# JCL Coding Standards

## 1. Preface

| | | |
|---|---|---|
| 1. | Outline | To set a standard for the MVS/JCL codings created and maintained by AMS. |
| 1.2 | Purpose | To improve the quality and the maintainability of JCLs.<br>To integrate the operation of JCLs and to improve the effectiveness of AMS. |
| 1.3 | Scope | MVS/JCL codings that have been created and are maintained by East Japan Computing Center, Section 1. |
| 1.4 | Owner | AMS Development Manager |
| 1.5 | Distributor | AMS System and Technology Promotion Manager |
| 1.6 | Item | Standard<br>Any deviation from this standard will require the approval of the owner. |
| 1.7 | Standards | None |
| 1.8 | Related Standards | AMS Standard 50.5.1 "Naming Standards"<br>AMS Standard 80.3.2 "IES (Data Registering Operation) User's Guide"<br>AMS Standard 80.4.7 "Long-Storage-Period Tape Registration" |
| 1.9 | Issuance Date | November 1, 1990 |
| 1.10 | History | March 1987: Requested by the Technical Promotion Dept. at the 1987 Productivity Promotion Committee Meeting.<br>The Standard Work Group drafts a proposal and it is revised and approved by the AMS Kawasaki Computer Center line managers and AMS Planning prior to issuance.<br>November 1990: Issuance of the Second Edition |

# 2. Contents

## 2.1 JOB statements

```
//jobname JOB (F9500B,account,op,
//         'symbolic-parameter'),
// name[,CLASS=A][,MSGCLASS=J][,REGION=nK][,TIME=minutes]
```

[ ] usually not specified

1) Jobname
   - Should be an alphanumeric within 8 characters. The first four to five digits should be the application number (Project No.).
   - Should not be identical with other names.
   - Refer to AMS Standard 50.5.1 "Naming Standards."
   - Make the first four digits of the Jobname and the Job Group Name identical. Refer to AMS Standard 80.3.2 "IES (Data Registering Operation) User's Guide."
   - Special Jobnames (refer to the following table.)

| Job Type | Input Character | Input Position | Example |
|---|---|---|---|
| COM Job | 'CM' | The 5th and 6th bytes or the 6th and 7th. | SY10CMXX,SY10XCMX |
| OPC-related Job | 'OPC' | The 5th, 6th, and 7th bytes or the 6th, 7th, and 8th . | SY1010PC,SY1020PC |
| NetView/FTP Job | 'FTP' | The 5th, 6th, and 7th bytes | SY10FTP,SY10FTP1 |

2) account
   - Application No.(Project No.) (4 digits) +'X'

3) op
   - Operation Code 00 ... User monitoring
     31 ... Test
     41 ... Actual operation

4) 'symbolic-parameter'
   - Refer to Section 2.7 "Special symbolic parameters developed by IS" on page 21.

5) name
- Set to 09500.

6) TIME=minutes
- Usually not specified.
- The job ends in an abend (abnormal end) when the CPU processing time exceeds the specified time.
- Used to prevent such problems as program loops.
- There is no limit to the processing time when the default CPU processing time is used. However, the Default Step CPU Time whose processing limit is 60 minutes, is effective.
- You cannot specify a CPU time of over 1440 minutes (24hours).
- The job terminates at the Time Limit even if a longer Step CPU Time is specified.

7) CLASS=A
- Usually not specified, since the Default Class is A.
- Specify a Job Class A for batch operation.

8) REGION=nK
- In principle, the region should be specified by the EXEC card.
- You should specify in 64K units.
- The default is 1024K.
- Should be within 5M (5000K).
- If the region is specified on the job card, the region specified in is ignored.

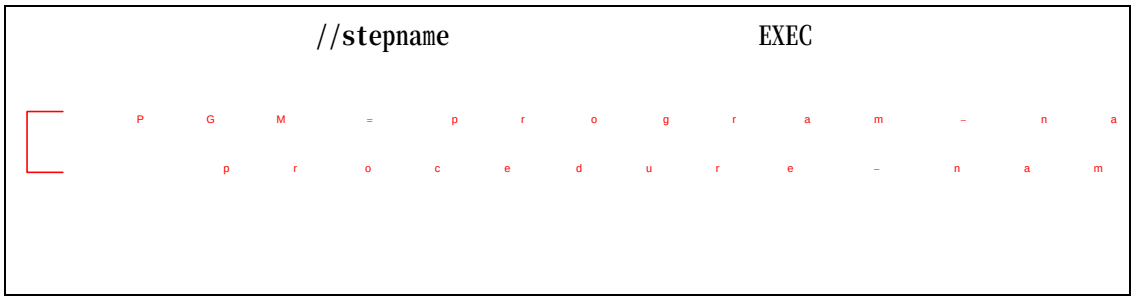
9) MSGCLASS
- Usually not specified.
- The default value of the MSGCLASS is J.
  (J is written to the VPW (Virtual Paper Writer))

10) Other keywords
- May be a cause of errors if specified; therefore do not specify.

11) /*JOBPARM S=system ID
- Usually not specified.
- Should be specified when the machine used is specified. (For example; an EUL machine is specified as KW42)

12) JCL should be coded that it is re-runnable (or re-executable) without modification.

