

Reunion NOAS 07 le 17 Janvier 1990

Présents: P.Antonsanti J.Boillot F.Di Maio B.Frammery J.Lewis A.Pace F.Perriollat
Ch.Serre C.H.Sicard U.Raich M.Boutheon

Excuses: E.Malandain JP.Potier JP.Riunaud

1. PLS : conditions exterieures et programmes "SPARE"

= Julian expose les possibilites du nouveau concept, comment se structurent l'interface utilisateur et le nouveau materiel. Dans ces conditions il demande que l'operation definisse ses besoins et ses intentions pour editer les equations logiques determinant l'uyilisation des programmes "spare". Ces derniers peuvent etre plus souples et sophistiques qu'actuellement car s'adressant non seulement au PS mais a ses injecteurs "independants".

= Jean rappelle l'etat, l'usage et les possibilites du systeme actuel, en particulier la gestion des conditions exterieures liees au PS et PSB; le LPI gerant de facon quasi autonome ses propres conditions. Les lignes combinees (32) sont elaborees avec une logique simplifiee. La tendance serait de diminuer le nombre de ces lignes, mais en augmentant la capacite de leur logique de formation. Seuls quelques specialistes devraient y avoir acces.

ACTION => Jean et Bertrand analyseront les etats correspondants aux programmes NORMAL, SPARE et DUMP (ce dernier necessaire pour reagir a une condition exterieure arrivant trop tard pour etre prise en compte pour demarrer un programme SPARE). On s'achemine vers une declaration d'un supercycle complet en SPARE, le passage de NORMAL a SPARE pouvant avoir lieu en cours du deroulement du supercycle . Mais attention a la synchronisation de l'evaluation des conditions exterieures. On n'envisage pas un etat "SPARE de SPARE".

Jean et Bertrand elaboreront ces specifications avec Julian (NOAS reunion si necessaire ou en cas de consequences lourdes sur le fonctionnement PPM actuel).

Transparents de Julian: ANNEXE 1 A - J

Transparents de Jean: ANNEXE 2 A - C

2. Interface humaine/Workstations.

La premiere version elaboree apres les premieres specifications de NOAS par Julian a succite des reactions. Une tentative d'un autre type d'interface - basee sur des techniques et structures couramment vu dans des produits commerciaux largement utilises dans le reseau PS par exemple - est presentee par Alberto (PLS et generalites) et Marcel (PS Injection 1 GeV).

Si l'on tente de resumer les caracteristiques des deux voies:

- la premiere utilise des fenetres specialisees (en petit nombre donc efficace au maximum) optimisees pour un processus particulier

- l'autre proposition (structuree plus finement donc plus ramifiee) tente d'elaborer des fenetres et menus identiques applicables a de nombreux processus.

On retrouve la les deux classiques des specifications d'interface humaine: specialisation ou standardisation, avec les avantages et inconvenients respectifs bien connus et debattus en de nombreuses occasions dans le passe (relatifs a la complexite, l'apprentissage, la vitesse, la clarte...etc...).

Quelques points souleves au cours de la reunion meritent d'etre notes.

= les transparents presentes ne sont pas encore une specification, au sens ou les processus ne sont pas entierement et exactement definis et decrits.

= les figures montrees ont ete elaborees sur des outils du reseau informatique du PS; il est entendu que la realisation se fait dans le cadre du systeme de controle de processus PS (XWindows, DECstations, toolboxes et widgets du groupe CO).

= le terme FILE qui figure sur les menus proposes n'implique aucune option sous entendue sur la structure et les outils de stockage des donnees. Pour l'Operation, il s'agit d'un ensemble de valeurs d'elements coherents pour un processus que l'on peut nommer, stocker, rappeler, mettre a jour, ..etc..en lui donnant un nom reconnaissable.

Neanmoins, la proposition est basee sur l'existence de tels quantites, que nous appelons ARCHIVES. Le probleme de la coherence de celles-ci en particulier du au PPM ou non doit etre approfondi. Cependant on peut envisager que le travail on-line s'adresse a une seule ARCHIVE contenant les parametre PPM + non PPM (Baptisee dans les transparents HARDWARE) en meme temps qu'au materiel. Le travail off-line sur une ARCHIVE ne s'adresserait qu'aux parametres PPM. HARDWARE ne serait utilisee en bloc que pour un setup apres coupure generale puisque representant a un instant l'etat du hardware. L'envoi d'une ARCHIVE X pourrait se faire en laissant les variables non PPM en l'etat. Autre solution: tester les parametres non PPM et prevenir l'utilisateur d'une non-coherence ? Un cas doit de toute facon etre resolu: celui des GFA.

=> ce sujet a besoin d'etre etudie ! Il conditionne la possibilite d'avoir ou non des ARCHIVES que l'on puisse traiter comme telles pour les processus. Fabien rappelle que beaucoup d'information est presente seulement dans les E.M et difficile a archiver.

= la proposition n'est pas assez proche des guide-lines de X-Windows: ceci sera revu et une proposition plus conforme fera l'objet d'une note a paraitre.

= dans le choix du menu VIEW: nous proposons une exclusion entre type GRAPHIQUE ("Synoptic") et type TABLE. Ceci sera revu selon les cas pour plus de souplesse.

Proposition cadre:

ANNEXE 3 pages A - E : PS Injection

ANNEXE 4 pages A - C : Supercycle editor

ANNEXE 5 pages A - C : Beam editor

ANNEXE 6 page A : Cycle editor

ANNEXE 7 page A : ecran WST complet pour PLS ?

B : ecran WST pour injection PS ?

C : ecran WST pour PLS actuel ?

Les differents etats correspondants aux fenetres presentees et les evenements declenchant les transitions entre ces etats ont ete elabores mais ne sont pas presentes ici pour simplifier. Les figures ont ete arrangees pour montrer si possible la similitude des presentations et actions disponibles. Les interactions sont assez claires selon les fenetres proposees. Comparez par exemple les pages

annexe 3 A annexe 4 A et annexe 5 A

annexe 3 B annexe 4 B et annexe 5 B

annexe 4 C annexe 5 C et 6 C (annexe 6 est "comprimee" pour simplifier)

l'annexe 3 E peut etre utilisee pour toute MESURE. (presentation et menus)

3.Outils en cours. Application test.

Franck rappelle qu'il existe un outil "knob" (utilise d'ailleurs dans les transparents annexes 3 C, 7 B) et qu'il prepare un outil de presentation de controle/acquisition. D'autre part une application prototype de mesures est en cours d'elaboration dans le cadre XWindows : mesure CODD 2 tours. Cela nous permettra de tester cette interface plus pratiquement...Franck ne voit pas de collision grave avec les propositions presentees ci-dessus.

Tests sur Workstations: **apres login**

cd /user2/wsc/examples

testknob permet de jouer avec cet outil

testdigit devrait visualiser des valeurs rafraichies.

Autre chose: **cd /usr/examples/decburger**

decburger permet de voir quel type d'outil XWindows peut etre utilise selon l'etendue du choix a faire.

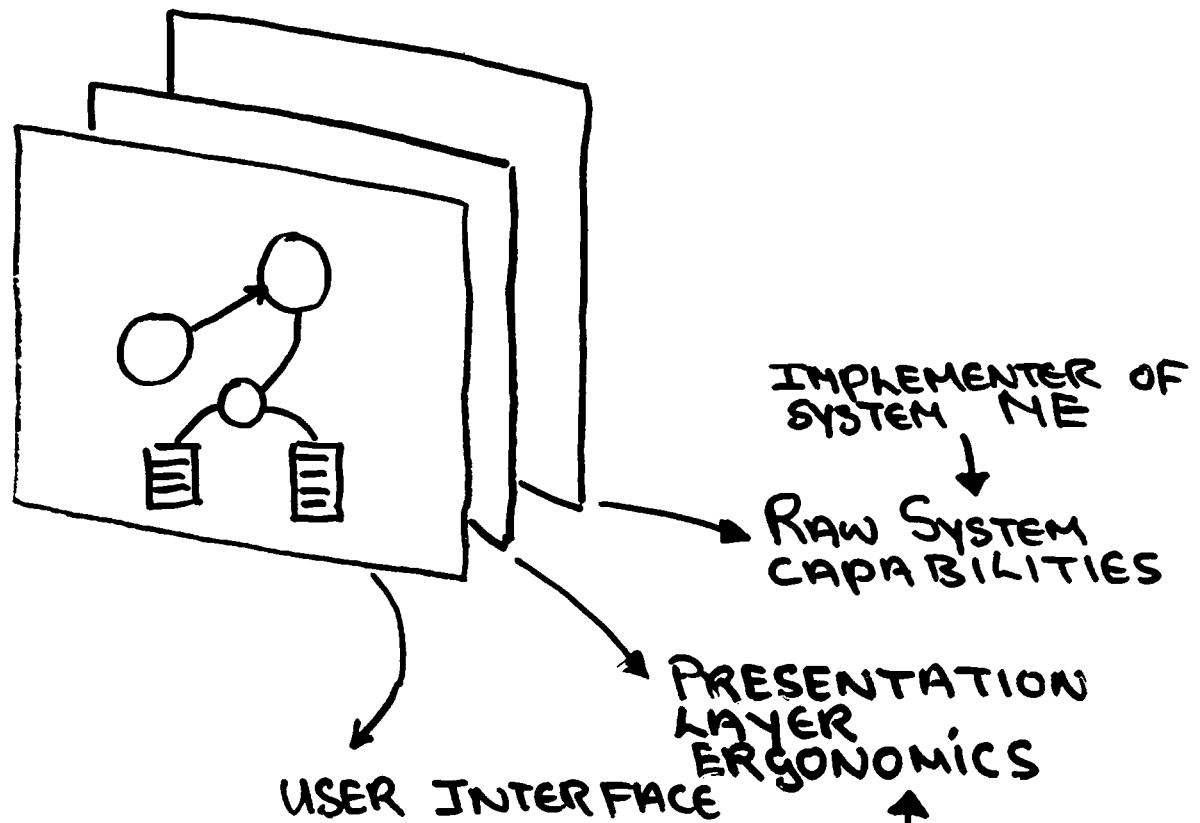
Gens d'operation, vous etes convies a tester ces outils. Enfin vous pouvez aussi continuer de tester le PLS car cela fonctionne de mieux en mieux meme si l'interface humaine n'est pas celle que nous souhaitons definitive.

M.Boutheon

Distribution: du draft => personnes presentes.

J.Boillot	GP.Benincasa	E.Durieu (archive)
M.Boutheon	S.Baird	D.Gueugnon
F.Di Maio	V.Chohan	D.Manglunki
B.Frammery	J.Cuperus	G.Tranquille
J.Lewis	G.Daems	P.Antonsanti
E.Malandain	W.Heinze	JM.Elyn
A.Pace	L.Henny	open
JP.Potier	B.Kuiper	
JP.Riunaud	S.Maury	
C.Serre	N.de Metz-Noblat	
CH.Sicard	F.Perriollat	
	T.Pettersson	
	U.Raich	
	G.Shering	
	Ch.Steinbach	

USER INTERFACES - general Points



IN OUR CASE, THE RAW SYSTEM CAPABILITIES HAVE BEEN MAXIMIZED TO COVER ALL EVENTUALITIES.

THE USER INTERFACE IS A TRADEOFF BETWEEN ERGONOMICS AND SYSTEM CAPABILITIES.

THE PRESENTATION LAYER TRANSLATES BETWEEN THE USER INTERFACE AND THE SYSTEM. IT CAN HIDE THE SYSTEM FROM THE USER.

