LLL 24-OCT-72 14:15 12168
Request for RLE QPR Section IX, Speech Communication from M.I.T.

ARPA Network Information Center NIC
12168
Stanford Research Institute
23-OCT-72
Menlo Park, California 94025 1

TO: Mr. J. H. Hewitt
Massachusetts Institute of Technology
26-327
Cambridge, Massachusetts 02139 2

FROM: Jeanne B. North
Information and Station Agent Coordinator 3

Dear Mr. Hewitt: 4

We should like very much to be added to your distribution list for the RLE QPR, Section IX, Speech Communication, starting with No. 106. 5

Our address is as follows: 6

Jeanne B. North
ARPA Network Information Center
Stanford Research Institute
Menlo Park, California 94025 6a

Lane, Linda L.
Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

To:
Access Copy

LLL 24-OCT-72 14:15 12168
Request for RLE QPR Section IX, Speech Communication from M.I.T.

(J12168) 24-OCT-72 14:15; Title: Author(s): Lane, Linda L./LLL;
Distribution: North, Jeanne B./NICSTA; Sub-Collections: SRI-ARC NICSTA;
Clerk: LLL;
Origin: <LANE>NIC12168.NLS;1, 23-OCT-72 12:33 LLL ;

JBN 1-DEC-72 8:55 12182

Transmittal to Richard M. Van Slyke

ARPA Network Information Center
Stanford Research Institute
Menlo Park, California 94025

NIC 12182
1-NOV-72

1

Richard M. Van Slyke
Network Analysis Corporation
Beechwood, Old Tappan Road
Glen Cove, New York 11542

2

Dear Mr. Van Slyke:

3

We have received notice that your office is now an Affiliate of the ARPA Network. As such, you will be receiving documents on distribution from the Network Information Center (NIC).

4

We are sending you a core collection of existing documents, including the following Functional Documents for which we will provide updates:

5

NIC 5145	Current Catalog of the NIC Collection	1-AUG-72	5a
5150	Current Directory of Network Participants	16-OCT-72	5b
6740	Network Resource Notebook	28-AUG-72	5c
7104	Current Network Protocols	6-JUN-72	5d
7590	Network Information Center User Guide	19-JUL-72	5e

We are also sending you a number of documents which you may need as background (see list below).

6

We will be glad to supply copies of particular documents indicated by a back arrow in the Catalog Listings, an will loan or direct you to sources of other documents in the Listings.

7

Susan Lee, our Station Agent, accomplishes NIC distribution, and has now put you on distribution for all documents sent to Site Liaisons.

8

Jeanne North,
Information and Station
Agent Coordinator

9

c: S. Crocker (ARPA)

10

encl: 4564 7542
4565 7750

Transmittal to Richard M. Van Slyke

4566	10507	
4567	10509	
4568	10510	
11924		11

JBN 1-DEC-72 8:45 12183

Transmittal to Col. Louis F. Dixon

ARPA Network Information Center
Stanford Research Institute
Menlo Park, California 94025

NIC 12183
1-NOV-72

Col. Louis F. Dixon
Director, ADP Support Division
U.S. Army War College
Carlisle Barracks, PA 17013

Dear Col. Dixon:

We have received notice that your office is now an Affiliate of the ARPA Network. As such, you will be receiving documents on distribution from the Network Information Center (NIC).

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Jeanne North,
Information and Station
Agent Coordinator

c: S. Crocker (ARPA)

encl: 4564 7542
4565 7750

Transmittal to Col. Louis F. Dixon

4566	10507	
4567	10509	
4568	10510	
11924		11

JBN 1-DEC-72 8:38 12184

Transmittal to Ted Lee

ARPA Network Information Center
Stanford Research Institute
Menlo Park, California 94025

NIC 12184
1-NOV-72

1

Ted Lee
Mail Station #8901
UNIVAC
P.O. Box 3525
St. Paul, Minn. 55165

2

Dear Mr. Lee:

3

We have received notice that your office is now an Affiliate of the ARPA Network. As such, you will be receiving documents on distribution from the Network Information Center (NIC).

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We are sending you a core collection of existing documents, including the following Functional Documents for which we will provide updates:

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Jeanne North,
Information and Station
Agent Coordinator

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c: S. Crocker (ARPA)

10

encl: 4564 7542

Transmittal to Ted Lee

4565	7750
4566	10507
4567	10509
4568	10510
11924	

11

DVN 13-OCT-72 10:10 12201

Help Keep User Lists Available

See (journal,12160,linkfail) for how the abscence of a list of users from systat screwed up my helping a net user. 1

DVN 13-OCT-72 10:10 12201

Help Keep User Lists Available

(J12201) 13-OCT-72 10:10; Title: Author(s): Van Nouhuys, Dirk H./DVN; Distribution: Norton, James C., Wallace, Smokey C., Neigus, Nancy J./JCN DCW NJN (for your information and to show you how comments work) ; Sub-Collections: SRI-ARC; Clerk: DVN;

RWW 12-OCT-72 9:03 12203

Meeting (ICCCT) Reminder

Just a reminder next iccct meeting at 3:00 friday. The last meeting before Wahington on Tues 3:00. 1

RWW 12-OCT-72 9:03 12203

Meeting (ICCCT) Reminder

(J12203) 12-OCT-72 9:03; Title: Author(s): Watson, Richard W./RWW; Distribution: Norton, James C., Engelbart, Douglas C., White, James E. (Jim), Rech, Paul, Kudlick, Michael D., Auerbach, Marilyn F., Irby, Charles H., Bass, Walt, Van Nouhuys, Dirk H., Vallee, Jacques F., North, Jeanne B., Watson, Richard W./ICCCT ; Sub-Collections: SRI-ARC ICCCT; Clerk: RWW;

RWW 13-OCT-72 9:25 12204

Addition to SRI-ARC Scenario for Uppercase Terminals

Note: For the SRI-ARC scenario, the Locator one will not work from an upper case only terminal unless the user types:
TER ALT [MINAL TYPE IS] 33 CR
before entering NLS, this sets the case to lower and will make the viewspecs work which have to be lower case. 1

RWW 13-OCT-72 9:25 12204

Addition to SRI-ARC Scenario for Uppercase Terminals

(J12204) 13-OCT-72 9:25; Title: Author(s): Watson, Richard W./RWW; Distribution: Levin, Joel B., Bressler, Robert D. (Bob), Padlipsky, Michael A., Plummer, William W., Kahn, Robert E., Watson, Richard W., Karp, Peggy M., Thomas, Robert H., White, James E. (Jim), Cerf, Dr. Vinton G., Metcalfe, Robert M. (Bob), Vezza, Albert, Roberts, Diane C., McKenzie, Alex A./XIC3 ; Sub-Collections: SRI-ARC XIC3; Clerk: RWW;

TFL 13-OCT-72 8:10 12205

ARPA NETWORK TASK

FOR YOUR INFORMATION

ARPA NETWORK TASK

TITLE: 1

ARPA NETWORK 1a

ENGINEER: 2

Tom Lawrence 2a

OBJECTIVE: 3

The objective of this efffort is to facilitate RADC's participation in the ARPA Network. 3a

APPROACH: 4

The task includes procurement of an interface message processor, TIP variety, and communication lines. Utilization of the TIP will proceed as follows: 4a

a. Terminal Port: assure that IMP software is compatible with terminals. 4a1

b. Computer Port: 4a2

1. Maintain network specifications through coordination with the network working group. 4a2a

2. Analyze problem of implementing network interface software on RADC computer. 4a2b

3. Acquire special interface hardware for TIP computer compatibility. 4a2c

c. AHI Line Printer: Procure a medium speed line printer fpr use with the AHI system via the ARPA Network. 4a3

d. Liaison: Currently the compapability between ARPA's secure data effort and the Tactical Assistance System security needs will be investigated. 4a4

RELATIONSHIP: 5

The network will provide economical multiconsole connection with SRI, setting the stage for application, experimentation, and modification of AHI techniques and procedures. Once the network control program (NCP) is written and running, connection to and use of software and hardware at any node is possible, opening the door for experimentation with foreign data management and management information systems. The NCP will also make it possible to rather easily connect together programs running on our own 635/45. 5a

TFL 13-OCT-72 8:10 12205

ARPA NETWORK TASK

EFFORTS: 6

TIP: 6a

Terminal Interface Processor accquisition, delivery and maintainance. The TIP will provide the local ports to the ARPA network. There are 63 independent terminal ports and one computer port. TIP cost $96K with ARPA holding title. Maintainance cost $7K per year after the 1st year. The TIP come up on 12 Feb 71. 6a1

Comm Lines: 6b

The comm service is provided by AT&T/NY Tel. Comm costs are 16.5K per year plus 30 cents per kilopacket in excess of 4500 kilopackets in a single month. 6b1

Terminal Interface: 6c

This effort includes all items necessary to connect local terminals to the TIP.
1-modems:

30	Vadic VA305DM(103e org/ans)	@ 187.50	5625
2	Intertel 2010(201b)	@1058	2116
32	cables	@ 25	800
2	Intertel 100 SA enclosures	@ 225	450
2	Vadic VA1616 Chassis (redundant power sup.)	@ 800	1600
1	Vadic VA1748 Cabinet (DAA-modem cables inc)	@ 750	750
1	Vadic VA232 Test Panel	@ 250	250
	Installation by Vadic		250
30	Pules Com 1692-6 Data Coupler (CBT Equiv)	@ 132	3960
			15801
	G/A @ 18.8%		2970
	subtotal		18771
	Fee @ 8.56%		1607
	total		20378

2-accquisition of local lines:
3-renting interim modems:
4-103a2 modems for 3 months at $458.40 total starting late Nov 71. 6c1

NCP/Liaison: 6d

To be aware of Network developments and provide interface between local and Network personnel. At present T. Lawrence is investigating ARPA's secure data effort for J. Mc Lean in regards to the Tactical Assistance System. He is also interacting with Dick Metzger and Capt. Simmons on interfacing the PDP-11 with the Net. 6d1

ARPA NETWORK TASK

Special Interface: 6e

It has been decided that the pusuit of the special interface will be a task for the computer facility and that it's appearance in this effort will fall in the category of Liaison. 6e1

AHI Printer: 6f

The Computer Facility is charged with the task of providing AHI with printer services. The AHI task is to maintain contact with the Facility and to provide the Facility with our printer requirements. 6f1

Comp Ports: 6g

This effort includes procurring from BBN a distant Host interface (up to 2000 ft.) for about $9K. This unit has been ordered. 6g1

MILESTONES: 7

effort APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR 7a
Ter Int: ----------1--2-------3--- 7b
1 Delivery of 30 modems and accessories. 7b1
2 Terminals installed and interfaced with TIP. 7b2

3 Order 6 Rome phone lines. 7b3

effort APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR 7c
AHI Printer:----------1---2----------3 7d
1 Procurement begun 7d1
2 Crocetti delays SOW 7d2
3 Printer delivered 7d3
effort APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR 7e
Comp Ports: ----------1----------2---------- 7f
1 Distant host interface ordered. 7f1
2 Distant host interface delivered. 7f2

MANNING: 8

NCP/Liaison: Oct Nov Dec COMP 8a

week	01	08	15	22	29	05	12	19	26	03	10	17	24	
TFL	.0	.0	.0	.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	

Ter Int: Oct Nov Dec COMP 8e

week	01	08	15	22	29	05	12	19	26	03	10	17	24	
TFL	.0	.2	.1	.0	.3	.2	.0	.0	.0	.0	.0	.0	.0	
DLS	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	

AHI Printer: Oct Nov Dec COMP 8j

week	01	08	15	22	29	05	12	19	26	03	10	17	24	

TFL 13-OCT-72 8:10 12205

ARPA NETWORK TASK

TFL	.1	.1	.0	.0	.1	.1	.0	.1	.0	.0	.2	.0	.0	8m

TFL 13-OCT-72 8:10 12205

ARPA NETWORK TASK

DOLLARS: 9

effort	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	
													9a
													9b
Ter Int:	15	0	0	0	0	0	0	0	0	0	0	0	9c

effort	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	
													9d
													9e
Comp Ports:	0	0	0	0	0	0	0	9	0	0	0	0	9f

effort	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	
													9g
													9h
AHI Printer:	0	0	0	24	0	0	0	0	0	0	0	0	9i

STATUS: 10

TIP: 10a

Oct--Planned: 10a1

Continue to check out the Net. 10a1a

Sep--Accomplished: 10a2

The TIP operated very well in Sep. Its down time was about 2% as compared to the 30% in the immediate past. 10a2a

Com Lines: 10b

Oct-Planned: 10b1

Continue to use the Net. 10b1a

Sep--Accomplished: 10b2

Net in use 10b2a

Ter Int: 10c

Oct--Planned: 10c1

Install 12 second time out feature on Vadic modems. It is also planned to order 6 Rome phone lines at a cost of from $42 to $66 per month. 10c1a

Sep--Accomplished: 10c2

4 new DAA's were sent from Pulse Comm. to replace the 4 defective DAA's. 10c2a

NCP & Liaison: 10d

Oct--Planned: 10d1

Continue to interact with Metzger and Simmons on PDP-11 interface to the Net. Also Lawrence and Stone will attend the ICCC. 10d1a

Sep--Accomplished: 10d2

DEC was given the Network interface and protocal specifications. 10d2a

TFL 13-OCT-72 8:10 12205

ARPA NETWORK TASK

AHI Printer: 10e

Oct--Planned: 10e1

The Facility will work up plans for printer service to AHI. There plans will provide an immediate and final solution to the printer problem. It is planned to keep in touch with the Facility to make sure they provide acceptable service. 10e1a

Sep--Accomplished: 10e2

Crocetti stopped the SOW because he wanted to know if the printer we were getting could be used with the Honeywell system. I did find some information on the problem as given in file MEMO2.
All was confusion in Sep. Crocetti was addressing the larger problem of utilization of all printers in IS. 10e2a

SUMMARY: FY72 FY73 11

TITLE	TIP Maintenance		11a
dollars	0000	0007	11a1
manyrs	00.0	00.0	11a2
type			11a3
symbol	ISIM		11a4
engr	Lawrence		11a5

COMMENT:TIP maintainance cost lowered from 13.2K per year to 7K per year. 11a5a

TITLE	ARPA Net Com Lines		11b
dollars	0050	0040	11b1
manyrs	00.0	00.0	11b2
type			11b3
symbol	ISIM		11b4
engr	Lawrence		11b5

COMMENT:Actual com line cost as of 1 Dec 71 is 16.5K per year plus 30 cents per kilopacket in excess of 4500 kilopackets in a single month. Since RADC has already paid 50K in FY72 FY73 funds may have to be adjusted downward. 11b5a

TITLE	Local TIP Modems		11c
dollars	0024	0015	11c1
manyrs	00.1	00.1	11c2
type			11c3
symbol	ISIM		11c4
engr	Lawrence		11c5

COMMENT:Imlac guarantees operation of their terminals up to 500 feet directly connected. Due to this assurance 6-201b modems were canceled bringing total FY 72 funds spent thus far to $9K. A $19K MIPR has been send to ARPA. An additional 15K is being MIPR'ed to ARPA for additional modems. 11c5a

ARPA NETWORK TASK

TITLE	Network Liaison		11d
dollars	0000	0000	11d1
manyrs	00.2	00.2	11d2
type			11d3
symbol	ISIM		11d4
engr	Lawrence		11d5
TITLE	AHI Printer		11e
dollars	0000	0024	11e1
manyrs	00.0	00.1	11e2
type			11e3
symbol	ISIM		11e4
engr	Lawrence		11e5
TITLE	Dist. Host Inter.		11f
dollars	0000	0009	11f1
manyrs	00.0	00.1	11f2
type			11f3
symbol	ISIM		11f4
engr	Lawrence		11f5

ARPA NETWORK TASK

(J12205) 13-OCT-72 8:10; Title: Author(s): Lawrence, Thomas F./TFL;
Distribution: Stone, Duane L., Bair, James H., McNamara, John L./DLS JHB
JLM; Sub-Collections: RADC; Clerk: TFL;
Origin: <LAWRENCE>EFF/NET.NLS;7, 11-OCT-72 10:31 TFL ;

TFL 13-OCT-72 8:56 12206

AHI TRAINING

FOR YOUR INFORMATION

AHI TRAINING

TITLE: 1

AHI TRAINING 1a

ENGINEER: 2

Tom Lawrence 2a

OBJECTIVE: 3

The objective of this effort is to
(1) provide instruction to branch (ISI) personnel in how to use the various AHI sudsystems.
(2) educate branch personnel in regards to the overall objectives of AHI and to the branch operating proceedures necessary for AHI utilization
(3) provide instruction and education to Air Staff personnel as required. 3a