## 2.2 EXEC statement

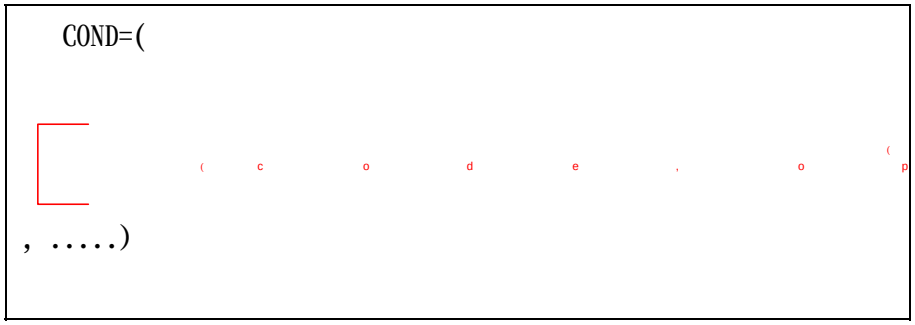



1) stepname
   - Should always be specified in 8-digit alphanumeric where the first digit is a alphabet.
   - Should be a unique name within the job and should be in ascending order.

2) PGM=program-name
   - Should specify a Load Module Name or an OS Utility Name within a JOBLIB/STEPLIB.
   - Refer to AMS Standard 50.5.1 "Naming Standards."

3) procedure-name
   - Enter the Procedure Name when using a Cataloged Procedure.

4)




   - code.....0-4095 (Return Code of Previous Step)
   - operator... GT (greater than)
     GE (greater than or equal to)
     EQ (equal to)
     LT (less than)
     LE (less than or equal to)
     NE (not equal to)

Example:

- CODE=EVEN.....Executes the program even if there is an abend in the previous steps.
- CODE=ONLY.....Executes the program only if there is an abend in the previous steps.
- COND=(10,GT,ST1)....Bypasses this step when the ST1 return code is less than 10.
- CODE=((10,GT,ST1),(20,EQ,ST2))
  ....Bypasses this step when the ST1 return code is less than 10 or when the ST2 return code is 20.
- CODE=(EVEN,(10,GT,ST1))
  ....Bypasses this step when the ST1 return code is less than 10; otherwise this step is performed.

5) REGION=nK

- Displayed in 64K units.
- The default is 1024K.
- Ignored if specified on the JOB Card.
- Should be limited to within 5M (5000K).

6) TIME=m

- Specify the Limit CPU Time of the step in minutes.
- The default CPU time is 60 minutes.
- Not usually specified. The default should be the upper limit of the program and the program should be designed not to exceed this value.

7) PARM='-'

- Specifies the parameter to pass to the step.
- Maximum of 100 bytes.
- Usually, the PL/1 execute option "ISASIZE" is not specified.

Specify the ISASIZE as follows:
-For good performance: PARM='ISA(nk)/-'
-For average performance: PARM='/-'

At the test run, specify the PARM as follows:

```
//         EXEC PGM=xx...,PARM='ISA(nK),R'
-                                    |    └─ Report option
-                                    └─ "n" can be any value
//PLIDUMP DD SYSOUT=*
  |
  └─  The ISA size is displayed
```

For the test run, make sure that the data volume is similar to the actual operation.

Do not specify the report option at actual operation.

• If the parameter is too long and overflows to the next line, then specify as follows:

```
1st row    //     •••••,PARM=('-----',
2nd row    //     '---')
                  |
                  The start column should be between 4 and 16.
```

## 2.3 DD statement

```
//ddname    DD DSN=pppp.DS.--,DISP=--[,
//               UNIT=--,VOL=SER=--,SPACE=--,
//               DCB=(RECFM=--,LERCL=--,BLKSIZE=--),
//               LABEL=RETPD=--]
```

### 1) DD name

- The DD Name of the report to be sent to the user should be specified as a name other than SYSPRINT.
- SYSPRINT should contain only the following:
  - System messages
  - Control data for the programmer
- Refer to AMS Standard 50.5.1 "Naming Standards."

### 2) DSNAME

- Refer to AMS Standard 50.5.1 "Naming Standards."
- The maximum length of the DSNAME is as follows:

  DISK/MSS  44 Bytes
  TAPE  17 Bytes
- The temporary DSNAME should be named as follows:
  - Place two ampersands (&&) before a DSNAME (for example: &&xxxxxxx). In principle, do not use a DSNAME that identifies a step name, since it may be confusing when there is a change in the number of steps.)
  - Do not catalog it, since the temporary dataset uses the OS Work volume.
  - Do not specify the expiration date, EXPDT.

3) UNIT

- Ordinarily, the magnetic tape should not be used.
- If you want to use the magnetic tape as an exception, refer to Section 2.10 "How to Use the Tape."
- The unit parameter of the temporary dataset should be specified as follows:

  UNIT=(DISK2,4) or UNIT=(SYSDA,4)

  where DISK2 is the group name of the DASD volume where the dataset name (DSN) is searched.
  The second parameter, in this case 4, is the number of DASD volumes to be searched. We recommend that you use 4 or less since it can be used to specify the DASD volume on any machine.

- For MSS(Mass Storage System), specify UNIT=(3330V,P).
  By specifying DISP=SHR and UNIT=(3330V,P), you can share the MSS on multiple machines. You will not be able to share the MSS on multiple machines when UNIT=3330V is specified.

4) VOL=SER=

- Enter the volume-serial number assigned to the project you are working on.