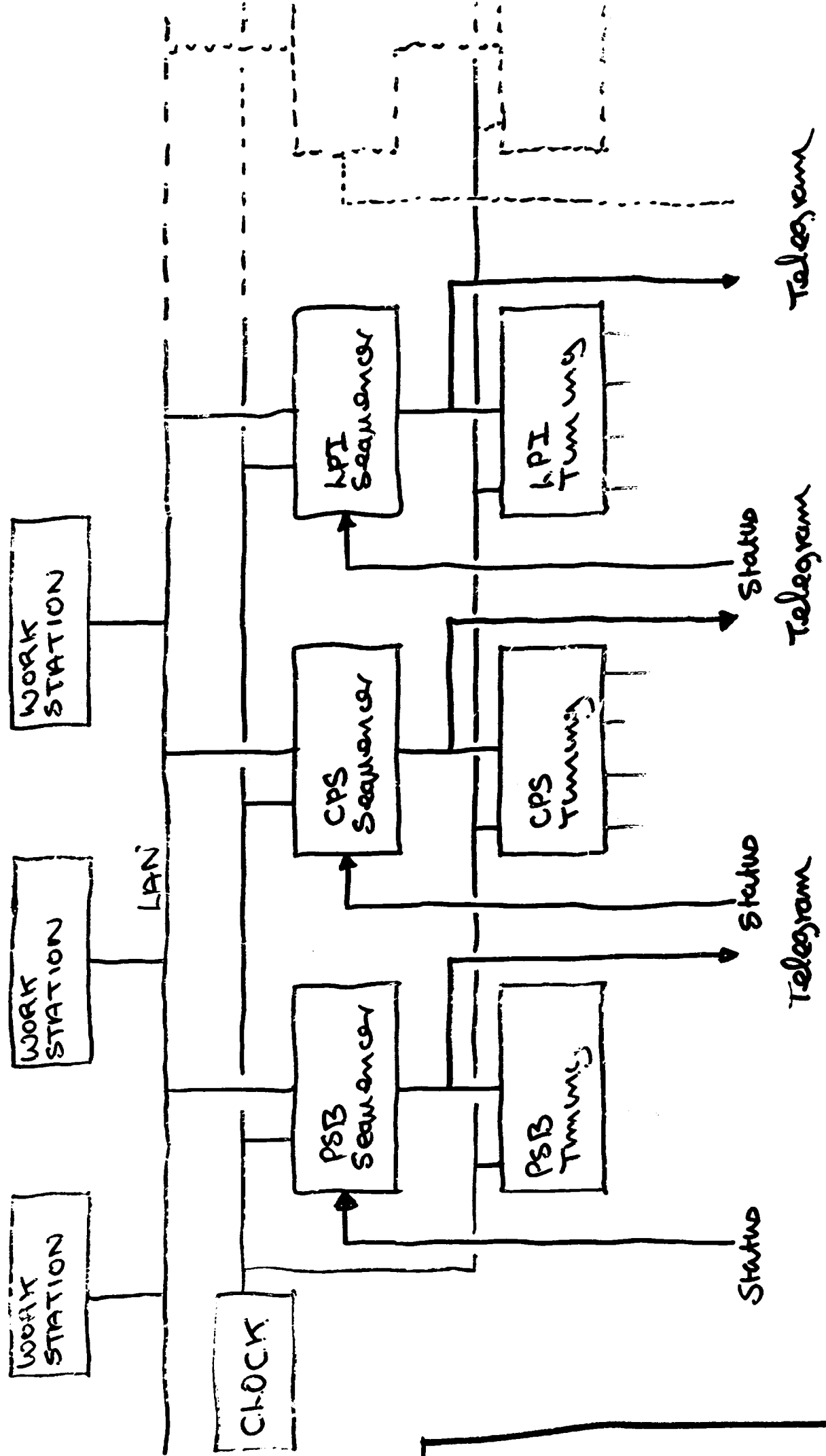
THE BASIC TRADE OFF

AS PRESENTATION LAYER $\rightarrow \emptyset$

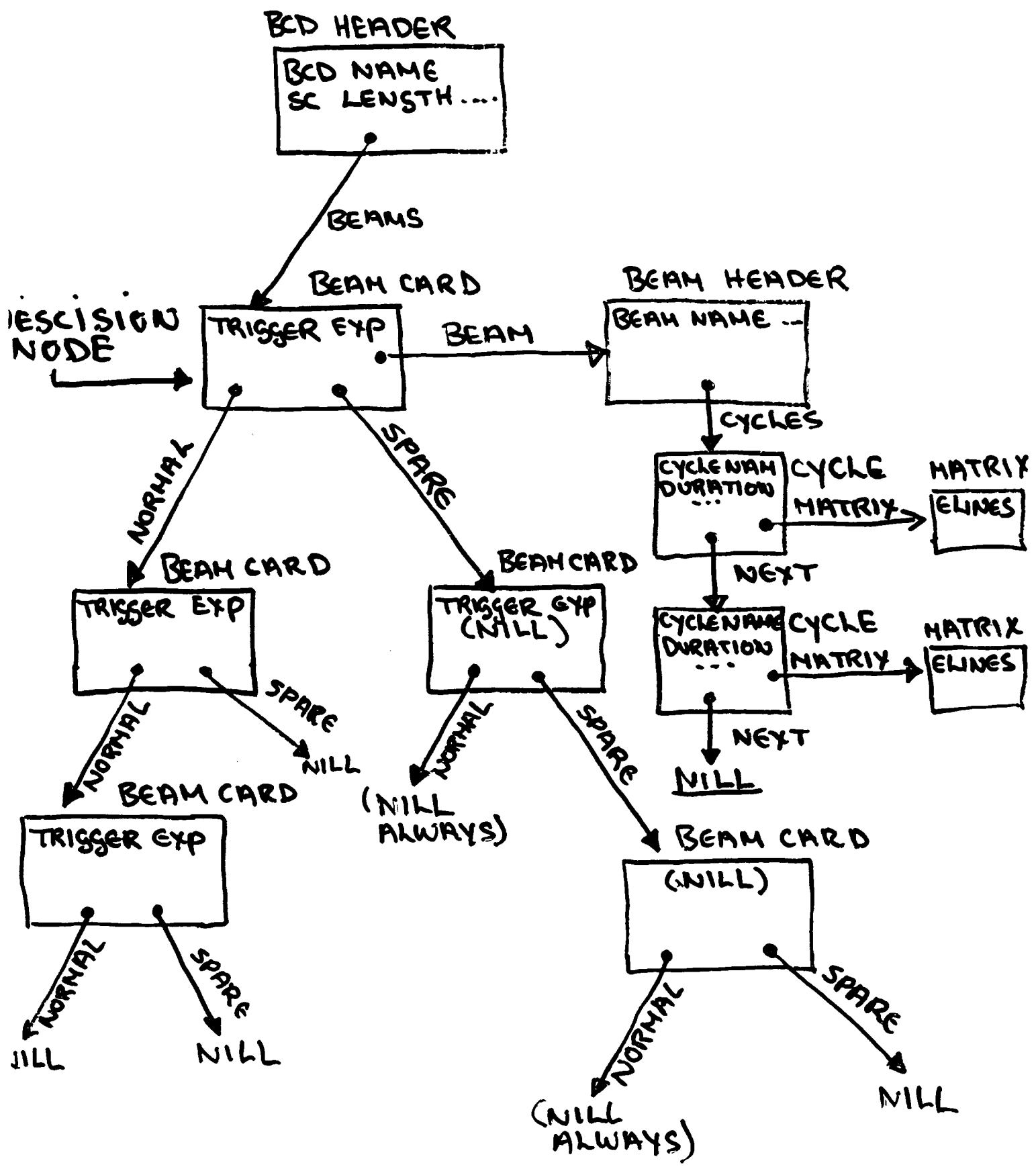
- + 1) MINIMUM IMPLEMENTATION
- + 2) USER INTERFACE \rightarrow RAW SYSTEM CAPABILITY
- 3) TEDIOUS TO USE
- 4) EASY TO MAKE MISTAKES
- + 5) WE DON'T NEED TO PREDICT FUTURE
- 6) DIFFICULT TO LEARN

A GOOD EXAMPLE OF $P \rightarrow \emptyset$ IS THE UNIX SHELL
X-WINDOWS
NODAL

COURSE TIMING AND SEQUENCING: AN ID SYSTEM



THE BCD STRUCTURE



Edit super-cycles of the PS complex.

ARCHIVES EDIT HELP EXIT

Machine: CPS super cycle julian (12 BPs 14.4 Sec) Scroll = 1

ELECT 1	SFT 2	SFT 3	PHY25 4	LEAR 6	TSTD 7	AAprod 8	POSIT1 10	POSIT2 11	ELECT 12
ELECT 1	SFTD3 2	SFTD3 3	AAprod 4	MD 6	LEAR 7	TSTD 8	ZEROP 10	ZEROP 11	ELECT 12

Machine: PSB super cycle

SFT 1	SFT 2	PHY25 3	ME1 4	ZERO 5	TSTD 6	AA 7	ME1 8	ME1 9	ZERO 10	ME1 11	ZERO 12
SFT 1	SFT 2	AA 3	ME2 4	MD 5	ZERO 6	TSTD 7	TSTD 8	ZERO 9	ZERO 10	ZERO 11	ME1 12

Machine: LPI super cycle

POSITJP 1										POSIT2 10	ELECT 11	ELECT 12
ZERO 1	ZERO 2	ZERO 3	ZERO 4	ZERO 5	ZERO 6	ZERO 7	ZERO 8	ZERO 9	ZERO 10	ELECT 11	ELECT 12	

NOAST
ANNEXE 1
D

EXTERNAL CONDITIONS

Signal levels presented to a sequencer which control selection of the DUMP or SPARE option.

SPARE if USER.AA and not AA-READY
DUMP if not VACUM-OK

COMBINED LINES

A set of bits in the telegram whose value is the result of some expression.

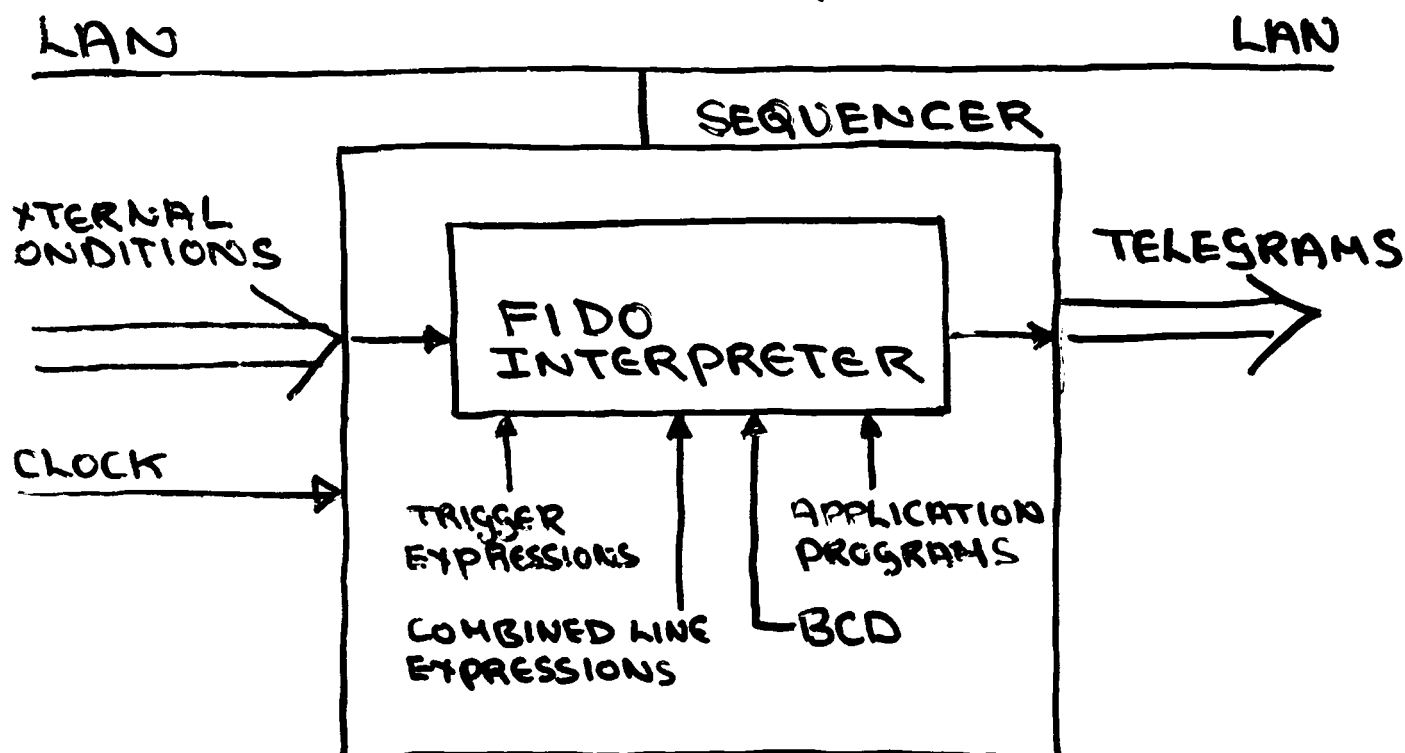
LEPTON if P.TYP.ELECTRON or P.TYP.POSITRON
+ FIRST if BPNM is 1
+ AA-READY if AA-READY

In fact there is very little difference between the way a sequencer treats combined lines and external conditions.

We define two terms:

TRIGGER EXPRESSION

COMBINED LINE EXPRESSION



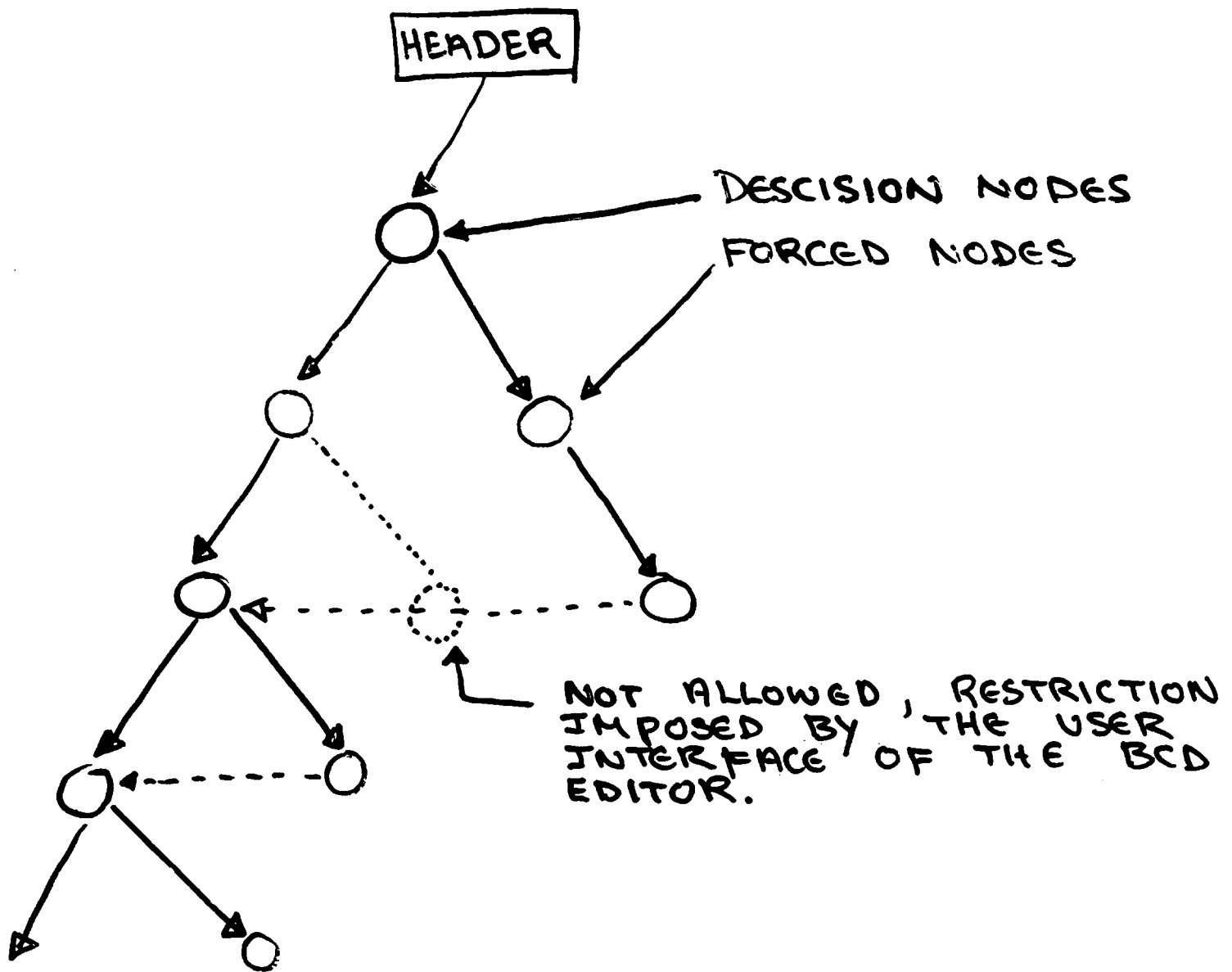
FIDO CAPABILITIES

- 1) Its a full blown interpreter optimized for handling bit and boolean expressions
- 2) Its job is to build telegrams in real time so it is very fast.
- 3) It is reentrant so it can run diagnostic programs, update tasks etc concurrently.