APPROACH: 4

(1) To train a group of ISI personnel (3or 4 people) in the AHI subsystems by instruction from SRI. These individuals equipped with the necessary manuals will then become the instructors for the remaining branch personnel. SRI support may be used directly to train ISI.
(2) To deliver briefings and distribute operating proceedures in hardcopy to branch personnel.
(3) Approaches (1) & (2) above applied to Air Staff. 4a

RELATIONSHIP: 5

This effort is related to the following factors: 5a

1- number of AHI subsystems
The present list of subsystems is as follows:
TNLS - teletype
DNLS - display
BMS - baseline management system
DEX - deffered execution 5a1

By the end of Nov 72 we should have 14 AHI terminals (11 Execuports and 3 IMLAC's). This complement of Terminals should be able to support 25 people. 5a2

TFL 13-OCT-72 8:56 12206

AHI TRAINING

3- availability of SRI support (manuals, instruction & programming) ref.(stone,workstatement,)
The instructors must be trained in the use of both the NLS systems and vaiety of terminals. At present the instuctors can use TNLS commands. They have yet to learn DNLS & BMS & DEX. DNLS will probably have to wait until the IMLACs are programed for DNLS. 5a3

4- availability of operating procedures ref.(stone,baseline,)
Operating procedures should be considered in more detail. 5a4

5- availability of evaluation procedures ref.(bair,plan,)
Evaluation procedures should be considered before training begins. 5a5

6- variety of terminals
Individuals trained on teletypes will have to be retrained on IMLAC's. Training on Tycom's or 2741's should be minimal. 5a6

7- availability of ARPA network ref.(lawrence,eff/net,)
The 50K baud lines became available on 12 Feb 72. 4- 103a2 modems are being rented from AT&T for 3 months and arrived in the week of the 28th of Nov 71. We now have 30 permanent modems. We have ordered 11 new phones & numbers for the offices & 15 new lines for the TIP. Of the 11 office phones ordered we have 8, of the 15 TIP lines we have 5 to date.
The Network was down 2% of the time in Sep 72. This is the lowest down time possible considering the scheduled maintenance. We have no reason to believe that this condition will not continue. 5a7

8- availability of NLS
In the month of Sep 72 the system was available in excess of 80% of the time. We expect this favorable service to continue. 5a8

EFFORT: 6

The overall objective of this effort is to involve all the activities of the branch (ISI) within NLS proceedures. This means that either every individual must be trained in NLS commands and have an available terminal when needed or that there must be a limited number of people able to meet the daily needs of the remaining persons inregards to NLS. These select persons would have to be numerous enough to meet the branch needs for NLS. The branch includes at least 37 people (secrearies, engrs, admnistratrs & managers). Though I have no substantiaion perhaps one terminal for every two people would be adequate. It should be kept in mind that the system is a tool for the engrs. and managers not excluively for use by the seretaries and admistrators. 6a

TFL 13-OCT-72 8:56 12206

AHI TRAINING

INDIVIDUALS TO BE TRAINED: 6b

	TNLS	DNLS	BMS	DEX		
						6b1
T. F. Lawrence	x	x	x	x		6b2
D. L. Stone	x	x	x	x		6b3
J. H. Bair	x	x	x	x		6b4
M. D. Petell	x			x		6b5
T. Bucciero	x			x		6b6
R. B. Panara	x					6b7
J. P. Cavano	x	x	x	x		6b8
J. L. McNamara	x	x				6b9
F. P. Sliwa	x					6b10
R. F. Iuorno	x					6b11
J. R. Stellato	x				x	6b12
R. A. Liuzzi	x					6b13
D. F. Bergstrom	x					6b14
E. Kennedy	x					6b15
D. Daughtry	x					6b16
W. Rzepka	x					6b17
F. Tomaini	x	x				6b18
L. Cassetta	x					6b19
D. VanAlstine						6b20
R. Calicchia						6b21
F. LaMonica						6b22
J. Johnson						6b23
M. Wingfield						6b24
R. Nelson	x	x				6b25
J. Cellini						6b26
F. Norman						6b27
D. Elefante						6b28
A. Vito						6b29
D. Trad						6b30
M. Landes						6b31
R. Robinson						6b32
S. DiNitto						6b33
D. White						6b34
R. Slavinski						6b35
D. Williams						6b36
J. Ives						6b37
J. Previte						6b38
O. Reimann						6b39
J. McLean						6b40
C. Marcoccia				x		6b41
C. Salvo						6b42
C. DeFiore						6b43
R. Levine						6b44
A. Klayton						6b45
M. Sturans						6b46
W. Patterson						6b47

TFL 13-OCT-72 8:56 12206

AHI TRAINING

Training will proceed in groups of three or four persons. The instructors will be Lawrence Stone or Bair. It is expected that basic NLS can be taught to a group in four half day sessions. 6c

The first major group of people to be trained will all be in the section ISIM.The first group that was trained consisted of Bucciero, Cavano, Panara, Petell and McNamara. Training should not proceed untill there are enough terminals and manuals for the trained persons to use after the sessions are completed. 6d

The Baseline Management System (BMS) and Deferred Execution (DEX) commands have yet to be learned by the instructors. Stone, Lawrence, and Cavano will become the core of individuals knowledgeable in these two systems. 6e

MILESTONES: 7

effort	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Training:	----------				1	----------				2	---		7b

1 Start training of 1st group of ISIM trainees. 7b1

2 Start training of 2nd group of ISIM trainees. 7b2

MANNING: 8

Training:	Oct					Nov				Dec				MP	8a
week	01	08	15	22	29	05	12	19	26	03	10	17	24		8b
															8c
DLS	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		8d
TFL	.0	.5	.8	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0		8e
JRS	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		8f
RFI	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		8g
FPS	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		8h
JLM	.0	.0	.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		8i
DFB	.0	.0	.0	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0		8j
RAL	.0	.0	.0	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0		8k
JHB	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0		8l
JPC	.0	.0	.0	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0		8m
RBP	.0	.0	.0	.4	.0	.0	.0	.0	.0	.0	.0	.0	.0		8n
FT	.0														8o

DOLLARS: 9

effort	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	NOV	DEC	COMP	
													9a
													9b
Training:	0	0	0	0	0	0	0	0	0	0	0	0	9c

TFL 13-OCT-72 8:56 12206

AHI TRAINING

STATUS: 10

Training: 10a

Oct--Planned: 10a1

Training of 5 more people (Iuorno, Stellato and Sliwa) will begin on Monday the 16th of Oct. The training session should last 2 to 3 days. It is expected that the trainees will immediately after the formal training session og out on their own and exercise several options under each command set in the mannual. After a trainee has done his home work he will take a test to give an indication as to how far he has progressed in using and understsnding TNLS commands. Training has been stalled for some time now due to the lack of equipments such as terminals and phone lines. We could intertain the idea of training 5 more people in the Sept. Oct. period but that's all we can do untill we get more terminals and especillaly more than the current 10 lines at the TIP. Base Communications will not supply anymore lines for data communication purposes. If we do get more lines in the immediate future it will be because people are turning in existing lines. People are not exactly rushing to Base Comm to turn in their lines. An effort is being made by Hickok to have more lines made available for data communications so far it appears to have been unsuccessful.

It is tentatively planned to train Bergstrom, Liuzzi, Rzepka and LaMonica in Nov. 10a1a

Sep--Accomplished: 10a2

No training effort was carried out in Sep primarily due to non-availability of Execuports. 10a2a

SUMMARY:

	FY72 FY73	
Title	AHI Training	11a
Dollars	5581-4K 6K*	11b
Precedence		11c
Manyears	.8 .8	11d
Type	IN-house	11e
Symbol	ISIM	11f
Engr	Tom Lawrence X3857	11g

*- The 6K would be consumed by SRI if they were required to train the remaining people in the branch. 11g1

TFL 13-OCT-72 8:56 12206

AHI TRAINING

(J12206) 13-OCT-72 8:56; Title: Author(s): Lawrence, Thomas F./TFL;
Distribution: Stone, Duane L., Bair, James H., Lawrence, Thomas F.,
Norton, James C., Rech, Paul, Van Nouhuys, Dirk H., McNamara, John
L./RBMS JLM; Sub-Collections: RADC RBMS; Clerk: TFL;
Origin: <LAWRENCE>EFF/TRA.NLS;9, 13-OCT-72 8:03 TFL ;x

JCN 13-OCT-72 16:11 12208
User Specifications for the PDP-10 NLS Calculator
(by Fred Van den Bosch 10/15/70)

DRAFT *** JCN 14 OCT 72 1:34AM xxxxx";

User Specifications for the PDP-10 NLS Calculator

(by Fred Van den Bosch 10/15/70)

TABLE OF CONTENTS STATEMENT

1

INTRODUCTION 2

Basic entities in the calculator are the Q-register, variables, programs and procedures. 2a

Q-register and variables. 2b

When you enter the calculator, by giving the command goto calculator, there is an intitial set of 10 variables waiting for you. They are called b0 through b9. There is also the Q-register which you can use to perform simple operatons like addition, subtraction, negation, multiplication and division. 2b1

There are commands for moving values back and forth between variables and the q-register. You will also be able to get a list of all variables and their values on your screen or to put the values of variables anywhere on your screen. 2b2

Programs and procedures. 2c

In your files you may have programs. Each program has to consist of a declaration of external variables, followed by any number of procedures, followed by the word "FINISH". 2c1

When you compile a program by placing it at the top of the screen and giving the calculator-command "compile program", the external variables declared in the program will be added to the variables b0 through b9 and you can perform the same operations on them. 2c2

When you compile a new program the variables b0 through b9 and their values stay around, but the external variables of the new program will replace the old. 2c3

Syntax for the Calculator Language. 2d

PROGRAM. 2d1

```
program   =  [declext] $procedure "FINISH";          2d1a

declext   =  "DECLARE" varlist;                      2d1b

varlist   =  variables $ ( ', variables);            2d1c

variable  =  .ID ['[.NUM']];                         2d1d
```

A program consists of a declaration of external variables (optional), followed by any number of procedures, followed by the word "FINISH". 2d1d1

Variables declared in an external declaration can be single variables or arrays. At the moment a variable may consist of at most 6 characters. An array can be declared by specifying its length between square brackets. The elements of the array are numbered from 0 through the specified length and can be accessed by giving the name of the array followed by the number of the desired element between square brackets. The scope of extenal variables is unlimited, that is, they are known throughout the whole program. 2d1d1a

Example:
DECLARE a[10], b[5], c, d; 2d1d1b

PROCEDURE. 2d2

```
procedure = '(.ID') "PROCEDURE" ['(forlist')] '; body;        2d2a

forlist   = .ID $( ',.ID);                                    2d2b

body      = [decloc] labeled $( '; labeled ) "END." ;         2d2c

decloc    = "DECLARE" loclist;                                2d2d

loclist   = .ID $( ',.ID );                                   2d2e

labeled   = [label] statement;                                2d2f

label     = '(.ID') ': ;                                      2d2g

statement = assign/if/iterative/transfer/
            block/bump/demand/insert/replace;                 2d2h
```

A procedure may have any number of formal parameters and local variables, however they can not be arrays. 2d2h1

Formal parameters can be used to transfer values of parameters to the procedure when it is called. 2d2h2

Local variables are declared at the beginning of the procedure and their scope is limited to the proecedure in which they are declared. 2d2h3

The body of a procedure consists of the declaration of local variables and an aribtrary number of statements followed by the word "END.". 2d2h4

Example:

```
(exmpl) PROCEDURE(x,y);
   DECLARE a,b;
   a←x+y; b←x-y; RETURN
END.
```

2d2h5

ASSIGNMENT STATEMENT 2d3

```
Assign    = .primitive '← exp;                                2d3a

primitive = .ID['[exp']];                                     2d3b
```

The assignment statement serves to give a value to a primitive, which can be a single variable or an array element. 2d3b1

Examples:
x←3*y+z;
a[4]←a[2]+a[3]*x; 2d3b2

ITERATIVE STATEMENTS. 2d4

```
iterative = while/loop;                                   2d4a

while     = "WHILE" disjunct "DO" labeled;                2d4b

loop      = "LOOP" labeled:                               2d4c
```

The iterative statements serve to repeat the execution of a statement as long as a certain condition is satisfied. 2d4c1

Examples:
x ←0;
WHILE x<10 DO x←x+1:
This statement will be executed 10 times. 2d4c1a

x ←0;
LOOP BEGIN x←x+1; IF x>=100 THEN EXIT END;
This statement will be executed 100 times. 2d4c1b

TRANSFER STATEMENT. 2d5

```
Transfer = "RETURN" ['(exp')]/ "GOTO" .ID/
           "CALL" .ID['(args')]/ "EXIT";                  2d5a

args     = '([esp $(', exp)]');                           2d5b
```

The transferstatements transfer control to another part of the program or to the calculator. 2d5b1

The RETURN-statement transfers control back to the point where the currently executed procedure was called (which might be outside the program, if the user started the procedure from the calculator). 2d5b1a

If a procedure is used as a function, the RETURN-statement can be used to transfer a value to the return location by giving the expression to compute that value after the word "RETURN". If the procedure is invoked by an ordinary call this will have no effect. 2d5b1b

The CALL-statement transfers control to the start of the procedure whose name is given after the word CALL, if that procedure has formal parameters, their actual values must be listed behind the procedure name. 2d5b1c

The EXIT-statement transfers control from inside the innermost loop to the first statement following that loop. Is not allowed outside a loop. 2d5b1d

The GOTO-statement will transfer control to the first statement after the specified label. 2d5b1e

Example:
```
x←function;
(function) PROCEDURE;
   RETURN( 4*y+2)
END.
```
This has the same effect as x←4*y+2; 2d5b1f

BLOCK. 2d6

```
block = "BEGIN" labeled $( '; labeled) "END";
```
2d6a

A block can be used to group a number of statements into one statement for use in iterative and if-statements. 2d6a1

Example:
```
IF x>o THEN BEGIN x←x*12; CALL proc END;
```
2d6a2

BUMP STATEMENTS. 2d7

```
bump = "BUMP" ["DOWN"] .ID $(', .ID);
```
2d7a

The BUMP-statement increases or decreases the value of the listed variables, with one. 2d7a1

EXPRESSIONS. 2d8

```
exp = "IF" disjunct "THEN" exp "ELSE" exp/disjunct;
```
2d8a

Expressions may be a disjunct or an arithmetic IF. If an expression that gives a boolean as a result, is used as an arithmetic operand, its value is 1 if the result is true and 0 if its result is false. 2d8a1

Examples:
IF x<=y THEN x ELSE y;
The result of this expression will be x if x is smaller or equal then y and y otherwise.
x>=y AND z#0; 2d8a2

The result of this expression is 1 if x is greater or equal then y and z not equal to 0, and 0 otherwise.
12*(3*y+27)/7*z*(w+16); 2d8a3

BOOLEAN OPERATORS 2d9

disjunct = conjunct $("OR" conjuct); 2d9a

conjunct = negation $("AND" negation); 2d9b

negation = relation/ "NOT" negation; 2d9c

The boolean operators are OR, AND and NOT. 2d9c1

Example*
IF x=0 AND y=0 OR x=10 AND NOT y=10 THEN x←-1 ELSE z←1; 2d9c2

RELATION. 2d10

Relation = sum [binaryrel]; 2d10a

binaryrel = ["NOT"] ('='/'#/">="/"<="/'<'/'>')sum; 2d10b

The relational symbols =, #, <, >, <= and >= have their normal meaning and can be used to test if certain relations are true. 2d10b1

Example:
IF (3*x+y)>=5*(2+z) THEN x←1 ELSE x←0; 2d10b2

SUM, PRODUCT, FACTOR. 2d11

sum = prod $('+prod/'-prod); 2d11a

prod = factor $('* factor/ '/factor); 2d11b

factor = '- factor/ '(exp')/primary; 2d11c

Sum, product and factor include the normal operations add, subtract, multiply, divide and unary minus. 2d11c1

PRIMARY. 2d12

primary = .DECNUM/ primitive ['← exp] / .ID [args] ; 2d12a

A primary may be a decimal number, a primitive or a function call. 2d12a1

A decimal number may have at most 16 digits before and at most 7 after the decimal point. Comma's are not allowed. 2d12a2

A primitive may be given the value of an expression using the same syntax as the assignment-statement. 2d12a3

A functioncall will result in the value returned by the called procedure. If the called procedure does not return with any value, the result will be an arbitrary value. 2d12a4

Examples:
4 12.1 1234 3745927.2672
X←a[2]←3*x+7
proced(t,u) 2d12a5

DEMAND STATEMENT. 2d13

demand = "DEMAND" '(varlist'); 2d13a

The demand-statement will ask the user to specify values for the listed (external) variables, by typing values, bugging them or eventually calculating them using other procedures. 2d13a1

For each of the variables its name followed by the word "EQUALS" will appear in the command feedbackline, asking you to specify a value for that variable. 2d13a2

You can give a value by: 2d13a2a

*bugging a number on the screen. 2d13a2a1

*typing a q for Q-register. 2d13a2a2

*typing a v for variable and then bugging the name of the variable on the screen or typing it. 2d13a2a3