5) SPACE

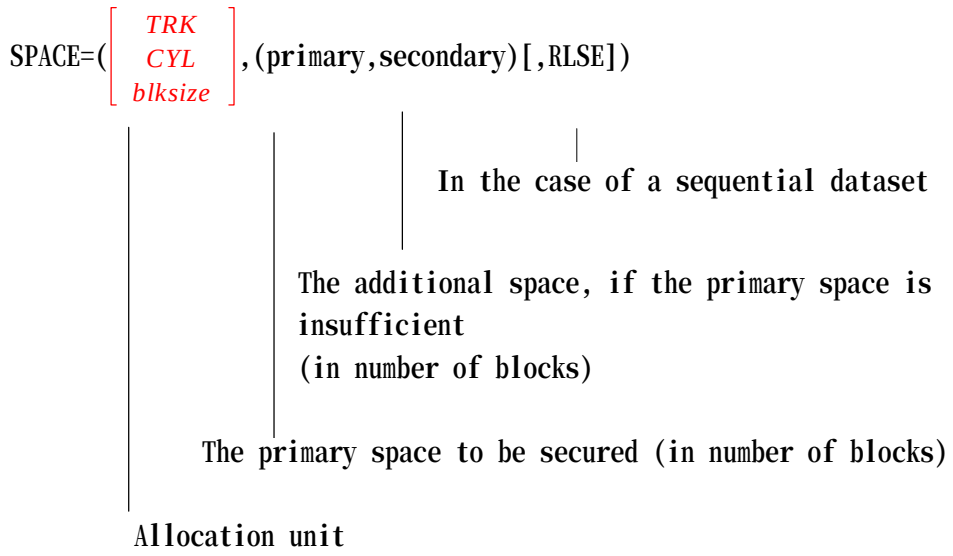
- A system abend due to insufficient space (error code B37) occurs frequently in the running of the actual job. Therefore, you should specify enough workspace, allowing for the future increases in the data volume.

  Number of necessary blocks (CI) = (forecast) Total records/records per block

  Example: For about 20,000 records with BLKSIZE=6320, LRECL=80, and an annual increase of 10%, the necessary space for 3 years will be:

  Blocks needed initially = 20000/79 = 254
  Blocks needed after three years = 337
  The SPACE parameter => SPACE=(6320,(260,30))

• Basically, the SPACE parameter is specified as follows:




Example: SPACE=(9000,(1000,200),RLSE)

This statement obtains 1000 blocks of 9000 bytes for the primary space, and 200 blocks of 9000 bytes for the secondary space, for a maximum of 16 times, until sufficient space is obtained.

• Five attempts to obtain the primary space are allowed (not five times the allowed primary space).
• An extension of up to 16 attempts can be made on the same pack after totaling the primary and the secondary space.
• Obtain the necessary space by specifying it in the primary parameter instead of specifying it in the secondary parameter.

• When specifying the work space (SP) for NEWSORT, you should obtain a work space (SP) of 1/4 the size of the input dataset. If you are going to use SORTWORK instead of the cataloged procedure of NEWSORT, specify as follows:
—Specify the UNIT as DISK2 or SYSDA. It cannot be specified as MULTI VOLUME<(DISK2,3)>.
—The necessary space for one SORTWORK = SORTIN space x 1.3/number of SORTWORKs.

6) DISP

• Catalogs all the new datasets.
• Deletes all the temporary datasets after a problem or after use.
• Reference to a common dataset should be done using DISP=SHR.

Example: //STEPLIB DD DSN=load module library,DISP=SHR

7) DCB

- The dataset block size of the disk should be decided with space effectiveness and performance in mind. An optimum value can be obtained by using ISPF MIGRATION AID(DASDSPAC).
  The 3380 Capacity Table is as follows:
  Ordinarily, it is desirable to specify a BLKSIZE not exceeding 9076 bytes when the UNIT=3380.
- When using a magnetic tape, specify a dataset block size between 8K and 12K.

The content per track of a Non-3380 key record

| BLKSZ | BLKS/TRK | BYTES | BLKSZ | BLKS/TRK | BYTES | BLKSZ | BLKS/TRK | BYTES | BLKSZ | BLKS/TRK | BYTES | BLKSZ | BLKS/TRK | BYTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23476 | 2 | 46952 | 2932 | 14 | 41048 | 1332 | 26 | 34632 | 756 | 38 | 28728 | 372 | 55 | 20460 |
| 15476 | 3 | 46428 | 2676 | 15 | 40140 | 1268 | 27 | 34236 | 724 | 39 | 28236 | 340 | 57 | 19380 |
| 11476 | 4 | 45904 | 2484 | 16 | 39774 | 1204 | 28 | 33712 | 692 | 40 | 27680 | 308 | 59 | 18172 |
| 9076 | 5 | 45380 | 2324 | 17 | 39508 | 1140 | 29 | 33060 | 660 | 41 | 27060 | 275 | 62 | 17050 |
| 7476 | 6 | 44856 | 2164 | 18 | 38952 | 1076 | 30 | 32280 | 628 | 42 | 26376 | 244 | 65 | 15860 |
| 6358 | 7 | 44492 | 2004 | 19 | 38076 | 1044 | 31 | 32364 | 596 | 44 | 26244 | 212 | 68 | 14416 |
| 5492 | 8 | 43936 | 1876 | 20 | 37520 | 980 | 32 | 31360 | 564 | 45 | 25380 | 180 | 71 | 12780 |
| 4820 | 9 | 43380 | 1780 | 21 | 37380 | 948 | 33 | 31284 | 532 | 46 | 24472 | 148 | 74 | 10952 |
| 4276 | 10 | 42760 | 1684 | 22 | 37048 | 916 | 34 | 31144 | 500 | 48 | 24000 | 116 | 78 | 9048 |
| 3860 | 11 | 42460 | 1588 | 23 | 36524 | 852 | 35 | 29820 | 468 | 49 | 22932 | 84 | 83 | 6972 |
| 3476 | 12 | 41712 | 1492 | 24 | 36808 | 820 | 36 | 29520 | 436 | 51 | 22236 | 52 | 88 | 4576 |
| 3188 | 13 | 41444 | 1396 | 25 | 34900 | 788 | 37 | 29156 | 404 | 53 | 21412 | 20 | 93 | 1860 |

: General optimum value

•You can increase the performance remarkably in sequential processing by specifying BUFNO. The Default is 5.