Operators

#	NOT EQUAL TO	<<	LEFT SHIFT
=	EQUAL TO	>>	RIGHT SHIFT
>	GREATER THAN	++	INCREMENT
>=	GREATER OR EQUAL	--	DECREMENT
<	LESS THAN	.	BIT FIELD
<=	LESS OR EQUAL	[]	TELEGRAM GROUP
:=	ASSIGNMENT	()	RECURSION
+	ADD	@	TERMINATE
-	SUBTRACT	, ;	SEPERATORS
*	MULTIPLY	IF	CONTROL STRUCT
/	DIVIDE	DO	CONTROL STRUCT
&	AND		
!	OR		
!!	XOR		
##	BIT COMPLIMENT		
#-	NEGATE		

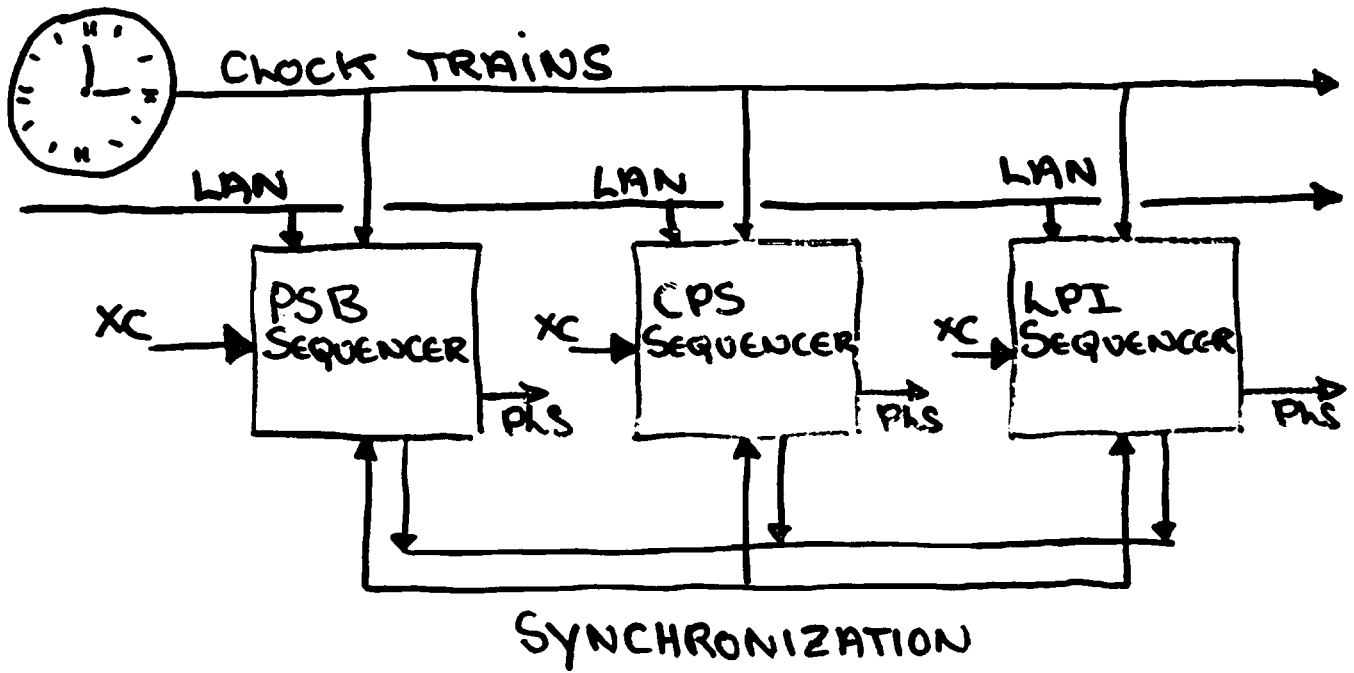
A BCD IS A DIRECTED GRAPH



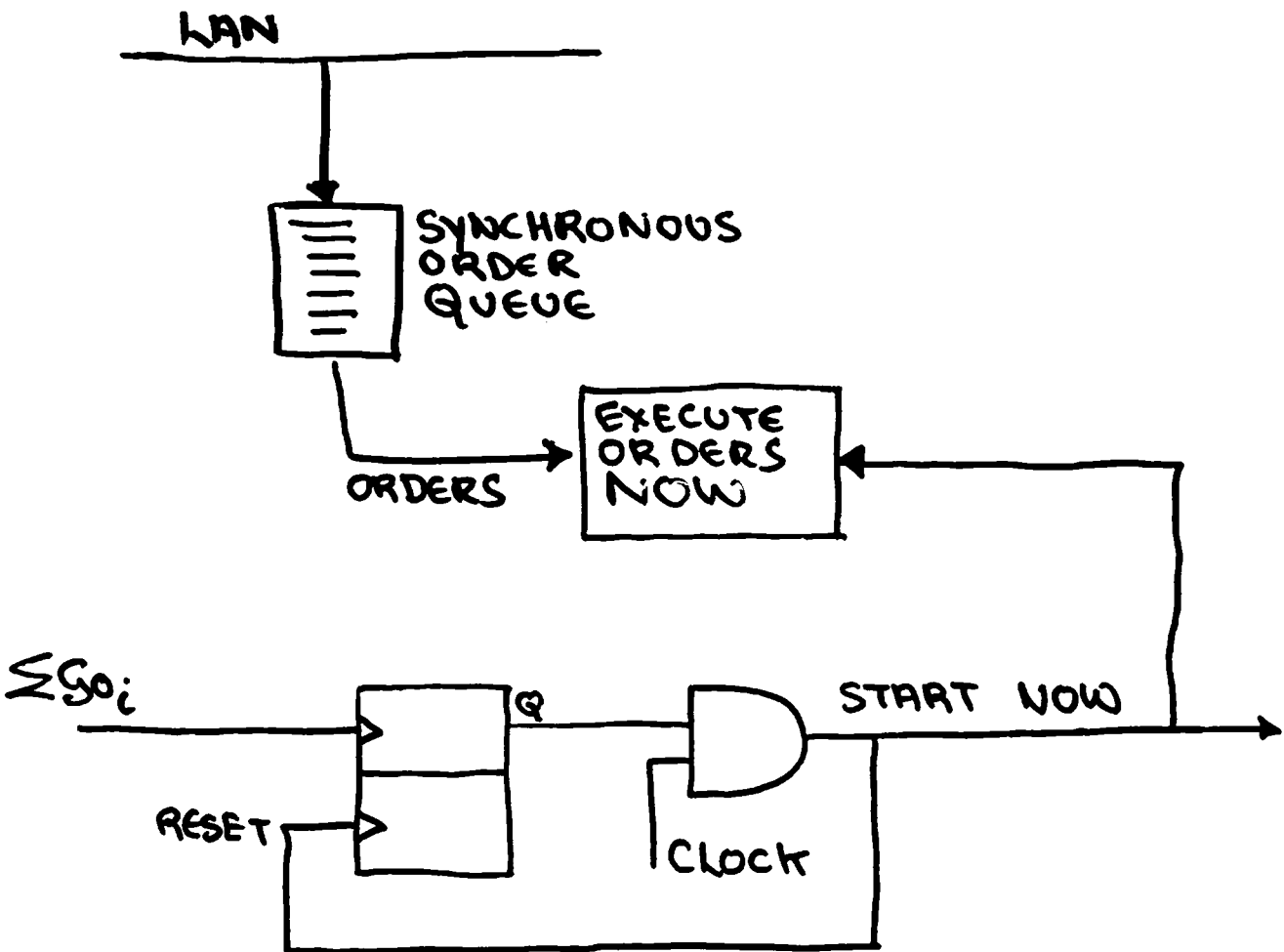
THE PATH THROUGH THIS GRAPH TAKEN BY THE SEQUENCERS DEPENDS ON THE TRIGGER EXPRESSION RESULTS AT THE DECISION NODES ; WHICH IN TURN DEPEND ON THE EXTERNAL CONDITIONS.

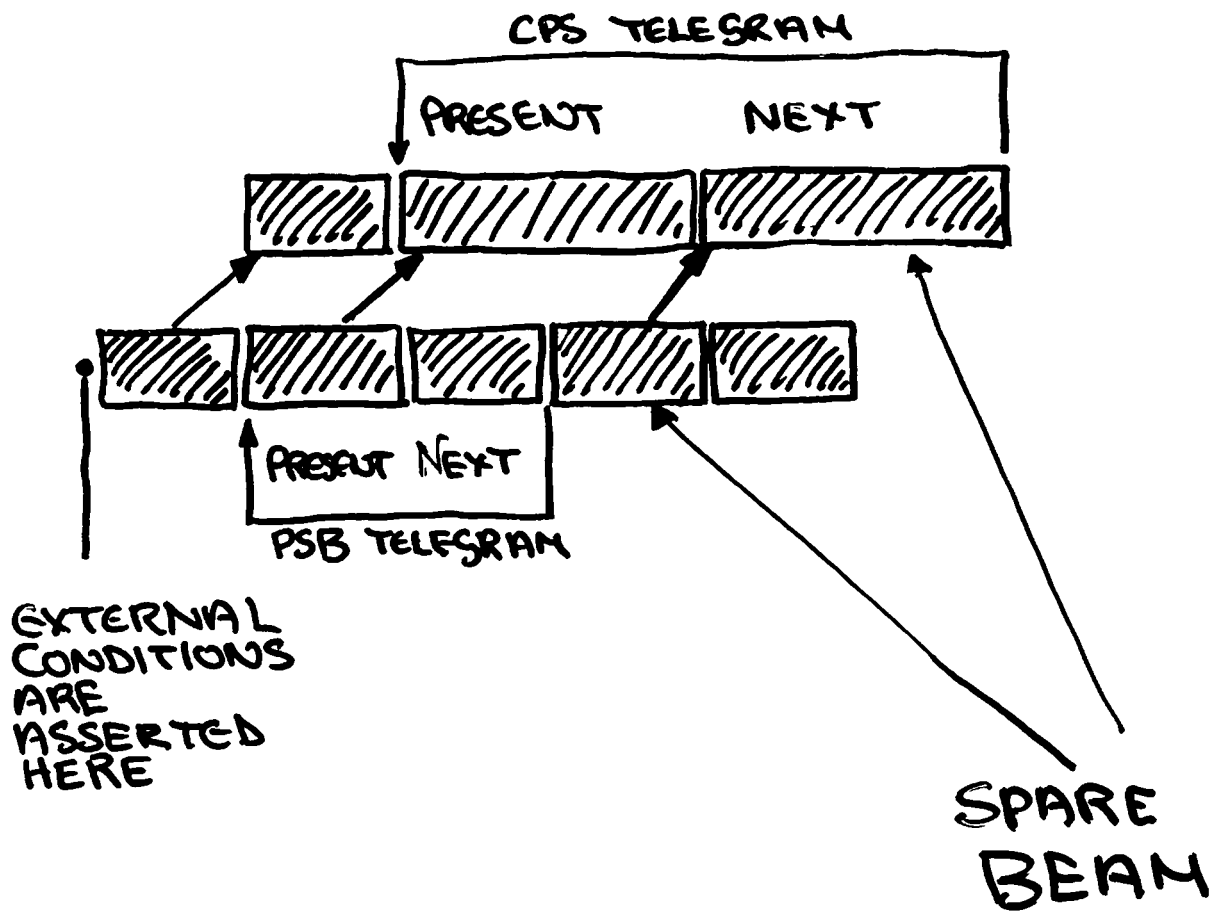
WE COULD EVALUATE A DIFFERENT TRIGGER EXPRESSION AT EACH NODE

EXTERNAL CONDITION TIMING



SYNCHRONIZATION LOGIC





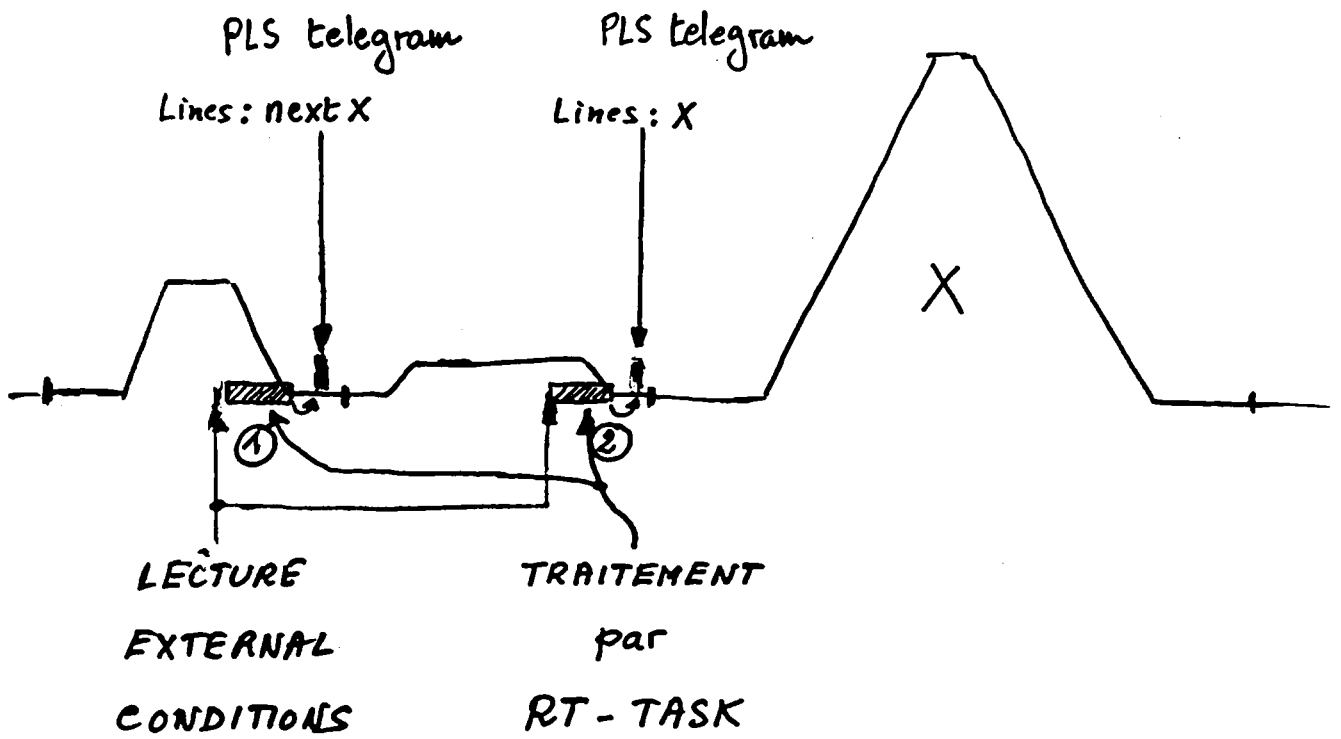
When a telegram is sent out by a sequencer, the system is COMMITTED to both the PRESENT and NEXT lines.