*typing a p for procedure and again typing or bugging its name. This will return the result of the procedure to the variable. (if the procedure return with a value, otherwise the result is an arbitrary value). 2d13a2a4

INSERT STATEMENT. 2d14

insert = "INSERT" '(varlist'); 2d14a

The insert command makes it possible for the user to bug points on the screen where he wants the listed variables to be inserted in the existing text. 2d14a1

For each variable its name followed by the word "INSERT" will appear in the command feedbackline and you can bug the point on the screen where you want its value to be inserted. 2d14a2

REPLACE STATEMENT. 2d15

replace = "REPLACE" '(varlist'); 2d15a

The replace statement allows the user to replace numbers on the screen by the values of the listed variables. It works the same as INSERT but you have to bug a number on the screen. 2d15a1

CALCULATOR COMMANDS. 3

Add number, qreg, variable, procedure. 3a

syntax: a ([number]/ q / v [variablename]/ p ([procedurename] parameterpec.)) CA 3a1

semantics: The specified number is added to the Q-register. If you want to add the result of a procedure and the procedure has any parameters, the calculator will ask you to specify values for the paramteres. (see the "execute procedure" command) 3a2

Subtract number, qreg, variable, procedure. 3b

syntax: s ([number]/ q / v [variablename]/ p ([procedurename] parameterpec.)) CA 3b1

semantics; Similar to Add-command. 3b2

Multiply number, qreg, variable, procedure. 3c

syntax; m ([number]/ q / v [variablename]/ p ([procedurename] parameterpec.)) CA 3c1

semantics; Similar to Add-command. 3c2

Divide number, qreg, variable, procedure. 3d

syntax; d ([number]/ q / v [variablename]/ p ([procedurename] parameterpec.)) CA 3d1

Semantics: Similar to Add-command. 3d2

Load Q-register with number, qreg, variable, procedure. 3e

syntax; 1 ([number]/ q / v [variablename]/ p ([procedurename] parameterpec.)) CA 3e1

semantics: Similar to Add-command. 3e2

Zero Q-register. 3f

syntax: z CA 3f1

semantics; The q-register is set to 0. 3f2

Negate Q-register. 3g

syntax: n CA 3g1

semantics: The q-register is negated. 3g2

Transfer q-register to variable. 3h

syntax: t [variablename] CA 3h1

semantics: The value of the q-register is transfered to the specified variable. 3h2

Insert list. 3i

syntax; i l [c] CA 3i1

semantics: The list of names and values of all presently known external variables is inserted immediately after the specified character. 3i2

Insert Q-register. 3j

syntax: i q [c] CA 3j1

semantics: The value of the Q-register is inserted immediately after the specific character. 3j2

Insert variable. 3k

syntax: v [variablename] [c] CA 3k1

semantics: The value of the variable is inserted immmediately after the specified character. 3k2

Insert procedure. 3l

syntax: i v [procedurename] parameterspec. [c] CA 3l1

semantics: The procedure is invoked, if it has parameters you will be asked to specify values for those parameters. If the procedure returns with a value, that value will be inserted immediately after the specified character, else an arbitrary value will be inserted. 3l2

Replace Q-register, variable, procedure 3m

syntax: r (q / v [variablename] / p [procedurename] parameterspec.) [c] CA 3m1

semantics: The semantics are the same as for the corresponding insert-commands, but you have to bug a number on the screen which will be replaced by the specified value. 3m2

Compile program. 3n

syntax: c CA 3n1

semantics: The first line of the program you want to compile has to be on the top of the screen. 3n2

Execute procedure 3o

syntax: e [procedurename] paramspec. CA 3o1

semantics: If the procedure you want to execute has any parameters, for each parameter the question "parameter

[param.number] equals". will appear in the command feedbackline. You can then specify a value for that parameter using the following syntax: ([n] / q / v [variablename] / p [procedurename] paramspec.) CA 3o2

semantics: The parameter will be set to the specified value. 3o3

Once the parameters are given the procedure will be executed. 3o4

Number of digits after decimal; comma's 3p

syntax: p (d [integer] / c (y / n)) CA 3p1

semantics: You can set the number of digits after the decimal point by typing p d followed by an integer number smaller than 8. You type pcy if you want and pcn if you don't want comma's to be displayed. 3p2

Exit calculator. 3q

syntax: x CA 3q1

semantics: You leave the calculator. The status of it will be saved. 3q2

JCN 13-OCT-72 16:11 12208

User Specifications for the PDP-10 NLS Calculator

(by Fred Van den Bosch 10/15/70)

(J12208) 13-OCT-72 16:11; Title: Author(s): Norton, James C./JCN ;
Distribution: Engelbart, Douglas C., Irby, Charles H., Hopper, J. D.,
Watson, Richard W., Rech, Paul/DCE CHI JDH RWW PR ;
Sub-Collections: SRI-ARC; Clerk: JCN ;
Origin: <NORTON>CALC.NLS;2, 13-OCT-72 15:57 JCN ; HJOURNAL="***

DESCRIPTION OF DIRECTIVES

BFont Body character Font 1

BFont=size,face,style

On Output Device COM, the text of the body will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you don't wish to change the style, the second comma is not necessary. If you wish to change only one of the values, it is usually easier to use the directives Size, Face, Slant, Underline, Monospace, Lightface, or Boldface. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce body text bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

SRI-ARC 11 SEP 73 12210
DESCRIPTION OF DIRECTIVES

BLM Body Left Margin 2

BLM=n,m Initial value: 0 Range: [-131(-8.5), 131(8.5)]

Sets the body left margin to n characters to the right of LMBase, independent of the LM setting. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (BLM=,m), the non-COM value will remain the same. On all devices except COM, the first possible printing position is 0, so all body statements will be indented at least n spaces. This takes effect in the line following the one which includes this directive.

BM Bottom Margin setting 3

BM=n,m Initial value: 56(10) Range: [1(0.1), 150(11)]

n is the last line on which body text will be printed. Optionally, m may be specified; m is a COM measure which will only have effect on Output Device COM. If only m is specified (BM=,m), the non-COM value will remain the same. If statement numbers and signatures are being printed as well as the text, and they overlap each other on the last line, then the statement number will be printed on line n+1 and the signature wlll be printed on line n+2. Any lines consisting only of carriage returns immediately following an automatic pagenation will be discarded. This takes effect on the page which includes this directive, unless this directive moves the bottom margin to a point above the end of the current statement. The bottom margin should be greater than TM+(height of headers)+YFH.

BP Body text Positioning option 4

BP=n Initial value: 1 Range: [0, 11]

Off	0	Don't format the lines. May line break in the middle of a word.
FL	1	set lines flush left
FR	2	set lines flush right
C	3	center between left and right margins
OddL	8	set odd pages flush left, even pages flush right
OddR	9	set even pages flush left, odd pages flush right
J	10	set with full justification (COM only)

If there is a tab in the line, the line is set flush left. This takes effect in the line which includes this directive. One may use the alphabetic eqivalents instead of the numbers (e.g. BP=OddL). If BP=J, on non-COM devices BP will be flush left.

BRM Body Right Margin 5

BRM=n,m Initial value: 72(6) Range: [1(0.1), 131(8.5)]

Sets the body right margin to n characters to the right of LMBase, independent of the RM setting. Optionally, m may be specified; m is a COM measure and will only have effect on Output Device COM. If only m is specified (BRM=,m), the non-COM value will remain the same. There are 77 character positions on the line printer's 8 1/2 by 11 page, but a good practical limit is 72. On Output Device Teletype, the default is 65. This takes effect in the line following the one which includes this directive.

BoldFace change to BoldFaced type 6

BoldFace=On/Off

On Output Device COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in boldfaced type from that point on. If no argument is given, On will be assumed. Whether the type style is light or bold, it may be set to medium by setting either LightFace or BoldFace to Off. See Appendix D for instructions on the use of Output Device COM's features.

CBL Columnate Before Line 7

CBL

For COM only. Columnate (or paginate if Columns=1) before the current line. Directives in this line will affect the page and column in which the line would have appeared had the CBL not been there.

CBS Columnate Before Statement 8

CBS

For COM only. Columnate (or paginate if Columns=1) before the current statement. Directives in this statement will affect the page and column in which the statement would have appeared had the CBS not been there.

CEL Columnate at End of Line 9

CEL

For COM only. Columnate (or paginate if Columns=1) at the end of the current line.

CES Columnate at End of Statement 10

CES

For COM only. Columnate (or paginate if Columns=1) at the end of the current statement.

CFit Columnate to Fit statements 11

CFit=On/Off

For COM only. From that point on, a new column will be begun if a statement won't entirely fit on the page in that column. Affects the current statement and all thereafter until changed.

CLev Columnate before every statement of level <=n 12

CLev=n

For COM only. A new column will be begun before every statement of level n or above level n. Affects the current statement and all thereafter until changed.

CaseMode force Case of text 13

CaseMode=n Initial value: 0

0 current mode; don't do any changing
1 force all text to lower case
2 print all text as upper case

This takes effect just after it appears, and remains in effect until subsequently changed.

Center Center the next n lines 14

Center=n Initial value: 0

Beginning with this line, center n lines between the margins. The count includes blank lines. If no number is given, 1 will be assumed.

Columns Number of Columns on a page 15

Columns=n Initial value: 1 Range: [1, 4]

For COM only. Beginning with the next statement, there will be n columns on the page, with XBC between columns. When you change the number of columns, the next statement will appear in the left column below the lowest y coordinate yet written on the page. If you are printing right statement numbers, you will probably want to define them in terms of the apparent right margins (or else the numbers for all the columns will appear in the same place. To do so, redefine SNF and set SNFRel to On (see SNFRel).

D print-Directives switch 16

D=On/Off Initial value: Off

On = directives will be printed
Off = directives will not be printed

When D is turned on, it and every directive thereafter will be printed as part of the output. When turned off, this directive and all that follow are not printed.

DCase Directive recognition Case 17

DCase=n Initial value: 2

0 will recognize either upper or lower case characters as the first letter of the directive
1 will recognize directives beginning with a lower case letter only
2 will recognize directives beginning with an upper case letter only

This takes effect immediately after this directive appears, so all succeeding directives will have to conform to this directive's specifications, even another DCase to change things back. This parameter also applies to the alphabetic argument equivalents (the mnemonics like All, None, FL, etc.).

DLD set Directive Left Delimiter 18

DLD='@ Initial value: '. Range: [0B, 177B]

Normally, the left delimiter of a directive is a ".". This directive will reset it to any desired character. One may NOT set a directive delimiter to letters, numbers, and non-printing characters, This leaves the following characters: " # $ % & ' ( ) @ : = ↑ ← [ ] ;

< > . , ? + * / - It is alright to set the left and right delimiters to the same character. By setting the delimiters to some little used character, one can get faster response from the output processor. The change takes effect immediately after that directive. From that point on, only directives using the new left delimiter will be recognized.

DRD set Directive Right Delimiter 19

DRD='@ Initial value: '; Range: [0B, 177B]

Normally, the right delimiter of a directive is a ";". This directive will reset it to any desired character. One may NOT set a directive delimiter to letters, numbers, non-printing characters, and the characters: + - * / This leaves the following characters: " # $ % & ' ( ) @ : = ↑ ← [ ] ; < > . , ? It is alright to set the left and right delimiters to the same character. By setting the delimiters to some little used character, one can get faster response from the output processor. The change takes effect immediately after that directive. From that point on, only directives using the new right delimiter will be recognized.

Dash set 'Dash' character for page deliniation 20

Dash='* Initial value: '- Range: [0B, 177B]

Sets the "dash" character to any desired character for printing at the bottom of the page if the NumDash directive is used. For example, one may print a row of Qs at the bottom of each page if one desires. This directive does not apply to dashes within the text. This takes effect on the page which includes this directive, and continues in effect until changed. This is only useful on Output Device Teletype.

DefSyn Define Synonym for directive 21

DefSyn[Directive]=Ullll

Defines the name given to be a synonym for the bracketed directive. The name must begin with an upper case letter, so long as DCase=2. The two names can be used interchangeably from that point on.

DefaultFont Default (all) character Font 22

DefaultFont=size,face,style

On Output Device COM, the type size, face, and style are controllable for each area of text on the page (the Body, each header, the footer, right statement numbers, etc.). For each of these areas, there is a font directive which controls these parameters (e.g. BFont). The DefaultFont directive sets ALL such font directives to the given values. Its most common use is at the beginning if the file, to set up a particular default font for all font directives. The initial value of DefaultFont (and hence the initial value of all font directives) is 10 point Courier medium. If any of the values are not specified, they will be changed back to 10p, Courier, or Medium, as the case may be. See Appendix D for a complete description of all COM directives.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce text bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

Dot Set Dot Character 23

Dot='- Initial value: '. Range: [0B, 177B]

Normally, when the user executes a DotSplit or DotTo directive, the space is filled with dots (periods). This directive allows the user to reset the "dot" character so that a space may be filled with any character. For example, one may want to fill a space wth dashes (Dot='-), or one might want to fill it with spaces and set DotFont to underlined. The regular Split directive puts nothing in the space.

DotFont Set Dot Character Font 24

DotFont=size,face,style

On Output Device COM, the dots produced by the directives DotSplit and DotTo will be set in the type size, face, and style given in this directive, regardless of the font locally in effect at the time a dot directive is invoked. The default font is 10 point Courier medium. If any of the values are not specified, they will not be changed. If you don't wish to change the style, the second comma

is not necessary. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. BStyle=2+4+8 or BStyle=Bold+Slanted+Underlined would both produce body text bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

DotSpacing set Spacing between Dots 25

DotSpacing=n,m Initial value: 0(.05) Range: [0, 131(8.5)]

Sets spacing between dots generated by DotSplit or DotTo. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specifed (DotSpacing=,m), the non-COM value will remain the same. On non-COM devices, this parameter is the

number of spaces between dots; on COM it is the distance between dots. If only the non-COM parameter is specified, the COM value will be calculated from the width of a blank in the current body font. The .05" default for COM is roughly equivalent to "3-to-em" spacing for a 10 point font, a common default for the printing industry. Dots are spaced from the left margin, so all dots on a page will be lined up vertically. On non-COM devices, there will always be at least one space both before and after the dots, except when Dot Spacing=0. On COM, the minimum space before and after the dots will be MIN(sp,DotSpacing)/2.

DotSplit Split lines wth Dots 26

DotSplit

When this occurs in a line, the text in the line to the left of this directive will be set flush left, and the text to the right of the directive will be set flush right. The area in between will be filled with dots (see Dot, DotFont, and DotSpacing). This is particularly useful in formatting indices and tables of contents.

DotTo fill line segment with Dots 27

DotTo=n,m Range: [1, 132(8.4)]

Insert dots to the given character position. The character following that directive will be in the nth column. Optionally, m may be specified; m is a COM measure and replaces n on Output Device COM. If only m is specified (TabTo=,m), this directive will be ignored on non-COM devices. Takes effect immediately and constitutes a line segment break. Will move as little as 2*DotSpacing+1 spaces. If you are on or beyond the given position, nothing will happen. See Dot, DotFont, and DotSpacing.

EvenPage insure on Even Page 28

EvenPage

The Output Processor will make sure that the page which includes the directive EvenPage will be an even page. If it would fall on an odd page, a pagination will occur before that statement. "Verso" (a printer's term for left or back page) is a synonym for EvenPage.

F sets the text of Footer 29

F="string"

Sets the text of the footer to the string. The default is GPN. i.e. once a footer is set, automatic page number generation is cancelled. So if you want a page number at the bottom of the page, you must include a GPN directive in the footer string. The footer is a generalization of the page number field. The string will be printed at the bottom of each page. Directives may appear in the text of the footer; they will be executed each time the footer is printed. If you wish no footer (page numbers) to be printed, set FSw to Off.

FFont Footer character Font 30

FFont=size,face,style

On Output Device COM, the text of the footer will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you don't wish to change the style, the second comma is not necessary. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the three options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce footer text bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

FLM Footer Left Margin setting 31

FLM=n,m Initial value: 0 Range: [-131(-8.5), 131(8.5)]

Sets the left margin of the footer to n characters to the right of LMBase, independent of the setting of LM. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (FLM=,m), the non-COM value will remain the same. On all devices except COM, the first printing position is 0, so the footer will be indented n spaces. When LM is set, FLM is set to the same value at the same time.

FP Footer Position 32

FP=n Initial value: 3

FL	1	set lines flush left
FR	2	set lines flush right
C	3	center between left and right margins
OddL	8	set odd pages flush left, even pages flush right
OddR	9	set even pages flush left, odd pages flush right
J	10	set with full justification (COM only)

One may use the alphabetic eqivalents instead of the numbers (e.g. FP=OddL). This takes effect on the page which includes this directive.