8) AMP

- Specify the number of VSAM buffers.
- Since the number of buffers greatly affects the performance, especially in sequential processing, specify the optimum values as follows:
  BUFNI : Specify 10 to 20 for the number of I/O buffers in the index portion of KSDS. The default is 1. For direct access, increase this number.
  BUFND : Specify 10 to 20 for the number of I/O buffers in the index portion of KSDS/ESDS. The default is 2. For sequential access, increase this number.

Example: //xxxx DD DSN=～,...,AMP=('BUFNI=10,BUFND=20')

Notes:

- You should not specify the BUFSP size with AMP??? since BUFSP has higher priority.
- For IMS･DLI, use //DFSVSMP. The AMP is ignored.
- If you take too much VSAM buffers, the paging increases and the performance decreases.

- If you increase the number of buffers, consider also increasing the region size (REGION=) as follows:

  Add (Data CISZ x BUFND + INDEX CISZ x BUFNI) for each VSAM datasets.
  Example: Add (Data CISZ=8, BUFND=50, Index CISZ=1K, and BUFNI=20) ⇒ 8K × 50 + 1K × 20 = 420K.

9) SYSOUT
- You should use SYSOUT=*.
- For a production job, you will have no output unless MSGCLASS=J is specified.

10) Retention period
- You should specify the Retention Period for every cataloged dataset.
- The period depends on the request of the owner, and is application -dependent.
- For tapes assigned a long retention period, refer to AMS Standards 80.3.6, "Long-Retention-Period Tape Registration Procedures."
- For tapes assigned a short retention period, refer to the following table:

Unit: calendar days

| Retention Period | Cycle | Comments |
|---|---|---|
| 0 | | WORK FILE |
| 3 | | COM TAPE |
| 5 | Daily | |
| 10 | Semiweekly<br>Weekly | |
| 20 | Semimonthly | |
| 45 | Monthly | |
| 70 | | For two months |
| 100 | Quarterly | |
| 200 | Semiannually | |
| 450 | Annually | |
| 450～1800 | | On registration basis |

11) JOBLIB DD statement

```
//JOBLIB DD DSN=XXXXXXXX.LMOD,DISP=SHR
```

- We advise you not to use this statement, because the Utility Program is also searched first in this DSN, affecting the performance. Instead, we recommend that you use the STEPLIB DD Statement described below.
- The JOBLIB statement should be placed right after the JOB statement (after the JES parameter and before the first EXEC).
- Specify the Program Library Data Set Name.
- This statement cannot be inserted into a Cataloged Procedure.
- If there is no STEPLIB DD statement, the JCL procedure searches the program specified by PGM from this dataset. If no program is found, it then searches the system library (such as the SYS1.LINKLIB library specified in LINKLIST).

12) STEPLIB DD statement

```
//STEPLIB DD DSN=XXXXXXXX.LMOD,DISP=SHR
```

- This statement should be placed right after the EXEC statement.
- Specify the Program Library Data Set Name.
- This statement can be placed in the Cataloged Procedure.
- The program specified in PGM in the EXEC statement that is placed right after this statement searches this dataset first, and then the system library, such as the SYS1.LINKLIB library as specified in LINKLIST.
- If the JCL statement does not specify a JOBLIB or STEPLIB statement, only the system library is searched.

## 2.4 JCL restriction of ACS

### 1) Dataset naming

| Use | DATA SET NAME | |
|---|---|---|
| DATA SYSIN | SP40.DT.XXXX<br>or<br>SP40.DT.XXXX<br><br>SP40.DT.GXXX<br>or<br>SP40.DT.GXXXX | • XXXX: If the fifth digit of the JOBGROUP No. is a dash (-), specify the first four digits.<br>XXXXX: When the fifth digit of the JOBGROUP No. is an alphanumeric, specify the first five digits.<br>•If the JOBGROUP No. is GDE, specify G as the first digit of the third qualifier.<br>The explanation for XXXX, XXXXX above applies here also.<br>Note: You must specify this name in the JCL master. However, within the JCL WORK, the XXXX[X] portion is automatically converted to a JOBGROUP No. |
| COM TAPE | (For FICHE)<br>XXXX.DS.FICHNNNN<br>(For ROLL)<br>XXXX.DS.ROLLNNNN | • XXXX: Application No. (Project No.)<br>• NNNN: The sequence number within the application (project). |
| BACK UP | (For TAPE)<br>XXXX.@DS.YY•••Y<br>(For DASD)<br>XXXX.#DS.YY•••Y | • XXXX: Application No. (Project No.)<br>• YY.....Y: Any (within 8 digits) |
| REPORT (POST-PROCESS) | (For SPOOL-PACK)<br>SP40.RP.XXXXX[symbolic]<br>or<br>SP40.MS.XXXXX[symbolic] | • XXXX: REPORT No. |

2) JCL volume restrictions on ACS

—JCL: 5000 cards per job

—DD: 3000 per job

—Symbolic parameters:

Maximum number of digits specifiable on the job card: 65 bytes

—Maximum number of jobs per job group: 50 jobs

(Since the LAST JOB on the OPC sequence is 50, only 45 jobs can be run. The other jobs are used to prepare the workstation to perform the JUS, OLN, TAPE, and INP operations.)