- 1) External conditions arrive at source machine
- 2) Send Synchronous order "SELECT SPARE"
- 3) We can get reply
 - a) OK
 - b) COMMITTED = NOT OK
- 4) if a) Build Spare
else wait 1 SC
Build Spare.

Questions

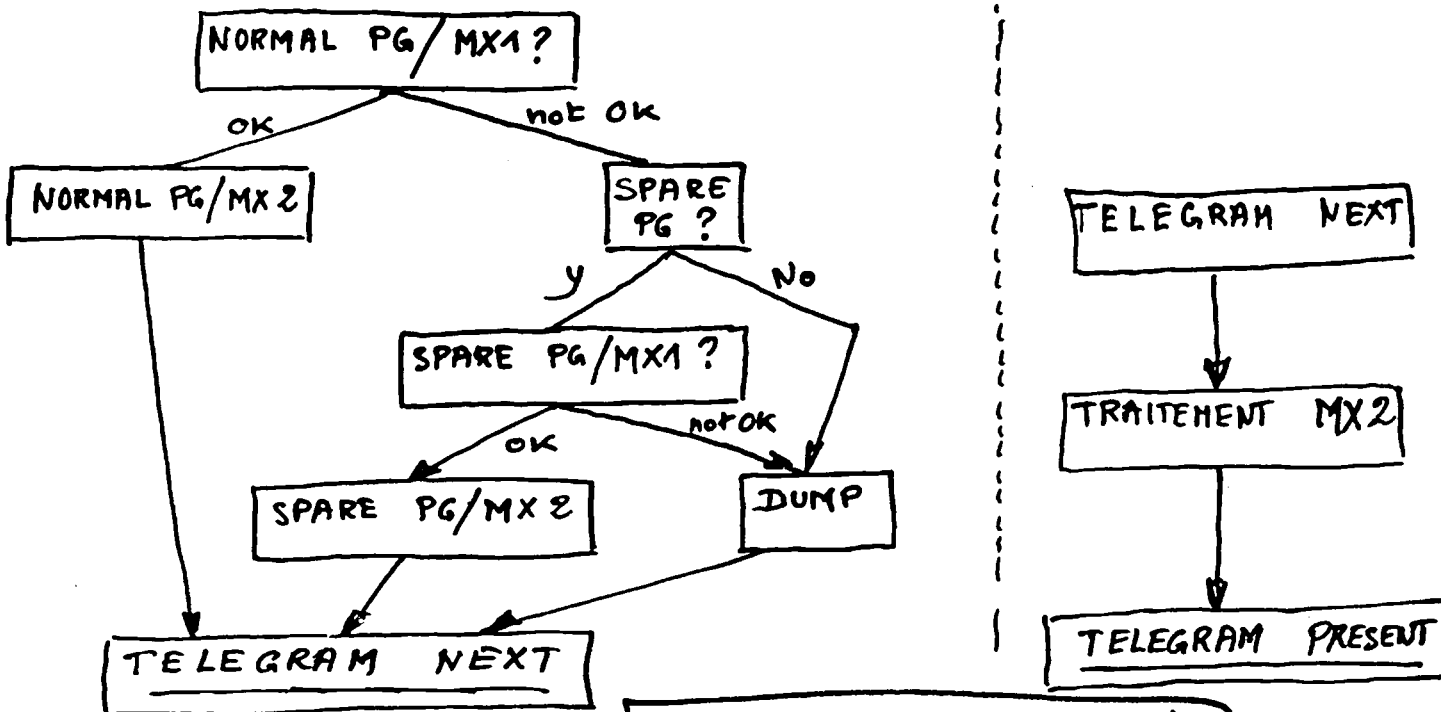
- 1) What real time response is required to external condition changes (DUMP not included)
- 2) Do you want the trigger expressions to be linked to a position in the BCD
- 3) What kind of trigger expression representation
- 4) Do you think the power FIDO gives in making combined lines is useful.
→ IE FIRST if BPNM = 1
LAST if NEXT BPNM = 1
etc.

RT TASK - cycle X



TRAITEMENT PHASE ①

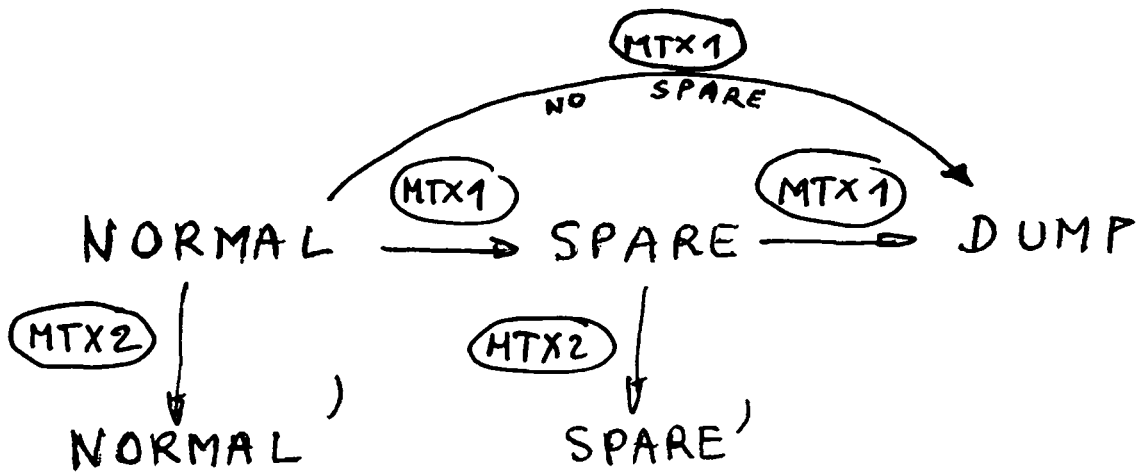
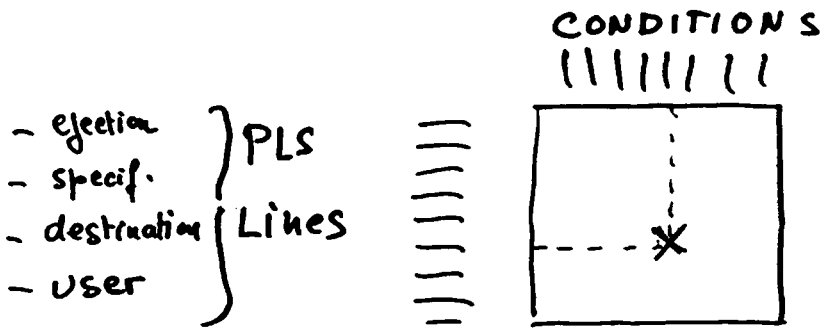
PHASE ②



EXTERNAL CONDITIONS

- 2 types :
- Request, Ready - - -
 - HW conditions

2 matrix
 MTX 1
 MTX 2

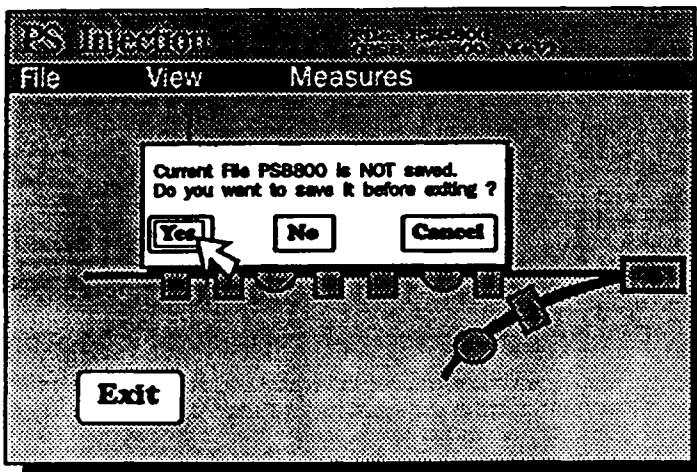
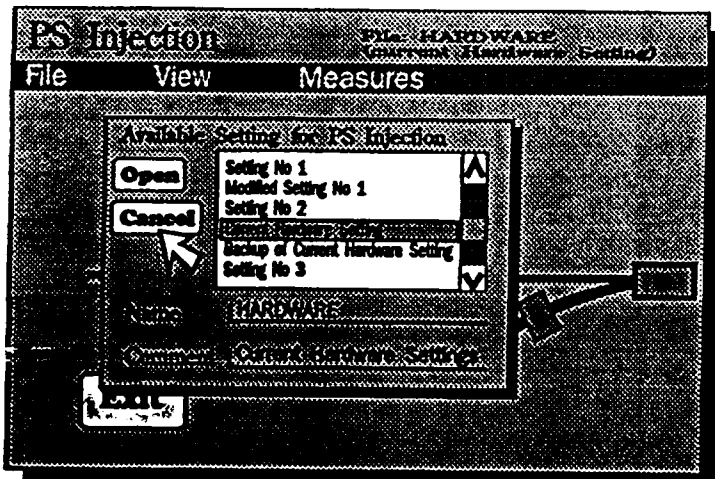
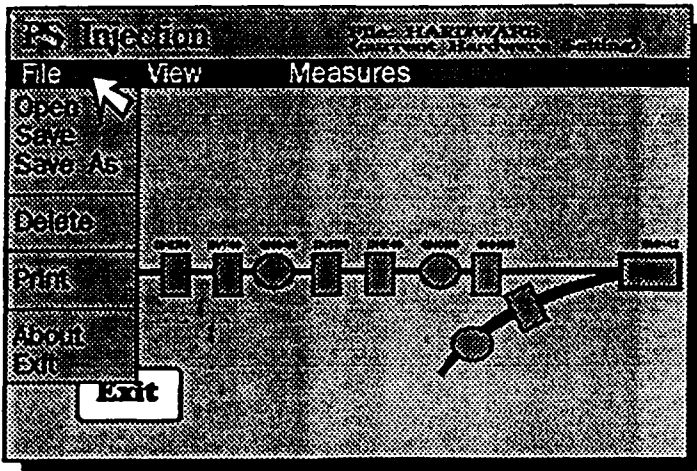


COMBINED LINES

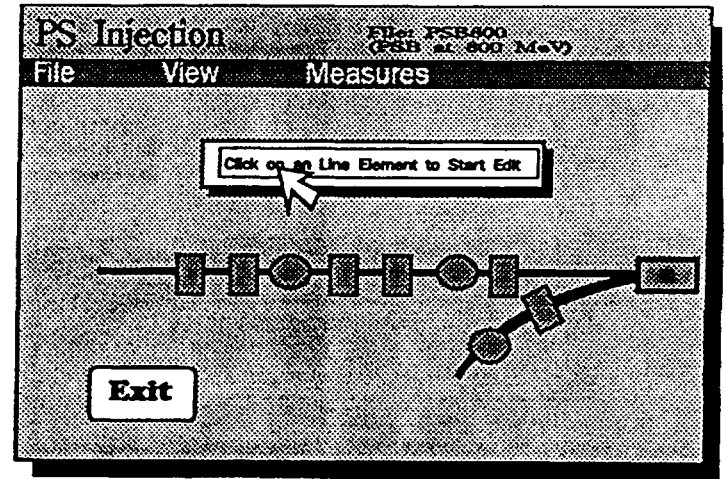
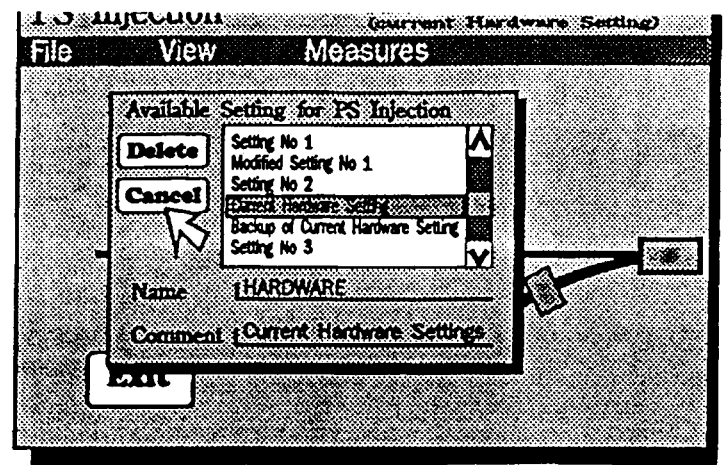
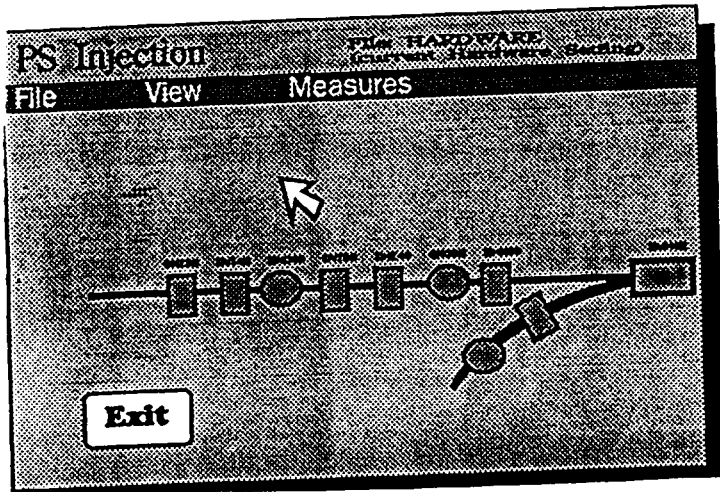
PS PSB PROGRAM LINES LOGIC DATE: 1989-12-04-09:24:23