FRM Footer Right Margin setting 33

FRM=n,m Initial value: 72(6) Range: [1(0.1), 131(8.5)]

Sets the footer right margin to n characters to the right of LMBase, independent of the setting of the RM. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (FRM=,m), the non-COM value will remain the same. An 8 1/2 by 11 page has approximately 77 character positions, but a good practical limit is 72. The initial value of FRM with Output Device Teletype is 65. The new parameter takes effect on the page which includes this directive. When RM is set, FRM is set to the same value at the same time.

FSw Footer Switch 34

FSw=On/Off

When on, the string defined by the directive F will be printed at the bottom of each page. Page numbers will be replaced, so if you want a page number down there, you must put the GPN directive in the string of the footer. When off, no footers (including no page numbers) will be printed. This directive takes effect on the page which includes this directive.

Face change type Face 35

Face=n Range: [0, 6]

On Output Device COM, the text of the area in which this directive appears (be it the body, header1, header 2, etc .) will be set in type face n from that point on. See Appendix D for instructions on the use of Output Device COM's features.

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Font character Font 36

Font=size,face,style

On Output Device COM, the text of the area in which this directive occurs (be it the body, header 1, header 2, etc.) will be set in the type size, face, and style given in this directive. If any of the values are not

specified, they will not be changed. The default is 10 point Courier medium. If you don't wish to change the style, the second comma is not necessary. If you wish to change only one of the values, it is usually easier to use the directive Size, Face, Slant, Underline, Monospace, Lightface, or Boldface. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. BStyle=2+4+8 or BStyle=Bold+Slanted+Underlined would both produce body text bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

GCR Generate Carriage Return(s) 37

GCR=n or just GCR Range: [0, 75]

Generates n carriage returns (and line feeds) at that point in the output. GCR without an argument generates one carriage return. May be placed in any text, including in headers and footers. Blank lines following an automatic pagination will be discarded; if you really want them, use the directive GLES, GLEL, GLBS, or GLBL.

GD Generate text for current Date 38

GD

Generates the text for the current date at that point in the output. It takes 9 character-positions.

GDT Generate text for Date and Time 39

GDT

Generates the text for the current date, a space, then the current time at that point in the output. It takes 16 character-positions.

GN Generate Number 40

GN=n

Generates the text for the number n at that point in the output, in the form determined by GNType. The user variable directives (U0 through U9) may prove useful in connection with this directive.

GNType Type of number generated by GN 41

GNType=n

Dec	1	decimal numbers
LR	2	lower case roman numerals
UR	3	upper case roman numerals
LL	4	lower case letters
UL	5	upper case letters
Oct	6	octal numbers
Parens	10	enclose whichever type of number in (parenthesis)
Brackets	20	enclose in [brackets]
Angles	30	enclose in <angle brackets>
Hyphens	40	enclose in -hyphens-
Period	100	follow number (and enclosure) with a period
Colon	200	follow number (and enclosure) with a colon

One may use the alphabetic equivalents instead of the numbers (e.g., either "GNType=231" or "GNType=Dec+Angles+Colon" would produce a number in the form "<n>:").

GPN Generate text for Page Number 42

GPN=n

Generates the text for the page number at that point in the output in whatever format n dictates. When no argument is given, the page number is generated in whatever type PNType currently dictates. The default of F is GPN=1.

Dec	1	decimal numbers
LR	2	lower case roman numerals
UR	3	upper case roman numerals
LL	4	lower case letters
UL	5	upper case letters
Oct	6	octal numbers

Parens	10	enclose whichever type of number in (parenthesis)
Brackets	20	enclose in [brackets]
Angles	30	enclose in <angle brackets>
Hyphens	40	enclose in -hyphens-
Period	100	follow number (and enclosure) with a period
Colon	200	follow number (and enclosure) with a colon

One may use the alphabetic equivalents instead of the numbers (e.g., either "GPN=231" or "GPN=Dec+Angles+Colon" would produce a page number in the form "<n>:").

GSp Generate Space(s) 43

GSp=n or GSp Range: [0, 75]

Generates n spaces at that point in the output; when there is no argument, a single space is generated.

GT Generate text for Time of day 44

GT

Generates the text for the current time of day at that point in the output. It it takes 7 character-positions.

GTab Generate Tab(s) 45

GTab=n or GTab Initial value: NLS Range: [0, 10]

Generates n tabs at that point in the output; when there is no argument, one tab is generated. Will tab as little

as one space. Printing then begins in the character position following the position where the tabs are set. Tabs are, unless changed in NLS or by a TabStops directive, set in position eight (8), and every eight spaces therafter, up to 72.

GYBL Generate vertical distance Before Line 46

GYBL=n,m Range: [1, 792]

Generates n lines before the line which includes this directive. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (GYBL=,m), nothing will happen on non-COM devices. The distance will be generated even if this line is the first one on a new page.

GYBS Generate vertical distance Before Statement 47

GYBS=n,m Range: [1, 792]

Generates n lines before the statement which includes this directive. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (GYBS=,m), nothing will happen on non-COM devices. This applies to the body area only. The distance will be generated even if this is the first statement on a new page.

GYEL Generate vertical distance After Line 48

GYEL=n,m Range: [1, 792]

Generates n lines after the line which includes this directive. Optionally, m may be specified; m is a COM

measure and will only take effect on Output Device COM. If only m is specified (GYEL=,m), nothing will happen on non=COM devices.

GYES Generate vertical distance After Statement 49

GYES=n,m Range: [1, 792]

Generates n lines after the statement which includes this directive. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (GYES=,m), nothing will happen on non-COM devices. This applies to the body area only.

Grab paginate if can't fit n lines on page 50

Grab=n,m Range: [0, 148(8.5)]

Paginate (or, on COM, columnate) if n lines, beginning with the first line of the current statement, won't fit on the current page. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (Grab=,m), nothing will happen on non-COM devices. When m is specified, the distance is measured from the top of the first line in the current statement. Blank lines are included in this count. This is commonly used for heading widows, i.e. to insure that something like a chapter head isn't the last line on a page.

H1 text of page Header 1 51

H1="string" or H1="odd", "even"

When defined, this string will be printed at the top of every page, in the position determined by the directive H1P, so long as H1Sw is set to "On". When two strings are defined, the first will apply to all odd numbered pages and the second will apply to all even numbered pages. H is a synonym for H1 (when the number is left off, it assumes you are referring to H1). Directives may appear in the text of headers; they will be executed each time the header is printed. The double-quote mark (") may appear in the text of headers, so long as it is not immediately followed by a comma or the directive right delimiter (i.e. the end of the header string is only a double-quote immediately followed by the directive right delimiter). This takes effect on the page following the one which includes this directive.