—The word JOB cannot be used as a comment on the OPC.

Comments can be used only in a //* statement.

Example: // EXEC SX01ABC ERROR CHECK FOR SAMPLE |

Cannot be used

3) To output to the ACS Spool DASD(UNIT=SPLD), specify as follows:

a.OPEN/CLOSE the output file before processing.

```
Example: //   EXEC PGM=RPD8DLD
         //STEPLIB DD DSN=DMS001A.LMOD,DISP=SHR
         //MOUNT01 DD DSN=SP40.RP.AB123,DISP=(,CATLG,DELETE),
         //   UNIT=(SPLD,2),SPACE=(TRK,(0,3),RLSE),
         //   DCB=(RECFM=FBA,LRECL=133,BLKSIZE=9044)
```

b.Specify the UNIT parameter as follows:

```
UNIT=(SPLD,2)
```

c.Specify 0 for the primary value of the SPACE parameter as follows:

```
SPACE=(TRK,(0,nn),RLSE)
   or
SPACE=(CYL,(0,nn),RLSE)
```

d.To create a spool dataset, specify the JCL as follows:

```
//SCR EXEC MSSSCR1
  DSN=SP40.RP.xxxxxyyy[xxxxx:Report No.yyy:Symbolic(Any) ]
    )
    (
//DMY EXEC    PGM=aaaa
//SYSPRINT DD SYSOUT=*
//OUTPUT DD   DSN=SP40.RP.xxxxxyyy,DISP=(,CATLG,DELETE),
//           UNIT=(SPLD,2),SPACE=(TRK,(0,3),RLSE),
//           DCB=(RECFM=FBA,LRECL=133,BLKSIZE=9044)
```

## 2.5 Cataloged procedure

### 1) Purpose

Our method of storing data on a DASD is the cataloged procedure, by which, for identical JCLs, only the member name is changed, to minimize the volume of data in the input job stream.

In some cases, the cataloged procedure is created not in the SYS1.UPROC but in the job stream. The characteristics of the two methods are as follows:

| | Created in the SYS1.UPRO | Created in the In-stream |
|---|---|---|
| Sharing with other jobs | Easy | Copy and use |
| Correcting at the time of a revision | One location | If multiple locations exist, then at multiple locations |
| Ease of tracing on the JCL | JCL+Catalog are required | Only on the JCL |

### 2) Method of use

a) The JCL before the creation of the cataloged procedure in the SYSI.UPROC is as follows:

```
 //SA01AA1   JOB    ......
//SA01AA1P  PROC   Symbolic Default Parm.
//SA01AA1   EXEC PGM=SA01AA1, ......
//STEPLIB   DD DSN=SA01A,DISP=SHR
//SYSPRINT  DD SYSOUT=*
//   PEND
//SA01AA1P  EXEC SA01AA1P,Parameters ......
```

In-Stream

Cataloged Procedure

b) The JCL after creating the cataloged procedure in the SYSI.UPROC is as follows:

```
 //SA1AA1  JOB ......
//SA01AA1P EXEC SA01AA1P,Symbplic Parameters ......
```

3) Method of creation

a) PROC statement

```
//Pname PROC Symbolic Default Parameters
     ......

//     EXEC Pname
```

- Indicates the start of an In-Stream procedure.
- Make sure that the PROC statement is contained in the procedure, although the cataloged procedure can be created without it.
- Make the Pnames identical.
- Place a blank after the PROC and indicate the default value for symbolic parameters of this procedure. The Symbolic Default Parameters are overriden when the procedure is called by the JCL.
- Use the same method as in the ordinary JCL for continuing the PROC statement.
- Use a maximum of eight alphanumeric characters for the Pname.

b) PEND statement

```
      After Col. 4                    Col. 71
//   PEND
```

- The PEND statement indicates the end of the In-Stream procedure.
- Specify PEND statement between columns 4 and 71.
- Insert the PEND statement at the end of the In-Stream procedure.

Note: When storing the SYS1.UPROC, remove the PEND statement from the cataloged procedure.

4) Cataloged procedures that cannot be inserted into the JCL

```
//jobname JOB ~
//stepname EXEC MA01A [cannot call another procedure within the cataloged
  procedure]
/*
//
//JOBLIB DD ~
//ddname DD * (or DATA)
//      PEND
```

5) Overrriding, adding, and nullifying parameters in the EXEC statement

a) Parameter.Procstepname=Value

This is the usual method of specifying the parameter value in the EXEC statement. It is used to change the parameter value of a specific step or to add the parameter to a new step.

b) Parameter=Value

This is another method of specifying the parameter value in the EXEC statement where the parameter can be the following:

i) PARM

When PARM is specified in the first step of a cataloged procedure, it changes only that step.

When it is specified in the second step or later, it nullifies the PARM value; that is, it has the effect of deleting a PARM value from the EXEC statement.

ii)TIME

When TIME is specified in the first step of a cataloged procedure, it has the effect of specifying the TIME for all the steps of the EXEC statement. It also has the effect of specifying the CPU time limit for the entire cataloged procedure.

When TIME is specified in the second step or later of a cataloged procedure, it does not override the TIME value, but nullifies it.

iii) Other parameter

When some other parameter is specified in the first step of a cataloged procedure, the effect is that "Other" is specified for all the steps of the EXEC statement.