	MODIFICATION POSSIBLE		MODIFICATION POSSIBLE	
81	SPFTA =	SPA FTA	97 LC1 = AA	OR SFT
82	NRFTA =	NRM FTA	98 LC2 =	SPA FE58S
83	DIREC = NRFTA	AND TST	99 LC3 =	NRM FE58S
84	PGFTA = SPFTA	OR NRFTA	100 LC4 = LC2	OR LC3
85	PRODU = PGFTA	AND FE16A	101 LC5 = PBAR	AND ALL
86	NRATP =	NRM ATPP	102 BOUCL = NRATP	AND TST
87	INJLI = PRODU	OR DIREC	103 PR+PB = PROT	OR PBAR
88	SPP6 = SPP	AND 6-12	104 EJLI = ATPA	OR BOUCL
89	NR16S =	NRM SPP6	105 AATEJ = ATPP	AND NODMP
90	APTST = TST	AND 6-12	106 AATIJ = FTA	AND NODMP
91	PPBAR = SPP6	OR PBAR	107 REINJ = SPN	AND PROT
92	NRFTS =	NRM FTS	108 ATP = ATPP	OR ATPA
93	NODMP =	NOT PGDMP	109 FTS*P = PROT	AND NRFTS
94	SPN6 = SPN	AND 6-12	110 I.EPA = ELEC	OR POSIT
95	SM.DP = SIMUL	OR PGDMP	111 DECEL = TST	AND 10
96	\IP=0 = ZERO	OR SM.DP	112 \ZERO = ALL	AND ZERO
09:24	00 KNOB		MAILBOX CREATION FAILED	
09:24	00 KNOB		TERMINE	
09:24	00 DISPL-COMB-PL		TERMINE	

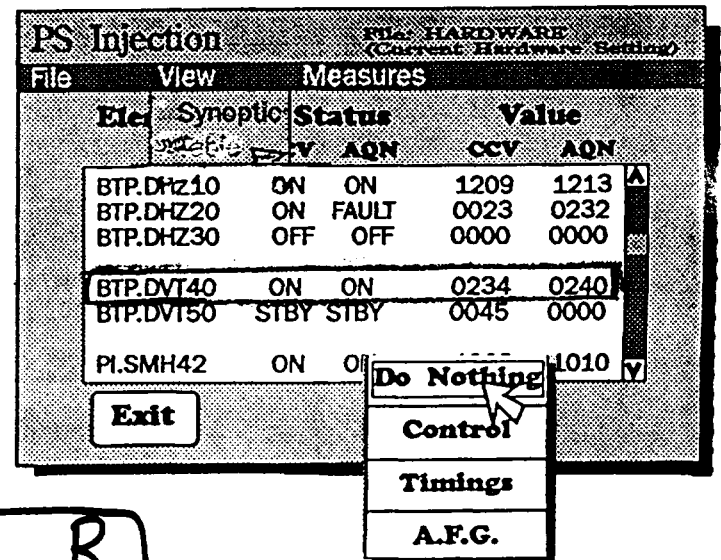
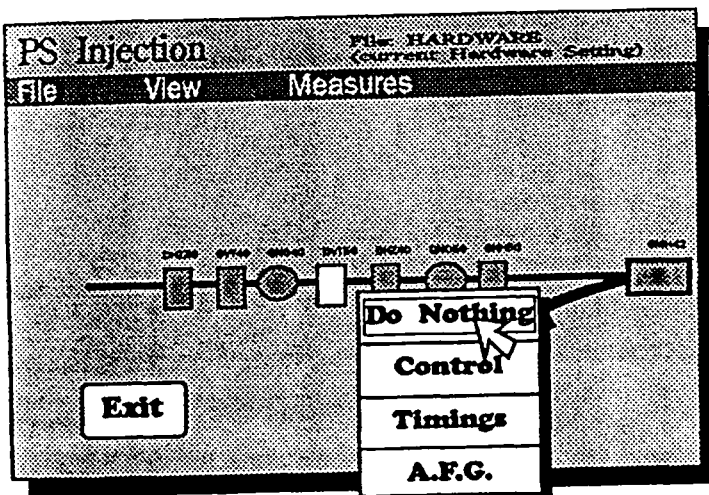
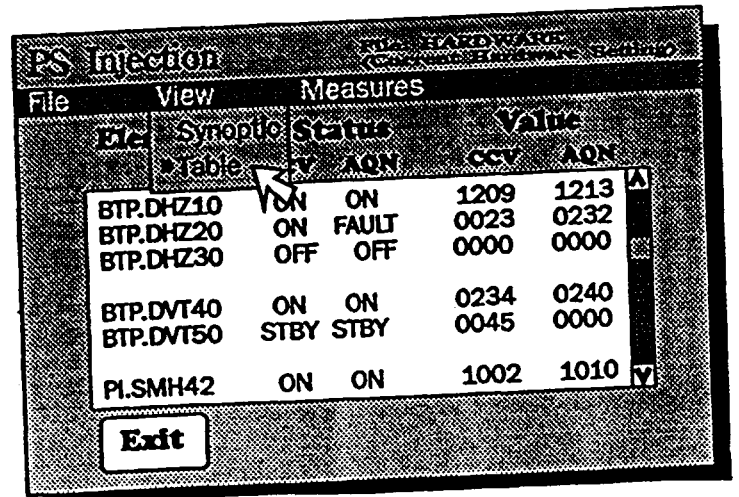
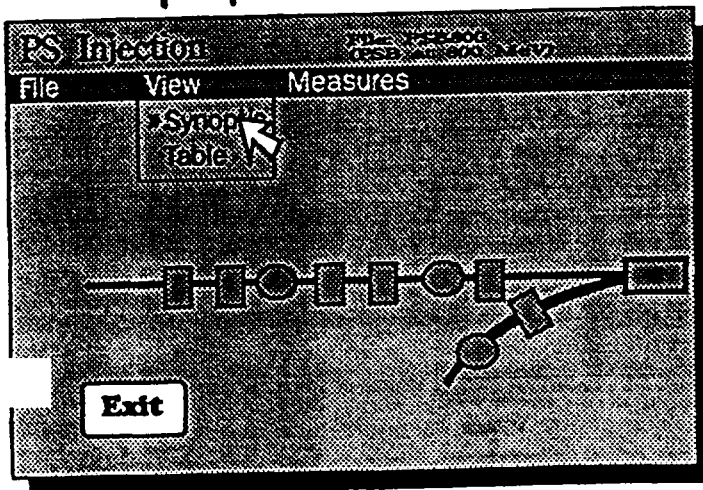
NOA57 ANNEXE 2 C



NOAS 7 ANNEXE 3 A



"Synoptic" Dualité de présentation → "Table"



(NOA57 ANNEXE 3 B)

Elements control

Control Panel for Element BTPDVT40
 FILE: HARDWARE
 Element Type: Steering Vertical
 CCV Status: On, Off, Standby
 AqN Status: On
 INIT 0100 A
 CCV ▲▲▲▲ 0032 A
 ▼▼▼▼
 AQN 0034 A
 Reset Exit

Control Panel for Element PLSMH42
 FILE: HARDWARE
 Element Type: Septum Magnet
 CCV Status: On, Off, Standby
 AqN Status: Local
 INIT 1300 A
 CCV ▲▲▲▲ 1209 A
 ▼▼▼▼
 AQN 1178 A
 Reset Exit

PS Injection FILE: HARDWARE (Current Hardware Settings)
 File View Measures

Element	Synoptic Table	Status	Value
		TV AQN	CCV AqN
BTP.DHZ10	ON	ON	1209 121
BTP.DHZ20	ON	FAULT	0023 023
BTP.DHZ30	OFF	OFF	0000 000
BTP.DVT40	ON	ON	0234 024
BTP.DVT50	STRY	STRY	0045 000
PL.SMH42			

Control Panel for Element BTPDVT40
 FILE: HARDWARE
 Element Type: Steering Vertical
 CCV Status: On, Off, Standby
 AqN Status: On
 INIT 0100 A
 CCV ▲▲▲▲ 0032 A
 ▼▼▼▼
 AQN 0034 A
 Reset Exit

Control Panel for Element PLSMH42
 FILE: HARDWARE
 Element Type: Septum Magnet
 CCV Status: On, Off, Standby
 AqN Status: Local
 INIT 1300 A
 CCV ▲▲▲▲ 1209 A
 ▼▼▼▼
 AQN 1178 A
 Reset Exit

PS Injection FILE: HARDWARE (Current Hardware Settings)
 File View Measures

Do Nothing
 Control
 Timings
 A.F.G.

Exit

Timings control

PS Injection FILE: P8B800 (EEP at 800 McV)
 File View Measures

Control Panel for Timing PKSKPA45
 FILE: RUN3-91
 Kicker KFA 45 Start
 CCV Trains: OC, OB, Fast RF
 AqN Trains: XXXXXXX
 INIT 4320 RF
 CCV ▲▲▲▲ 3516 RF
 ▼▼▼▼
 AQN XXXXX RF
 Exit

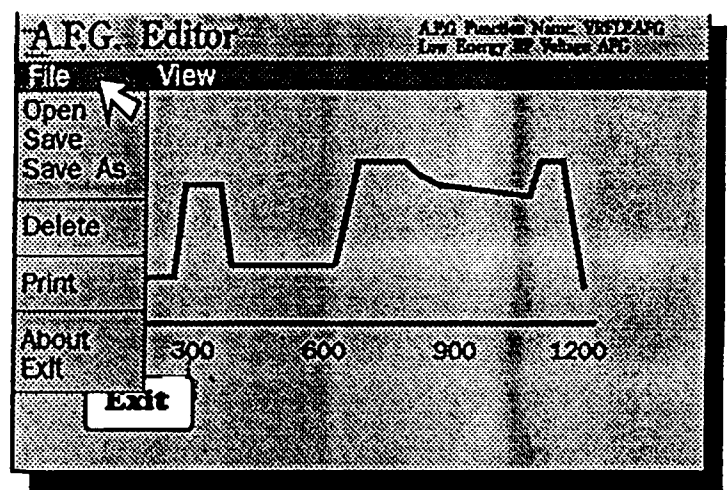
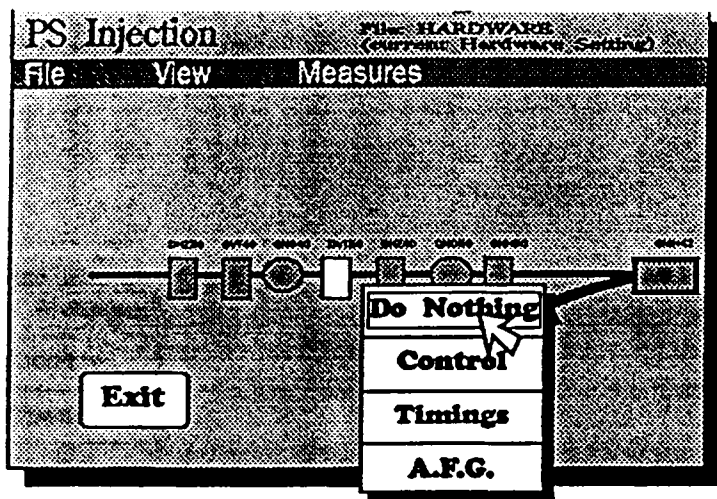
Control Panel for Timing PX.042
 FILE: HARDWARE
 Injection 42 Observation
 CCV Trains: C, OB, Fast RF
 AqN Trains: C
 INIT 0220 ms
 CCV ▲▲▲▲ 0215 ms
 ▼▼▼▼
 AQN 0215 ms
 Exit

