draw a line through every position point recorded to show the real trail done.

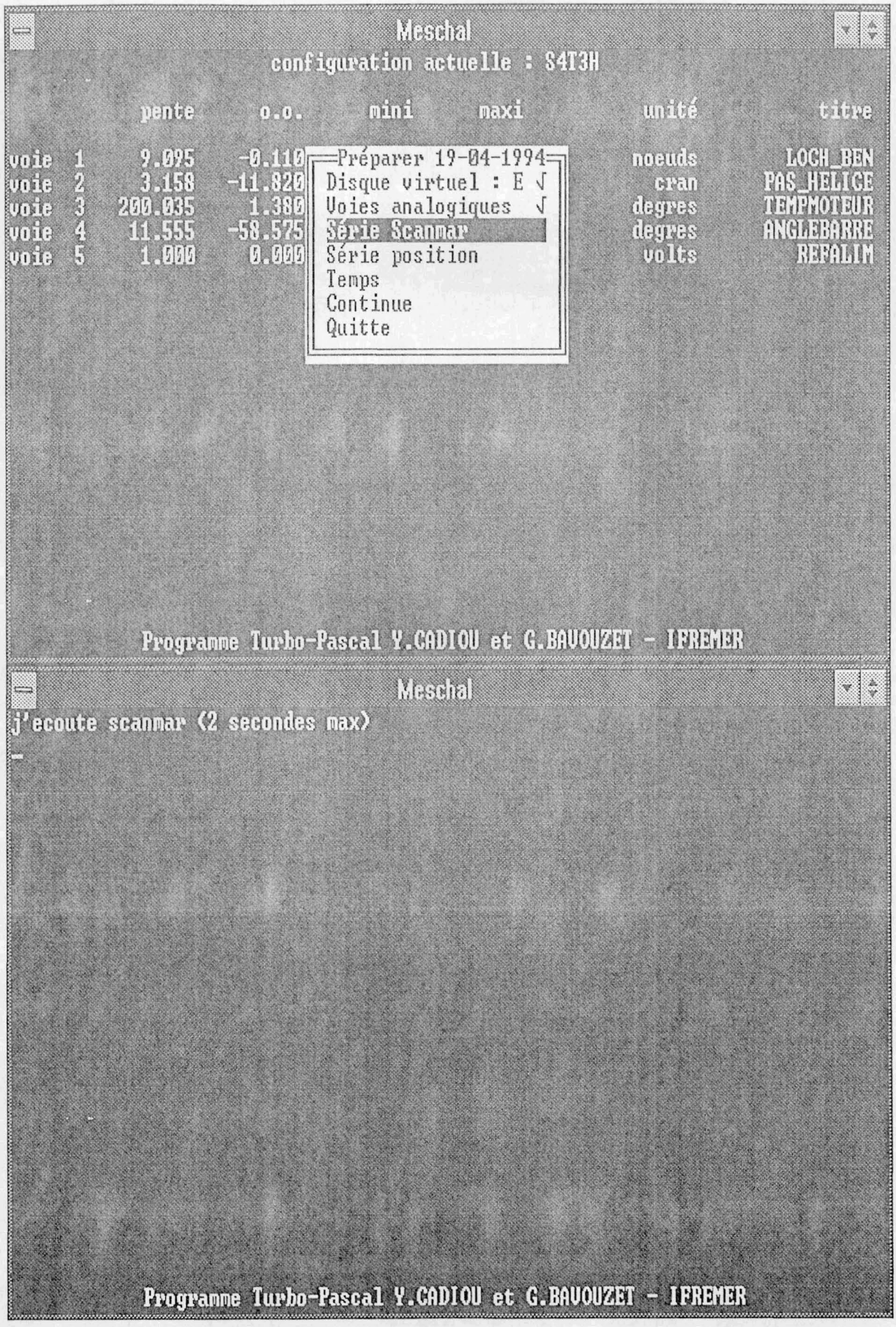
Files with an apropriate format can be-open by data sheet like Excell from Microsoft.