H1Font Header 1 character Font 52

H1Font=size,face,style

On Output Device COM, the text of the header 1 will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2

```
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce header 1 text bold faced, slanted (italics), and underlined. See Appendix D for samples.

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

H1P Header 1 Positioning option 53

H1P=n Initial value: 1

FL	1	set lines flush left
FR	2	set lines flush right
C	3	center between left and right margins
OddL	8	set odd pages flush left, even pages flush right
OddR	9	set even pages flush left, odd pages flush right
J	10	set with full justification (COM only)

This takes effect beginning on the next occurance of a header. If there is a tab in the line, the line is set flush left. One may use the alphabetic equivalents instead of the numbers (e.g., H1P=OddR). If H1P=J, on the printer it will be set flush left.

H1Sw page Header 1 Switch 54

H1Sw=On/Off

When on, the string defined by H1 will be printed at the top of every page; when off, header 1 and LBH1H2 won't be printed. This takes effect after the current statement.

H2 text of page Header 2 55

Works just like H1. Will be printed under H1. The distance between H1 and H2 is determined by the directive LBH1H2, and is initially 0.

H2Font Header 2 character Font 56

Works just like H1Font.

H2P Header 2 Positioning option 57

Works just like H1P.

H2Sw page Header 2 Switch 58

H2Sw=On/Off

When on, the string defined by H2 will be printed at the top of every page, under H1 and HJournal; when off, H2

and LBH2H3 won't be printed. THis takes effect after the current statement.

H3 text of page Header 3 59

Works just like H1. Will be printed under H2. The distance between H2 and H3 is determined by the directive LBH2H3, and is initially 0.

H3Font Header 3 character Font 60

Works just like H1Font.

H3P Header 3 Positioning option 61

Works just like H1P.

H3Sw page Header 3 Switch 62

Works just like H1Sw.

H4 text of page Header 4 63

Works just like H1. Will be printed under H3. The distance between H3 and H4 is determined by the directive LBH3H4, and is initially 0.

H4Font Header 4 character Font 64

Works just like H1Font.

H4P Header 4 Positioning option 65

Works just like H1P.

H4Sw page Header 4 Switch 66

Works just like H1Sw.

HJFont Journal Header character Font 67

Works just like H1Font.

HJLM Journal Header Left Margin 68

HJLM=n,m Initial Value: 0 Range: [-131(-8.5), 131(8.5)]

Sets the Journal Header left margin to n characters to the right of LMBase, independent of the LM setting. LM does not change HJLM. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (HJLM=,m), the non-COM value will remain the same. On all devices except COM, the first possible printing position is 0. This takes effect on the page following the one which includes this directive.

HJP Journal Header Positioning option 69

Works just like HlP. By default, HJP=FR.

HJRM Journal Header Right Margin 70

HJRM=n,m Initial Value: 76(6.5) Range: [-131(-8.5), 131(8.5)]

Sets the Journal Header right margin to n characters to the right of LMBase, independent of the RM setting. RM does not change HJRM. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (HJRM=,m), the non-COM value will remain the same. This takes effect on the page following the one which includes this directive. On Output Device Teletype, this is defaulted to 72.

HJournal text of Journal page Header 71

HJournal="string" or HJournal="odd", "even"

The string is printed as a running head above everything else (including the other headers), beginning on the page following the one which includes this directive. If two strings are defined, the first will be printed on all odd numbered pages and the second will be printed on even numbered pages. It is by default set flush to the right margin. It is printed in the top margin so as not to affect the page format (see --YBHJTM). When a file is journalized, HJournal is set by the Journal system to the sender's ident, a space, the date and time of journalization, a space, and the journal number. Once set, the Journal header may not be changed; subsequent HJournal directives will be recognized only so far as to conform to D (directive print switch). See the introduction for a list of Journal inserted directives.

HLM Header Left Margin 72

HLM=n,m Initial value: 0 Range: [-131(-8.5), 131(8.5)]

Sets the left margin of all except the Journal header to n characters to the right of LMBase, independent of the setting of LM. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (HLM=,m), the non-COM value will remain the same. The first possible printing position is 0. Setting LM sets HRM to the same value at the same time.

HRM Header Right Margin 73

HRM=n,m Initial value: 72(6) Range: [1(0.1), 131(8.5)]

Sets the right margin of all except the Journal header to n characters to the right of LMBase, independent of the setting of RM. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (HRM=,m), the non-COM value will remain the same. There are approximately 77 columns on our printer's 8 1/2 by 11 page, but a good practical limit is 72. The initial value is 65 with Output Device Teletype. This takes effect on the next occurance of a header. Setting RM sets HRM to the same value at the same time.

Halt ignore rest of input file 74

Halt

Stops compilation and output of the input file from that point on. It's as if this were the last thing in the file.

ICR Indentation for Carriage Return on previous line 75

ICR=n,m Initial value: 0 Range: [0, 131(8.5)]

Indents n spaces from level-indented left margin after each carriage return in the text. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified, the non-COM value will remain the same. Does not indent the first line in a statement nor overflow of a line onto the next line. Takes effect on the next line. No indentation will be greater than IMax.

IFirst Indentation for First line of statement 76

IFirst=n,m Initial value: 0 Range: [0, 131(8.5)]

Indents the first line of each statement n spaces. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (IFirst=,m), the non-COM value will remain the same. Text begins in the n+1th position. Takes effect on the next line. No indentation will be greater than IMax.

IL Indentation per Line in statement 77

IL=n,m Initial value: 0 Range: [0, 131(8.5)]

Each line of text in a statement is indented n spaces from the beginning of the previous line (NOT necessarily from the first visible), so it's cumulative. Optionally, m may be specified; m is a COM measure and takes effect only on Output Device COM. If only m is specified (IL=,m), the non-COM value will remain the same. Takes effect on the next line. No indentation will be greater than IMax.

ILCR Indentation per Line-ended-by-CR in statement 78

ILCR=n,m Initial value: 0 Range: [0, 131(8.5)]

Each occurance of a carriage return (the CR character or a GCR directive) will increment total indentation in that statement by n; i.e. the line resulting from the carriage return and all in the statement thereafter will be indented n more spaces than the previous line. (Zero is off.) Optionally, m may be specified; m is a COM measure and will take effect only on Output Device COM. If only m is specified (ILCR=,m), the non-COM value will remain the same. Takes effect on the next line. No indentation will be greater than IMax.

ILev Indentation per statement Level 79

ILev=n,m Initial value: NLS Range: [-131(-8.5), 131(8.5)]

All of each statement is indented n(L-1). It is the amount of indenting for each lower level of statement. The initial value is 3. Optionally, m may be specified; m is a COM measure and takes effect only on Output Device COM. If only m is specified (ILev=,m), the non-COM value will remain the same. Takes effect on the next statement. This indentation is always performed before any of the other indents are considered. No indentation will be greater than IMax.

IMax Maximum total Indentation 80

IMax=n,m Initial value: NLS Range: [0, 131(8.5)]

The maximum amount of indenting from the left margin by ALL the other indent options will be n characters to the right of Body Left Margin. Optionally, m may be specified; m is a COM measure and only takes effect on

Output Device COM. If only m is specified (IMax=,m), the non-COM value will remain the same. The default NLS value is 48. To get any indentation greater than this, you must increase this parameter. Takes effect on the next line.

IOvr Indentation for Overflow of previous line 81

IOvr=n,m Initial value: 0 Range: [0, 131(8.5)]

Overflow from the previous line in a statement will be indented n spaces from the level indented statement margin. When the output processor can't fit a statement or a line all on one print line, it automatically backs up to the last invisible and begins a new line; this new line is called overflow. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (IOvr=,m), the non-COM value will remain the same. Takes effect on the next line. No indentation will be greater than IMax.

IRel Indentation Relative to first visible in previous line 82

IRel=n,m Initial value: 0 Range: [0, 131(8.5)]

Each line in a statement is indented n spaces from the position in which the first visible character in the previous line was printed, so it's cumulative. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (IRel=,m), the non-COM value will remain the same. Takes effect on the next statement. No indentation will be greater than IMax.

IRest Indentation for statement lines after first line 83

IRest=n,m Initial value: 0 Range: [0, 131(8.5)]

All but the first line in a statement will be indented n spaces from the level indented statement margin. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (IRest=,m), the non-COM value will remain the same. Takes effect on the next line. No indentation will be greater than IMax. Leading spaces in each line will be discarded.

ISN Indentation to replace Statement Numbers 84

ISN=n,m Initial value: 0 Range: [0, 131(8.5)]

If statement numbers are not being printed (SN=Off), then n spaces will be printed before the first character of the first line of the statement is printed. (These spaces are in addition to any created by other indent options.) Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified (ISN=,m), the non-COM value will remain the same. Takes effect on the next statement. No indentation will be greater than IMax.

IgB Ignore Branch 85

IgB

The statement in which this directive appears and all its sub-statements will not be printed. If some lines of the statement have already been compiled, they will be printed. The directives before the IgB directive will be executed. After the ignore directive, there will be no scanning for directives and no printing.

IgD Ignore Directives 86

IgD=On/Off

All directives except IgD will be ignored while IgD=On. Directives will be recognized, however, and treated by the directive D. This applies only to the body area, so directives in the headers and footer will be executed.

IgLS Ignore Line Segment 87

IgLS

The text of the line segment in which this directive occurs will be ignored. Directive in the line segment are executed, however. A line segment is a string of text terminated by:

1. a tab character or a GT directive
2. a split directive
3. a change in type font, style, or size (on COM only)
4. an end-of-line condition (carriage return or GCR directive, line overflow beyond the right margin, or end-of statement encountered).

IgRest Ignore Rest of statement 88

IgRest

From that point on, the rest of that statement will be ignored. This includes directives in that last part of the statement. It's as if the statement ended there.

IgS Ignore Statement 89

IgS

From the line which includes this directive on, the statement will not be printed. Directives in the statement before, but not after, this one will be recognized and executed.

IgText Ignore Text 90

IgText=On/Off

If IgText is set to On, all text in the file will be ignored until IgText is turned off again. All directives except for IgText will also be ignored. It's as if that section of the file were not there.

LM Left Margin setting 91

LM=n,m Initial value: 0 Range: [-131(-8.5), 131(8.5)]

The first character printing position will be n characters to the right on LMBase. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (LM=,m), the non-COM value will remain the same. On all non-COM devices, the first possible printing position is 0, so all statements will be indented at least n spaces. Negative left margins can be used when one wants to bring indented statements out to the left edge of the page. Until subsequently changed (by HLM, FLM, BLM), this sets the left margin for the body, the headers (except the Journal header), and the footer, all at once. Takes effect on the next line.

LMBase Base Left Margin in points 92

LMBase=n,m Initial value: 0(1.5) Range: [0, 131(8.5)]

Sets a reference position to n characters to the right of zero character position on non-COM devices and to the right of the left edge of the page on COM. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specifed (LMBase=,m), the non-COM value will remain the same. All horizontal margin parameters for COM are with respect to this position. When one sets LM to n, the left margin will be set to n + LMBase from the of zero position. One may change LM without changing the reference point from which the right margin is calculated, since RM is calculated from LMBase.

LP Line Positioning option 93

LP=n

FL	1	set lines flush left
FR	2	set lines flush right
C	3	center between left and right margins
OddL	8	set odd pages flush left, even pages flush right
OddR	9	set even pages flush left, odd pages flush right
J	10	set with full justification (COM only)

If there is a tab in the line, the line is set flush left. Takes effect on the line which includes this directive. One may use the alphabetic eqivalents instead of the numbers (e.g. LP=OddL). If LP=J, on the printer it will be flush left.

Leading print-Leading-spaces switch 94

Leading=On/Off

When off, any blank spaces at the beginning of each line will not be printed. Doesn't affect ISN (indentation to replace statement numbers). Takes effect on the next line.

Lev Level of current statement 95

This cannot be changed by the user; it is for queries only. i.e. it may be used in the argument of another directive.

LevClip don't print Levels below n 96

LevClip=n Initial value: NLS Range: [0, 72]

Levels below n will not be printed. Their directives will not be recognized. Similiar to NLS viewspec L, which determines its initial value. Having n greater than the L viewspec at the time at which the file is sent to the output processor is meaningless, since the output processor will only see L levels anyway.

LevShow output only these Levels 97

LevShow=intervals

Beginning with the next statement, only statements of the given levels will be printed. Directives in unprinted levels will be ignored. The initial value depends on the

value of the NLS viewspec L in force at the time of output processing.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All"/"On"/"Yes"	Levels 1 thru 12
"None"/"Off"/ No"	No Levels (resets LevShow)

LightFace change to LightFaced type 98

LightFace=On/Off

On Output Device COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in lightfaced type from that point on. If no argument is given, On will be assumed. Whether the type style is light or bold, it may be set to medium by setting either LightFace or BoldFace to Off. See Appendix D for instructions on the use of Output Device COM's features.

MonoSpace change to MonoSpaced type 99

MonoSpace=On/Off

On Output Device COM, the text of the area in which this directive appears (be it the body, header 1, header 2,

etc.) will be set in mono spaced type from that point on. If no argument is given, On will be assumed. This directive only has meaning when a type face that is normally proportionally spaced is in effect. Those type faces which may (and will by default) be proportionally spaced are: Courier (#0), NewsGothic (#5), and TimesRoman (#6). See Appendix D for instructions on the use of Output Device COM's features.

Names print-statement-Names switch 100

Names=On/Off Initial value: NLS

Statement names will be printed when Names is on; they won't be printed when Names is off. A statement name is as defined in the NLS file. Takes effect on the next statement.

NumDash Number of Dashes at end of page 101

NumDash=n Initial value: 0 Range: [0, 132]

When set to other than 0, n dashes [or whatever character one may set with the directive "Dash"] will be printed at the end of the page to show where the page ends. This is only useful when outputting on a teletype, it is not useful on the printer or on COM.

OddPage insure on Odd Page 102

OddPage

The Output Processor will make sure that the page which includes the directive OddPage will be an odd page. If it would fall on an even page, a pagination will occur

before that statement. "Recto" (printer's term for right page) is a synonym for OddPage.

PBL Paginate Before this Line 103

PBL

The printer will paginate before the line which includes this directive. The first such will be ignored if a page break automatically occured just before this line. Directives in that line will apply to the previous page as well.

PBS Paginate Before this Statement 104

PBS

The printer will paginate before the statement which includes this directive. The first such will be ignored if a page break automatically occured just before this statement. Directives in that statement will apply to the previous page as well.

PEL Paginate at End of this Line 105

PEL

The printer will begin a new page after the line which includes this directive. The first such will be ignored if a page break automatically occured just after this line.

PES Paginate at End of this Statement 106

PES

The printer will begin a new page after the statement (including statement number and/or signature, if applicable) which includes this directive. The first such will be ignored if a page break automatically occured just after this statement.

PFit Paginate to Fit statements 107

PFit=On/Off

When on, if a statement won't completely it on the page, the printer will paginate (or, on COM, columnate) before that statement. This applies to all statements so long as this directive remains on. Any lines consisting only of carriage returns immediately following an automatic pagination will be discarded. Takes effect on the current statement.

PLev Paginate before every statement of Level above n 108

PLev=n Initial value: 0 Range: [0, 35M]

Every time the printer encounters a statement of level n or higher, it will paginate before that statement. Will be ignored if a page break would automatically occur in the same place anyway. To turn off this option, set PLev to zero. This takes effect on the current statement.

PN set current Page Number to n 109

PN=n Initial value: 1

Sets the current page number to n. Note peculiarity mentioned in PBS and PBL: if PN is in a line containing a PBL or a statement containing a PBS, the PN will affect the page on which it would have appeared had there not been a pagination directive, not the new page on which that line will be printed. The default of F is GPN=1, (initialized at PN=1).

PNType Page Number Type 110

PNType=n

Dec	1	decimal numbers
LR	2	lower case roman numerals
UR	3	upper case roman numerals
LL	4	lower case letters
UL	5	upper case letters
Oct	6	octal numbers
Parens	10	enclose whichever type of number in (parenthesis)
Brackets	20	enclose in [brackets]
Angles	30	enclose in <angle brackets>
Hyphens	40	enclose in -hyphens-
Period	100	follow number (and enclosure) with a period
Colon	200	follow number (and enclosure) with a colon

One may use the alphabetic equivalents instead of the numbers (e.g., either "PNType=231" or "PNType=Dec+Angles+Colon" would produce a page number in the form "<n>:"). To turn automatic page number generation off, set FSw to Off. (They are being produced because the default of F is GPN=1.)

PShow output only these Pages 111

PShow=interval

Output only these pages, but format and scan all the other pages for directives. (Zero or "all" means print all pages.) Takes effect on current statement.

"interval" represents an interval of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All"/"On"/"Yes"	Levels 1 thru 12
"None"/"Off"/ No"	No Levels (resets LevShow)

PSw Pagination Switch (no page separation) 112

PSw=On/Off

When off, no page breaks will be made. The output will be in continuous form. There will be no page number generation, headers, footers, dashes at end of page. Page size and pagination directives will be meaningless.

Photo insert Photograph 113

Photo=catnum, (x,y), (x,y)

For COM only. The page on which the first character of the statement includes this directive will be printed will have the specified line drawing or half-tone photograph superimposed on the page within the given coordinates. The first number is the catalog number of the photograph. The second number is the x coordinate of the upper-left corner of the photo area; the third number is the y coordnate of the upper-left corner of the photo area. The fourth number is the x coordinate of the lower-right corner of the photo area; the last number is the y coordinate of the lower-right corner of the photo area. All five parameters must be specified. The parenthesis may be left out, and the commas may be optionally replaced by spaces. The photo will be an overlay, so, unless you wish text within the picture area, you must allow room for the photo. The GYBS or GYES might prove helpful for this. Catalog numbers are assigned by Mil Jernigan. Arrangements must be made with Dean Meyer to have a copy of the photo sent to DDSI.

PlexNum Number Plex below current statement 114

PlexNum=n

Dec	1	decimal numbers
LR	2	lower case roman numerals
UR	3	upper case roman numerals
LL	4	lower case letters
UL	5	upper case letters
Oct	6	octal numbers
SNum	7	statement number format
DotNum	8	dot number format
Parens	10	enclose whichever type of number in (parenthesis)
Brackets	20	enclose in [brackets]
Angles	30	enclose in <angle brackets>
Hyphens	40	enclose in -hyphens-

Period	100	follow number (and enclosure) with a period
Colon	200	follow number (and enclosure) with a colon

One may use the alphabetic equivalents instead of the numbers (e.g., either "PlexNum=231" or "PlexNum=Dec+Angles+Colon" would produce plex numbers in the form "<n>:").

Only the statements that are exactly one level below the statement in which PlexNum appears are numbered. i.e. The PlexNum directive must be put in the statement one up from the plex you wish numbered. The number goes before leading spaces, at the beginning of the first output line of each statement in the sublist. Plex numbers will replace statement numbers if SN is on. The PlexNums will be printed in the font in which the statement is initialized (as determined by either BFont or the PxFont for that level).

Once you have defined a PlexNum for a branch, any subsequent PlexNum directives IN THAT BRANCH will serve only to change the numbering scheme. If you wish to number plexes within plexes, use the more versatile PxN and PxNShow directives.

Post Post processor switch 115

Post=On/Off

When Post is on, the formatted file will be post-processed, as is normal, and sent to the output device or file. When Post is off, the Output Processor will format the file as it usually does, but the formatted string will not be post-processed; i.e. it will not be sent into the output file. It will be as if that section of the file where Post is off were cut from the output, or as if the printer were turned off while that section was being sent out to it. This means the page deliniation will be off for that page; it should be used with care.

PxFShow Plex Format Show 116

PxFShow=intervals Initial value: None Range: [0, 12]

Blank lines will be inserted in plexes of the listed levels in accordance with PxFLU, PxFLS, and PxFLD. This directive takes effect immediately, and is in addition to any other y distance (e.g. YBS). This stays in effect until changed or turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All"/"On"/"Yes"	Levels 1 thru 12
"None"/"Off"/ No"	No Levels (resets LevShow)

PxFYD Plex Format Lines Down 117

PxFYD=n,m Initial value: 1(12p) Range: [0, 147(11)]

n blank lines will be inserted after a level L statement if the next statement is at level L+1 (one down); i.e. the number of blank lines before the first substatement of every level L statement. L is set by the PxFShow directive. Optionally, m may be specified; m is a COM measure and replaces the value n on Output Device COM. If only m is specified (PxFYD=,m), the non-COM value will remain the same. This directive takes effect immediately, and is in addition to any other y distance (e.g. YBS).

PxFYS Plex Format Lines Same 118

PxFYS=n,m Initial value: 1(12p) Range: [0, 147(11)]

n blank lines will be inserted after a statement of level L if the next statement is also of level L; i.e. the number of blank lines between statements of the same level. L is set by the PxFShow directive. Optionally, m may be specified; m is a COM measure and replaces n on Output Device COM. If only m is specified (PxFYS=,m), the non-COM value will remain the same. This directive takes effect immediately, and is in addition to any other y distance (e.g. YBS).

PxFYU Plex Format Lines Up 119

PxFYU=n,m Initial value: 2(24p) Range: [0, 147(11)]

n blank lines will be inserted before a level L statement if the preceding statement was at level L+1 (one down); i.e. the number of blank lines before each new branch of level L. L is set by the PxFShow directive. Optionally, m may be specified; m is a COM measure and replaces n on Output Device COM. If only m is specified (PxFYU=,m), the non-COM value remains the same. This directive takes effect immediately, and is in addition to any other y distance (e.g. YBS).

PxFont Plex character Font 120

PxFont=size,face,style

On Output Device COM, the text of the level specified in the brackets will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. A BFont

directive or other font control directives (Font, Face, Size, etc.) may be placed in the statement if a change is desired. At the end of that statement, the font will be switched back to its value before that statement, even if a BFont or other font control directive appears in the statement. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce text bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

PxFontShow Plex formatted type Font Show 121

PxFontShow=intervals Initial value: 0 Range: [0, 12]

For COM only. Controls the levels on which PxFont will show its effects. If a level is listed in PxFontShow but is not defined in a PxFont directive, their defaults will be assumed. This takes effect on the next statement, and remains in effect until turned off (set to Off). See Appendix D for instructions on the use of all COM features.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All"/"On"/"Yes"	Levels 1 thru 12
"None"/"Off"/ No"	No Levels (resets LevShow)

PxI Plex formatted Indentation 122

PxI[lev]=n,m Initial value: 3(lev-1) Range: [0, 132(8.5)]

The listed levels will, when turned on by PxIShow, be indented n spaces from LMBase instead of level indenting (ILev). Optionally, m may be specified; m is a COM measure and replaces n on Output Device COM. If only m is specified (PxI[lev]=,m), the non-COM value will remain the same. The default on COM is 0.3(lev-1). Takes effect on the next statement.

PxIShow Plex formatted Indentation Show 123

PxIShow=intervals Initial value: 0 Range: [0, 12]

The listed levels will be indented according to PxI[lev]. This indentation replaces ILev for those levels. This takes effect on the next statement, and remains in effect until turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All"/"On"/"Yes"	Levels 1 thru 12
"None"/"Off"/ No"	No Levels (resets LevShow)

PxN Plex Numeral style/level 124

PxN[level]=n Initial value (for n): 8

Specifies the type of numbering to be used at each level of plex numbering.

Dec	1	decimal numbers
LR	2	lower case roman numerals
UR	3	upper case roman numerals
LL	4	lower case letters
UL	5	upper case letters
Oct	6	octal numbers
SNum	7	statement number format
DotNum	8	dot number format

Parens	10	enclose whichever type of number in (parenthesis)
Brackets	20	enclose in [brackets]
Angles	30	enclose in <angle brackets>
Hyphens	40	enclose in -hyphens-
Period	100	follow number (and enclosure) with a period
Colon	200	follow number (and enclosure) with a colon

One may use the alphabetic equivalents instead of the numbers (e.g., either "PxN=231" or "PxN=Dec+Angles+Colon" would produce plex numbers in the form "<n>:").

The number goes before the leading spaces, at the beginning of the first output line of each statement in the sublist. Plex numbers will replace statement numbers if SN is on. Effective on next statement.

PxNFont Plex Numeral character Font 125

PxNFont[level]=size,face,style

On Output Device COM, the plex numerals of the given level will be set in the type size, face, and style given in this directive. This may be defined for the first twelve levels. "All" may be used in the level parameter. If no level is given, All will be assumed. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1

```
Film          =  2
OCRB          =  3
NMAMicrofont  =  4
NewsGothic    =  5
TimesRoman    =  6
```

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce plex numerals bold faced, slanted (italics), and underlined. See Appendix D for samples.

```
Medium      =  0
Light       =  1
Bold        =  2
Slanted     =  4
Underlined  =  8
Mono        = 16
```

PxNFontShow right Plex Numbers Font switch 126

PxNFontShow=intervals Initial value: 0 Range: [0, 12]

For COM only. With the PxNFont directive, different fonts may be defined for each of the first twelve levels of plex numbers. These will only have effect on the levels listed in the PxNFontShow directive. If the PxNFontShow directive does not include a given level, or if no PxNFontShow directive appears, the plex number will appear in the font at which the statement was initialized (BFont or PxFont for that level). If the PxNFontShow directive includes a level not previously defined by a PxNFont directive, it will appear in the DefaultFont, until subsequently changed.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n       Level n itself.
<n      Levels 1 thru n-1
<=n     Levels 1 thru n
```

```
>n        Levels n+1 thru 12
>=n       Levels n thru 12
(n,m)     Levels n+1 thru m-1
[n,m)     Levels n thru m-1
(n,m]     Levels n+1 thru m
[n,m]     Levels n thru m
"All" / "On" / "Yes"
                Levels 1 thru 12
"None" / "Off" / "No"
                No Levels (resets PxNFontShow)
```

PxNShow Plex Number level switch 127

PxNShow=intervals Initial value: None Range: [0, 12]

The listed levels will be plex numbered, in accordance with PxN. Takes effect on the next statement, and remains in effect until turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

```
n         Level n itself.
<n        Levels 1 thru n-1
<=n       Levels 1 thru n
>n        Levels n+1 thru 12
>=n       Levels n thru 12
(n,m)     Levels n+1 thru m-1
[n,m)     Levels n thru m-1
(n,m]     Levels n+1 thru m
[n,m]     Levels n thru m
"All"/"On"/"Yes"
          Levels 1 thru 12
"None"/"Off"/ No"
          No Levels (resets LevShow)
```

PxP Plex Position for given level 128

PxP[lev]=n

All statements of the given level will be justified as specified, when PxPShow is on for that level. When PxPShow is not on for a level, statements of that level will be set according to BP (Body Position). PxP may be specified for levels 1 through 12. The default is 3, or C (Centered). If the level is not specified, the plex position of all levels will be set to the given value.

FL	1	set lines flush left
FR	2	set lines flush right
C	3	center between left and right margins
OddL	8	set odd pages flush left, even pages flush right
OddR	9	set even pages flush left, odd pages flush right
J	10	set with full justification (COM only)

If there is a tab in the line, the line is set flush left. Takes effect on the statement which follows the one which includes this directive. One may use the alphabetic eqivalents instead of the numbers. If PxP[lev]=J, on non-COM devices it will be flush left.