Available Timings for Element PLSMH42

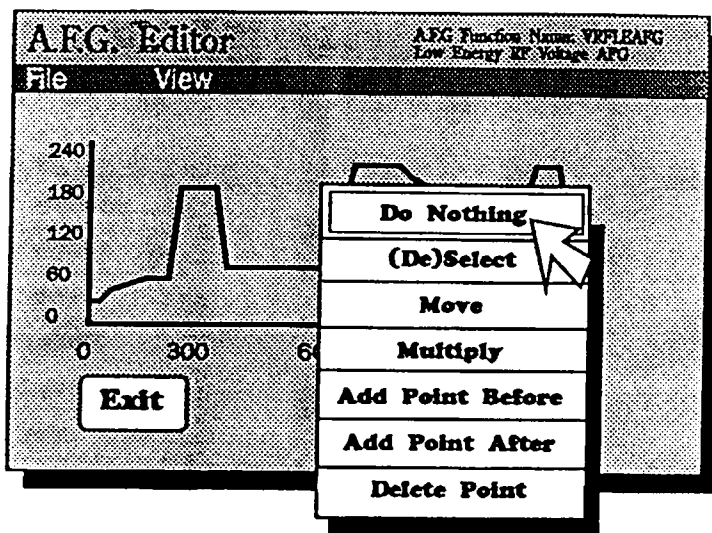
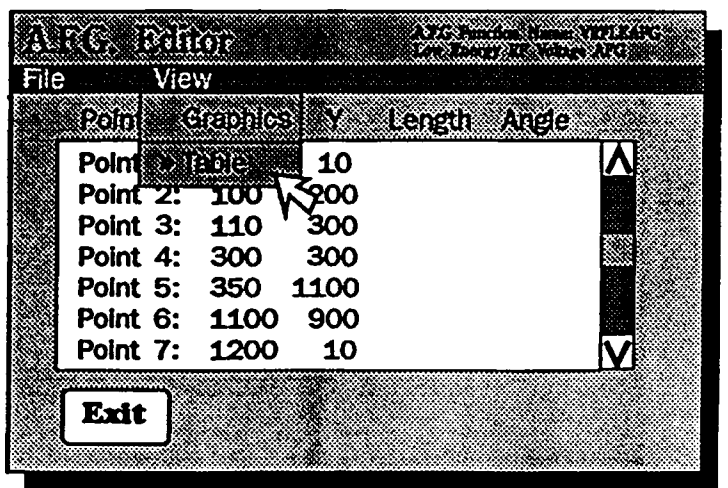
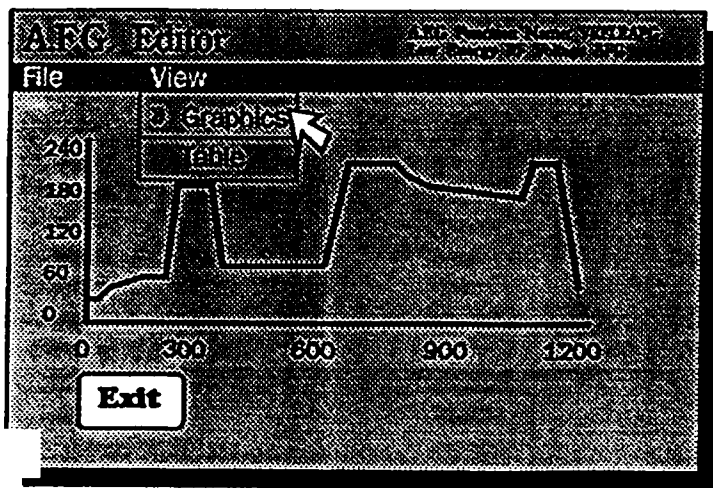
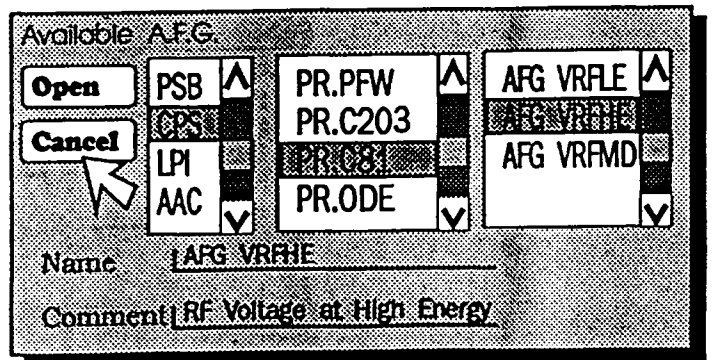
Control
 Cancel

PX.SMH42
 PX.WSMH42
 PX.042
 PX.ESMH42

Name: PX.042
 Comment: Injection 42 Observation

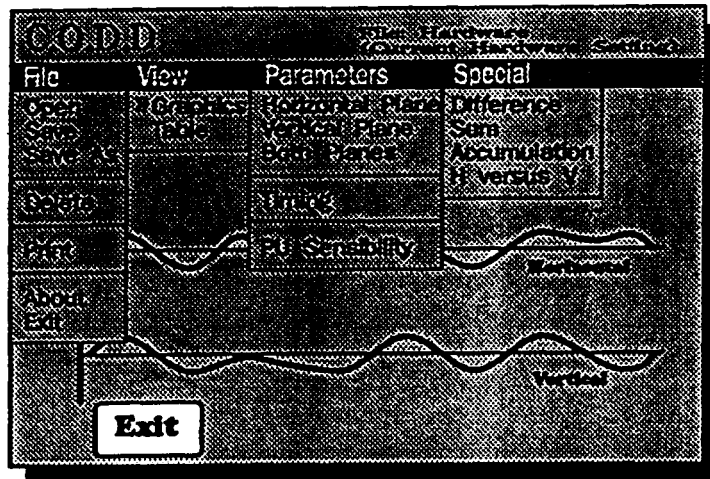
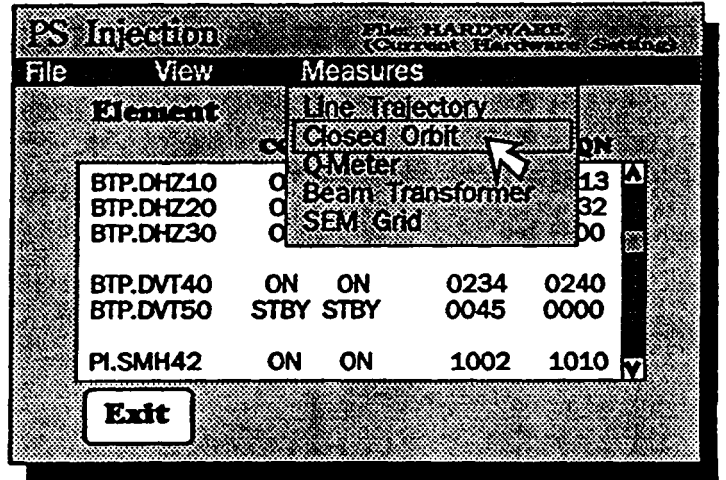
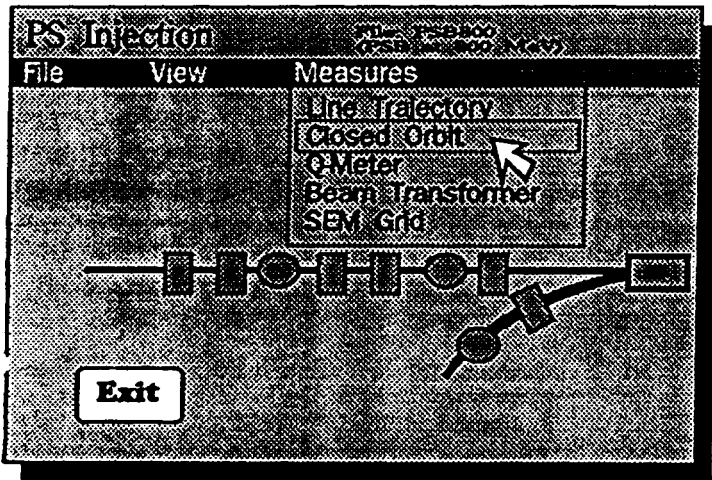


GFA control

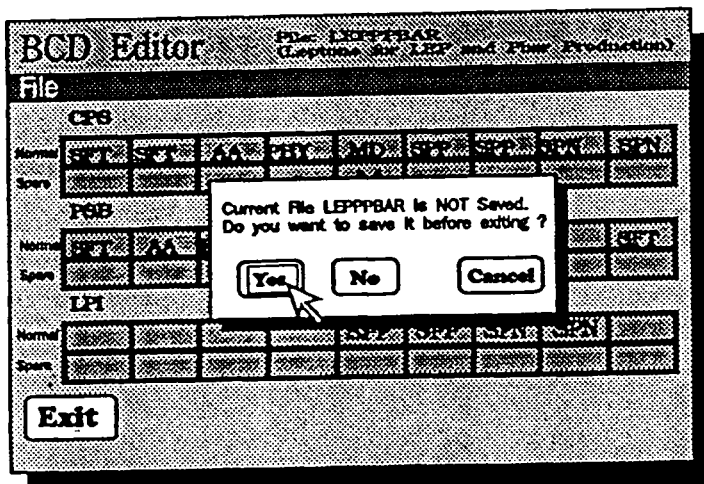
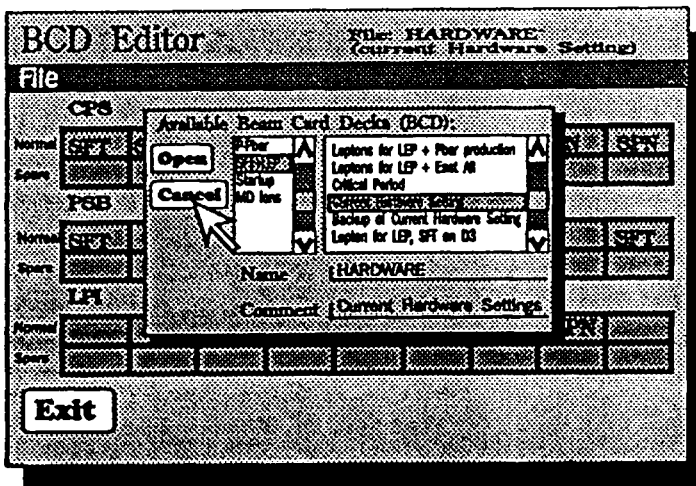
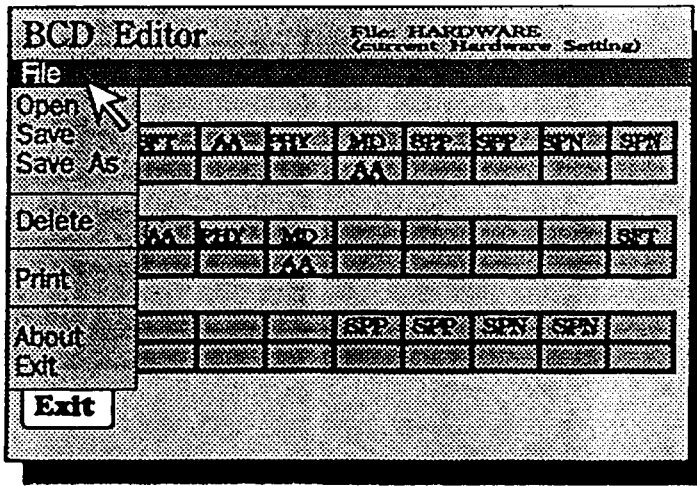


NOA57 ANNEXE 3 D

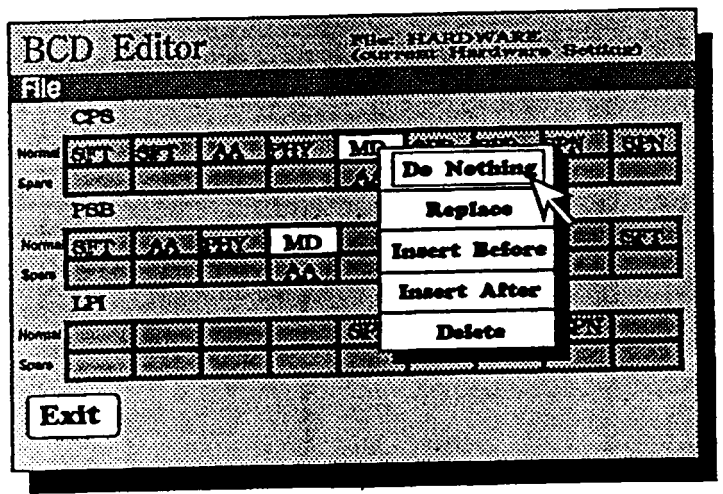
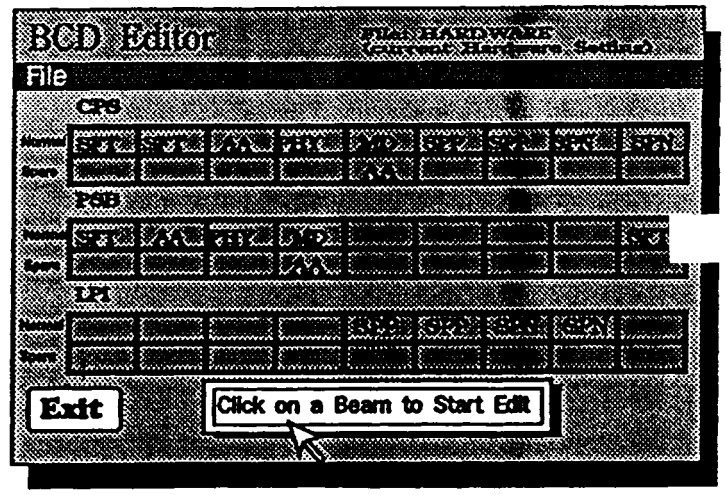
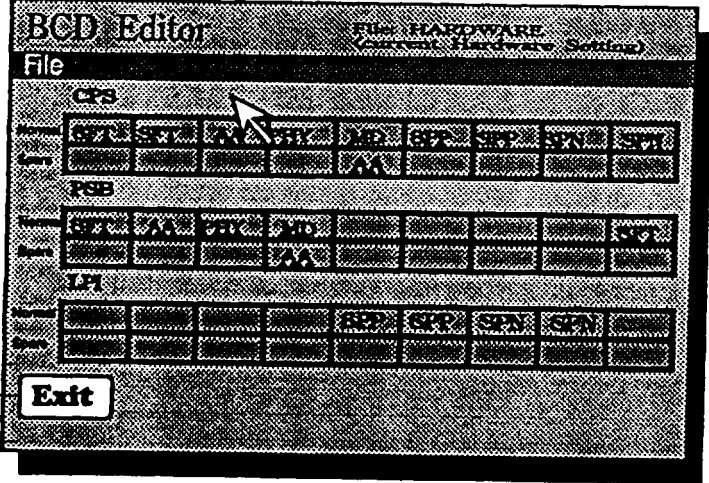
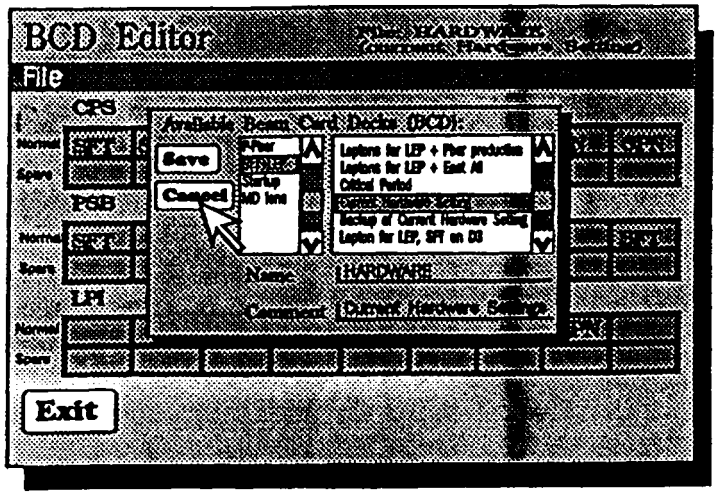
MEURES