If an identical parameter exists in the EXEC statement, it overrides the other parameter. If no identical parameter exists, then it adds the parameter.

c) Parameter.Procstepname=

When no value is specified, the parameter is nullified from the EXEC statement. You can use such a statement to delete a specific parameter from the EXEC Statement.

If Procstepname is not specified, then it is processed as "Undefined."

```
//  EXEC SA01AA1P,PARM.SA01AA1=,REGION.SA01AA1=80K
```

d) You cannot specify the PGM parameter.

e) If specifying Parameter.Procstepname= causes multiple override statements, they must be in the same sequence as the steps in the cataloged procedure.

6) Overriding, adding, and nullifying parameters on the DD

a) //Procstepname.ddname DD Parameter=Value

- These parameters are used to change a specific step of a DD statement or to add a DD statement to a specific step.
- Except for the DCB parameter, you must specify the entire value.
- If you want to change a part of a DCB parameter, or add a DCB parameter, you need only specify the DCB parameter and its subparameter.
- You can specify a symbolic parameter on an operand only when overriding a value.
- The sequence within a DD Card must match the sequence of the cataloged procedure.

Example:

```
//          EXEC SA01AA1P,LM=&LM,TM=&TM
//SA01AA1.INP DD DSN=SA01.DS.AX&LM
//SA01AA1.OUT DD UNIT=3480,DCB=DEN=4
```

b) //Procstepname.ddname DD Parameter=

If no value is specified, the parameter will be deleted from the DD statement.

## 2.6 Symbolic parameters

### 1) Purpose

The symbolic parameter is a method of temporarily changing the parameters of the operands on the EXEC or DD statements within a Cataloged Procedure at execution.

### 2) Format

| Position | JCL | Format |
|---|---|---|
| Input Job Stream | • JOB (note 1)<br>• EXEC [PROC=]proc name | ' Symbolic-Parameter=Value、・・・' |
| | • EXEC [PROC=]proc name | Symbolic-Parameter=<br>& Symbolic-Parameter (note 1) |
| Cataloged Procedure | • PROC | Symbolic-Parameter=Value (note 2) |
| | • EXEC PGM=pgm name<br>• DD | JCL-Key-Word=<br>& Symbolic-Parameter |

Notes:

1. This symbolic parameter was developed by the IS and therefore cannot be used on the standard operating system.
2. This is the default value used when a value cannot be specified on the EXEC [PROC=]proc name statement.

### 3) Rules for making a symbolic parameter

a) It should be specified only in the JCL operand field.

b) The maximum length is seven characters.

c) Only alphanumeric characters can be used. Top means an alphabet???.

d) A keyword on the EXEC statement cannot be used as a symbolic parameter name.
(Example: &PGM, &REGION, etc.)

e) Two or more symbolic parameters can be specified in succession, or can be concatenated with other data in a cataloged procedure or in the operand of an overridden DD statement.

i) If the next character of a symbolic parameter is a letter, a period, or a left parenthesis, then place a period after the symbolic parameter, to serve as a delimiter.

Example: P1=X

```
& P1.A44    → XA44
& P1..A44   → X.A44
 &P1.(A)    →  X(A)
```

ii) Not required for cases other than the above.

Example: P1=X
P2=Y

```
& P1 P2          →    XY
A1 & P1 & P2     →    A1XY
A1 & P1,         →    A1X,
A1 & P1          →    A1X
& P2             →    Y
```

f) Two consecutive ampersands are recognized as a symbolic parameter.

g) //ddname DD DDNAME=□～

You cannot specify a symbolic parameter in the above statement.

4) Specifying a value

a) There is no limitation on the length of a value; however you cannot continue to a different card while specifying a value.

b) A value that contains a special character should be enclosed in quotation marks.

Two consecutive apostrophes within a value should be recognized as a pair.

PARM='A''B'→ A'B

c) An ampersand(&) cannot be used within a value.

d) If two or more values are specified for one symbolic parameter, only the first one is recognized.

e) If a symbolic parameter is concatenated with some other data, the total number of characters cannot exceed 120.

## 2.7 Special symbolic parameter developed by IS

### 1) Purpose

In a standard OS, the symbolic parameter values can be specified only in the EXEC statement that refers to a cataloged procedure. Ordinarily, if a job contains multiple EXEC statements and if each one of them has a common symbolic parameter, you should change each EXEC statement.
To facilitate this process, we have modified our Reader/Interpreter so that a symbolic parameter value can be specified on the job card for use by all EXEC statements.

### 2) Rules for creating the IS special symbolic parameters

a) Specify the IS special symbolic parameters or on the second row of the JOB statement, or as the fourth positional parameter of an accounting information Job card.

b) If you are going to specify a symbolic parameter, specify the other parameters on the third row of a JOB statement.

c) The IS special symbolic parameter and its value must be enclosed in quotation marks.

d) The IS special symbolic parameter and its value cannot be continued. They must be on the same card.

e) If an IS special symbolic parameter with an ampersand (&) exists in an EXEC [PROC=]□, the value displayed on the job card is substituted and control is passed to the OS Reader/Interpreter.

f) If an IS special symbolic parameter with an ampersand (&) exists in a JCL other than an EXEC statement that refers to a cataloged procedure, the parameter is not processed by the IS special symbolic parameter routine.
They are decoded when control is passed to the OS Reader/Interpreter.

g) The display method of the IS special symbolic parameter and the value should match the IBM Supplied Symbolic Parameter format.