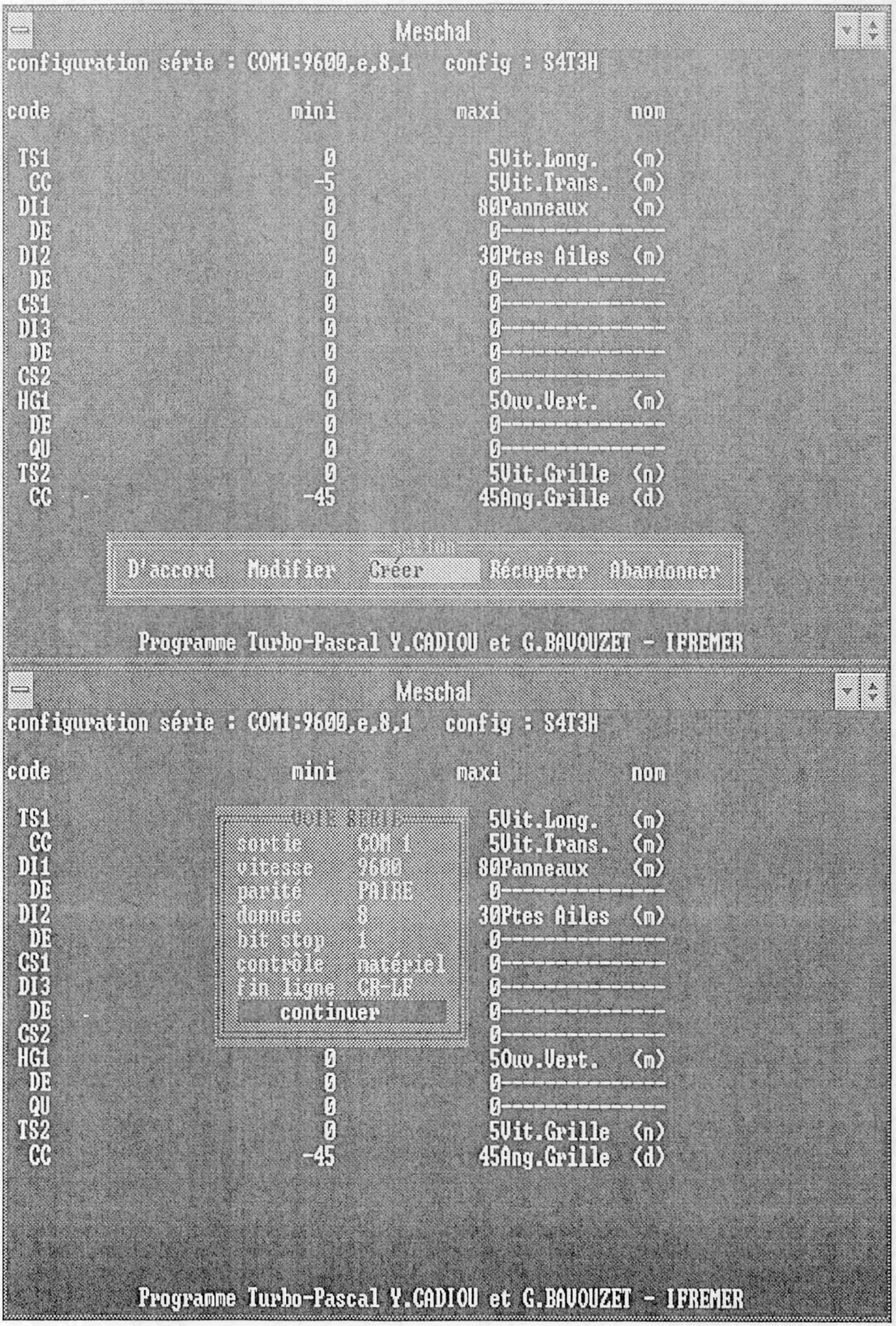

Meschal
Mesures des paramètres
d'un
chalut au travail
Continue
Quitte
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
Préparer 19-04-1994
Disque virtuel : D
Voies analogiques
Série Scanmar
Série position
Temps
Continue
Quitte
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER

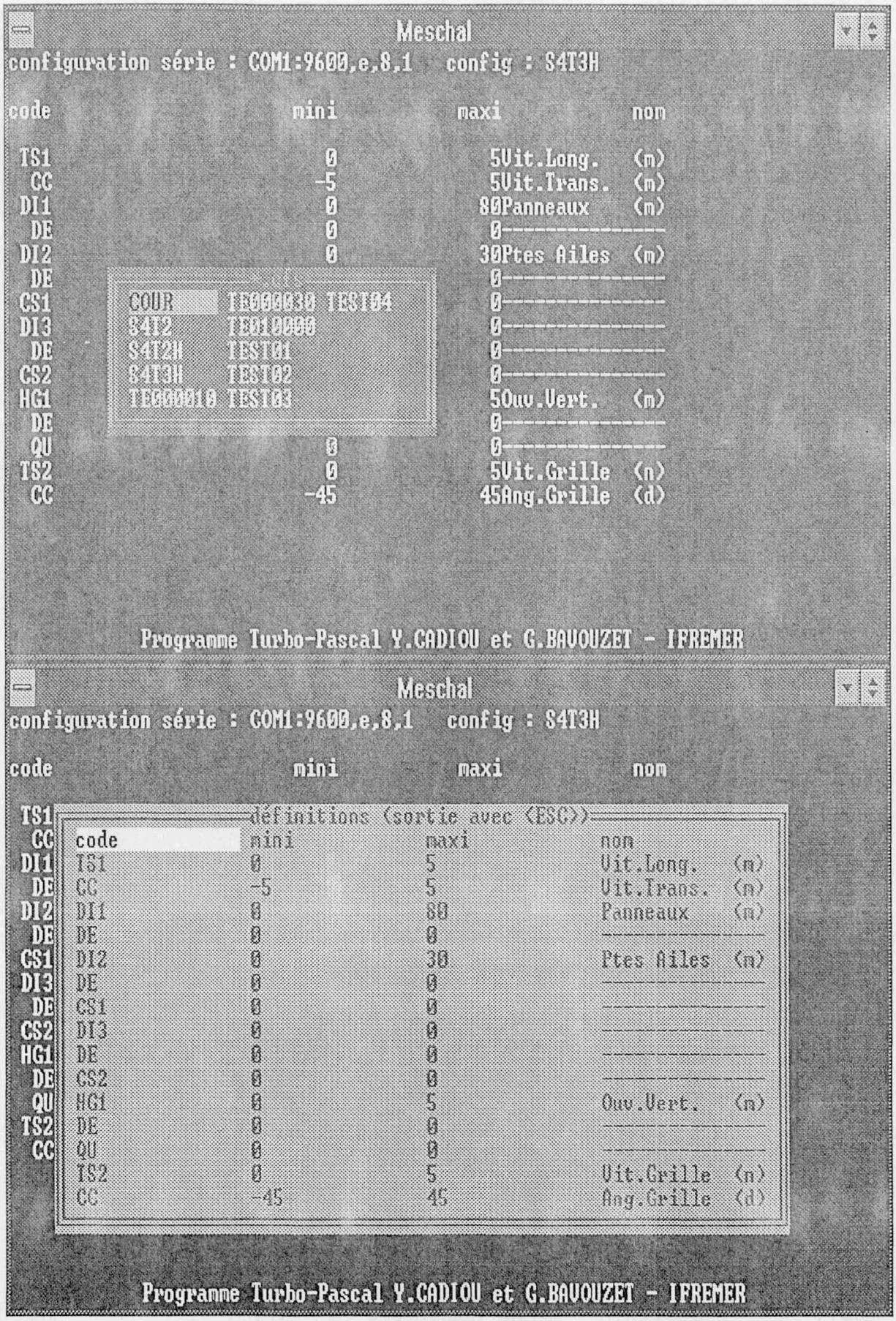

Meschal
Préparer 19-04-1994
Disque virtuel : E √
Voies analogiques
Série Scanmar
Série position
Temps
Continue
Quitte
Programme Turbo-Pascal Y.CADIOU et G.BAUDUZET - IFREMER
Meschal
configuration actuelle : S4I3H
pente o.o. mini maxi unité titre
voie 1 9.095 -0.110 -2.000 10.000 noeuds LOCH_BEN
voie 2 3.158 -11.820 -6.000 10.000 cran PAS_HELICE
voie 3 200.035 1.380 0.000 1000.000 degres TEMPMOTEUR
voie 4 11.555 -58.575 -40.000 40.000 degres ANGLEBARRE
voie 5 1.000 0.000 0.000 10.000 volts REFALIM
action
D'accord Modifier Créer Récupérer Abandonner
Programme Turbo-Pascal Y.CADIOU et G.BAUDUZET - IFREMER

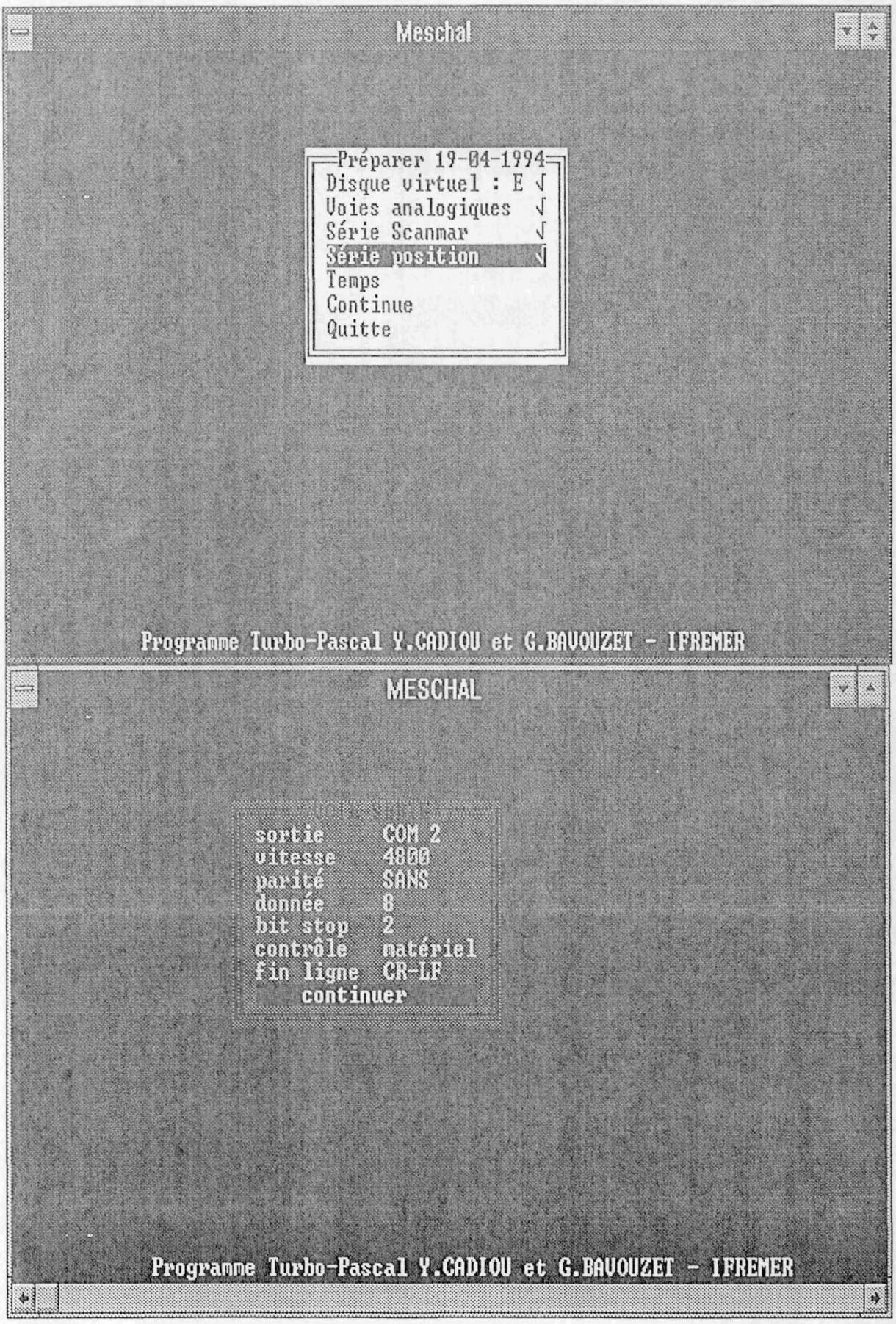

Meschal
configuration actuelle : S4T3H
pente o.o. mini maxi unité titre
définitions (sortie avec <ESC>)
pente o.o mini maxi unité titre
voie 1 9.095 -0.110 -2.000 10.000 noeuds LOCH_BEN
voie 2 3.158 -11.820 -6.000 10.000 cran PAS_HELICE
voie 3 200.035 1.380 0.000 1000.000 degres TEMPMOTEUR
voie 4 11.555 -58.575 -40.000 40.000 degres ANGLEBARRE
voie 5 1.000 0.000 0.000 10.000 volts REFALIM
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
configuration actuelle : S4T3H
pente o.o. mini maxi unité titre
voie 1 9.095 -0.110 -2.000 10.000 noeuds LOCH_BEN
voie 2 3.158 -11.820 -6.000 10.000 cran PAS_HELICE
voie 3 200.035 1.380 0.000 1000.000 degres TEMPMOTEUR
voie 4 11.555 -58.575 -40.000 40.000 degres ANGLEBARRE
voie 5 1.000 0.000 0.000 10.000 volts REFALIM
COUR IE000030 TEST04
S4T2 IE010000
S4T2H TEST01
S4T3H TEST02
IE000010 TEST03
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER

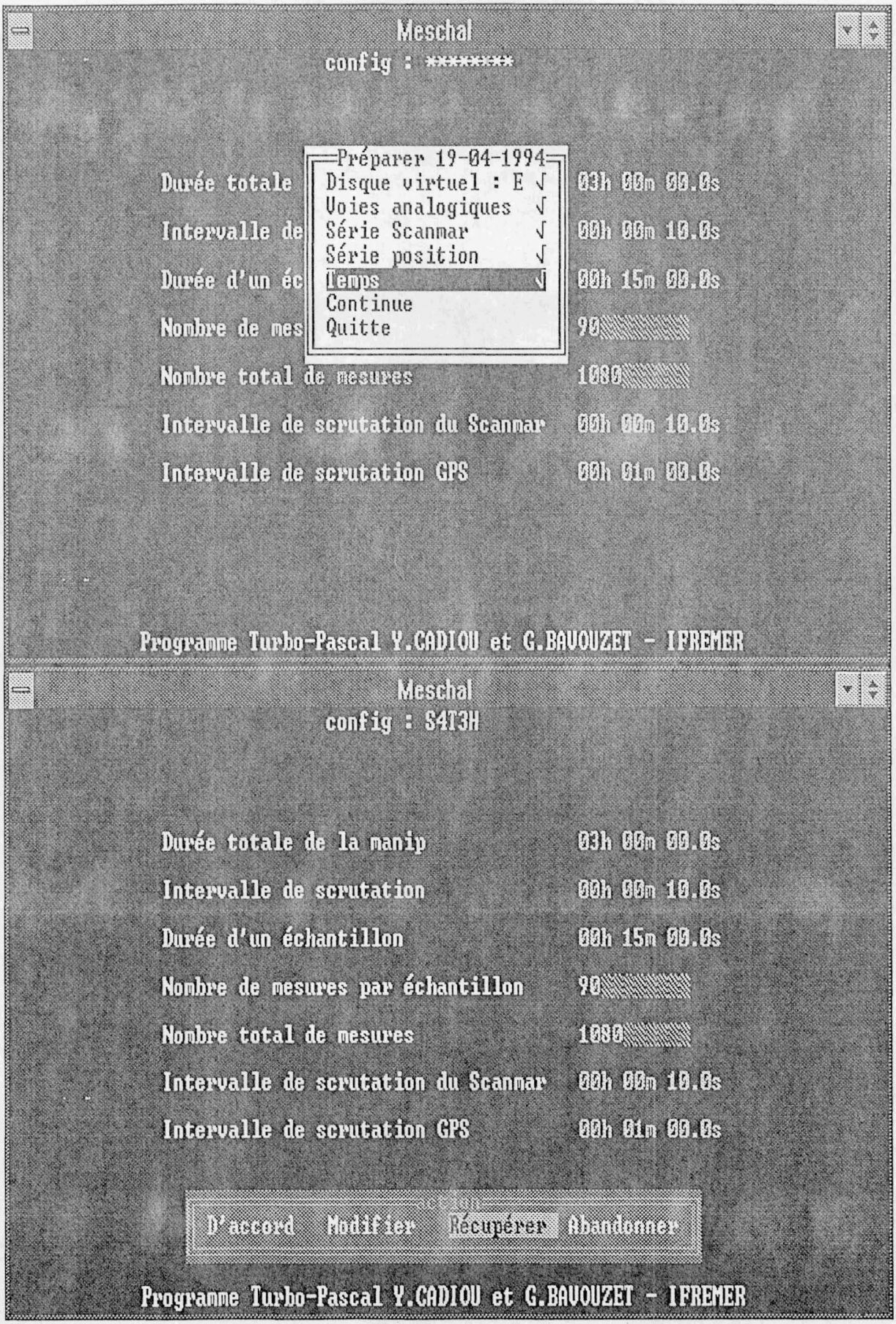

Meschal
configuration actuelle : S4T3H
pente o.o. mini maxi unité titre
voie 1 9. 0 -2.000 10.000 noeuds LOCH_BEN
voie 2 3. 0 -6.000 10.000 cran PAS_HELICE
voie 3 200. 0 0.000 1000.000 degres TEMPMOTEUR
voie 4 11. 5 -40.000 40.000 degres ANGLEBARRE
voie 5 1. 0 0.000 10.000 volts REFALIM
choix
-fin-
→voie 1
→voie 2
→voie 3
→voie 4
→voie 5
voie 6
voie 7
voie 8
voie 9
voie 10
voie 11
voie 12
voie 13
voie 14
voie 15
voie 16
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
configuration actuelle : S4T3H
pente o.o. mini maxi unité titre
définitions (sortie avec <ESC>)
pente o.o mini maxi unité titre
voie 1 1 0 0 10 volts xxxxx
voie 2 1 0 0 10 volts xxxxx
voie 3 1 0 0 10 volts xxxxx
voie 4 1 0 0 10 volts xxxxx
voie 5 1 0 0 10 volts xxxxx
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER

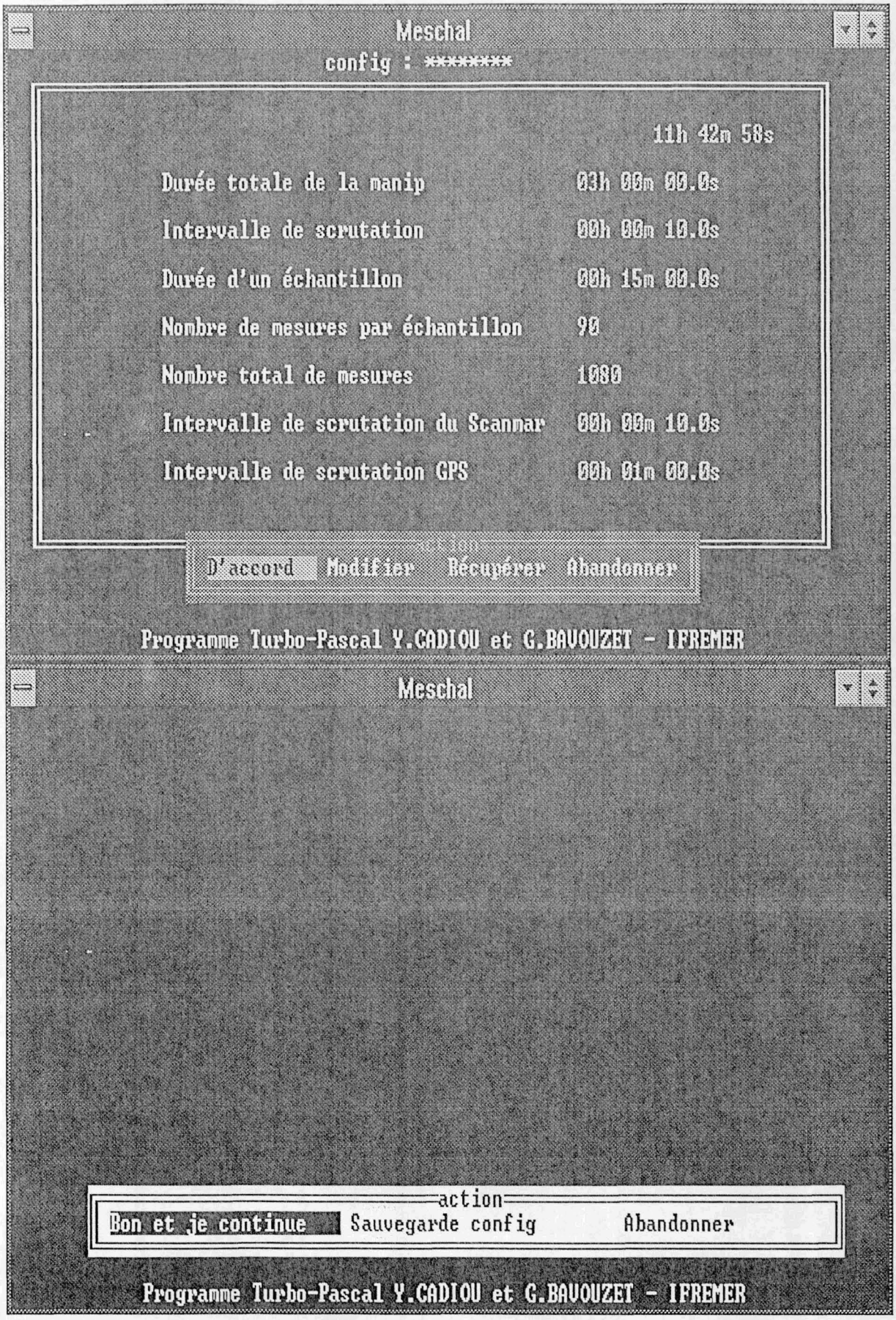

Meschal
configuration actuelle : S4T3H
pente o.o. mini maxi unité titre
voie 1 9.095 -0.110 noeuds LOCH_BEN
voie 2 3.158 -11.820 cran PAS_HELICE
voie 3 200.035 1.380 degres TEMPMOTEUR
voie 4 11.555 -58.575 degres ANGLEBARRE
voie 5 1.000 0.000 volts REFALIM
Préparer 19-04-1994
Disque virtuel : E √
Voies analogiques √
Série Scanmar
Série position
Temps
Continue
Quitte
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
j'ecoute scanmar (2 secondes max)
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER

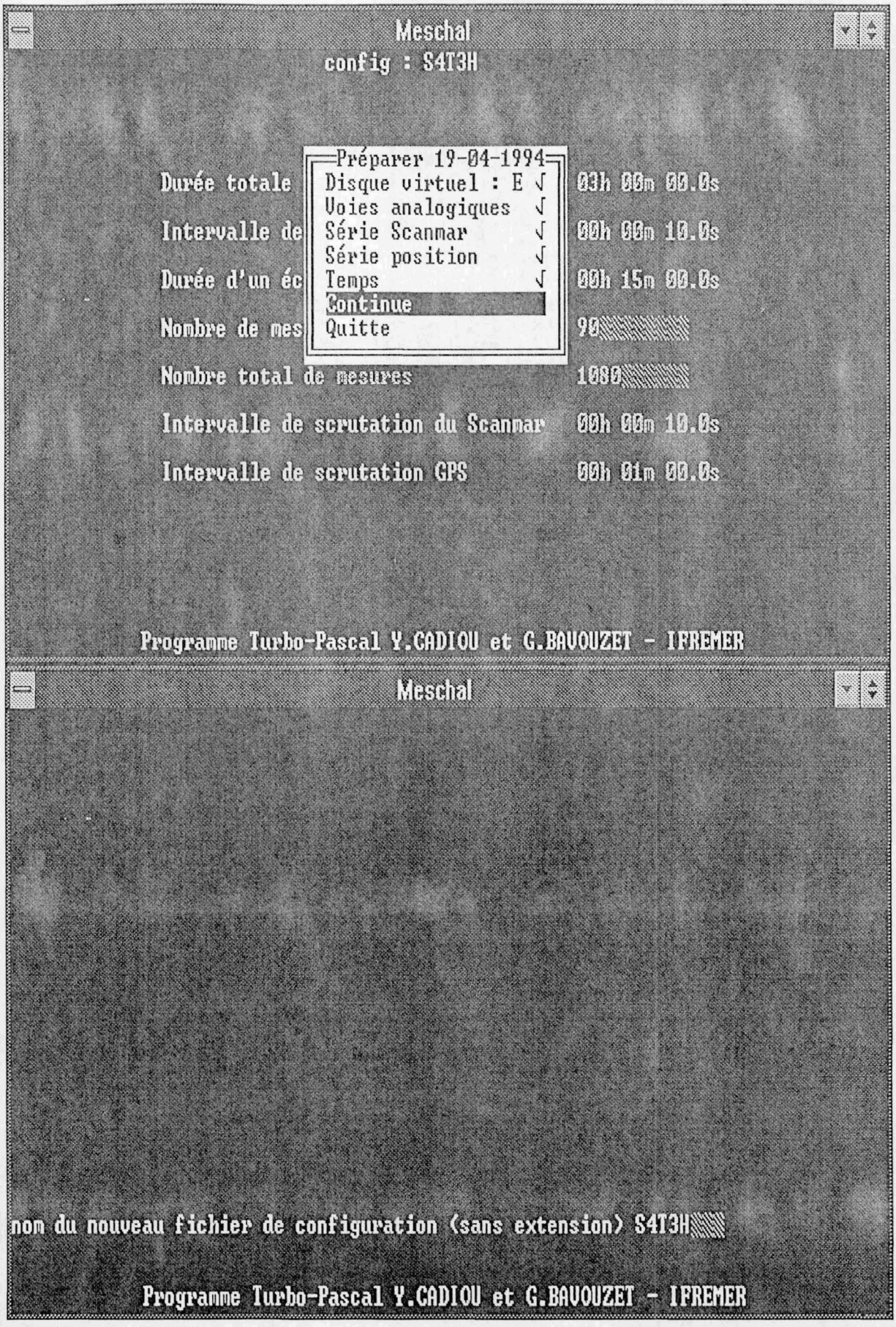

Meschal
configuration série : COM1:9600,e,8,1 config : S4T3H
code mini maxi nom
TS1 0 5Vit.Long. (m)
CC -5 5Vit.Trans. (m)
DI1 0 80Panneaux (m)
DE 0 0
DI2 0 30Ptes Ailes (m)
DE 0 0
CS1 0 0
DI3 0 0
DE 0 0
CS2 0 0
HG1 0 5Ouv.Vert. (m)
DE 0 0
QU 0 0
TS2 0 5Vit.Grille (n)
CC -45 45Ang.Grille (d)
Action
D'accord Modifier Créer Récupérer Abandonner
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
configuration série : COM1:9600,e,8,1 config : S4T3H
code mini maxi nom
VOIE SERIE
sortie COM 1
vitesse 9600
parité PAIRE
donnée 8
bit stop 1
contrôle matériel
fin ligne CR-LF
continuer
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER

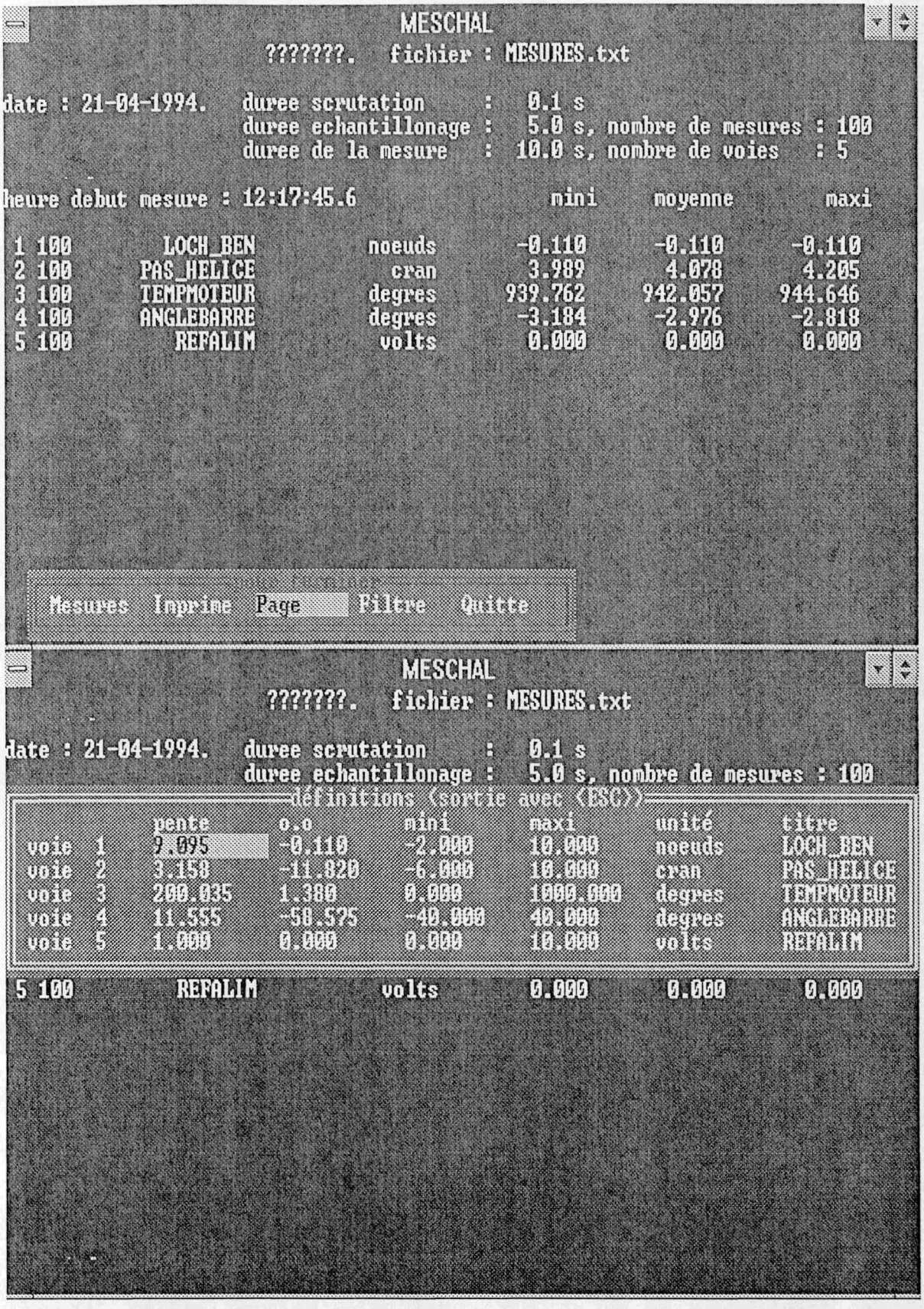

Meschal
configuration série : COM1:9600,e,8,1 config : S4T3H
code mini maxi nom
TS1 0 5Vit.Long. (m)
CC -5 5Vit.Trans. (m)
DI1 0 80Panneaux (m)
DE 0 0----------
DI2 0 30Ptes Ailes (m)
DE 0----------
CS1 0----------
DI3 0----------
DE 0----------
CS2 0----------
HG1 5Ouv.Vert. (m)
DE 0----------
QU 0----------
TS2 0 5Vit.Grille (n)
CC -45 45Ang.Grille (d)
COUR TE000030 TEST04
S4T2 TE010000
S4T2H TEST01
S4T3H TEST02
TE000010 TEST03
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
configuration série : COM1:9600,e,8,1 config : S4T3H
code mini maxi nom
définitions (sortie avec <ESC>)
code mini maxi nom
TS1 0 5 Vit.Long. (m)
CC -5 5 Vit.Trans. (m)
DI1 0 80 Panneaux (m)
DE 0 0 ----------
DI2 0 30 Ptes Ailes (m)
DE 0 0 ----------
CS1 0 0 ----------
DI3 0 0 ----------
DE 0 0 ----------
CS2 0 0 ----------
HG1 0 5 Ouv.Vert. (m)
DE 0 0 ----------
QU 0 0 ----------
TS2 0 5 Vit.Grille (n)
CC -45 45 Ang.Grille (d)
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER

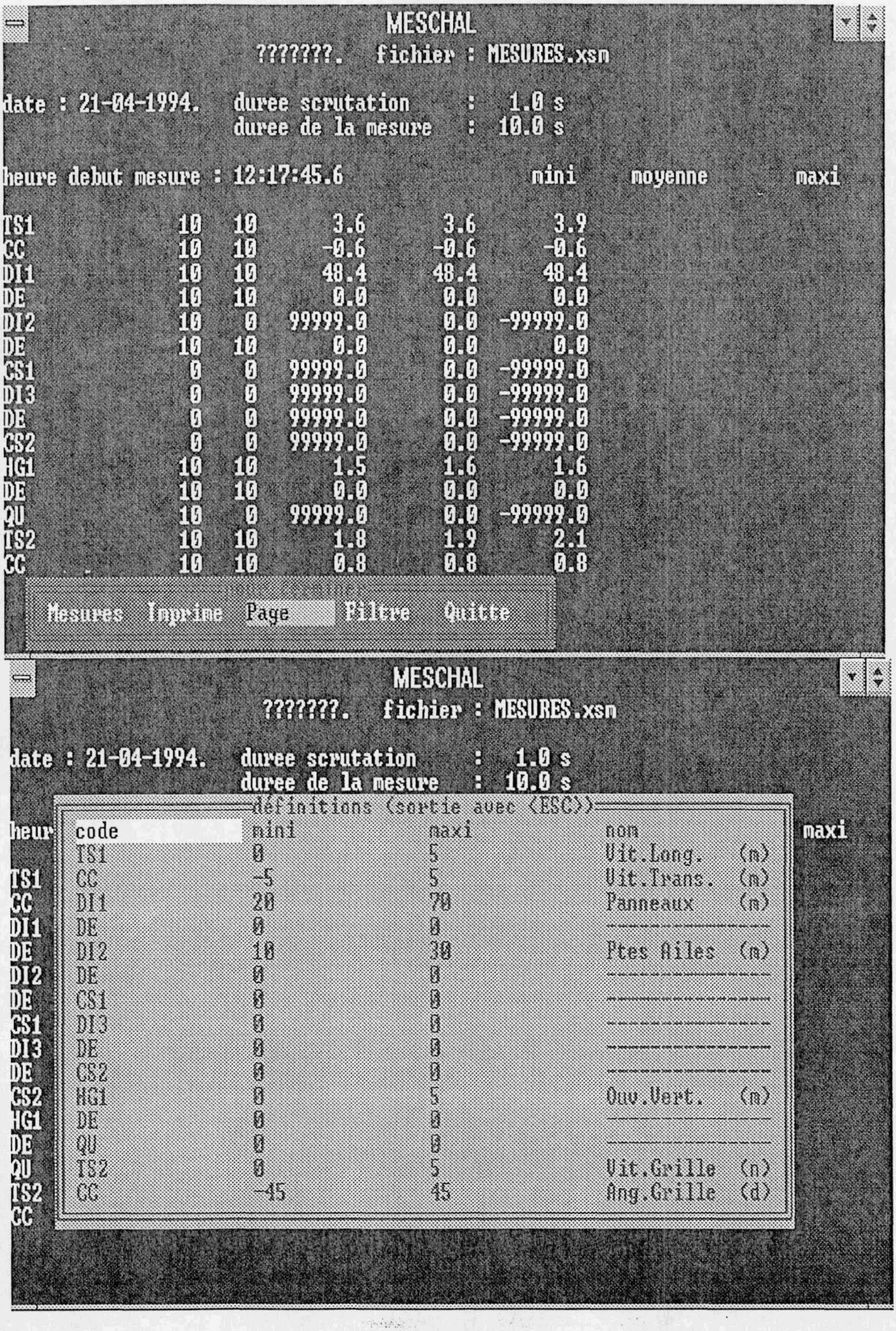

Meschal
Préparer 19-04-1994
Disque virtuel : E √
Voies analogiques √
Série Scanmar √
Série position √
Temps
Continue
Quitte
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
MESCHAL
sortie COM 2
vitesse 4800
parité SANS
donnée 8
bit stop 2
contrôle matériel
fin ligne CR-LF
continuer
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER


Meschal
config : ********
Préparer 19-04-1994
Disque virtuel : E √
Voies analogiques √
Série Scanmar √
Série position √
Temps √
Continue
Quitte
Durée totale 03h 00m 00.0s
Intervalle de 00h 00m 10.0s
Durée d'un éc 00h 15m 00.0s
Nombre de mes 90
Nombre total de mesures 1080
Intervalle de scrutation du Scanmar 00h 00m 10.0s
Intervalle de scrutation GPS 00h 01m 00.0s
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
config : S4T3H
Durée totale de la manip 03h 00m 00.0s
Intervalle de scrutation 00h 00m 10.0s
Durée d'un échantillon 00h 15m 00.0s
Nombre de mesures par échantillon 90
Nombre total de mesures 1080
Intervalle de scrutation du Scanmar 00h 00m 10.0s
Intervalle de scrutation GPS 00h 01m 00.0s
D'accord
Modifier
Récupérer
Abandonner
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER


Meschal
config : ********
11h 42m 58s
Durée totale de la manip 03h 00m 00.0s
Intervalle de scrutation 00h 00m 10.0s
Durée d'un échantillon 00h 15m 00.0s
Nombre de mesures par échantillon 90
Nombre total de mesures 1080
Intervalle de scrutation du Scannar 00h 00m 10.0s
Intervalle de scrutation GPS 00h 01m 00.0s
action
D'accord Modifier Récupérer Abandonner
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
action
Bon et je continue Sauvegarde config Abandonner
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER


Meschal
config : S4T3H
Préparer 19-04-1994
Disque virtuel : E √
Voies analogiques √
Série Scanmar √
Série position √
Temps √
Continue
Quitte
Durée totale 03h 00m 00.0s
Intervalle de 00h 00m 10.0s
Durée d'un éc 00h 15m 00.0s
Nombre de mes 90
Nombre total de mesures 1080
Intervalle de scrutation du Scanmar 00h 00m 10.0s
Intervalle de scrutation GPS 00h 01m 00.0s
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER
Meschal
nom du nouveau fichier de configuration (sans extension) S4T3H
Programme Turbo-Pascal Y.CADIOU et G.BAVOUZET - IFREMER


MESCHAL
??????. fichier : MESURES.txt
date : 21-04-1994. duree scrutation : 0.1 s
duree echantillonage : 5.0 s, nombre de mesures : 100
duree de la mesure : 10.0 s, nombre de voies : 5
heure debut mesure : 12:17:45.6
mini moyenne maxi
1 100 LOCH_BEN noeuds -0.110 -0.110 -0.110
2 100 PAS_HELICE cran 3.989 4.078 4.205
3 100 TEMPMOTEUR degres 939.762 942.057 944.646
4 100 ANGLEBARRE degres -3.184 -2.976 -2.818
5 100 REFALIM volts 0.000 0.000 0.000
Mesures Imprime Page Filtre Quitte
MESCHAL
??????. fichier : MESURES.txt
date : 21-04-1994. duree scrutation : 0.1 s
duree echantillonage : 5.0 s, nombre de mesures : 100
définitions (sortie avec <ESC>)
pente o.o mini maxi unité titre
voie 1 9.095 -0.110 -2.000 10.000 noeuds LOCH_BEN
voie 2 3.158 -11.820 -6.000 10.000 cran PAS_HELICE
voie 3 200.035 1.380 0.000 1000.000 degres TEMPMOTEUR
voie 4 11.555 -50.575 -40.000 40.000 degres ANGLEBARRE
voie 5 1.000 0.000 0.000 10.000 volts REFALIM
5 100 REFALIM volts 0.000 0.000 0.000


MESCHAL
??????. fichier : MESURES.xsm
date : 21-04-1994. duree scrutation : 1.0 s
duree de la mesure : 10.0 s
heure debut mesure : 12:17:45.6
mini moyenne maxi
TS1 10 10 3.6 3.6 3.9
CC 10 10 -0.6 -0.6 -0.6
DI1 10 10 48.4 48.4 48.4
DE 10 10 0.0 0.0 0.0
DI2 10 0 99999.0 0.0 -99999.0
DE 10 10 0.0 0.0 0.0
CS1 0 0 99999.0 0.0 -99999.0
DI3 0 0 99999.0 0.0 -99999.0
DE 0 0 99999.0 0.0 -99999.0
CS2 0 0 99999.0 0.0 -99999.0
HG1 10 10 1.5 1.6 1.6
DE 10 10 0.0 0.0 0.0
QU 10 0 99999.0 0.0 -99999.0
TS2 10 10 1.8 1.9 2.1
CC 10 10 0.8 0.8 0.8
Mesures Imprime Page Filtre Quitte
MESCHAL
??????. fichier : MESURES.xsm
date : 21-04-1994. duree scrutation : 1.0 s
duree de la mesure : 10.0 s
définitions (sortie avec <ESC>)
heur code mini maxi nom maxi
TS1 0 5 Vit.Long. (m)
CC -5 5 Vit.Trans. (m)
DI1 20 70 Panneaux (m)
DE 0 0
DI2 10 30 Ptes Ailes (m)
DE 0 0
CS1 0 0
DI3 0 0
DE 0 0
CS2 0 0
HG1 0 5 Ouv.Vert. (m)
DE 0 0
QU 0 0
TS2 0 5 Vit.Grille (m)
CC -45 45 Ang.Grille (d)