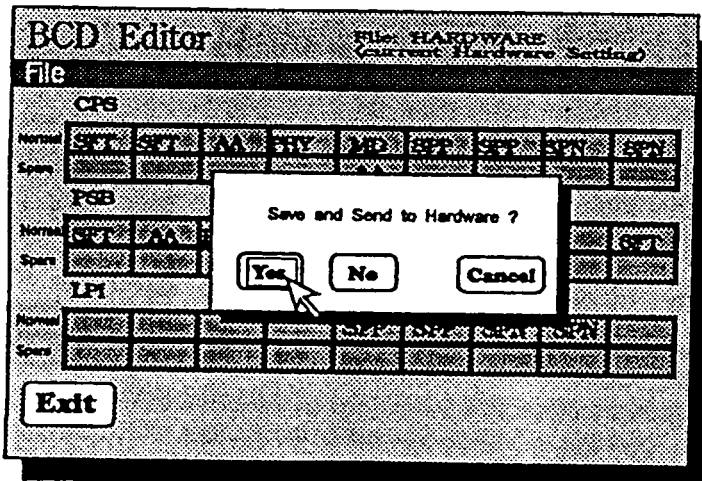
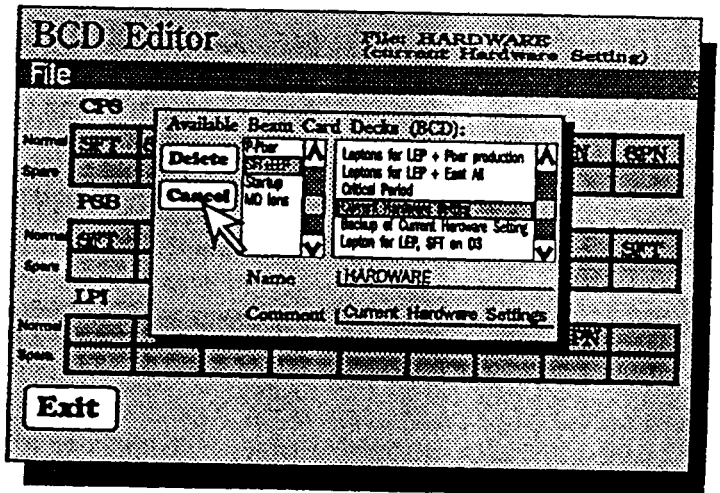
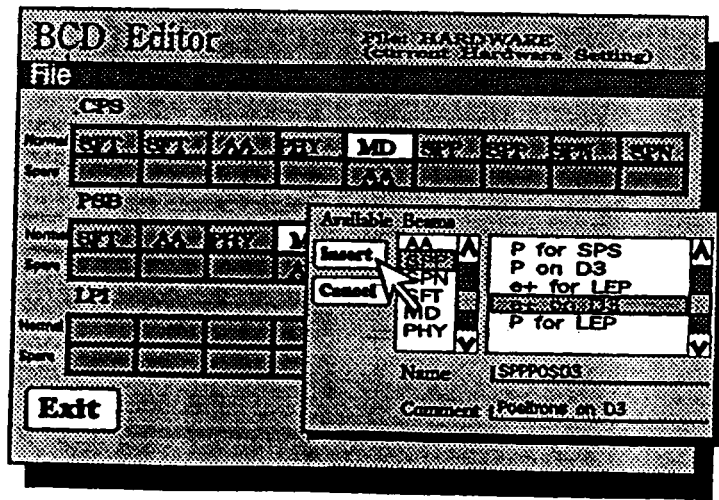
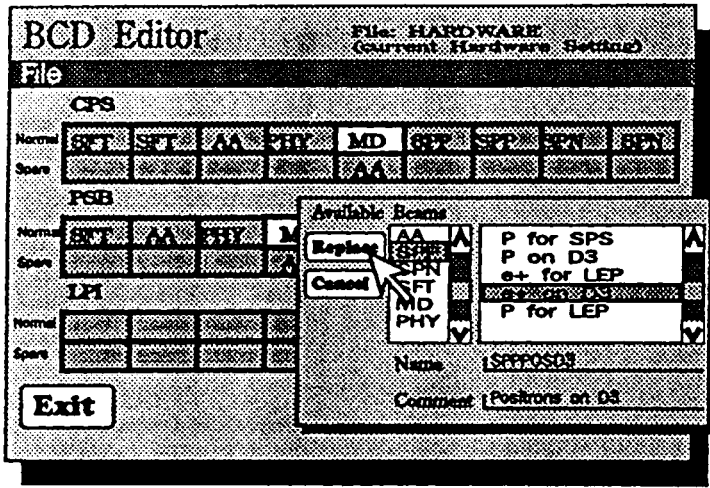
NOAS7 ANNEXE 3 E



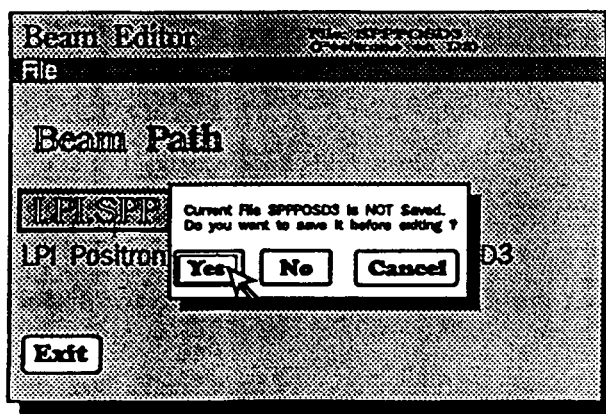
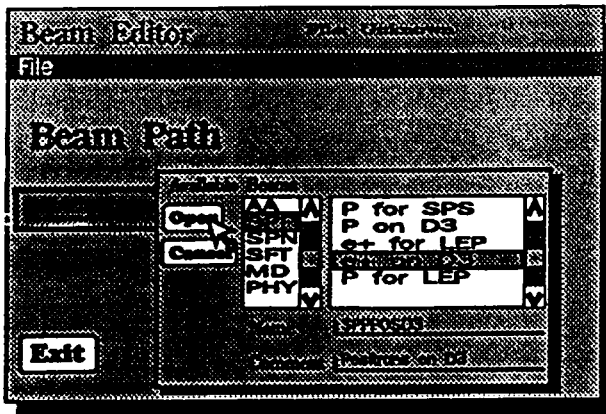
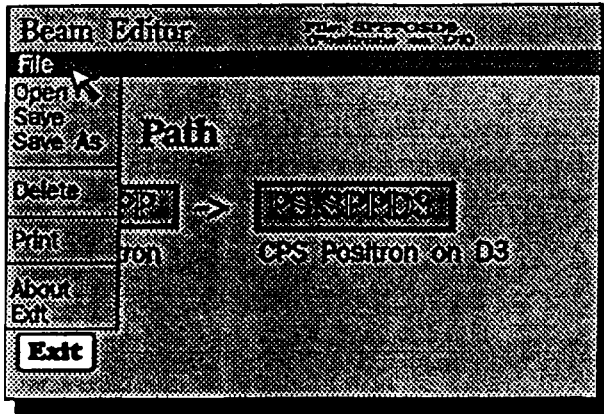
NOAS 7 ANNEXE 4 A



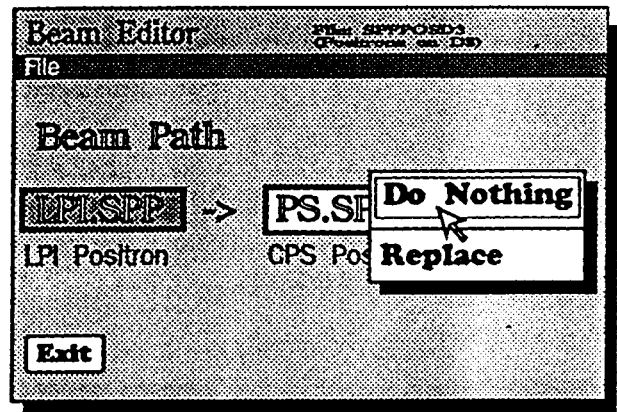
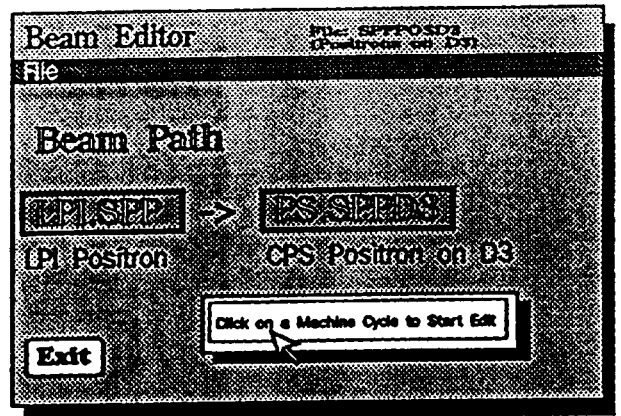
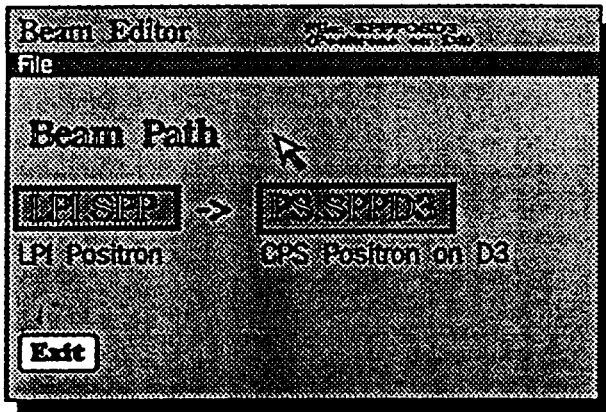
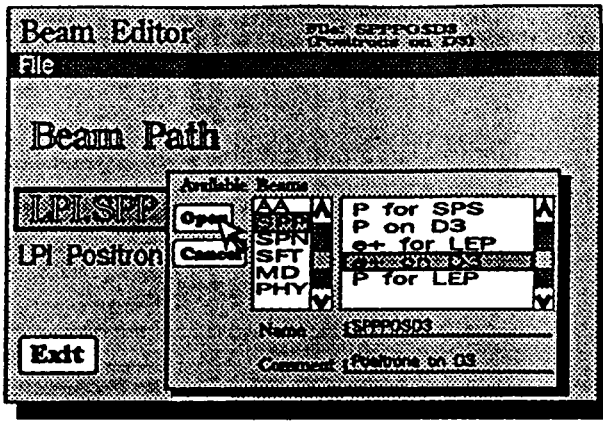
NOA7 ANNEXE 4 B



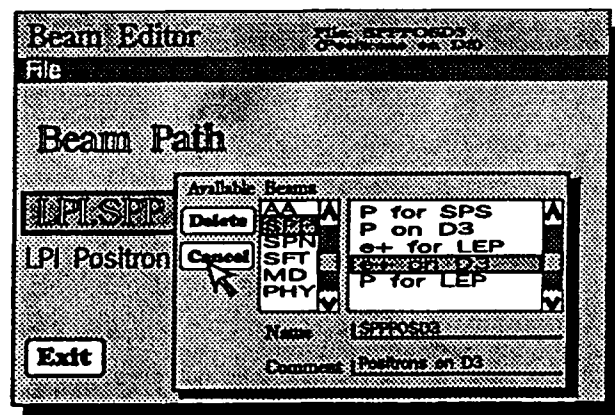
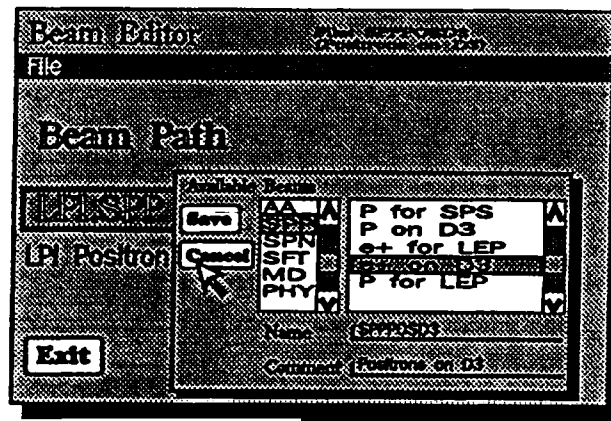
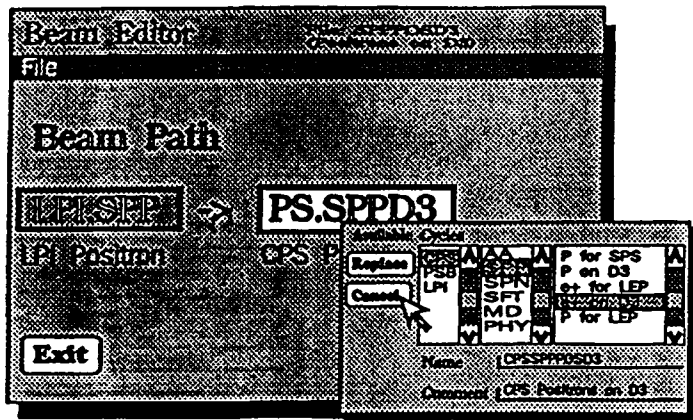
NOA37 ANNEXE 4C