Example: Correct
```
//SY10A01   JOB   (F9500B,SY10X,41,
//   'TY=0,TM=09,TD=27'),
//   09500
```
Error
```
//SY10A01   JOB   (F9500B,SY10X,41,
//   'TY=0,TM=09,TD=27'),09500
```

3) Sample use

| JCL | Position | |
|---|---|---|
| //SA01AA1 JOB (F9500B,SA01X,41,<br>// 'LM=07,TM=08',<br>.....<br>// EXEC PROGM1,SYM='TM=&TM'<br>UNCATLG DSN=SA01.DS.A1&TM<br>//SA01AA1P EXEC SA01AA1P,LM=&LM,TM=&TM | Input JOB Stream | a<br><br>b<br>b<br>c |
| //SA01AA1P PROC SOUT='*',RET=30<br>//SA01AA1 EXEC PRM=SA01AA1,PARM='&LM,&TM'<br>//STEPLIB DD DSN=SA01.LMOD,DISP=SHR<br>//INP DD DSN=SA01.DS.A1&LM,DISP=OLD<br>//OUT DD DSN=SA01.DS.A1&TM,UNIT=3380<br>// VOL=SER=VOL001,DISP=(,CATLG),<br>// LABEL=RETPD=&RET,DCB=(～)<br>//SYSPRINT DD SYSOUT=&SOUT,DCB=(～) | The JCL of the Member Name named SA01aa1P within a cataloged procedure. | d |
| //SA01AA1 JOB (F9500B,SA01X,41,<br>'LM=07,TM=08'),<br>.....<br>// EXEC PROGM1,SYM='TM=08'<br>UNCATLG DSN=SA01.DS.A1&TM<br>//SA01AA1 EXEC SA01AA1P,LM=07,TM=80 | The results of the IS Special Symbolic Parameter routine. | e<br><br>e<br>f<br>e |

| | | |
|---|---|---|
| //SA01AA1 JOB (F9500B,SA01X,41,<br>'LM=07,TM=08'),<br>·····<br>·····<br>//SA01AA1 EXEC PGM=SA01AA1,PARM='07,08'<br>//STEPLIB DD DSN=SA01.LMOD,DISP=SHR<br>//INP DD DSN=SA01.DS.A107,DISP=OLD<br>//OUT DD DSN=SA01.DS.A108,UNIT=3380<br>// VOL=SHR=VOL001,DISP=(,CATLG),<br>// LABEL=RETPD=30,DCB=(～)<br>//SYSPRINT DD SYSOUT=*,DCB=(～) | The final results of the decoding by the Reader/Interpreter. | g |

LM means Last Month
TM means This Month

a) The LM=07 and TM=08 in the Job statement are standard IS symbolic parameters. If this Symbolic Parameter is used on multiple EXEC cards and you want to change these values, you need change only the symbolic parameter on the Job card.
b) To eliminate the work of changing the JCL at the time of its return, you should uncatalog (UNCATLG) the data set in the step preceding DISP=(,CATLG). There are no limitations on the number of cards used for the Control Statement. Refer to "Extended OS Utility(PROGM1)."
c) To call this procedure by using only one EXEC card, store the job in SYS1.UPROC, using the Member Name SA01AA1P.
d) The procedure in the cataloged procedure library SYS1.UPROC. The member name is SA01AA1P.
e) The result of processing by the IS developed Special Symbolic Parameter routine (whose Reader and Interpreter have been modified)
f) The Control Statement
The Symbolic Parameter is decoded at Extended OS Utility execution.
g) The final result of the processing by the Standard OS Interpreter, which decodes the result of the above e).

## 2.8 Standard symbolic parameters for ACS

### 1) Symbolic parameters for batch processing

| Job Cycle | Job Name | Typical Samples of Standard Symbols |
|---|---|---|
| Yearly | pppp@Y0<br>ppppsY0 | TY[,LY][,LLY] |
| Semiannually | pppp@Yx<br>ppppsYx | TY,TN[,LY,LN][,LLY,LLN] |
| Quarterly | pppp@Yx<br>ppppsYx | TY,TN[,LY,LN][,LLY,LLN] |
| Monthly | pppp@M0<br>ppppsM0 | TM[,LM][,LLM] |
| Semimonthly | pppp@Mx<br>ppppsMx | TM,TN[,LM,LN][,LLM,LLN] |
| Weekly | pppp@Mx<br>ppppsMx | TM,TN[,LM,LN][,LLM,LLN] |
| Daily | pppp@Cx<br>ppppsCx<br>pppp@Dx<br>ppppsDx | TM,TD[,LM,LD][,LLM,LLD]<br>RUNNO[,LRUNNO]<br>TN[,LN,LLN] |

Note:

1. In the Job Name, place a letter from A to Z in the place marked s.
2. In the Job Name, place the following in the place marked x.
   - a number from 1 to 9 for semiannually, quarterly, monthly, semimonthly, or weekly.
   - an alphanumeric from 1 to Z for daily.

Usable Symbolic Parameters

Table 2.8

| Symbol | Description | Number of Digits | Meaning (differs by application and cycles) |
|---|---|---|---|
| TY=x<br>TM=xx<br>TN=x<br>TD=xx | This year<br>This month<br>This number<br>This day | 1<br>2<br>1～3<br>2 | Self-explanatory<br>Self-explanatory<br>Self-explanatory<br>Self-explanatory |
| LY=x<br>LM=xx<br>LN=x<br>LD=xx | Last year<br>Last month<br>Last number<br>Last day | 1<br>2<br>1～3<br>2 | Self-explanatory<br>Self-explanatory<br>Self-explanatory<br>Self-explanatory |
| LLY=x<br>LLM=xx<br>LLN=x<br>LLD=xx | L.Last year<br>L.Last month<br>L.Last number<br>L.Last day | 1<br>2<br>1～3<br>2 | Last Last Year<br>Last Last Month<br>Last Last Number<br>Last Last Day |
| RUNNO=xxx<br>LRUNNO=xxx | Run number<br>L.Run number | 3<br>3 | Execution Number<br>Last Execution Number |

You should not use any symbolic parameters on the Job cards than those listed in Table 2.8.