PxPShow Plex Positioning option Show 129

PxPShow=intervals Initial value: None Range: [1, 12]

This, in conjunction with PxP, allows the positioning of each level independently. The listed levels will be positioned according to PxP[lev]; levels not listed will be positioned according to BP (Body Position). This takes effect on the next statement and remains in effect until changed.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n Level n itself.

```
<n        Levels 1 thru n-1
<=n       Levels 1 thru n
>n        Levels n+1 thru 12
>=n       Levels n thru 12
(n,m)     Levels n+1 thru m-1
[n,m)     Levels n thru m-1
(n,m]     Levels n+1 thru m
[n,m]     Levels n thru m
"All"/"On"/"Yes"
          Levels 1 thru 12
"None"/"Off"/ No"
          No Levels (resets LevShow)
```

RM Right Margin setting 130

RM=n,m Initial value: 72(6) Range: [1(0.1), 132(8.5)]

The right margin will be set to n characters to the right on LMBase, i.e. LM + LMBase will be the last character position in which a character will be printed. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (RM=,m), the non-COM value will remain the same. There are approximately 77 character positions on an 8 1/2 by 11 page on our line printer, but 72 is a good practical limit. Until subsequently changed (by HRM, FRM, BRM), this sets the right margin for the body, the headers (except the journal header), and the footer, all at once. The default value for outut device teletype is 65. This takes effect for the next line segment.

SN print-Statement-Numbers switch 131

SN=On/Off

When on, statement numbers will be printed in front of each new statement. Takes effect on the next statement.

This is completely independent of SNF, so if both are on, two sets of statement numbers will be printed.

SNF right Statement Number Format 132

SNF=n,m Initial value: NLS Range: [-132(-8.5), 132(8.5)]

When other than Off, statement numbers will be printed right justified to n, after the last of the text of the statement has been printed. If SNFRel is Off, n is to the right of LMBase; if SNFRel is On, n is to the right (or if negative to the left) of the apparent right margin. The apparent right margin is the right margin unless multiple columns are being printed, in which case it is the column right margin. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (SNF=,m), the non-COM value will remain the same. When right statement numbers are on in NLS (viewspecs mG), the default will be 72 on non-COM devices, 6.5 on COM.

The output processor will attempt to put statement numbers in the last line of the text. If they would overlap the text, the statement numbers will be printed in the blank line following the statement. If there is no blank line following the statement, it will create one. Two things overlap if there is not at least one space between them. The statement number will always go on the same page as the last line of its statement (unless there is a PEL in that line). SNF is not affected by indentation, LM, nor RM settings. If n<=1 and SNFRel is Off, statement numbers will be printed flush left. SNF may be negative if SNFRel is on; SNF will be right justified n to the left of the right margin (see SNFRel). This takes effect the statement which includes this directive.

SNFFont right Statement Numbers character Font 133

SNFFont[level]=size,face,style

On Output Device COM, the right statement numbers of the given level will be set in the type size, face, and style given in this directive. This may be defined for twelve levels. "All" may be used in the level parameter. If no level is given, All will be assumed. If any of the values are not specified, they will not be changed (from DefaultFont). The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce right statement numbers bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

SNFFontShow right Statement Numbers Font switch 134

SNFFontShow=intervals Initial value: 0 Range: [0,12]

For COM only. With the SNFFont directive, different fonts may be defined for each of the first twelve levels of statement numbers. These will only have effect on the levels listed in the SNFFontShow directive. If the SNFFontShow directive does not include a given level, or if no SNFFontShow directive appears, the statement number will appear in the font at which the statement was initialized (BFont or PxFont for that level). If the SNFFontShow directive includes a level not previously defined by a SNFFont directive, it will appear in the DefaultFont, until subsequently changed.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All"/"On"/"Yes"	Levels 1 thru 12
"None"/"Off"/ No"	No Levels (resets LevShow)

SNFRel right Statement numbers Relative to right margin 135

**SNFRel=On/Off Initial value: Off

When on, the value of SNF will be taken relative to the apparent right margin. When off, SNF will be counted from LMBase as usual. On COM, one may define more than one column on a page (see Columns). This directive is particularly useful in such a situation, since for more

than one column, there are multiple apparent right margins (although only one actual right margin). If right statement numbers are taken relative to the LMBase, the numbers for both columns will appear in the same place. SNFRel will do the proper thing. SNF may be negative, meaning to the left of the right margin.

SNFShow Show right Statement Numbers for these levels 136

SNFShow=intervals Initial value: NLS Range: [1, 12]

Statement numbers will be printed for only the levels listed. This affects both SN and SNF. It takes effect for the next statement, and remains in effect until turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All"/"On"/"Yes"	Levels 1 thru 12
"None"/"Off"/ No"	No Levels (resets LevShow)

SNFont left Statement Numbers character Font 137

SNFont[level]=size,face,style

On Output Device COM, the left statement numbers of the given level will be set in the type size, face, and style

given in this directive. This may be defined for twelve levels. "All" may be used in the level parameter. If no level is given, All will be assumed. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce left statement numbers bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

SNFontShow left Statement Numbers Font switch 138

SNFontShow=intervals Initial value: 0 Range: [0,12]

For COM only. With the SNFont directive, different fonts may be defined for each of the first twelve levels of statement numbers. These will only have effect on the levels listed in the SNFontShow directive. If the SNFontShow directive does not include a given level, or if no SNFontShow directive appears, the statement number will appear in the font at which the statement was initialized (BFont or PxFont for that level). If the SNFontShow directive includes a level not previously defined by a SNFont directive, it will appear in the DefaultFont, until subsequently changed.

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All"/"On"/"Yes"	Levels 1 thru 12
"None"/"Off"/ No"	No Levels (resets LevShow)

SNShow Show left Statement Numbers for these levels 139

SNShow=intervals Initial value: NLS Range: [1, 12]

Statement numbers will be printed for only the levels listed. This affects both SN and SNF. It takes effect for the next statement, and remains in effect until turned off (set to Off).

"intervals" represents a series of intervals of levels (in the range [1,12] in any of the following forms (where n and m are integers between 1 and 12):

n	Level n itself.
<n	Levels 1 thru n-1
<=n	Levels 1 thru n
>n	Levels n+1 thru 12
>=n	Levels n thru 12
(n,m)	Levels n+1 thru m-1
[n,m)	Levels n thru m-1
(n,m]	Levels n+1 thru m
[n,m]	Levels n thru m
"All" / "On" / "Yes"	Levels 1 thru 12
"None" / "Off" / "No"	No Levels (resets SNShow)

SP Statement Positioning option 140

SP=n

FL	1	set lines flush left
FR	2	set lines flush right
C	3	center between left and right margins
OddL	8	set odd pages flush left, even pages flush right
OddR	9	set even pages flush left, odd pages flush right
J	10	set with full justification (COM only)

One may use the alphabetic eqivalents instead of the numbers (e.g. SP=OddL). If there is a tab in the line, the line is set flush left.
This affects only the current line and any remaining lines in the statement. The default is whatever BP is set to. If SP=J, on the printer it will be flush left.

SetL Set n lines flush Left 141

SetL=n

Sets the next n lines, including this one, flush to the indented left margin. If no number is given, 1 is assumed.

SetR Set n lines flush Right 142

SetR=n

Set the next n lines, including this one, flush to the right margin. If no number is given, 1 is assumed.

SigF statement Signature Format 143

SigF=n,m Range: [0, 132(8.5)]

When n is greater than 0, statement signatures (the initials of the person who last changed the statement, and the date and time of last change) will be printed, right justified to column n, after the last of the text of the statement has been printed. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only n is sppecified (SigF=,m), the non-COM value will remain the same. If signatures and blank lines are on in the NLS viewspecs at the time of output through the output processor, the default value will be 60, otherwise 0. The output processor will attempt to put statement signatures in the last line of the text. If they would overlap the text, signatures will be printed in the blank line following the statement. If there are no blank lines between statements, a blank line will be forced into existence to accomodate the signature. Statement numbers have precedence and will be printed first in case of overlap.

(Signatures will be printed on the next line.) There are 20 characters in a signature.

Two things overlap if there isn't at least one space between them. Indentation, LM, and RM settings do NOT affect signatures. If n<=20, the signatures will be printed flush left. The signature will always go on the same page a the last line of its statement, unless there is a PEL in the line.

SigFont Signatures character Font 144

SigFont=size,face,style

On Output Device COM, the text of the signatures will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. If you do not wish to change the style, the second comma is not necessary. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce

signatures text bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

Size Character Size 145

Size=n Range: [50, 2000]

On Output Device COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in n high type from that point on. See Appendix D for instructions on the use of Output Device COM's features.

Slant change to Slanted type 146

Slant=On/Off

On Output Device COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in slanted type from that point on. Only the News Gothic (#5) and the Times Roman (#6) may be set in slanted type. If no argument is given, On will be assumed. See Appendix D for instructions on the use of Output Device COM's features.

Split Split this line 147

Split

When this occurs in a line, the text in the line to the left of this directive will be set flush left, and the text to the right of the directive will be set flush right. This is particularly useful in formatting headers and footers. It was used in the footer of this document.

TM Top Margin setting 148

TM=n,m Initial value: 3(1) Range: [0, 148(11)]

There will be n blank lines above the first line on the page on which text will be printed. Optionally, m may be specified; m is a COM measure and will only take effect on Output Device COM. If only m is specified, the non-COM value will remain the same. Takes effect for the next page. If a Journal header is defined, it will be printed in the top margin. It will be followed by YBHJTM blank lines/distance.

TabP Tab Position 149

TabP=n Initial value: 1 Range: [0, 10]

FL	1	set lines flush left
FR	2	set lines flush right
C	3	center between left and right margins
J	10	set with full justification (COM only)

The line segment which ENDS with a tab will be set according to the value of TabP; therefore there must be a tab after the last visible in the segment for this parameter to take effect. The line segment will be set according to the parameter between the end position of the last line segment and the tab. One may use the

alphabetic eqivalents instead of the numbers (e.g. TabP=OddL). If TabP=J, on the printer TabP will be flush left.

TabStops clear and set Tab Stops 150

TabStops=n,m,o,p, etc. (a,b,c,d etc.)
Initial value: NLS Range: [0, 144(8.4)]

The previous tab stops will be cancelled and new tab stops will be set in columns n, m, o, and p, etc. When a tab is executed, printing begins in the column in which the tab is set. On Output Device COM, the distances are interpreted in light of the body character size and face in effect at the time of this directive. Optionally, a,b,c,d etc. may be specified; these are COM measures and only take effect on Output Device COM. On COM, printing begins with the left edge at these positions. If only the COM measures are given (TabStops=(a,b,c,d,etc.)), the non-COM tabstops will not be changed. The initial array is whatever it was in NLS at the time of output processing (the initial NLS array is 8, 16, 24,...72). One may set up to 20 tab stops.

A shorthand way of specifying both the printer and the COM parameters is available. Three dots means set the rest of the tabstops in intervals equaling the difference between the last two parameters.
For example: TabStops=7,15,...(1.0,...) means the same things as
TabStops=7,15,23,31,39,47,and so on
(1.0,2.0,3.0 and so on) . Note that the three dots must be preceded by a comma.

TabTo Tab To given character position 151

TabTo=n,m Range: [1, 132(8.4)]

Tab to the given character position. The character following that directive will be in the nth column. Optionally, m may be specified; m is a COM measure and replaces n on Output Device COM. If only m is specified (TabTo=,m), this directive will be ignored on non-COM devices. Takes effect immediately and constitutes a line segment break. Will tab as little as one space. If you are on or beyond the given position, nothing will happen.

Tabs output: o=null, 1=tab, 2=space 152

Tabs=0,1,or2 Initial value: 1

When set to 0, nothing will happen when a tab is encountered in the text; when set to 1, a tab will occur when the tab character is encountered; when set to 2, a single space will be printed when a tab is encountered. Tab characters will tab as little as one space.

Text define a name to print a Text string 153

Text[Name]="string"

From this point on, the name is a valid directive. When it is enountered as a directive (between the proper delimiters), the string will be printed at that point. (The first character of "Name" must be in the case specified by the DCase directive, normally upper case.)

Trailing print-Trailing-spaces switch 154

If you are centering lines or setting lines flush right, any spaces at the end of the line will cause different positioning than might be expected. Trailing spaces are normally not printed, i.e. Trailing=Off. When Trailing=On, spaces at the end of lines will be retained. This takes effect for the next line segment.

Trun Truncation to n lines 155

Trun=n

From this point on, all statements will be truncated to n lines (same as NLS viewspec T). The initial value is whatever the NLS viewspec T is set to at the time of output processing. If no number is given, 1 is asssumed.

U0 User variable directive 0 156

U0 Initial value: 0

May be set and used as a variable, or storage register, by the user. May be anywhere between a very large negative number and a very large positive number.

For example, one may set U0=Dec+Brackets+Colon, then say PxN[3]=U0, or U1=U1+1 and GN=U1.

U1 User variable directive 1 157
U2 User variable directive 2 158
U3 User variable directive 3 159
U4 User variable directive 4 160
U5 User variable directive 5 161
U6 User variable directive 6 162
U7 User variable directive 7 163
U8 User variable directive 8 164
U9 User variable directive 9 165

Underline change to Underlined type 166

Underline=On/Off

On Output Device COM, the text of the area in which this directive appears (be it the body, header 1, header 2, etc.) will be set in underlined type from that point on. If no argument is given, On will be assumed. See Appendix D for instructions on the use of Output Device COM's features.

V1 set N Visibles in a specified type face 167

V1=n Range: [1, 102]

For COM only. The next n visibles will be set in the type font. V is a synonym for V1. If n is not specified, 1 will be assumed. A visible is any string of printing characters surrounded by spaces. If the end of the line segment is encountered before the V1 directive is exhausted, it is from that point on cancelled. See Appendix D for instructions on the use of all COM features.

V1Font set Font for V1 Visibles 168

V1Font=size,face,style

On Output Device COM, until subsequently changed. If you do not wish to change the style, the second comma is not necessary, whenever a V1 directive appears, the text of the number of visibles specified in the V1 directive immediately following the V1 directive will be set in the type size, face, and style given in this directive. If any of the values are not specified, they will not be changed. The default is 10 point Courier medium. See Appendix D for instructions on the use of Output Device COM's features.

Size options:

from 50 to 2000 thousandths of an inch, or from 4 to 144 points

Face options:

Courier	=	0
Directory	=	1
Film	=	2
OCRB	=	3
NMAMicrofont	=	4
NewsGothic	=	5
TimesRoman	=	6

Style options:

One may combine the four options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or Bold+Slanted+Underlined would both produce text bold faced, slanted (italics), and underlined. See Appendix D for samples.

Medium	=	0
Light	=	1
Bold	=	2
Slanted	=	4
Underlined	=	8
Mono	=	16

V2 set N Visibles in a specified type face 169

V2=n Range: [1, 102]

For COM only. The next n visibles will be set in the type font, style, and size specified by the last occurance of V2Font. If n is not specified, 1 will be assumed. A visible is any string of printing characters surrounded by spaces. If the end of the line segment is encountered before the V2 directive is exhausted, it is from that point on cancelled. See Appendix D for instructions on the use of all COM features.

V2Font set Font for V2 Visibles 170

Works just like V1Font.

V3 set N Visibles in a specified type face 171

V3=n Range: [1, 102]

For COM only. The next n visibles will be set in the type font, style and size specified by the last occurance of V3Font, V3Style, and V3CSz. If n is not specified, 1 will be assumed. A visible is any string of printing characters surrounded by spaces. If the end of the line segment is encountered before the V3 directive is exhausted, it is from that point on cancelled. See Appendix D for instructions on the use of all COM features.

V3Font set Font for V3 Visibles 172

Works just like V1Font.

VSplit Vertical Split 173

VSplit

At the occurance of this directive, carriage returns will be inserted such that the rest of the statement will appear at the bottom of the page. This directive will be ignored if there is not enough room for the rest of the statement on the page.

WidowL minimum number of Widowed Lines on next page 174

WidowL=n Initial value: 2 Range: [0, 148]

From this point on in the document, at least n lines of a statement must appear together on the top of each new

page (or, on COM, column). If filling the previous page (column) would leave less than n lines for the next page (column), a pagination (columnation) will occur n lines from the end of the statement (if the statement is at least n lines long). Any lines consisting only of carriage returns immediately following an automatic pagination (columnation) will be discarded. This affects the current statement.

X X-coordinate of current character in thousandths of an inch 175

This is for queries, only. It may be used in the argument of a directive, but it may not be changed by the user. On the printer or teletype, it is the position in characters. On Output Device COM, it is in thousandths of an inch.