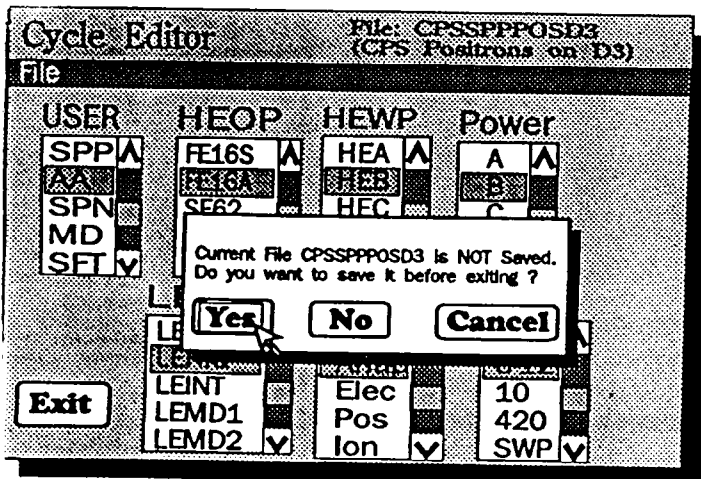
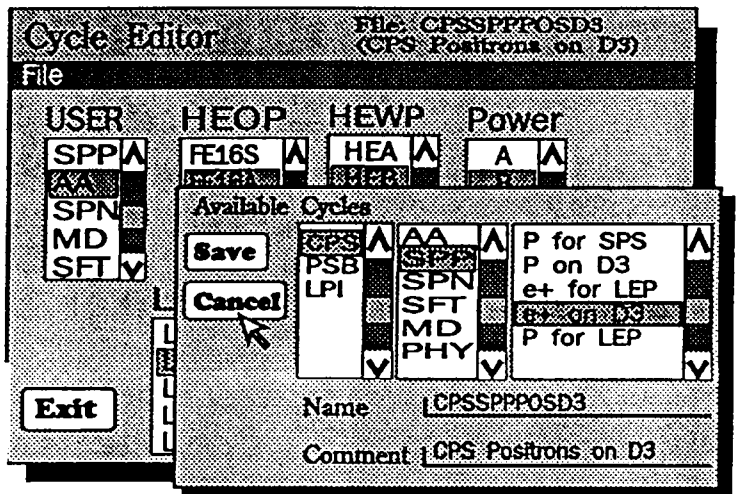
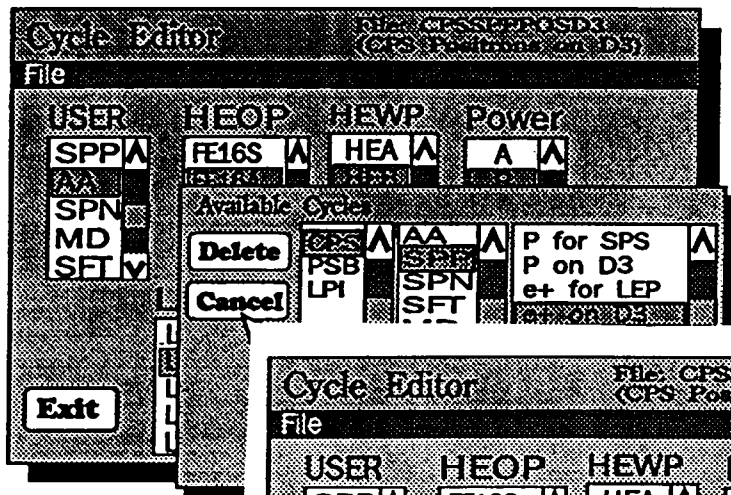
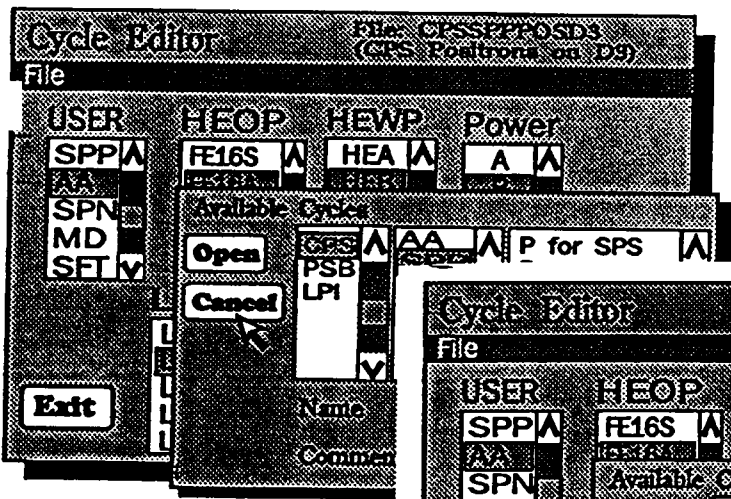
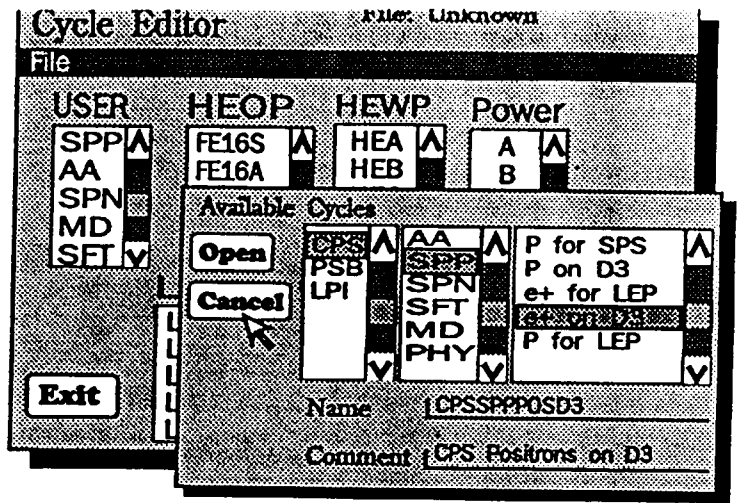
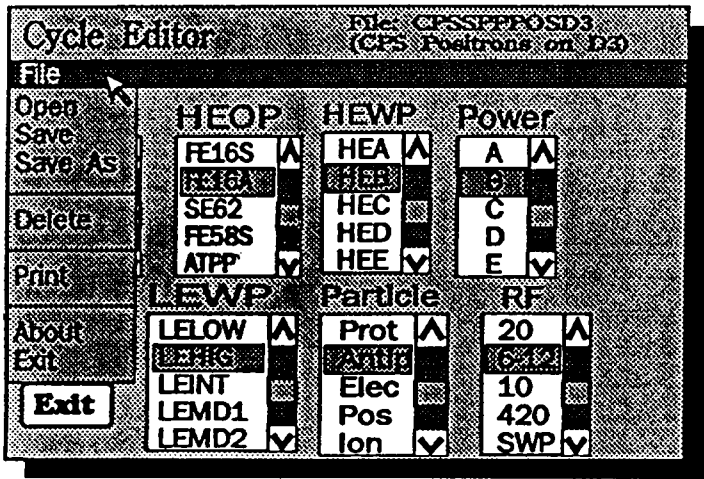
NOA7 ANNEXE 5 A



NOA7 ANNEXE 5 B



NOA7 ANNEXE 5 C



NOAS7 ANNEXE 6 A

BCD Editor
FILE HARDWARE
(Current Hardware Settings)

File

CPS

Normal	SFT	SFT	AA	PHY	MD	SFT	SFT	SFT	SFT
Speed									

PSB

Normal	SFT	AA	PHY	Y
Speed				

LPI

Normal				
Speed				

Available Beams

AA	P for SPS
SFT	P on D3
SPN	e+ for LEP
SFT	P for LEP
MD	
PHY	

Name: |SPPP0SD3|
Comment: |Positions on D3|

Insert Cancel

Exit

Beam Editor
FILE HARDWARE
(Current Hardware Settings)

File

Beam Path

LPI Position

Available Beams

AA	P for SPS
SFT	P on D3
SPN	e+ for LEP
SFT	P for LEP
MD	
PHY	

Name: |SPPP0SD3|
Comment: |Positions on D3|

Open Cancel

Exit

Cycle Editor
FILE: CPSSPP0SD3
(CPS Positions on D3)

File

USER HEOP HEWP Power

SPPA	FE16S	HEA	A
AA			
SPN			
MD			
SFT			

Available Cycles

CPS	AA	P for SPS
PSB	SFT	P on D3
LPI	SPN	e+ for LEP
	SFT	P for LEP
	MD	
	PHY	

Name: |CPSSPP0SD3|
Comment: |CPS Positions on D3|

Save Cancel

Exit

Cycle Editor
FILE: CPSSPP0SD3
(CPS Positions on D3)

File

USER HEOP HEWP Power

SPPA	FE16S	HEA	A
AA			
SPN			
MD			
SFT			

Available Cycles

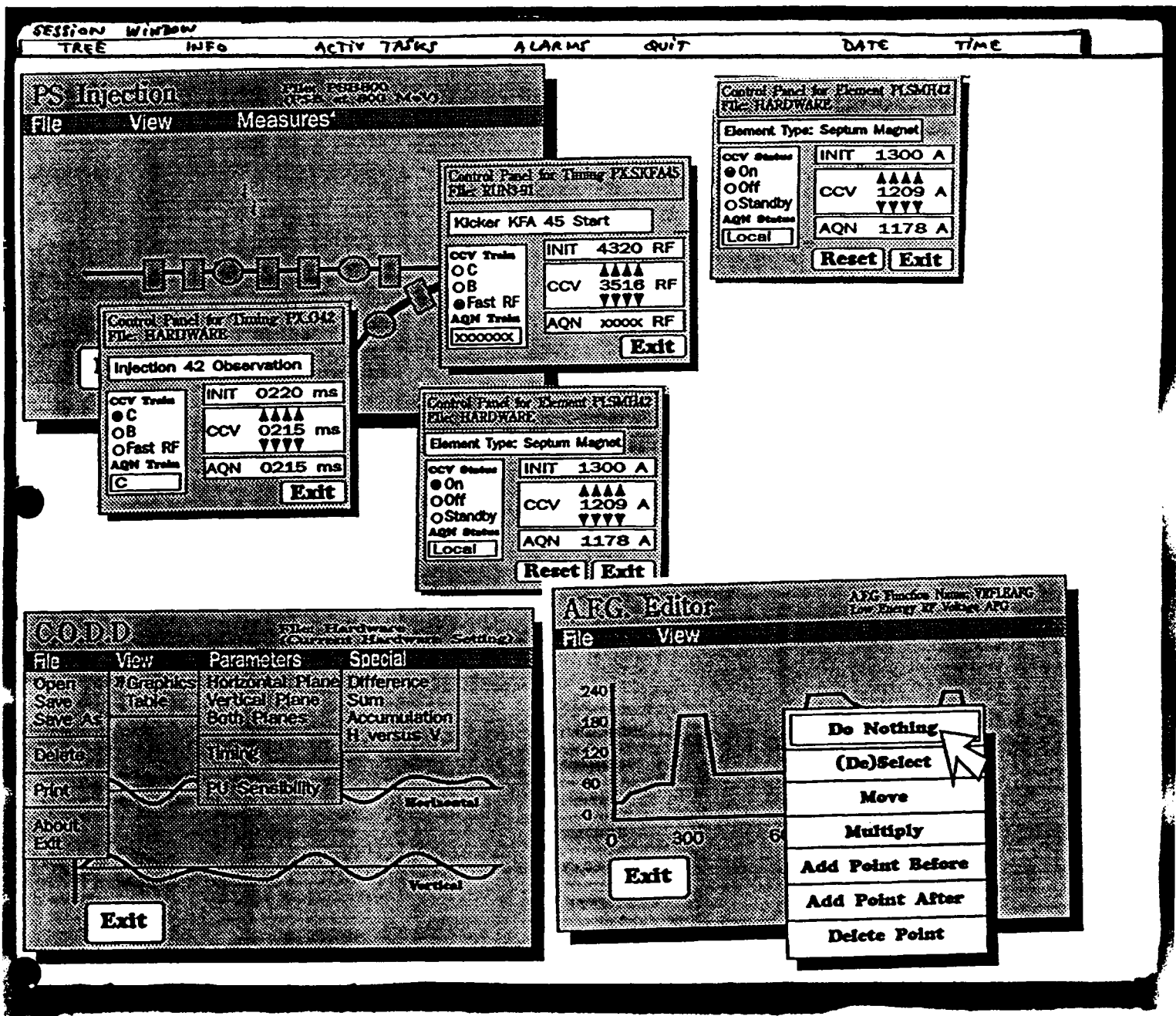
CPS	AA	P for SPS
PSB	SFT	P on D3
LPI	SPN	e+ for LEP
	SFT	P for LEP
	MD	
	PHY	

Name: |CPSSPP0SD3|
Comment: |CPS Positions on D3|

Delete Cancel

Exit

NOAS7 ANNEXE 7 A



NOAS 7 ANNEXE 7 B

Session Manager
 Session Create Customize Print Screen Help

Messages
 Ultrix-32 V3.1 (Rev. 9) System #3: Wed Jan 3 15:17:34 WET 1990
 Digital Equipment Corporation
 Nashua, New Hampshire
 Starting Process 1510 "dxterm"
 Starting Process 1523 "dxterm1"

AA 1 CME IMAX
 C3
 CZERO

Mac) S
 A
 Se

PASSR
 SCRH
 SCR
 ONEGEV
 FLAT
 PARAB

PARTY USER WKPNT
 PROTON SFT QLOW
 DEUTERON SPP QHIGH
 OXYGEN AA QME1
 ALPHA TST QMAX
 MD QION
 PHY QSPEC
 ME1 QFLAT
 ME2 QME2

UPDATE HELP EXIT

DELETE [TST] [02-OCT-89 16:07:50] - Test beam for AAC low intensity (2.4 s)
 Name: MD
 Comment: Machine development proton beam for CPS
 Duration: 1

1 Gev and Energy Saving
 ods for accumulation
 .2 s

DELETE Comment: 12 BP unwrapped se
 Comment: PS Machine development 1.2 s
 Beam path: PSB.MD->CPS.MD

HELP EXIT SAVE WORK
 LOAD RCD INTO WORK AREA

UPDATE DELETE USE NORMAL USE SPARE HELP EXIT

NOAS7 ANNEXE 7 C