Generally, the starting point of "This" in defined as follows:

a. The data closing year or month in the case of TY and TM or the job execution year or month.

b. For TD, the job execution day.

c. The first time of This Year or This Month becomes "1."

The term "Last" is defined as the Tx (TY,TM,TN,TD, etc.) of the last operation.

Example: When TM, TN, LM, LN, LLM, or LLN is used for a weekly job.

| | TM | TN | LM | LN | LLM | LLN |
|---|---|---|---|---|---|---|
| The first week of May | 05 | 1 | 04 | F | 04 | 3 |
| The second week of May | 05 | 2 | 05 | 1 | 04 | F |
| The third week of May | 05 | 3 | 05 | 2 | 05 | 1 |
| The fourth week of May | 05 | 4 | 05 | 3 | 05 | 2 |
| The fifth week of May | 05 | F | 05 | 4 | 05 | 3 |

## 2.9 Processing at job abends

You should notify the person in charge of any system or application errors by one of the following:

1) A "SYSTEM ABEND" or a "USER ABEND"
   - IEF450I ABEND Sxxx～Uxxx
2) A "JCL ERROR"
   - IEF452I JOB NOT RUN -JCL ERROR
   - IEF453I JOB FAILED - JCL ERROR

### 1) Generating a USER ABEND

i) Using SMONERR, a standard error processing macro.
Refer to AMS Standards 70.2.2, "Standard Subroutine Macro Usage."

ii) Using PGM=UABEND
This program is used to ABEND a program when it is not ABENDed by the IMS utility. The requisite is that the condition code (return code is set. An example is shown on the next page.
The following should be used as guides for setting the condition codes (return codes).

| | |
|---|---|
| 0 | ・・・・Normal end. |
| 4 | ・・・・With a warning message; processing can continue. |
| 8 | ・・・・With an error message; processing can continue. |
| 16-100 | ・・・・Abend; processing is stopped. |
| 100- | ・・・・Unused; generally, an abend is handled by the above i. |

PGM=UABEND

```
    -
    -
    //ST5    EXEC  ·····                    ← The step where the condition
                                                code is set.
    -
    //ST6    EXEC  ·····,COND=(16,LE,ST5)   ← Specifying a COND for
                                                bypassing a step when an abend
                                                occurs.
    -
    -                          If 16 is less equal (LE) to the return code
                               of ST5, then this step is not executed.
    -
    //DUMMY    EXEC  PGM=IEFBR14,COND=(16,LE)
   //UAMEND   EXEC  PGM=UABEND,COND=(0,EQ,DUMMY)
   //STEPLIB DD     DSN=SYS1.LINKLIBX,DISP=SHR
```

If the condition code of any of the previous step is equal to or greater than 16, the dummy steps are not executed and that condition code becomes a blank.
If the condition code of any of the previous step is equal to 16, the dummy steps are not executed and that condition code becomes a zero 0.

If the condition code for this step DUMMY is blank, this step UABEND is executed and an ABEND occurs (USER 1111) .
If the condition code for this step DUMMY is 0, this step UABEND is not executed and ends normally.

## 2.10 Using the tape

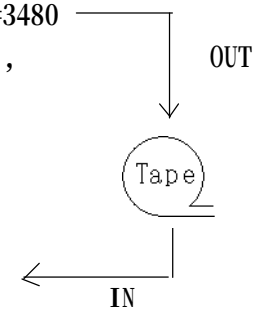
1. A 3480 Tape Unit should be used. The use of any other tape unit, such as the 3420, requires the authorization of the East Japan Computing Center, Section 1.
2. The shared use of tape units for one step is limited to two units including the unit used exclusively for allocation.
3. If the 3480 Tape Handling System (tape robot) is used, the JCL coding is limited to the following:

   a. For JCL with cataloged input tapes:
   -Input tapes cataloged on other systems cannot be used.
   -Only the DSN and DISP parameters should be specified.

```
//ddname DD DSN=ppp.DS.～,DISP=OLD
```

   b. If the same file is used for output and input, the job should be separated into two. If the job cannot be separated, specify the UNIT=TR03..

```
//stepA     EXEC aaa
//ddname    DD DSN=pppp.DS.～,DISP=(,CATLG),UNIT=3480
//             DCB=(RECFM=～,LRECL=～,BLKSIZE=～),
//             LABEL=(～,～,RETPD=～),UNIT=TR03
//setpb     EXEC bbb
//ddname    DD DSN=pppp,DS.～,DISP=OLD,UNIT=TR03
```




   c. The JCL to concatenate the tape input file is as follows:

```
//ddname  DD  DSN=pppp.DS.～,DISP=OLD
//        DD  DSN=pppp.DS.～,DISP=OLD
```

   Caution:
   ・Do not specify UNIT=AFF=--.
   ・No more than two data set files can be specified.

   d. Other Caution Points
   ・Do not specify a GDG file on the tape.
   ・When using NL tape, specify the JCL as follows:
   —Specify UNIT=T348 when initializing.
   —For input, there are no limitations.
   —For output, always specify VOL=NLSCRx, where x is an alphanumeric (1-9, A-Z).