XBC horizontal distance Between Columns 176

XBC=n,m Initial value: 0.25 Range: [0, 130(8.5)]

For COM only. When there are more than one columns, there will be n characters after the end of one column before the start of the next. Alternatively, XBC may be specified in COM measure by specifying m instead of (or in addition to, making the n meaningless) the n (XBC=,m). This will take effect at the next occurrance of:

1 a pagination
2 a columnation
3 a change in the number of columns

YBH1H2 distance Between Headers 1 and 2 177

YBH1H2=n,m Initial value: 0(24p) Range: [0, 147(11)]

There will be n blank lines between the first and the following headers. On COM, the size of the line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size a blank lines in the body area. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YBH1H2=,m), the non-COM value will remain the same. This will take effect only when H1 is on and there are defined Headers after H1 on.

YBH2H3 distance Between Headers 2 and 3 178

YBH2H3=n,m Initial value: 0(24p) Range: [0, 147(11)]

There will be n blank lines between the second and the following headers. On COM, the size of the line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size a blank lines in the body area. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YBH2H3=,m), the non-COM value will remain the same. This will take effect only when H2 is on and there are defined Headers after H2 on.

YBH3H4 distance Between Headers 3 and 4 179

YBH3H4=n,m Initial value: 0(24p) Range: [0, 147(11)]

There will be n blank lines between the third and the following headers. On COM, the size of the line is

calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size a blank lines in the body area. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YBH3H4=,m), the non-COM value will remain the same. This will take effect only when H3 is on and there are defined Headers after H3 on.

YBHJTM distance Between HJournal and TM 180

YBHJH1=n,m Initial value: 0(24p) Range: [0, 147(11)]

There will be n blank lines between the journal header and the top margin. On COM, the size of the line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size a blank lines in the body area. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YBHJTM=,m), the non-COM value will remain the same. This will take effect only when HJ is defined.n If one subsequently moves the top margin, this parameter stays the same so the Journal header will follow the move in TM.

YBL distance Between Lines in a statement 181

YBL=n,m Initial value: 0(2p) Range: [0, 149(11)]

There will be n blank lines between lines within a statement (doesn't affect spce between statements -- se YBS). On COM, the size of a line is calculated using the current values of body character size and YBL. If either of these is subsequently changed, this directive will not adjust and will not produce lines of the same size as blank lines in the text of the body. Optionally, m may

be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YBL=,m), the non-COM value will remain the same. This affects the body area only, and takes effect immediately.

YBS distance Between Statements 182

YBS=n,m Initial value:0(2or14p) Range: [0, 147(11)]

There will be n blank lines between the last line of one statement and the beginning of the next. On COM, the size of a line is calculated using the current values of the body character size and YBL. If either of these is subsequently changed, this parameter will not adjust and will produce blank lines of a different size than those produced by the body text. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YBS=,m), the non-COM value will remain the same. This takes effect immediately.

YFC distance Following change in Columns 183

YFC=n,m Initial value: 0.5 Range: [0, 147(11)]

n lines will be generated after each change in the number of columns (Columns) takes place. Alternatively, m may be specified; m is a COM measure and replaces the n if it is also there. This is for COM only. The actual blank space after a change in the number of columns will be YFC + YBS. The top of each column will be lined up. See Appendix D for a complete explanation of all COM features.

YFH distance Following Headers 184

YFH=n,m Initial value: 3(0.5) Range: [0, 148(11)]

There will be n blank lines following the last header before the text begins. This is effective only if at least one header has been defined and is being printed. On COM, the size of a line is calculated using the current values of the body character size and YBL. If either of these is subsequently changed, this directive will not adjust, so it will produce lines of different size than those in the body text. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YFH=,m), the non-COM value will remain the same.

YMax Maximum vertical distance on a page 185

YMax=n,m Initial value: 66(11) Range: [1, 150(11)]

LMax is the number of lines on a "logical" page. Its principal function is to determine the spacing on Output Device Teletype. Our printer has physical pages of 66 lines, and pagination is done so that a new logical page always begins on a new physical page, regardless of what LMax is set to. The principal use for LMax in Output Device Printer is to check for footer overflow. As a general rule, if LMax is greater tha BM+LPF+(number of lines in footer), you won't have any problems. Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YMax=,m), the non-COM value will remain the same. On COM, all pages are 8 1/2 by 11 inches, or 612 by 792 points, so you probably don't want to change this.

YPF vertical distance Preceeding Footer 186

YPF=n,m Initial value: 5(30p) Range: [0, 148(11)]

There will be n blank lines between the end of the body text and the footer (whose default is GPN). Optionally, m may be specified; m is a COM measure and only takes effect on Output Device COM. If only m is specified (YPF=,m), the non-COM value will remain the same.

```
(J12210) 10-SEP-73 14:37;  Title:  Author(s): Stanford Research
Institute /&SRI-ARC; Distribution: /; Sub-Collections: OPIG ; Clerk:
NDM;
Origin: <USERGUIDES>OP-DIREXP.NLS;15, 4-SEP-73 14:37 NDM ; .D=Print;
.DefaultFont=7p,2,0;
.LMBase=0,1.0; .RM=72,7.0; .BRM=65,6.0; .BP=J; .ILev=8,0.75;
.H1="SRI-ARC .GD; 12210.GCR;DESCRIPTION OF DIRECTIVES"; .H1P=9;
.H1Font=8p,0,0; .YFH=4;
.F="OUTPUT PROCESSOR USERS' GUIDE .Split; page .GPN;";
.FFont=8p,0,0;
.PxFYU=3; .PxFYS=0; .PxFYD=1; .PxFShow=1; .YBS=1,12p; .YBL=0,2p;
.SN=0; .SNFShow=1; .SNF=75,7.0; .SNFFont=10p,1,0;
.PxFontShow=1,2; .PxFont[1]=12p,6,0; .PxFont[2]=8p,0,0;
.PN=0; .PEL;
```

SRI-ARC 11 SEP 73 12211
Appendix A: QUICK-REFERENCE LIST OF DIRECTIVES

Name	Min	Max	*ValType	Init	When	Description	St Num
	see Appendix B (12212,2) for an explanation of these columns						
BFont			*Font		I	body type font	1
BLM	-131	131	Number	0	NL	body left margin	
	-8.5	8.5	*COMMes	0	NL	body left margin, in COM meas.	2
BM	1	150	Number	56	CS	bottom margin setting	
	0.0	11.0	*COMMes	10	CS	bottom margin setting, in COM meas.	3
BP	0	11	Number	1	CL	body text positioning option	4
BRM	1	131	Number	72	NL	body right margin	
	0.1	8.5	*COMMes	6	NL	body right margin, in COM meas.	5
BoldFace	0	1	*On/Off	Off	I	change char style to bold face	6
CBL			*Null		CS	columnate before line	7
CBS			*Null		CS	columnate before statement	8
CEL			*Null		CS	columnate at end of line	9
CES			*Null		CS	columnate at end of statement	10
CFit			*On/Off	Off	CS	columnate to fit statements	11
CLev			*Number	0	CS	columnate before every level <=n	12
CaseMode	0	2	Number	0	I	force case to: 1=lower, 2=upper	13
Center	0	35M	Num/Null	0	CL	center the next n lines	14
Columns	1	4	*Number	1	NS	number of columns / page	15
D			On/Off	Off	I	print-directives switch	16
DCase	0	2	Number	2	I	directive case: 0=any 1=lower 2=up.	17
DLD	0B	177B	[Num/SR1] '.		I	set directive left delimiter	18
DRD	0B	177B	[Num/SR1] ';		I	set directive right delimiter	19
Dash	0B	177B	[Num/SR1] '-		CS	set 'dash' character	20
DefSyn			[UID]		I	define synonym for directive	21
DefaultFont			*Font		I	set all font parameters	22
Dot	0B	177B	[Num/SR1] '.		CS	set 'dot' character	23
DotFont			*Font		I	change dot character Font	24
DotSpacing	0	66	Number	0	I	spaces between dots	
	0.0	8.4	*COMMes	.05	I	COM measure between dots	25
DotSplit			Null		I	split line with dots	26
DotTo	0	132	Number		I	insert dots to character position	
	0.0	8.4	*COMMes		I	dots to horizontal point position	27
EvenPage			Null		CS	insure even page number	28
F			String	"GPN"	CS	sets the text of footer	29
FFont			*Font		I	footer type font	30
FLM	-131	131	Number	0	NL	footer left margin setting	
	0.0	8.5	*COMMes	0	NL	footer left margin, in COM meas.	31
FP	0	9	Number	3	CS	footer position	32
FRM	1	131	Number	72	NL	footer right margin setting	
	0.1	8.5	*COMMes	6	NL	footer rt margin setting, COM meas	33
FSw			On/Off	On	CS	footer switch	34
Face			*Font		I	change area character Face	35

* For COM only. Values in inches. See Appendix D.

Name	Min	Max	*ValType	Init	When	Description	St Num
	see Appendix B (12212,2) for an explanation of these columns						
Font			*Font		I	change area character Font	36
GCR	0	75	Num/Null		I	generate carriage return(s)	37
GD			Null		I	generate text for current date	38
GDT			Null		I	generate text for date and time	39
GN			Number		I	generate number	40
GNType			Number	1	I	generated number type	41
GPN			Num/Null		I	generate text for page number	42
GSp	0	75	Num/Null		I	generate space(s)	43
GT			Null		I	generate text for time of day	44
GTab	0	10	Num/Null		I	generate tab(s)	45
GYBL	1	75	Number		CL	generate distance before line	
	0.0	11.0	*COMMes		CL	generate distance before line	46
GYBS	1	75	Number		CS	generate distance before statement	
	0.0	11.0	*COMMes		CS	generate distance before statement	47
GYEL	1	75	Number		CL	generate distance at end of line	
	0.0	11.0	*COMMes		CL	generate distance at end of line	48
GYES	1	75	Number		CS	generate distance at end of st	
	0.0	11.0	*COMMes		CS	generate distance at end of st	49
Grab	0	148	Number	0	CS	paginate if can't fit n dist on pg	
	0.0	11.0	*COMMes		CS	paginate if can't fit n dist on pg	50
H1			String	Null	CS	text of first page header	51
H1Font			*Font		I	header 1 type font	52
H1P	1	11	Number	1	CL	header 1 positioning option	53
H1Sw			On/Off	On	CS	page header 1 switch	54
H2			String	Null	CS	text of second page header	55
H2Font			*Font		I	header 2 type font	56
H2P	1	11	Number	1	CL	header 2 positioning option	57
H2Sw			On/Off	On	CS	page header 2 switch	58
H3			String	Null	CS	text of third page header	59
H3Font			*Font		I	header 3 type font	60
H3P	1	11	Number	1	CL	header 3 positioning option	61
H3Sw			On/Off	On	CS	page header 3 switch	62
H4			String	Null	CS	text of fourth page header	63
H4Font			*Font		I	header 4 type font	64
H4P	1	11	Number	1	CL	header 4 positioning option	65
H4Sw			On/Off	On	CS	page header 4 switch	66
HJFont			*Font		I	header 4 type font	67
HJLM	-131	131	Number	0	NL	journal header left margin	
	-8.5	8.5	*COMMes	0	NL	journal head l margin, COM meas.	68
HJP	1	11	Number	1	CL	journal header positioning option	69
HJRM	-131	131	Number	76	NL	journal header right margin	
	0.1	8.5	*COMMes	6.5	NL	journal head r margin, COM meas.	70

* For COM only. Values in inches. See Appendix D.

Appendix A: QUICK-REFERENCE LIST OF DIRECTIVES

Name	Min	Max	*ValType	Init	When	Description	St Num
	see Appendix B (12212,2) for an explanation of these columns						
HJournal			String	Null	CS	text of journal page header	71
HLM	-131	131	Number	0	NL	header left margin	
	0.0	8.5	*COMMes	0	NL	header left margin, in COM meas.	72
HRM	1	131	Number	72	NL	header right margin	
	0.1	8.5	*COMMes	6	NL	header right margin, in COM meas.	73
Halt			Null		I	ignore rest of input file	74
ICR	0	131	Number	0	NL	indent for CR on previous line	
	0.0	8.5	*COMMes	0	NL	indent/CR on previous ln, COM meas.	75
IFirst	0	131	Number	0	NS	indent for first line of statement	
	0.0	8.5	*COMMes	0	NS	indent/first line of St, COM meas.	76
IL	0	131	Number	0	NL	indentation per line in St	
	0.0	8.5	*COMMes	0	NL	indent/line in St, in COM meas.	77
ILCR	0	131	Number	0	NL	ind per line-ended-by-CR in St	
	0.0	8.5	*COMMes	0	NL	ind/ln-ended-by-CR in St, COM meas.	78
ILev	-131	131	Number	NLS	NL	indentation per statement level	
	-8.5	8.5	*COMMes	0.1	NL	indent / statement level, COM meas.	79
IMax	0	131	Number	NLS	NL	maximum total indentation	
	0.0	8.5	*COMMes	0.1	NL	max. total indentation, COM meas.	80
IOvr	0	131	Number	0	NL	indent for overflow of previous ln	
	0.0	8.5	*COMMes	0	NL	ind/overflow of prev ln COM meas	81
IRel	0	131	Number	0	NS	indent rel first vis in previous ln	
	0.0	8.5	*COMMes	0	NS	ind/1st visible in prev Ln, COM	82
IRest	0	131	Number	0	NL	indent for st lines after first	
	0.0	8.5	*COMMes	0	NL	ind/St lns after 1st, COM meas.	83
ISN	0	131	Number	0	NS	ind to replace st numbers	
	0.0	8.5	*COMMes	0	NS	ind to replace St numbers, distance	84
IgB			Null		I	ignore branch	85
IgD			On/Off	Off	I	ignore directives	86
IgLS			Null		I	ignore line segment	87
IgRest			Null		I	ignore rest of statement	88
IgS			Null		I	ignore statement	89
IgText			On/Off	Off	I	ignore text	90
LM	-131	131	Number	0	NL	left margin setting	
	-8.5	8.5	*COMMes	0	NL	left margin setting, in COM meas.	91
LMBase	0	131	Number	0	NL	left margin base	
	0.0	8.5	*COMMes	1.5	NL	left margin base	92
LP	0	11	Number	0	CL	line positioning option	93
Leading			On/Off	On	NL	print-leading-spaces switch	94
Lev			QueryOnly	NLS	I	level of current statement	95
LevClip	0	72	Number	NLS	NS	don't print levels below n	96
LevShow	0	72	Intervals	NLS	NS	output only these levels	97
LightFace	0	1	*On/Off	Off	I	change char style to light face	98

* For COM only. Values in inches. See Appendix D.

Name	Min	Max	*ValType	Init	When	Description	St Num
see Appendix B (12212,2) for an explanation of these columns							
MonoSpace	0	1	*On/Off	Off	I	monospace characters	99
Names			On/Off	NLS	NS	print-statement-names switch	100
NumDash	0	132	Number	0	CS	number of dashes at end of page	101
OddPage			Null		CS	insure odd page number	102
PBL			Null	0	CL	paginate before this line	103
PBS			Null	0	CS	paginate before this statement	104
PEL			Null	0	NL	paginate at end of this line	105
PES			Null	0	NS	paginate at end of this statement	106
PFit			On/Off	Off	CS	paginate to fit statements	107
PLev	0	35M	Number	0	CS	new pg before every st of level <=n	108
PN	4B11	35M	Number	1	CS	set current page number to n	109
PNType	0	6	Number	1	CS	page number type	110
PShow	4B11	35M	Interval	All	CS	output only these pages	111
PSw			On/Off	On	CS	page switch [no pg seperation]	112
Photo			Num/COMMes		CS	superimpose Photo	113
PlexNum	0	8	Number	0	NS	number plex below current st	114
Post			On/Off		I	post processor switch	115
PxFShow	Off	63	Intervals	Off	I	plex format show	116
PxFYD	0	147	Number	1	I	plex format dist. down	
	0.0	11.0	*COMMes	12p	I	plex format dist. down, COM meas.	117
PxFYS	0	147	Number	1	I	plex format dist. same	
	0.0	11.0	*COMMes	12p	I	plex format dist. same, COM meas.	118
PxFYU	0	147	Number	2	I	plex format dist. up	
	0.0	11.0	*COMMes	24p	I	plex format dist. up, in COM meas.	119
PxFont			*Font		NS	plex type font / level	120
PxFontShow	Off	12	*Intervals	Off	NS	plex formatted font show	121
PxI	0	132	Num	3(lev-1)	NS	plex indent/level	
	0.0	8.5	*COM	.3(lev-1)	NS	plex indent/level in COM meas.	122
PxIShow	Off	12	Intervals	Off	NS	plex formatted indent/level switch	123
PxN			[Number]	8	NS	plex numeral style/level	124
PxNFont	0	12	*[Font]		NS	plex numeral font	125
PxNFontShow	Off	12	*Numbers	Off	NS	plex nums font show switch	126
PxNShow	Off	12	Intervals	Off	NS	plex numberer level switch	127
PxP	0	11	Number	1	CS	plex positioning option	128
PxPShow	Off	12	Intervals	Off	NS	plex positioning switch	129
RM	1	132	Number	72	NLS	right margin setting	
	0.1	8.5	*COMMes	6	NLS	right margin setting, in COM meas.	130
SN			On/Off	NLS	NS	print-statement-numbers switch	131
SNF	0	132	Number	NLS	CS	statement number format	
	0.0	8.5	*COMMes	0or6.5	CS	statement number format, COM meas.	132
SNFFont	0	12	*[Font]		I	right statement numbers type font	133
SNFFontShow	Off	12	*Numbers	Off	NS	right st nums font show switch	134

* For COM only. Values in inches. See Appendix D.

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Appendix A: QUICK-REFERENCE LIST OF DIRECTIVES

Name	Min	Max	*ValType	Init	When	Description	St	Num
	see Appendix B (12212,2) for an explanation of these columns							
SNFRel			On/Off	Off	CS	right st num rel to RM		135
SNFShow	1	63	Intervals	NLS	NS	show rt st nums for listed levels		136
SNFont	0	12	*[Font]		I	left statement numbers type font		137
SNFontShow	Off	12	*Numbers	Off	NS	left st nums font show switch		138
SNShow	1	63	Intervals	NLS	NS	show left st nums for listed levels		139
SP	0	11	Number	0	CL	statement positioning option		140
SetL	0	35M	Num/Null	0	CL	set n lines flush left		141
SetR	0	35M	Num/Null	0	CL	set n lines flush right		142
SigF	0	132	Number	NLS	CS	statement signature format		
	0.0	8.5	*COMMes	0or5	CS	st. signature format, COM meas.		143
SigFont			*Font		I	signatures type font		144
Size	0.05	2.0	*Font	0.139	I	change area character Size		145
Slant	0	1	*On/Off	Off	I	Slant characters		146
Split			Null		I	split this line		147
TM	0	148	Number	3	CS	top margin setting		
	0.0	11.0	*COMMes	1	CS	top margin setting, in COM meas.		148
TabP	1	10	Number	1	NS	Tab line segment Position		149
TabStops	0	144	Intervals	NLS	I	clear and set tab stops		
	0	8.4	*Intervals	NLS	I	clear and set tab stops, COM meas.		150
TabTo	0	132	Number		I	tab to character position		
	0.0	8.4	*COMMes		I	tab to horizontal point position		151
Tabs	0	2	Number	1	I	output: o=null, 1=tab, 2=space		152
Text			[String]		I	define name to print a text string		153
Trailing			On/Off	Off	NLS	print-trailing-spaces switch		154
Trun	0	35M	Num/Null	NLS	CS	truncation to n lines		155
U0	4B11	35M	Number	0	I	user directive		156
U1	4B11	35M	Number	0	I	user directive		157
U2	4B11	35M	Number	0	I	user directive		158
U3	4B11	35M	Number	0	I	user directive		159
U4	4B11	35M	Number	0	I	user directive		160
U5	4B11	35M	Number	0	I	user directive		161
U6	4B11	35M	Number	0	I	user directive		162
U7	4B11	35M	Number	0	I	user directive		163
U8	4B11	35M	Number	0	I	user directive		164
U9	4B11	35M	Number	0	I	user directive		165
Underline	0	1	*On/Off	Off	I	Underline characters		166
V1	1	102	*Num/Null	1	I	set n visibles in special type face		167
V1Font			*Font		I	set font for V1 visibles		168
V2	1	102	*Num/Null	1	I	set n visibles in special type face		169
V2Font			*Font		I	set font for V2 visibles		170
V3	1	102	*Num/Null	1	I	set n visibles in special type face		171
V3Font			*Font		I	set font for V3 visibles		172

* For COM only. Values in inches. See Appendix D.

Name	Min	Max	*ValType	Init	When	Description	St Num
	see Appendix B (12212,2) for an explanation of these columns						
VSplit			Null		I	vertical split	173
WidowL	0	148	Number	2	CS	min num of widow lines on next page	174
X			QueryOnly	0	I	x-coor of current character	175
XBC	0	130	Number	0.25	NS	distance between columns	
	0.0	8.5	*COMMes	0.25	NS	distance between columns, COM meas	176
YBH1H2	0	147	Number	0	I	lines between headers 1 and 2	
	0.0	11.0	*COMMes	2p	I	dist. between headers 1 and 2	177
YBH2H3	0	147	Number	0	I	lines between headers 2 and 3	
	0.0	11.0	*COMMes	2p	I	dist. between headers 2 and 3	178
YBH3H4	0	147	Number	0	I	lines between headers 3 and 4	
	0.0	11.0	*COMMes	2p	I	dist. between headers 3 and 4	179
YBHJTM	0	147	Number	0	I	lines between HJournal and TM	
	0.0	11.0	*COMMes	2p	I	dist. between HJournal and TM	180
YBL	0	149	Number	0	I	lines between lines in a st	
	0.0	11.0	*COMMes	2p	I	dist. between lines in a st	181
YBS	0	147	Number	NLS	CS	lines between statements	
	0.0	11.0	*COMMes	2or14p	I	distance between statements	182
YFC	0	147	Number	0.5	I	lines following change in Columns	
	0.0	11.0	*COMMes	0.5	I	dist. following change in Columns	183
YFH	0	148	Number	3	CS	lines following header(s)	
	0.0	11.0	*COMMes	0.5	CS	distance following header(s)	184
YMax	1	150	Number	66	CS	max lines on a page	
	0.1	11.0	*COMMes	11.0	CS	max vertical distance on a page	185
YPF	0	148	Number	3	CS	lines preceeding footer	
	0.0	11.0	*COMMes	30p	CS	distance preceeding footer	186

* For COM only. Values in inches. See Appendix D.

```
Name     Min  Max *ValType Init When Description                          St Num
-------------------------------------------------------------------------------
        see Appendix B (12212,2) for an explanation of these columns
```

```
(J12211) 10-SEP-73 14:44;  Title:  Author(s): Stanford Research
Institute /&SRI-ARC; Distribution: /; Sub-Collections: OPIG ; Clerk:
NDM;
Origin: <USERGUIDES>OP-DIRLIST.NLS;8, 27-JUL-73 12:08 NDM ; .D=On;
.PES; .PN=58; .YBL=0,4p; .YBS=0,4p; .LMBase=0,1.5; .RM=76,6.08;
.BRM=72,5.7;
.H1="SRI-ARC .GD; 12211.GCR;Appendix A:  QUICK-REFERENCE LIST OF
DIRECTIVES"; .H1P=9; .H1Font=8p; .YBH1H2=4,0.5;
.H2="Name     Min  Max *ValType Init When Description
St Num
-------------------------------------------------------------------------------
----"; .H2Font=8p,5,16; .H2P=FL; .YBH2H3=0,2p; .YFH=2;
.H3="see Appendix B (12212,2) for an explanation of these columns";
.H3Font=6p,6,1; .H3P=C;
.F=".FFont=8p,6;.LP=C;*  For COM only.  Values in inches.  See Appendix
D..GYEL=3;.Face=0;.GCR;OUTPUT PROCESSOR USERS' GUIDE.Split;.GPN;";
.FP=FL; .YPF=2; .BM=,9.0;
.SN=0; .BFont=8p,0,Mono; .SNFFont=8p,0,2; .SNF=76,6.08; .SNShow=1;
.V1Font=8p;
```

* For COM only. Values in inches. See Appendix D.

DESCRIPTION OF DIRECTIVES

1

VALUE OPTIONS Table (Appendix C) -- Contains a list of predefined constants which have mnemonic names making them particularly useful in certain directives -- e.g., "SN=On", "SN=Keep", "SN=Print", and "SN=1" are all equivalent. [As with directive names, the case of the first letter of each of these symbols is governed by the value of the DCase directive; remaining letters may be either upper- or lower-case.]

2

DIRECTIVES Table (Appendix A) -- Contains information on all directives in the current version of the Output Processor. 3

Name -- Name of directive. [Note: When using directive names in a file they must begin with an upper-case letter (unless the value of DCase has been changed to Lower or Either); however, subsequent letters may be either upper-case, lower-case, or any mixture thereof -- i.e., "IgD", "IGD", "Igd", and "IGd" are all equivalent.] 3a

Min -- Minimum value to which directive may be set. 3b

Max -- Maximum value to which directive may be set. 3c

ValType -- Type of Value Field -- Examples: 3d

Number: .TM=3; .Dash=55B; .PN=-2; 3d1

On/Off: .Names=Print; .HSW=On; .Leading=Keep; .PFit=Yes; see Options for Switches in Appendix C 3d2

Null: .GPN; .Halt; i.e. it has no argument; either it exists or it doesn't. 3d3

Num/Null: .GCR; .GCR=3; (generate three Carriage Returns) i.e. it may exist without an argument, or it may have a number argument. 3d4

Interval: .PShow=I; where I is one of the forms: 3d5

n Level n itself.
<n Levels 1 thru n-1
<=n Levels 1 thru n
>n Levels n+1 thru 12
>=n Levels n thru 12
(n,m) Levels n+1 thru m-1
[n,m) Levels n thru m-1
(n,m] Levels n+1 thru m
[n,m] Levels n thru m
"All" / "On" / "Yes"
Levels 1 thru 12
"None" / "Off" / "No"
No Levels 3d5a

Intervals: .LevShow=I,I,I,...,I; Where I is as above. 3d6

QueryOnly: Directive value may be used in expressions but not changed by the user -- for example:

.GSp=50-X; [Fill line with spaces out to column 50]
the X directive is a QueryOnly type. 3d7

Font: For COM only. Three numbers or alphanumerics representing a choice of type font. See Appendix C for the list of choices, and Appendix D for instructions on how to use all the COM features. 3d8

COMMes: For COM only. A number representing a measurement.
If just a number is given, it will be read as 1/1000ths of an inch.
If there is a decimal point in the number, it will be read as inches.
If there is an upper or lower case "P" following the number, it will be read as points (1/72"), whether or not there is a decimal point in it.
If there is an upper or lower case "C" after the number, it will be read as 1/1000ths of a centimeter.
If there is an upper or lower case "C" after the number and a decimal point in the number, It will be read as centimeters.
See Appendix D for instructions on how to use all the COM features. 3d9

[Number]: The brackets indicate that the directive requires a functional argument (one must specify to which directive this is to apply) and the value should be a number:

```
.PxN[1]=Dec+Parens;
```
3d10

Num/SR1: The brackets indicate that the directive requires a functional argument (one must specify to which directive this is to apply) and the value may be a either number or a quoted character:

```
.DLD='*;  [set the directive left delimiter to "*"]
```
3d11

[String]: The brackets indicate that the directive requires a functional argument (one must specify to which directive this is to apply) and the value should be a quoted text string:

```
.Text[Mark]="++++++";   ["Mark", (an Upper-Case
Identifier) is defined as a directive which will
cause a string of six plus signs to be output
whenever it is executed]
```
3d12

[UID]: The brackets indicate that the directive requires a functional argument (one must specify to which directive this is to apply) and the value should be an Upper-Case Identifier (a word made of letters and digits, beginning with an upper-case letter):

```
.DefSyn[IgS]=Kill;   ["Kill" is defined as a
synonym for IgS]                                        3d13
```

Init -- Initial value of directive. 3e

"NLS" means whatever viewspecs are in force at the time when the file is sent to the output processor. 3e1

When -- "When" directive takes effect: 3f

```
  I = Immediately (following occurrence of directive)   3f1
 CL = (at beginning of) Current Line                    3f2
 NL = (at beginning of) Next Line                       3f3
 CS = (at beginning of) Current Statement               3f4
 NS = (at beginning of) Next Statement                  3f5
NLS = (at beginning of) Next Line Segment               3f6
```

A line segment is a string of text terminated by: 3f6a

1. a tab character or a GT directive
2. a split directive
3. a change in type font, style, or size (on COM only)
4. an end-of-line condition (carriage return or GCR directive, line overflow beyond the right margin, or end-of statement encountered). 3f6a1

```
(J12212) 10-SEP-73 14:49;   Title:  Author(s): Stanford Research
Institute /@SRI-ARC; Distribution: /; Sub-Collections: OPIG ; Clerk:
NDM;
Origin: <USERGUIDES>OP-PARAMS.NLS;7, 23-AUG-73 10:11 NDM ; .D=On;
.DefaultFont=8p,0,0; .PES; .PN=66; .YFH=4; .YBS=0,2p; .PxFShow=2,3;
.PxFYS=2,12p; .PxFYU=2,12p; .PxFYD=1,6p; .H1="SRI-ARC .GD;
12212.GCR;Appendix B:  DESCRIPTION OF TABLES"; .H1P=9; .H1Font=8p;
.F="OUTPUT PROCESSOR USERS' GUIDE .Split; .GPN;"; .FFont=8p; .SN=0;
.PxFontShow=1,2; .PxFont[1]=10p,5;.PxFont[2]=10p,5;.BFont=8p;
```

VALUE OPTIONS FOR DIRECTIVES

1

In all cases, the alphabetic equivalents can be substituted for the numbers (e.g. H1P=OddR).

2

Options for Horizontal Positioning
(H1P, FP, LP, SP, BP)

3

FL	=	1	Set Flush to Left Margin	3a
FR	=	2	Set Flush to Right Margin	3b
C	=	3	Center Between Left and Right Margins	3c
OddL	=	8	Set Odd/Even Pages Flush Left/Right	3d
OddR	=	9	Set Odd/Even Pages Flush Right/Left	3e
J	=	10	Set with Full Justification (Output Device COM only)	3f

Options for Page and Plex Numbers
(PNType, GPN, PlexNum)

4

Dec	=	1	Decimal Numbers	4a
LR	=	2	Lower Case Roman Numbers	4b
UR	=	3	Upper Case Roman Numbers	4c
LL	=	4	Lower Case Letters	4d
UL	=	5	Upper Case Letters	4e
Oct	=	6	Octal Numbers	4f
SNum	=	7	Statement Number Format (PlexNum only)	4g
DotNum	=	8	Dot Number Format (PlexNum only)	4h
Parens	=	10	Enclose Number in (Parenthesis)	4i
Brackets	=	20	Enclose Numbers in [Brackets]	4j
Angles	=	30	Enclose Number in <Angle Brackets>	4k
Hyphens	=	40	Enclose Numbers in -Hyphens-	4l
Period	=	100	Follow Numbers (and Enclosure) with a period	4m
Colon	=	200	Follow Numbers (and Enclosure) with a colon	4n

One may combine the three options, e.g. PlexNum=231 or PlexNum=Dec+Angles+Colon would produce plex numbers in the form "<n>:". 4o

Options for Center, SetL, SetR, etc.
(How Many to do)

5

None	= 0		5a
All	=35M	(Largest Positive Number)	5b

Options for Switches

6

On	= 1		6a
Off	= 0		6b
True	= 1		6c
False	= 0		6d
Yes	= 1		6e
No	= 0		6f
Keep	= 1		6g
Delete	= 0		6h
Print	= 1		6i
NoPrint	= 0		6j

Options for DCase and CaseMode

7

Either	= 0	Either or "Current" Case	7a
Lower	= 1	Lower Case	7b
Upper	= 2	Upper Case	7c

Options for Show Directives

8

None, Off, No		8a
n		8b
>n, <n		8c
>=n, <=n		8d
[n,m]	including endpoints	8e
(n,m)	excluding endpoints	8f
[n,m), (n,m]		8g
All, On, Yes		8h

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Appendix C: VALUE OPTIONS FOR DIRECTIVES

Options for Faces

9

Courier	= 0	9a
Directory	= 1	9b
Film	= 2	9c
OCRB	= 3	9d
NMAMicrofont	= 4	9e
NewsGothic	= 5	9f
TimesRoman	= 6	9g

News Gothic and Times Roman are the two publication quality faces. Courier is identical to IBM's Courier 80 typewriter face, and closely resembles our line printer's type face. The other four are high speed stick-figure faces. See Appendix D for samples of all the faces. 9h

Options for Styles

10

Medium	= 0	10a
Light	= 1	10b
Bold	= 2	10c
Slanted	= 4	10d
Underlined	= 8	10e

One may combine the three options by adding their numbers or alphanumeric mnemonics, e.g. 2+4+8 or 14 or Bold+Slanted+Underlined would all produce body text bold faced, slanted (italics), and underlined. See Appendix D for samples. 10f

Options for COM Measurements and type Size

11

number	1/1000ths of an inch	
number with decimal point	inches	
followed by upper or lower case "P" may or may not have decimal point	points	
followed by upper or lower case "C"	1/1000ths of centimeter	
followed by "C" and with decimal point	centimeters	11a

```
(J12213) 10-SEP-73 14:53;   Title:  Author(s): Stanford Research
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